

Chapter 1

What Does It Mean to “Believe”?

Through the ages and around the world, people have believed in various gods. While some scholars and nonbelievers find such beliefs mystifying, to those who hold them, nothing seems peculiar or unnatural about belief. In fact, until confronted with others who don't believe in religious entities, believing goes on unnoticed. To many believers, questions such as “do you believe in spirits?” or “do you believe in God?” make about as much sense as “do you believe in food?” or “do you believe in people?” What makes religious belief so natural and commonplace for some but so odd for others? To address the reasons people hold the sorts of religious beliefs they do, including belief in God, we must first have some sense for how people come about believing anything at all.

For most educated, thinking people, how we go about forming beliefs may seem rather straightforward. We carefully, logically evaluate evidence for and against a particular claim, and if the evidence outweighs counterexplanations, we believe the claim to be true. If only it were that simple. Though philosophers and scientists present logical evaluation of evidence as an ideal for forming beliefs, in practice, most beliefs we hold—even those of philosophers and scientists—arise through less transparent means.

We use the words *belief* and *believe* in many different ways. Sometimes believing something implies a strong commitment to something being true, as in “I believe racism is wrong.” Sometimes believing suggests weak commitment, as in “I believe it will rain today.” Sometimes believing suggests trusting another person, as in “I believe in my wife's faithfulness.” People invoke these and other senses of “belief” when speaking about God. They believe God exists, they *believe* God approves of their behavior but don't *know* it, and they believe in God's love.

Regardless of nuance, belief is fundamentally a mental process. Individuals use their minds to believe or disbelieve. Consequently, before explaining why anyone would believe in God, explaining the psychology of how it is that people *believe* is in order. Understanding where beliefs generally come from is critical to understand why people believe in God. In this chapter, I will share some thoughts on psychology of everyday beliefs that all people make day in and day out. The end of this book builds on this foundation.

Two Types of Belief

Behind the many ways people use the term *believe* are two types of belief derived from two different types of mental activity. I will term one kind of belief *reflective* and the other *nonreflective*.¹ Briefly, reflective beliefs are those we arrive at through conscious, deliberate contemplation or explicit instruction. We reflectively believe many facts, such as that cars run on gasoline, that $12 \times 8 = 96$, that caterpillars turn into butterflies, and that George Washington was the first president of the United States. We reflectively believe matters of opinion, such as that mother is a great cook or that blue is a nicer color for clothing than orange. By reflective beliefs, I mean the class of beliefs we commonly refer to as “beliefs,” including belief in God. But many, if not most, of our reflective beliefs, including belief in God, arise from and are supported by nonreflective beliefs,

Nonreflective beliefs are those that come automatically, require no careful rumination, and seem to arise instantaneously and sometimes even “against better judgment.” These nonreflective beliefs are terribly important for successfully functioning in the day-to-day world. Consider the following nonreflective beliefs:

- When I am hungry, I should eat.
- I can't walk directly through a solid wall.
- My children want things I don't want them to want.
- If I throw a rock in the air, it will come back down.

We hold these and countless other mundane beliefs nonreflectively. We don't need to consider them consciously. Such beliefs operate continually in the background, freeing our conscious minds to deal with other thoughts. Nonreflective beliefs are so ubiquitous and so often nonconscious that we frequently are not aware they are there.²

Suppose you were in a park flanked by a forest and saw a dull-brown, furry thing about the size of a loaf of bread moving along the tree line. Having never seen the thing before, you already have a number of beliefs about it without any careful contemplation. Relying only on intuitions, you believe it is an animal, don't you? (It could have been a machine covered with faux fur.) Do you think it was born? If it had babies, would they be the same type of animal? Breathe? If a dog ran toward it, what would it do? If you threw it in the air, would it fall? If you threw it against a wall, would it pass through? If you are like most people, you could answer nearly all these questions with a fair amount of confidence and without much, if any, consideration. These beliefs are nonreflective. But where do nonreflective beliefs come from, and how do they relate to reflective beliefs, particularly belief in God? To further unpack this distinction between reflective and nonreflective beliefs so that it may be helpful for understanding religious beliefs, a brief journey into the structure and functioning of the human mind is necessary.

The Mind as a Workshop

Thinking of the human mind as a workshop filled with racks of tools may be helpful. A lot of work happens in our minds. Cognitive scientists (scholars who study the activities of the mind) have concluded that the adult human mind has a large number of devices that are used for different problems on different occasions.³ Thus, for instance, the brain has specialized tools for tackling the interpretation and production of language, other tools for processing information picked up through the eyes, and other tools for making sense of other people's behaviors. Cognitive scientists debate whether some parts of the brain end up being used as more than one tool (or parts of more than one tool), analogous to how a standard hammer can be used as more than one tool (such as for pounding as well as pulling nails); how many tools the brain possesses; and whether these tools arise primarily from our biological makeup or whether they develop primarily through experience. The notion that the adult human brain possesses an array of specialized tools is scarcely debated anymore. Instead of having one powerful multipurpose mental tool, we have a number of specialized ones.

Most of these *mental tools* operate automatically, without any conscious awareness. They efficiently and rapidly solve lots of problems without concentration or angst, much the same way that computer programs solve problems in a swift, effortless fashion. Thus, when we confront an object, such as the previously mentioned fuzzy thing, one mental tool, the *object detection device*, recognizes it as an object and passes on this nonreflective belief to a number of other mental tools, including the *animal identifier* and the *object describer*. The animal identifier takes the information about the object's size, coloring, texture, movement, and location and arrives at the nonreflective belief that the thing is indeed an animal. The animal identifier passes this nonreflective belief on to yet other mental tools, such as the *living-thing describer*, which nonreflectively believes that the animal in question eats, breathes, and produces similar offspring, among other bits of information. The object describer, having been activated by the object detection device, nonreflectively believes that the thing likewise has all the properties of a normal, bounded, physical object. For instance, it falls to the earth when unsupported and cannot pass through other solid objects.⁴

It may be helpful to think of these tools as falling into three categories: categorizers, describers, and facilitators. *Categorizers* are mental tools that receive information primarily from our basic senses (hearing, smelling, seeing, tasting, and touching) and use that information to determine what sort of thing or things we have perceived. For example, on the basis of the visual appearance of something, we might decide that it is a bounded object (such as a ball) or that it is a fluid or formless substance (such as water). Such determination is typically done instantaneously without awareness because of the operation of the object detection device. This device is almost certainly active at birth. At birth, infants also have a *face detector*, which is used to discern human faces from the environment. Such a device enables babies

only one day old to imitate the facial expressions of others, even before they have seen, or presumably know they have, their own face.⁵ Other categorizers determine whether an object (once identified as such by the object detection device) is an animal, a plant, a human-made thing, and so forth. Perhaps the most important tool for the present discussion in the categorizer group is the *agency detection device*. This tool looks for evidence of beings (such as people or animals) that not merely respond to their environment but also initiate action on the basis of their own internal states, such as beliefs and desires.

Describers are devices that our minds automatically use for supposing the properties of any given object or thing once it has been identified by a categorizer.⁶ For instance, whenever a baby (or an adult) recognizes something as an object—whether a rock or ball or cat or unknown thing—it automatically assumes that the thing has all the properties of a bounded object: occupying a single location at a time, not being able to pass through other solid objects, being subject to gravity, being movable through contact, requiring time to move from one place to another, and so forth.⁷ The object describer generates all these property-related expectations even if the particular object in question is unfamiliar. The living thing describer automatically ascribes nutritional needs, growth, death, and the ability to reproduce its own kind to those things categorized as animals. Though no firm evidence exists that the living-thing describer operates in infancy, it seems to be functional by around age five.⁸ The agent describer, better known as the Theory of Mind (ToM), kicks into action once the agency detection device recognizes something that seems to initiate its own actions and does not merely respond mechanistically to environmental factors. The ToM then attributes a host of mental properties to the agent in question—percepts that enable it to negotiate the environment, desires that motivate actions, thoughts and beliefs that guide actions, memory for storing percepts and thoughts, and so forth.⁹

The third group of tools may be called *facilitators*. The function of facilitators results primarily in coordinating social activity and other behaviors that depend the situation and not merely on the identity of the things involved. Facilitators help people understand and predict human behavior in specific situations that require more explanation than appealing to simple beliefs and desires (the job of the ToM). Three facilitators may be particularly important for explaining religious beliefs. First, a *social exchange regulator* tries to make sense of who owes what to whom for what reason.¹⁰ Second, a *social status monitor* attempts to determine the high-status members of a group with whom it would be important to form alliances or from whom it would be profitable to learn and imitate.¹¹ Third, an *intuitive morality tool*, used in both social and nonsocial settings, helps people function in social settings, such as when they agree to certain behavioral norms even without explicit reasons for doing so.¹² Table 1.1 lists some mental tools that I will use in subsequent chapters.

Table 1.1 Mental Tools

Categorizers	Describers	Facilitators
Object detection device	Object describer	Social exchange regulator
Agency detection device	Living-thing describer	Social status manager
Face detector	Theory of Mind	Intuitive morality
Animal identities		
Artifact identifier		

Categorizers, describers, and facilitators have a number of features in common. All are mental tools that operate implicitly and automatically. The fluidity with which they solve problems renders them largely invisible to conscious reflection or evaluation. These tools also seem to be present in all adult populations regardless of culture (though facilitators may have more variability than categorizers or describers). Thus, these tools are factors that might help account for cross-cultural or recurrent features of human thought and behavior, such as beliefs in gods and God.

That people the world over possess these mental tools does not necessarily mean that such tools are biologically “hardwired” into our brains or that their development is inevitable. For the present discussion, I will remain largely agnostic on these issues. However, the classes of tools do have some differences in development, which sometimes suggests differences in the contribution of “nature” versus

“nurture” in their emergence. Research indicates that infants and sometimes newborns possess well-developed categorizers, including the object detection device, the agency detection device, and a face detector. Some research has provided evidence that animal and artifact identifiers function in the first two years of life.¹³

Describers, however, seem to emerge somewhat later in development and take longer to reach adultlike maturity. The ToM, for instance, may have its origins in the first three years of life but does not consistently approximate how adults reason until age four or older. A similar developmental pace appears to operate for other describers. Finally, many facilitators seem to come into their own only in middle childhood through adulthood. If so, this general developmental pattern would not be surprising because it reflects important functional relationships between the three types of tools: facilitators typically require that a certain amount of description has taken place, and describers assume categorization. To illustrate, social exchange regulation assumes that the beings who engage in the exchange relationship have beliefs, desires, memory, and experiences attributed by the ToM (a describer). The mind activates the ToM in cases in which an object is identified as an agent—the role of the agency detection device (a categorizer).

The Origin and Features of Nonreflective Beliefs

Now that some basic architecture of the mind is in hand, I can return to the nature of belief. In my description of the various tools, it may have sounded as if these tools are little people in our heads forming their own beliefs. Such a metaphor would capture the essentials well enough, for these mental tools produce nonreflective beliefs. When Mary’s object detection device registers some visual patterns as a bounded physical object in front of her, she experiences a nonreflective belief that an object is in front of her. When Juan sees Mike take an apple from a tree and eat it, Juan’s ToM interprets Mike’s action as the result of Mike’s desire to eat the apple. Thus, Juan experiences a nonreflective belief that Mike desired the apple.

When developmental psychologists claim that infants believe that objects in motion tend to continue on inertial paths, they refer to the nonreflective beliefs of infants. Such beliefs come from the object describer. When scientists who examine the interactions of people and computers say that people believe that computers have feelings (or have sinister plans to make our lives miserable), generally they refer to nonreflective beliefs generated by people’s agency detection device and ToM working together to try to make sense of computers.

Mental tools—operating without our awareness—constantly produce non reflective beliefs. Producing such beliefs is the job of these tools, and the utility of having such mental tools “instinctively” make decisions and form beliefs cannot be underestimated. What if every time we move an object from one place to another (as when we feed ourselves, get dressed, wash dishes, and so forth) we had to reason consciously that objects require support, or else they fall toward the is blocked by another physical object of sufficient density to stop their descent? Isn’t it much more convenient that we have an unconscious device that forms beliefs about how gravity operates on objects so that we don’t have to clutter our conscious mind with such mundane issues?

Perhaps you have noticed that all my examples of nonreflective belief rely on nonverbal behavioral evidence to support the belief. Babies’ nonreflective beliefs about objects become clear by examining (very carefully) their subtle behaviors. Adults’ belief that computers have minds and feelings comes to light primarily under experimental scrutiny of nonverbal behaviors and indirect verbal behaviors. By these examples I do not mean to imply that verbal evidence for nonreflective beliefs does not exist. Rather, nonreflective beliefs typically do not impinge enough on conscious activity to merit verbal commentary. When verbal evidence is available, it is indirect, such as when people say, “This stupid machine!” in reference to their computer, not direct, as when saying, “I do believe this computer has beliefs and desires that exceed its programming in a way that disturbs me’

The Origins and Features of Reflective Beliefs

In addition to automatic mental tools that function without awareness to produce nonreflective beliefs, people also enjoy powerful conscious mental abilities. Psychologists sometimes refer to these conscious mental tools as “higher-order” or “executive” functions of the mind or *metarepresentational devices*. What all these terms point to is the ability to evaluate information reflectively and to come to a decision that might not agree with our first, automatic impulses. When we stop to think things over, weigh the pros and cons, examine the evidence for and against, and then make a decision to believe or disbelieve a claim, our reflective abilities are working.

Differences between Reflective and Nonreflective Beliefs

By “reflective beliefs,” I refer to beliefs arrived at through conscious, deliberate mental activity. Perhaps closer to what we commonly think of as “beliefs,” reflective beliefs contrast with nonreflective beliefs on a number of fronts. First, whereas nonreflective beliefs come rapidly and automatically from mental tools, reflective beliefs take relatively more time to form. Believing that Moses wrote or edited the bulk of the Pentateuch might take several years of college study to decide. That would be a slow-forming belief. Other reflective beliefs, such as that it will rain today, might require only a quick glance out of the window. Nevertheless, even these very fast-forming reflective beliefs require more time to develop than nonreflective beliefs.

A second way in which reflective beliefs differ from nonreflective beliefs is the contexts in which they arise and are used. Nonreflective beliefs seem to spontaneously generate in each and every moment. Reflective beliefs typically surface when has to be made, that is, when a problem is deliberately presented that requires a solution. Nonreflective beliefs form simply by looking around us. Reflective beliefs form from us wondering what to do about the world around us. What would be best to make for dinner? How will I go about get-Why should I agree to my neighbor’s request? Though sometimes mundane, the contexts in which reflective beliefs are needed make the contexts reflective beliefs—such as setting down a spoon or walking through a doorway—pale by comparison in their complexity and novelty.

Unlike nonreflective beliefs, people present direct verbal evidence for their reflective beliefs. They may simply state what they believe. “I think dogs are better pets than cats,” someone might say. Or “I believe that Marxism is damaging to individual motivation.” Or “that man has a bag of magical potions that could change you into a tarantula,” This explicit, verbal reporting of reflective beliefs makes those beliefs obvious and easy to gauge—but not always. Sometimes reports of one’s own beliefs may be deceptive, but more frequently, people do not have a reflective belief until asked for one. To illustrate, when asked whether I believe that spring will come early this year, I might have previously formed no belief one way or another. But once asked, I may try to reason through the problem to come up with a belief.

Perhaps a more interesting feature of reflective beliefs and their verbal reports is that verbal reports of beliefs, even when sincerely held, may have little correspondence with relevant behaviors. Previously I mentioned that to determine non-reflective beliefs, observers must examine behaviors, In the case of reflective beliefs, little correspondence between beliefs and behaviors may exist. The case of “beautyism” is an example. The reflective belief, verbally reported, that “beauty is only skin deep” does not correspond to the strongly documented tendency for people to overestimate the intellectual and social abilities of physically attractive children as compared with less attractive children)¹⁴ Much racist thinking_ sincerely denounced by the practitioners—also illustrates this dissociation between reflective belief and behavior, as when a couple claim that people of all races should be treated the same but then have a negative visceral reaction to the suggestion that their child might marry someone from a different race.¹⁵

A final difference between reflective and nonreflective beliefs worth noting is their differences in cultural relativity. As I will explain later in this chapter, reflective beliefs are shaped and heavily informed by nonconscious mental tools (via nonreflective beliefs). Nevertheless, because reflective

beliefs may include elements verbally communicated or drawn from personal experience, reflective beliefs vary from individual to individual and from cultural group to cultural group. Nonreflective beliefs, being closely tied to mental tools that appear and function essentially the same in everyone, show little variation from place to place or from person to person. It follows that those reflective beliefs that arise most directly from nonreflective beliefs would likewise show little interpersonal or intercultural variation. For example, no matter where you go or to whom you talk, people believe that rocks can be in only one place at a time, cannot pass directly through other solid objects, and must be supported or else fall downward.

Reliability of Reflective and Nonreflective Beliefs

Note that the fact that a belief is reflective or nonreflective has no direct relationship to the belief being true or false. Though reflective beliefs may arise through careful, systematic evaluation of evidence, mistakes in reasoning or inadequacies of evidence may lead to erroneous conclusions. Indeed, reflective beliefs include the domains of opinion and preference. Nonreflective beliefs often correspond nicely to reality. This reliability comes from the observation that the mental tools responsible for these beliefs exist in large part because of their contribution to human survival throughout time. For instance, if people didn't automatically reason in a way that was mostly accurate about physical objects, they would probably spend much more time dropping things on each other's heads and falling off cliffs than they currently do. Nevertheless, these devices are tuned to survival and not to the firm establishment of truth. What mental tools provide is quick "best guesses" as to the identity and properties of objects and how to explain cause-and-effect relationships. These best guesses sometimes prove inaccurate. I discuss this issue further in the next chapter. Table 1.2 compares features of reflective and nonreflective beliefs.

Table 1.2 Reflective versus Nonreflective Beliefs

Reflective Beliefs	Nonreflective Beliefs
Consciously/explicitly held	May or may not be conscious or explicit
Produced deliberately and often slowly	Produced automatically and rapidly
Draw on outputs of many mental tools and memories	Produced by one or a small number of related mental tools
Best evidence of belief is typically explicit statements that may or may not be consistent with relevant behaviors	Best evidence of belief is typically behavioral
May or may not be empirically verifiable	May or may not be empirically verifiable
May or may not be rationally justifiable	May or may not be rationally justifiable
May or may not be true	May or may not be true
Great potential for within-group variation	Typically strong within-group uniformity

Religious Beliefs and the Reflective/Nonreflective Distinction

When people think about or discuss religious beliefs, they usually consider reflective religious beliefs. Though these explicit religious beliefs capture the attention of theologians, pastors, and social scientists, religious beliefs come in both flavors. Some are reflective, such as believing that "God exists as three persons" and that "God desires peace on earth," and some are nonreflective, such as believing that "God has desires" and that "God perceives human actions." Despite their mundane qualities, nonreflective beliefs do a tremendous amount of work *in* filling out religious beliefs, motivating behaviors, and making the fancier theological notions possible. For instance, that our ToM tool automatically attributes desires to God enables discussions about what exactly God's desires might be. Nonreflective beliefs that God perceives human actions make discussions of God's judgments regarding sin possible. When people reflectively talk about or engage in prayer, they nonreflectively believe that

God can both perceive and understand human language (particularly our own language). All folk theology and religious practices gain structure and support from nonreflective beliefs.¹⁶

Nonreflective religious beliefs sometimes contradict reflective religious beliefs. For instance, a small number of Christians argue that people's behaviors and attitudes are completely within God's control and that people do not have any free will. Nevertheless, in their day-to-day activity, these same Christians certainly behave as if they believe in free will. If their child transgresses, it sure isn't God's fault. ToM registers a strong nonreflective belief that people possess freedom to act on the basis of one's own desires. Consequently, consistently believing a strong doctrine denying free will presents formidable difficulties. Similarly, many properties of God embraced reflectively may contradict an individual's nonreflective beliefs,

In a series of experiments, I examined reflective beliefs about God's properties compared with nonreflective beliefs on the same dimensions.¹⁷ I asked theists (from many world religions) and nontheists in the United States and northern India whether God possesses a number of properties. (For Hindu participants in India, I used the names of several Indian deities). Across all groups sampled, God was attributed such nonhuman properties as being able to pay attention to multiple activities at the same time, not having a single location but being either everywhere or nowhere, not needing to hear or see to know about things, being able to read minds, and so forth. People's reflective beliefs about God fairly closely matched the exotic theological properties many world religions embrace and teach. When these same individuals recalled or paraphrased sketchy accounts of God's activities, however, they systematically misremembered God as having human properties in contradiction to these theological ones.

A well-substantiated body of research on memory for narratives shows that what gets remembered or comprehended is a combination of the text and the concepts or beliefs brought to the reading of the text. Thus, a good measure of non-reflective concepts is the type of intrusion errors (or inserted information) that a reader remembers (incorrectly) as being part of a text. I carefully constructed the narratives used in these studies so that readers could remember the stories using either "theologically correct" concepts of God or less orthodox humanlike concepts. Though the participants reflectively affirmed the theologically correct concepts, their nonreflective concepts remained largely anthropomorphic. That is, when reasoning about God using God's properties instead of reflecting on and reporting God's properties, these same individuals nonreflectively used human properties to characterize God. These properties included being able to pay attention to only one thing at a time, moving from one location to another, having only one particular location in space and time, and needing to hear and see things to know about them.

People seem to have difficulty maintaining the integrity of their reflective theological concepts in rapid, real-time problem solving because of processing demands. Theological properties, such as being able to be in multiple places at once, not needing to perceive, being able to attend to an infinite number of problems at once, and not being bound by time, importantly deviate from the nonreflective beliefs that mental tools freely generate. As such, these reflectively held concepts are more difficult to use rapidly than nonreflective beliefs. Nonconscious mental tools are not accustomed to handling such fancy concepts and find them cumbersome. Thus, when presented with accounts of God (or other equally complicated concepts, such as those in quantum physics) that must be rapidly comprehended and remembered, most of the features that do not enjoy the strong support of mental tools get replaced by simpler, nonreflective versions that can produce rapid inferences, predictions, and explanations.

These findings from the narrative comprehension tasks nicely illustrate how reflective religious beliefs sometimes contradict or at least depart from nonreflective religious beliefs. This divergence arises in part because nonreflective beliefs are not typically available to conscious access and are not easily altered because they are directly produced by nonconscious mental tools. The occasional difference between these two classes of beliefs should not, however, be taken to mean that nonreflective and reflective beliefs operate independently.

The Relationship between Reflective and Nonreflective Beliefs

In many cases, reflective beliefs arise as the consequence of verbal discourse, as when one person persuades another person of the truth of some claim. More frequently, reflective beliefs arise in large part because of related nonreflective beliefs influencing the conscious assessment of possible beliefs. In the following sections, I identify three related ways in which nonreflective beliefs influence the formation of reflective beliefs. First, nonreflective beliefs serve as default options for reflective beliefs. Second, reflective beliefs that resonate with nonreflective beliefs seem more plausible. Finally, nonreflective beliefs shape experiences that we consciously use as evidence to ‘form reflective beliefs.

Nonreflective Beliefs Act as Defaults for Reflective Beliefs

If I presented a group of unschooled people with an object (such as a type of rock) that they had never seen before and asked them if they believed it would fall to the earth when I released it from support, the vast majority of the group would answer affirmatively. Each would form a reflective belief that the object has the property of falling to the earth when released. Where does this belief come from? Quite simply, without reason to believe otherwise, the nonreflective belief that physical objects require support or else plummet to the earth serves as a good first guess or default assumption for the formation of reflective beliefs. Our reflective mental capacities “read off” beliefs from our unconscious mental tools.¹⁸ The outputs from unconscious mental tools (that is, nonreflective beliefs) serve as inputs for our reflective mental functions. Unless some salient competing or mitigating information challenges the nonreflective belief, it becomes adopted as a reflective belief.

In addition to the previously mentioned example, consider the following scenario. Suppose I observed a little girl go into a kitchen and leave with an apple. Then I see the child do it again and again. My ToM automatically tells me that people act in ways to satisfy desires, so a reasonable interpretation of this child’s behaviors is that the child wants apples. My living-thing describer tells me that people and other animals eat when hungry. I get all this information nonreflectively. If the girl’s behavior merited my attention (maybe I found it curious, maybe the apples were mine, or maybe I wanted an apple too) or someone directed my attention to the child by asking, “So why is that kid taking apples?” I might consciously form a belief about her desires. In many circumstances, this reflective belief would combine the nonreflective belief provided by my ToM—that she desires apples and is acting to satisfy that desire—with the nonreflective belief provided by my living-thing describer—that the girl is hungry. A reasonable and rapidly formed reflective belief would be that the girl is swiping apples because she is hungry.

Suppose, however, that I happened to know that earlier in the day the girl had enthusiastically commented that the horse outside would allow anyone to pet it when tempted by an apple. If I can consciously recollect this verbal information, then my reflective faculties may use this information together with any relevant nonreflective beliefs (that the girl desires apples or that the girl is hungry) to form a slightly different reflective belief. My ToM still says that the girl desires apples, but now I have two different possible reasons for the desire. Nonreflectively I believe she is hungry, but reflectively I have reason to believe she desires the apples to lure the horse. Dredging up some stored knowledge about little girls—that they rarely eat three whole apples in succession—I reflectively conclude that the girl wants the apples for the horse and that she is not in fact hungry. Note that though this reflective belief discounted one nonreflective belief regarding the girl’s own hunger, the reflective belief strikes me as satisfying and plausible largely because it still meshes well with other underlying nonreflective beliefs: that girls act to satisfy desires and that horses desire food because they are animals and will act to satisfy their desires (even if that means being petted by a little girl).

Nonreflective Beliefs Make Reflective Beliefs More Plausible

As the previous scenario illustrates, nonreflective beliefs not only influence reflective beliefs by serving as default candidates for beliefs but also make reflective beliefs seem more plausible or more credible. When a reflective belief nicely matches what our nonconscious mental tools tell us through

nonreflective beliefs, the reflective beliefs just seem more reasonable. Sometimes we say that such reflective beliefs seem right intuitively or that our intuitions tell us they are so. In fact, psychologists sometimes refer to our nonreflective beliefs as “intuitive beliefs or knowledge” and to our nonconscious mental tools as “intuitive reasoning systems.” When someone else tells us about some idea or something that fits these intuitive mental tools, we tend to (reflectively) believe most readily. We find the idea intuitive,

Fitting with nonreflective beliefs may be a matter of either matching them (as in the previous example) or simply not violating them. For instance, compare the following two claims: 1) scientists have discovered things on another planet that can move from one place to another without passing through the space in between and 2) scientists have discovered things on another planet that can move from one place to another at speeds of 90,000 km/hr. Which claim seems more believable? For most people, the second claim is more plausible than the first because our object describer produces a nonreflective belief that when objects move from one place to another, they pass through the intervening space. Our object describer has no particular beliefs about how fast things move. Reflective beliefs might tell us that both claims are impossible. (In fact, the possibility of either claim is debated by physicists, with some reporting that particles have been to another without passing through the intervening space.)

When we hear ideas that resonate with any beliefs we already have—nonreflective or otherwise—we are inclined to believe them, but nonreflective beliefs generated by intuitive mental tools remain special in this regard. Unlike preexisting beliefs that might arise through personal experience or education, the nonreflective beliefs generated by mental tools inhabit most all minds everywhere.

Nonreflective Beliefs Shape Memories and Experiences

A third and less direct way through which nonreflective beliefs shape reflective beliefs is by shaping experiences and memories for experiences. Sometimes people suppose that we experience events around us the way they are and remember things the way they really were as well. Not so, at least not exactly. Everything we experience must be processed and transformed through our nervous systems, including our brains. Some things get left out. Others get changed. Instead of thinking of our minds as blank slates or photographic film waiting to be impressed with whatever is “out there” or as a storage bin for whatever happens to come in, a more accurate metaphor for our minds is as a workshop that selectively brings in raw materials and then alters and combines those materials into new, useful units. Some of the primary tools used in the workshop of the mind are the nonconscious mental tools to which I have already referred,

With visual experiences, information about what is around us doesn’t simply come in as it is. For instance, the eyes and brain receive information from light waves and organize it into colors, lines, edges, shapes, and objects. Many of the tools I call categorizers take this basic information and transform it yet again, breaking down the visual information into recognizable objects. That is, the categorizers form nonreflective beliefs about what is around us. The describers then add to the information from the categorizers to give our minds useful understandings about what is around us, what can be done with it, and what it might do to us. These, too, are nonreflective beliefs. By the time we get to the level of a conscious experience (which may be explicitly remembered or forgotten), the basic information about what is outside us in the environment has been drastically changed and augmented—transformed by nonreflective beliefs. Thus, when people reflectively try to evaluate claims to form beliefs and draw on experiences as evidence for or against those claims, the memories recalled as evidence actually include additions and changes contributed by nonreflective beliefs,

At times, the role of nonreflective beliefs in changing the evidence relied on for forming reflective beliefs may drastically impact the resulting reflective beliefs. To illustrate, when trying to form a reflective belief about how smart gerbils are, I am likely to draw, at least in part, on recollections of my experiences with gerbils and their behavior. I might think about how a gerbil I once observed seemed to display remarkable problem solving in moving bedding from one place to another in its overstuffed

cheeks. I might recall how it seemed to contemplate its moves and consider its surroundings carefully. With these data, I might conclude that gerbils are fairly intelligent. Note, however, that all my memories were interpretive. The gerbil moved bedding from one place to another using its cheeks, and I interpreted it as the gerbil forming a desire, recognizing the usefulness of its own cheeks, and forming beliefs about how to use the holding ability of its cheeks to satisfy its desires. Whether this is what the gerbil actually did or whether it acted on brute instinct with none of these more sophisticated thoughts ever occurring is irrelevant to how my belief forms. I have no solid evidence to distinguish between these two options, but my intuitive mental tools provided me with nonreflective beliefs that color my memory of the animal's behavior. Similarly, what I remember as its contemplation might only be the consequence of my ToM attributing reflective abilities erroneously. Contemplation and vacant stupidity can look very similar from the outside. These nonreflective belief-tainted memories then serve as the corpus from which I form reflective beliefs.

Reflective beliefs—what we commonly talk about as beliefs gain their plausibility from 1) their fit with nonreflective beliefs, 2) their fit with reflectively available evidence including memories and experiences (that might be colored by nonreflective beliefs), and 3) their fit with other reflective beliefs that were previously derived in the same way. Generally, the more ways in which a candidate belief is saliently supported, the more likely it becomes a reflective belief. The more mental systems or mental tools produce outputs consistent with the idea in question, the more likely it becomes a belief. Thus, a candidate belief that enjoys synchronicity with a large number of mental tools *and* that fits with various personal experiences *and* that makes sense of reported events or phenomena would likely become a reflective belief. Another way to express this principle is simply this: the more mental tools with which an idea fits, the more likely it is to become a belief. Belief in gods generally and God particularly is common because gods fit this principle quite well.

To clarify, I do not mean to imply that the bulk of reflective beliefs people hold arise through careful and thorough evaluation. The process by which reflective mental faculties decide to accept a belief often amounts to a crude heuristic—a quick-and-dirty strategy for making decisions. As mentioned previously, people rarely work through a logical and empirical proof for a claim. Rather, what I call “reflective” tools typically do their calculations rapidly. How many different nonreflective beliefs and available memories (for information or experiences) fit with the claim? If the number is large, then believe. Such a strategy often does the job efficiently, though sometimes it produces errors in judgment. Because our nonconscious mental tools that produce nonreflective beliefs are tuned to survival, we ¹have reason to believe they tell us something close to the truth most of the time.¹⁹

Likewise, though potentially suffering from being nonrepresentative or idiosyncratic, our experiences function as a critical means for learning about the world around us. Consequently, the heuristic to believe easily those ideas that fit with a large number of nonreflective beliefs and experiences works reasonably well most of the time.

I also do not mean to imply that the process through which we arrive at reflective beliefs is a transparent process and easily inspected. Though the consequence is “reflective” belief, the tabulation of nonreflective beliefs and the evaluation of this tabulation may remain largely unavailable to conscious consideration,

Even those beliefs for which we seem to have lots of reflectively accessible reasons often, in fact, have been arrived at nonreflectively, and the explicit reasons amount to justification after the fact and have little or nothing to do with the actual formation of the belief. For instance, though we may be able to make a list of reasons why we believe someone is a good friend, deciding that person would be a good friend was probably done with little or no conscious awareness or explicit rationale. Similarly, I might be able to explicitly marshal a weighty list of reasons for believing eating chicken is more appropriate than eating rabbit, but the complete story must include the fact that I was raised eating chicken and thinking of rabbits as pets. Consequently, I nonreflectively categorize rabbits as pets and not as livestock, thereby weakening my desire to eat rabbits. Any explicit justifications for this belief

about the edibility of chickens relative to rabbits probably amount to rationalization of a nonconscious aversion to eating a pet.

In a religious context, many believers can give numerous explicit reasons why they believe in God, but the process of arriving at this belief probably involved few, if any, of these explicit reasons and even then only in part. As the rest of this book shows, belief in God arises through a host of reasons that typically escape reflective notice.

Why Do We Believe?

To summarize, I see what we commonly call “beliefs” as constituting a subset of beliefs I term *reflective*. These reflective beliefs commonly (but not exclusively) arise directly or indirectly from a second group of beliefs called *nonreflective*. Nonconscious, intuitive mental tools routinely and perpetually spill out nonreflective beliefs as they attempt to organize and make useful information about the world around us. These rapidly generated nonreflective beliefs not only help us solve problems negotiating our environment without taxing conscious mental resources but also serve as our first and best guess for constructing reflective beliefs.

When placed in a situation that demands a reflective belief, our conscious mental faculties begin by “reading off” relevant nonreflective beliefs. When no obvious reason presents itself to discard the nonreflective belief, we accept it as our reflective belief. In situations in which the candidate belief in question cannot be merely read off, nonreflective beliefs still weigh in to influence the reflective judgment. Beliefs that appear consistent with or that resonate with nonreflective beliefs give existential satisfaction, an intuitiveness. Nonreflective beliefs also serve as the glasses through which we view experiences and recall memories that might be brought to the reflective table as evidence for a particular belief.

Thus, at least when considering the ordinary beliefs of people in everyday settings (as opposed to academic or analytical settings), much of belief can be accounted for without appealing to any special reasoning. Whether a belief arose through personal experience versus secondhand account, through an authoritative source, through the senses, or through logical argumentation remains largely irrelevant at this level. Beliefs that considerably jibe with the outputs of the nonconscious mental tools that people have all over the world will be more likely to be embraced and to spread within and across cultures.

It might be helpful to think of the process in terms of a chairperson trying to determine the consensus opinion of a group of people, whether to agree with a proposition or to reject it. Each individual in the group has a belief about whether the proposition is true or false, but these beliefs vary in strength. When the chairperson, who represents the reflective mind, asks what everyone thinks, the chair gets some “definite yes” votes, some “well I guess so” votes, some “probably not” votes, some “no way” votes, and some abstentions. Think of these votes as the nonreflective beliefs registered by various mental tools. Both the strength of the commitments and the valence (positive or negative) matter to the chair in trying to reach a group decision.²⁰ Similarly, the various mental tools provide belief, antibelief, or no position at all, and these nonreflective beliefs may range in strength. The strength of the nonreflective beliefs are determined in part by built-in biases of the mental tools and in part by how frequently such beliefs receive exercise. Those beliefs that see the most activity, however, will tend to be those naturally supported by biases of the mental tools in the first place. The rest of this book argues that many theological beliefs, such as believing in God, are just these types of beliefs that are greatly supported by intuitive mental tools.

Chapter 2

Where Do Beliefs in Gods Come From?

Religious Concepts as Minimally Counterintuitive

Belief in Gods requires no special parts of the brain. Belief in gods requires no special mystical experiences, though it may be aided by such experiences. Belief in gods requires no coercion or brainwashing or special persuasive techniques. Rather, belief in gods arises because of the natural functioning of completely normal mental tools working in common natural and social contexts.

In chapter 1, I explained that the more mental tools with which an idea fits, the more likely it is to become a (reflective) belief. With this principle in hand, I now turn to the origins of belief in gods. I argue that belief in gods comes about through the same mental processes as any other beliefs, using the same mental tools. Belief in gods is common precisely because such beliefs resonate with and receive support from a large number of mental tools. To begin, I describe why people find concepts of gods and other superhuman and nonnatural beings attention demanding and memorable because of how minds represent their conceptual structure. Then, in chapters 3 and 4, I detail a number of additional specific mental tools that make concepts of gods likely to be embraced.¹

By “gods,” I mean broadly any number of superhuman beings in whose existence at least a single group of people believe and who behave on the basis of these beliefs. Under this definition, I do not discriminate between ghosts, demons, chimeras (such as centaurs or satyrs), or the supreme gods of religions. Even space aliens may count. They qualify as “gods,” for my purposes, as long as people’s activity in some way is modified by these beliefs and they are not merely people with ordinary properties of people—a point I develop in this chapter.

Minimally Counterintuitive Concepts

Cognitive anthropologist and psychologist Pascal Boyer observed that religious concepts, including concepts of gods, ghosts, and spirits, may be counted within a large class of concepts I have termed “minimally counterintuitive” (MCI) concepts.² These MCIs may be characterized as meeting most of the assumptions that describers and categorizers generate—thus being easy to understand, remember, and believe—but as violating just enough of these assumptions to be attention demanding and to have an unusually captivating ability to assist in the explanation of certain experiences. These MCIs commonly occupy important roles in mythologies, legends, folktales, religious writings, and stories of peoples all over the world.³

Create an MCI in the following way. First, take an ordinary concept, such as “tree,” “shoe,” or “dog,” that meets all of the naturally occurring assumptions of our categorizers and describers. Then *violate* one of the assumptions. For instance, as a bounded physical object, a tree activates the nonreflective beliefs governing physical objects, including being visible. So make the tree invisible (otherwise a perfectly good tree), and you have an MCI. Similarly, an MCI may be made by *transferring* an assumption from another category of things. A shoe, as an artifact (human-made thing), is not assumed to grow or develop. These assumptions deal with living things. Hence, a shoe that grows old and dies would be an MCI, whereas a dog that grows old and dies is ordinary. Constructing MCIs merely consists of either violating a property (or a small number of properties) nonreflectively assumed by categorizers and describers or transferring a property (or a small number of properties) from a different category of things that is nonreflectively assumed for the other category.

Because what qualifies a concept as MCI is determined by the nonreflective beliefs of categorizers and describers and because categorizers and describers operate essentially the same way in all people everywhere, what is MCI in one culture is MCI in any other culture. A person who can walk through walls is MCI anywhere. A rock that talks is MCI anywhere. This independence from cultural relativism enables identification as an MCI to be a valuable tool in making pan-cultural predictions and explanations.

Note that being MCI doesn’t necessarily (though often does) mean that the concept is nonnatural or

untrue. Arguably, plants that eat animals are MCI, yet several species of plants (such as Venus flytraps) do so. Likewise, an MCI concept is not the same as an unusual or bizarre concept. I may encounter animal-eating plants regularly but never experience a plant named George. A plant named George may be unusual or bizarre but certainly is not MCI. A plant that eats animals is MCI but may not necessarily be unusual or bizarre. What amounts to a bizarre concept *varies* by individual experiences and cultural factors, whereas whether a concept is MCI does not.

MCIs, then, constitute a special group of concepts—concepts that largely match intuitive assumptions about their own group of things but have a small number of tweaks that make them particularly interesting and memorable. Because they are more interesting and memorable, they are more likely to be passed on from person to person. Because they readily spread from person to person, MCIs are likely to become cultural (that is, widely shared) concepts.

Of course, it is possible to transfer or violate multiple properties and create concepts that do not qualify as *minimally* counterintuitive. For instance, a dog that was made in a factory, gives birth to chickens, can talk to people, is invisible, can read minds, can walk through walls, and can never die would be counterintuitive. But such a dog would be far from *minimally* counterintuitive. Adding violation after violation and transfer after transfer confuses the categorizers and describers to such a degree that these concepts become cumbersome and difficult to remember or make sense of. What we are left with is a laundry list of features. People do not easily remember such massively counterintuitive concepts, so it is not surprising that they do not frequently appear in folktales or mythologies or even modern science-fiction novels.

Another breed of difficult counterintuitive concepts consists of those that both transfer a property and violate its assumptions. For instance, a shoe that can hear you talking would be MCI. The property of hearing has been transferred from people (or animals) to an artifact. A person who can hear everything would be MCI because limitations on ability to hear have been violated. A shoe that can hear everything, however, would be a more problematic counterintuitive because the transferred property (hearing) has been violated (no limitations on hearing). Such concepts, like the maximally counterintuitive, also give people great difficulties in remembering and understanding and consequently do not spread well. These concepts do not frequently occur as religious or other cultural concepts. Though people sometimes talk about and believe in statues (artifacts) that can hear prayers, these people do not often believe that the statues can hear you anywhere. In fact, people typically speak to these statues from a distance similar to the distance they would use in talking to ordinary people.⁴

Many religious concepts clearly fall into the category of MCI. For instance, ancestor spirits that play a major role in many local religions around the world may be characterized as concepts of people—with all the assumed, nonreflective beliefs about people—plus a couple of counterintuitive features. These counter-intuitive features amount to a simple negation of physical object assumptions of people, for example, being tangible and visible. The ancestor spirits amount to ordinary people without physical bodies. Because believers understand them as people, they can easily and efficiently reason about their beliefs, desires, motivations, as the death of a prize animal, may be attributed to the vengeful action of an ancestor because of some transgression. All this is very sensible and intuitive. The mental tools (especially the Theory of Mind) that handle such matters proceed seamlessly. However, because ancestor spirits have no physical bodies, the notion of them also creates interest and speculation that might not take place when reasoning about ordinary people. Where might they be? Did they see the sin I committed yesterday? Are they pleased with us? Events may be attributed to them that could not be credited to people; had a person done it, we would have seen it. Similarly, gods, ghosts, demons, angels, witches, shamans, oracles, prophets, and many other members of religious casts of characters appear to meet a sort of optimum of being largely intuitive but having enough counter-intuitive features that make them memorable, attention demanding, and able to be used to explain and predict events and phenomena. If they were too hard to conceptualize, people might not be able to make sense of them in real time to solve problems, tell stories, or understand the implications of them for their own behavior. If

they were too intuitive, they would gather so little attention that they would soon be forgotten.

MCI Concepts That Fail to Spread

Though Boyer and others have experimentally and cross-culturally shown MCIs to be memorable and more likely to be passed on faithfully than either ordinary concepts or bizarre ones,⁵ MCIs do not outnumber the other two classes of concepts in either oral or written communication. Naturally, ordinary, intuitive concepts are most numerous. Perhaps the simplest reason is that most things with which we interact fall into the category of intuitive concepts. Though MCIs do exist in the world, intuitive things vastly outnumber them. Hence, intuitive concepts become the backdrop for talk about MCIs,

A second reason for the relative rarity of MCIs compared to intuitive concepts has to do with our earlier discussion of nonreflective and reflective concepts sometimes contradicting each other. In chapter 1, I explained that in contexts requiring the rapid handling and processing of complicated concepts (those not well grounded in nonreflective beliefs, such as many theological ones), these reflective concepts lose many (if not all) of their features *not* supported by nonreflective beliefs. That is, counterintuitive concepts degrade into intuitive ones. Consequently, even if one had an enormous repertoire of MCI concepts, when trying to use many at once in a single narrative, for instance, many would be degraded into intuitive versions. This degradation is a necessary consequence of limitations on how much novel (that is, not intuitive) information our minds can retain and use at one time.

A third reason for MCIs remaining relatively uncommon implicates some additional factors that help explain the commonness of belief in gods. Many different MCIs are possible and memorable, but not all appear frequently in cultural materials or communication. Though an invisible tree is just as much an MCI as a listening tree, ethnographers tell us that things like trees and rocks that listen appear much more commonly in belief systems—and even folktales that may not be believed—than invisible objects that are otherwise ordinary. Similarly, animals made in factories are MCI, but animals that can speak appear in mythologies, tales, and religions. So what is the difference between these MCIs?

Imagine you heard about a rock that vanished every time someone looked at it. Though such a thing would be MCI—having the two physical violations of being invisible and changing its physical properties when not directly contacted—the vanishing rock would not likely become part of *any* religious system or even part of folklore. Indeed, while stories of animals with the minds of people, accounts of artifacts coming to life, and many other types of MCIs abound, you would be hard-pressed to find stories about objects that vanish when you looked at them. These MCIs simply do a poor job of generating additional inferences or explanations. Thus, they generate little interest and aren't worth talking about.⁶ So what if there is a rock that vanishes whenever anyone looks at it? What follows from that? Similarly, imagine a person who has absolutely no desires. MCI? Sure. Worth thinking about? Not really. Or a tree that does not grow or die. MCI? You bet. Interesting? Not to me.

These examples show that being MCI is not enough for an idea to become a well-spread cultural idea or belief, let alone a religious idea or belief. Something else is needed. Some other factor or factors must make the concepts that become the stuff of religion mentally contagious.

Successful MCI Concepts

For MCIs to successfully compete for space in human minds and thus become “cultural,” they must have the potential to explain, to predict, or to generate interesting stories surrounding them. In short, MCIs must have good *inferential potenti*. Rocks that disappear when looked at or invisible trees or people who have no desires and do absolutely nothing have little inferential potential. It would be hard to build stories or accounts around such inferentially impoverished MCIs. They don't make sense of things that have happened or might happen to us. They don't help explain the *way* things are. They don't *activate* many other mental tools or reasoning.

Concepts that are most likely to have strong inferential potential, activating large numbers of mental tools and exciting reasoning, are those that qualify as intentional agents. The MCIs that folktales,

mythologies, and stories feature have minds that drive their behaviors. Whether they are listening trees, talking to animals, or cunning computers, all qualify as agents—beings that do not merely respond mechanistically to the world around them but also act on the world because of internal (mental) states. Similarly, religions do not center on such things as sticks that people can use to move objects (we would call that magic or technology, nor religion) or sofas that exist only during full moons but rather on people with superpowers, statues that can answer requests, or disembodied minds that can act on us and the world. The most central concepts in religions are related to agents.

Agents have tremendous inferential potential. Agents can cause things to happen, not only be caused. We can explain *why* things are so by appealing to agents. We can anticipate what an agent might do. We can't anticipate what a rock might do, only what might be done to it. Not surprisingly, then, from space aliens to humanlike animals to cartoon characters to God, intentional agents are the MCIs that people tell stories about, remember, and tell to others.

First Candidates for Religious Beliefs: MCIs That People Believe

Note, however, that not all MCIs—even if they are agents—gain the status of “religious.” To become part of religious thought, the existence of these MCI agents must be believed. As explained in chapter 1, reflective belief in concepts typically requires a substantial overlap with nonreflective beliefs. At first glance, it seems that MCIs, by definition, would be largely incredible. After all, they explicitly *violate* nonreflective beliefs. How then might MCIs be believable?

The principle I introduced in chapter 1 was that the more mental tools with which an idea fits, the more likely it is to become a belief. MCIs match mental tools' outputs—nonreflective beliefs—very well but include a small number of explicit violations, weakening their overall plausibility. However, some MCIs exchange a violation of intuitive assumptions for a stronger fit with other mental tools and experiences. Let's begin with a simple example: the Venus flytrap. The notion of a plant that moves suddenly to eat animals but otherwise is a perfectly good plant amounts to a MCI. A priori, it would seem somewhat less plausible than a plant that grows only five inches tall but otherwise is a perfectly good plant. However, if I happen to see a Venus flytrap close its modified leaf on an ant or fly, my mental tools that causally record what I just saw tell me that the most sensible interpretation of the event is that the plant eats animals (and not that it accidentally folded a leaf in half at the same time the leaf was contacted by an insect). As counterintuitive as it may be violating the nonpredator assumption of plants—more mental tools agree with the claim that the Venus flytrap preys on insects than disagree with that conclusion. Thus, on balance, the MCI reflective belief about Venus flytraps seems plausible, and I believe it.

Similarly, when considering religious beliefs or other cultural beliefs that may be characterized as MCI, those that make a “profitable exchange”—trading an intuitive property or two for better activation and fit with other mental tools—will be plausible and believed. For instance, around a large citrus ranch in California, the locals know about the Chivo Man who roams the “haunted dairy.” Presumed by some to have been invented a generation ago by a mother trying to keep children away from crumbling buildings, the story of the elusive and dangerous goat Chivo Man is now part of local cultural knowledge and regarded by as true.⁷ Rarely does anyone actually report an encounter with the Chivo Man and the notion of a part human, part goat creature certainly violates intuitive assumptions about animals being one and only one species. Why then might the Chivo Man be not only well spread but actually believed in by some? Though the details of this example might require fuller exploration by an ethnographer, my contention is that the Chivo Man concept (for at least those who believe) has exchanged a violation of one or two intuitive assumptions for a better fit with other mental tools. Suppose that a young man named Steve had heard the story of the Chivo Man told with great conviction by a trustworthy person with nothing obvious to gain from others believing the story. At a later time, Steve happened to be passing by the crumbling haunted dairy and was nearly struck by falling shingles even though the day was windless. Startled by the incident, he searched for who or what had caused the shingles to fall. But he saw no one. Puzzled, he cautiously continued past the ruins, stepping past what

looked like goat droppings. Strange—he had never heard of any goats being grazed here, nor were there any around. Then he remembered the story of the Chivo Man.

Would Steve believe in the Chivo Man? Automatically, his reflective mental systems would “read off” the outputs of other systems. On one side of the plausibility ledger, Steve’s living-thing describer says the Chivo Man does not fit assumptions. On the other side, consider the following:

- His object describer reports that shingles don’t just fall on their own, and his agency detection device registers a strong likelihood that someone had caused shingles to fall on him.
- His store of knowledge relevant to goats sends an affirmative regarding the droppings, but his memory for the setting offers no memory of actual goats.
- His Theory of Mind reasons that if he was assaulted, someone desired to harm him, and his knowledge of territorialism offers trespassing as a candidate transgression worthy of retaliation.
- His knowledge that people rarely come to the haunted dairy and that it inexplicably remains in ruins finds a satisfying cause in the presence of a hostile guardian.
- His social exchange regulator tells him that the woman from whom he heard the story was untrustworthy.

Given these inputs, the faculties determining reflective beliefs may prompt him, at least tentatively, to hold a belief in the Chivo Man. After all, many mental tools either independently or in coordination seem to support the plausibility of the Chivo Man for Steve. Not all people would reason in exactly the same way. The point of the Chivo Man illustration is not to convince you that one *should* believe in the Chivo Man or that Steve’s belief in the Chivo Man is *justified*. The Chivo Man story shows only *how* someone might come to believe in an MCI concept, that is, what the process might be.

Note again that this is mostly an unconscious process. Though we are now talking about reflective beliefs, the determination of plausibility is nonreflective. Reflective determination of plausibility is something that people rarely engage in unless they are formally trained to do so by scholars. Rather, they just “feel” that the belief is sensible. Unless one is trained in logic or empirical reasoning, even when required to offer justification, whatever “pops into mind” first may seem a good enough justification. This “popping into mind” typically amounts to nothing more than a fragmentary reiteration of the nonreflective plausibility determination. The “reasons” for belief suggested earlier in this chapter certainly don’t amount to any kind of argument for belief and may seem biased to attend to the evidence that supports belief instead of challenging belief. People find reasons for a belief much more rapidly and with greater ease than they find reasons against a belief. Indeed, much of the training in the social and natural sciences is teaching skepticism and how to find alternative explanations. It does not come easily.

I used an example of a MCI agent (Chivo Man) because it is MCI agents that most often activate a broad range of mental tools and hence seem plausible and become believed. As fundamentally social beings, we have a huge number of experiences interacting with others. To accommodate these social interactions, our minds develop a vast array of mental tools and “social intelligences.” Agent concepts (including MCIs) have the potential to trigger many of these social mental tools (mostly from the group I called facilitators in chapter 1), enhancing their potential credibility. Contrast agent concepts with vanishing rocks. At best, the suggestion of a vanishing rock could account for someone tripping on what looks like smooth ground and excite some inferences about how such a rock might be used as a tool. On the plausibility ledger, the violation of physical expectations (vanishing when looked at) substantially outweighs any ability to prompt other mental tools to generate congruent nonreflective beliefs. That the rock vanishes does not drive inferences or enhance plausibility any better than the rock being brown would. The vanishing rock cannot begin to support inferences regarding morality in social interaction, why trouble befalls some people, how the rains come, why the crops succeed or fail, or what happens to the dead. MCI agents can.

Not So *Minimally Counterintuitive* Concepts

Though many religious concepts have a small number of counterintuitive properties that enhance

their inferential potential, some religious ideas seem far from *minimally counterintuitive*. Common concepts of God, for instance, appear to be massively counterintuitive, including such properties as being immortal, all-knowing, all-powerful, nontemporal, nonspatial, a trinity, and so forth. As I will show in chapter 6, some of these divine properties may not be as counterintuitive as they first seem; nevertheless, theological beliefs, more typically held by clergy and theologians than regular folk, do have a large number of counterintuitive features and do not fit the MCI label.

The spread of counterintuitive concepts may be aided by a couple of different factors. Religious events may be used to develop and make more sophisticated religious beliefs. If a person believes in an MCI god, through rigorous theological instruction they may be led to accept additional counterintuitive properties of the god. Building on an MCI foundation, greater deviations from nonreflective beliefs may gradually be acquired through much explicit repetition and argumentation that persuasively connects these fancier ideas with the more intuitive ones already in place. However, note that (as discussed in chapter 1) too many counterintuitive properties may not easily be used in normal day-to-day reasoning about gods. Consequently, though people may claim to believe in complex theological ideas, the utility of such beliefs for generating inferences and motivating actions may remain low.

In addition to explicit and repetitive instruction, more complex religious beliefs may be formed because of the contextual nature of concepts. For simplicity's sake, I discussed counterintuitive properties as if concepts are single, context-free, encapsulated units. A concept with only a small number of counterintuitive properties that increase the concept's inferential potential will more readily spread and be believed. More precisely, a concept with only a small number of counterintuitive properties that increase the concept's inferential potential *in any given transmissive context* will more readily spread and be believed. To illustrate, if in one context God is described much like any other agent but as having the property of being outside time (nontemporal), such a concept would qualify as MCI. In another context, God might be characterized as existing as a trinity but with each person of the trinity having fairly ordinary properties otherwise. This concept of God would likewise be MCI. Independently, each of these concepts of God might be readily adopted through the mechanisms described previously. Then, because of a common label ("God"), these two concepts could be seamlessly fused. Though putting both properties in the same context could make "God" too complex to be considered MCI and thus difficult to transmit and believe, people may reflectively affirm such a complex concept when it is acquired cumulatively through diverse contexts.

Taking Stock so Far

In chapter 1, I argued that most beliefs people hold arise from a collection of nonconscious mental tools automatically generating assumptions about the way things are in the world. These nonreflective beliefs often become the basis for the creation of reflective beliefs. The credibility of reflective beliefs is (nonreflectively) enhanced by close matches with the output of many different mental tools. The more mental tools (including those that store memories of experiences and communications) agree with the possibility that something is true, the more likely that idea becomes a reflectively embraced belief.

In this chapter, I have elaborated the argument to include MCIs—concepts that do violate a small number of assumptions generated by the mental tools called categorizers and describers. These MCIs may be quite memorable and easy to transmit to others and may also be believable—provided that the violations they make enable them to activate a broader range of mental tools in their support than would be possible without the violations. MCI agents typically fit this description better than other MCIs. Consequently, it is MCI agents that become believed and become part of religious systems. Theologians and religious leaders cannot simply teach any ideas they want and expect those ideas to be remembered, spread, and believed; rather, the way human minds operate gradually selects only those with the best fit to become widespread.

Chapter 3

Where Do Beliefs in Gods Come From? Finding Agents Everywhere

The inferential potential and relative plausibility of minimally counterintuitive (MCI) concepts are not the only factors contributing to their frequency in cultural materials or their prominence in religious systems. Part of the reason people believe in gods, ghosts, and goblins also comes from the way in which our minds, particularly our agency detection device (ADD) functions. Our ADD suffers from some hyperactivity, making it prone to find agents around us, including supernatural ones, given fairly modest evidence of their presences. This tendency encourages the generation and spread of god concepts and religious concepts.

Anthropologist Stewart Guthrie revived and refined the theory that religion amounts to systematized “anthropomorphism”—the making of the cosmos in the image of people.¹ Part of this theory is an important observation that is supported by numerous experimental studies with adults and children as well as anthropological data. Guthrie astutely noted that people seem to have a strong bias to interpret ambiguous evidence as caused by or being an agent. When hearing a bump in the night, our first impulse is to wonder *who* caused the noise and not *what* caused the noise. As other agents (such as humans and animals) present both our most important resources for survival and reproduction and our greatest threats, Guthrie rues that such a perceptual bias would bestow survival advantages and thus, from evolutionary perspective, would be expected. We constantly scan our environment for the presence of other people and nonhuman agents. If you bet that something is an agent and it isn't, not much is lost. But if you bet that something is not agent and it turns out to be one, you could be lunch.

The mental tool responsible for the nonreflective detection of agency in the environment is the ADD. As Guthrie has suggested, the ADD may be a little hyperactive or hypersensitive to detecting agency. To emphasize this point, I sometimes refer to the mental tool as HADD—the hypersensitive agent detection device.²

HADD and Objects as Agents

Experimental work with adults and infants suggests that objects bearing little resemblance to people or even animals may be identified as agents.³ The way people treat computers is a fine case in point. But even colored dots on a video display may do the trick and get HADD identifying them as agents and passing on this identification to the Theory of Mind (ToM) that then reasons about the dots as thinking, feeling beings. It seems that all that is needed for HADD to identify something as an agent is for the object to move itself (or in some other way act) in a way that suggests a goal for its action. In a classic study replicated numerous times, adults observed a film of geometric shapes moving in and around a broken square. At the conclusion of the film, observers recounted what they had seen. Strikingly, they described the geometric shapes as having mental states, such as beliefs and desires, and even personalities and sometimes genders.⁴ These rich attributions of agency were sparked by contingent movement between two geometric shapes. Arguably, ignoring resemblance to known agents and risking false detection could have provided human ancestors with a selective advantage, detecting partially hidden, camouflaged, or disguised agents in the environment and only occasionally misidentifying wind-blown tree branches as agents. Such mistaken agent detection could quickly be turned off, minimizing costs of the error.

Though a nonreflective and crude system for finding agency, HADD, in working with other mental tools, may be sophisticated enough to reduce detection errors by paying attention to the known agents in the environment. Though people may treat geometric shapes as having beliefs, desires, and temperaments when they appear to move in a noninertial manner toward a goal, such movement information need not trigger such an identification. For instance, in one study using ball bearings made to move with hidden magnets, adults in one condition tended to make agent attributions to the ball

hearings: they triggered HADD by moving in a way inconsistent with nonreflective beliefs governing simple physical objects. Nevertheless, in a second condition in which the adults indirectly controlled when the marbles moved (but not how they moved), they did not attribute agency. Why not? HADD appears to register noninertial, goal-directed movement as caused by an agent and then searches for a candidate agent. If a person or other known agent clearly accounts for the action, the object that moves need not be identified as an agent. If no such known agent is responsible for the movement the object itself becomes a prime candidate for agency. Thus, we treat remote control toys, cars and computers as agents only when they “act” in a way that challenges our own agency (or the agency of another person).⁵

My examples, as well as the bulk of experimental work in the area, focuses on self-propelled movement; however, other actions triggered without physical contact could qualify as self-propelled and purposeful “movement” for HADD. So, if an object vocalizes without being physically contacted in what appears to be a purposeful reaction to events around it, HADD might identify the object as an agent. Computers don’t move, but they do present information, create visual displays, or otherwise function in manners that may appear unrelated to any strictly mechanistic causation. Thus, we frequently attribute them agency and reason to them as such, especially when they act in ways seemingly unrelated to our agency.

To summarize, when HADD perceives an object violating the intuitive assumptions for the movement of ordinary physical objects (such as moving on noninertial paths, changing direction inexplicably, or launching itself from a standstill) and the object seems to be moving in a goal-directed manner, HADD detects agency. Gathering information from other mental tools, HADD searches any known agents that might account for the self-propelled movement. Finding none, HADD assumes that the object itself is an agent. Until information arrives to say otherwise, HADD registers a nonreflective belief that the object is an agent, triggering ToM to describe the object’s activity in terms of beliefs, desires, and other mental states.

Sometimes HADD’s tendency to attach agency to objects contributes to the formation of religious concepts. The most straightforward manner is in identifying some ambiguous thing, such as a wispy form, as an intentional agent—a ghost or spirit. With the assistance of face detectors and other tools sensitive to human forms occasionally people see what appear to be humanlike figures. HADD may then discover evidence that these figures don’t just physically resemble humans but are, indeed, thinking, feeling beings. Whether the sighting is an illusion or not, if the right information is fed to these mental tools, the outcome is a nonreflective ghost or spirit. Without sufficient reflective defenses, this nonreflective belief becomes a reflective one.

HADD’s tendency to find agency in objects contributes to the formation of religious concepts in a second manner. Often the objects that HADD registers as being agents of known objects. Unlike in the case of spirits, HADD may suggest that known nonagents are exhibiting agency. A storm cloud might have destroyed one and only one home in a village with hail and lightning. Under some conditions, HADD might register the cloud as an agent acting purposefully. But a cloud is not an agent. As in the case of the ball-bearing experiment, though HADD may have detected an object behaving like an agent, a more salient candidate may be attributed responsibility for the action in question. For instance, if villagers believe a certain god controls the weather, the storm cloud’s apparent agency might be directed by that god against the reprobate individual. In these cases, HADD encourages belief in already known superhuman agents.

HADD and Identifying Events as the Result of Superhuman Agency

Consider the following event, A coworker of my wife once performed maintenance tasks on a farm. One day, Doug was working in a grain silo when leaked propane exploded. The first explosion rushed all around him and out the second-level windows high above him. Stunned by not being harmed by the blast, he tried to get out the door, only to discover that the explosion had jammed the doors. Knowing that a second, larger explosion was coming and he had no way out, Doug muttered hopelessly, “Take me

home, Lord,” He distinctly heard a voice say, “Not yet,” and then felt some invisible hands lift him a dozen feet in the air and out of a second-story window, then safely to the ground below. Once he landed outside the silo, a safe distance away, the silo and attached barn exploded into rubble. He stumbled to the farm office, where coworkers took him to the hospital. At the hospital, Doug told the doctor that God sent angels to save him. The dumbfounded doctor reluctantly agreed it was a possibility given that the amount of propane gas in the man’s lungs should have been fatal, yet he was not only alive but also conscious and talking. Doug, the doctor, and all staff of the farm believed this event to be caused by supernatural agency. In each of their minds, HADD played a major role in forming this belief.

Though receiving far less experimental attention, HADD also seems quite prone to detect agency that is not physically present in the form of an object. We don’t always see important agents in our environment, only the consequences of their behaviors. Though our ability to reason readily about nonpresent agents facilitates thinking about ghosts and gods, as we will see, thinking about people who are not here right now and about hypothetical people who may or may not exist likewise requires such an ability. Thus, HADD does not require an object acting to be present in order to detect agency.

As when detecting what is thought to be an agent, when HADD detects agency, it activates ToM and other relevant mental tools to begin reasoning through how and why an agent might have acted. When we attend to an event that has no obvious mechanistic or biological cause (as understood by the object describer and the living-thing describer), HADD springs into action, HADD searches for any present people or animals that might have caused the event, It also tries to determine if the event might accomplish some goal. If agent candidates can be found, HADD registers the event as caused by agency and passes the word to ToM, which then works out the motivations and thought processes that might have led the agent to bring about the event. If ToM can suggest the agent’s desires and aims relevant to the event, it affirms to HADD that the event was goal directed, increasing HADD’s confidence that agency has been discovered.

In the case of the silo explosion, we actually have a number of events that might get HADD jumping, but for the sake of clarity, I’ll focus just on Doug getting out of the silo before the ultimate explosion. A physical object (Doug’s body) moved up into the air and through a window over a dozen feet above the ground. Though an agent himself, Doug did not perceive his own agency to be responsible for this movement. Further, knowledge of human abilities would reject the possibility that he had leaped into the air under his own power. Because the movement of the physical object (Doug’s body) cannot be readily explained in terms of simple mechanics or simple biological causation and because the movement was directed at a goal (the window), HADD searches for agency to account for the apparently goal-directed event. In this case, because “angel” was already a cultural concept that might (if believed) account for the detected agency, HADD’s suggestion of agency was readily labeled “angel.” Doug’s negatively answered prayer and perhaps the suggestions of coworkers reinforced the identification of angels being responsible for the event, even though at the time of the event Doug did not consider himself a true believer in God or in angels.

Note that whether or not Doug believed in angels or that angels rescue people from silos is largely irrelevant to his attributing the event to the activity of angels. Suppose Doug had believed in God but not angels but had heard of angels taking care of people. Although he did not “believe in” angels prior to the event, HADD detected agency, and his memory for information about angels nonreflectively made them prime candidates of this agency. When reflectively forming a belief, angels made intuitive sense as the most likely explanation for the event. Thus, reflective belief in angels was strengthened.

For people disinclined to believe in angels or gods, it might be tempting to think that such an implicit thought process is odd or irrational. What is important to remember is that the system through which ideas become beliefs is not concerned with being “rational” or following some logic. It rapidly produces belief that produce intuitive satisfaction, resonating with the nonreflective beliefs that various mental tools produce.

Consider the angel attribution—versus—naturalistic counterexplanation. Perhaps an explosion lifted Doug up through the window and to the ground outside the silo before the final explosion and Doug’s feeling of being lifted by the arms and hearing a voice were caused by a propane-induced hallucination and some memory distortion for the event. Though perhaps being a scientifically possible explanation, it suffers numerous weaknesses from the perspective of intuitive reasoning. It requires believing the improbable (though not impossible) premise that the voice and feeling of being grabbed by the arms was imagined or caused by the same nonagent. It requires the improbable (though not impossible) supposition that a propane explosion could blast a man up and out of a window without harming him when such an explosion leveled a silo and barn. More critically, this alternative requires an ability to tell HADD it was simply mistaken. HADD was provided with all the relevant cues for attributing agency as the cause of the event, and any other explanation must override the nonreflective belief that this was indeed the purposeful activity of an intentional being.

This system for forming beliefs likewise does not necessarily see the impossibility of angels as a problem. At the moment HADD registers the nonreflective belief that the event was caused by an agent, it does not specify what kind of agent it is. Similarly, when mental tools find angels a reasonable candidate, they do not notice that angels are counterintuitive. They notice only that what is known about angels provides a good fit for the sort of agency HADD has detected. Even if the counterintuitiveness of angels (for example, that they are invisible) factored in, being counterintuitive does not immediately cause disbelief. We know that lots of counterintuitive things are real and do happen (such as the Venus’s-flytrap, invisible germs killing people, human-engineered plants, and being able to speak with someone on the other side of the world). Being counterintuitive may decrease the likelihood of a reflective belief being formed, but if the counterintuitiveness increases the number of mental tools or the amount of nonreflective “evidence” for the belief, the result is increasing the likelihood of reflective belief. The invisibility of angels satisfies the feeling of being grasped by the arms but seeing no one. A visible agent would be even less credible in this situation.

HADD and Identifying Traces of Agency

Not all agents may be directly observed as objects or their actions observed as events. Sometimes our best clues to agency having taken place are what agents leave behind: their traces. Traces of people include roads, machines, books, signs, houses, artwork, and footprints. Traces of animals include birds’ nests, groundhogs’ burrows, deer trails, and bears’ scratches on trees. On seeing such traces, HADD may recognize agency, though the process requires the help of other mental tools and is not as straightforward as in considering objects or events.

Our minds have numerous pattern detectors that organize visual information into meaningful units. HADD remains on the lookout for patterns known to be caused by agents. If this patterned information matches patterns (stored in memory, sort of a pattern file) known to be caused by agents, HADD detects agency and alerts other mental tools, including ToM. Thus, dealing with *known* agent traces is the simplest and least interesting way in which HADD handles traces. Because we know the agents in question, they will not likely be attributed to superhuman agency and thus play little role in the acquisition or spread of god concepts. In fact, by early childhood we become so accustomed to dealing with human-made things—artifacts—that we develop mental tools that specially deal with artifacts without HADD’s being included in the loop.⁶

More interesting is when a pattern is detected that appears to be purposeful or goal directed and, secondarily, does not appear to be caused by ordinary mechanical or biological causes. Such patterns may prompt HADD to attribute the traces to agency yet to be identified: unknown persons, animals, or space aliens, ghosts or gods. Crop circles may serve as an appropriate illustration.

Over the past several decades in various locations around the world, people have reported geometric shapes and complex patterns appearing in grain fields, literally overnight. Such patterns have been called “crop circles.” Frequently, the stalks of the plants have been bent over to yield the intricate designs

visible from the air. People commonly attribute these patterns to the activity of superhuman agency—typically extraterrestrials but sometimes gods—and skeptics scramble for alternative explanations. But what makes these patterns seem to be the work of agents?

Crop circles contrast with their surroundings by approximating the sorts of purposeful patterns that people produce: smooth circular curves, straight lines, and clean angles, all surrounded by more naturally appearing plants. Such apparent order and purposefulness in the construction of the crop circle patterns excites HADD. Further, crop circles cannot be easily explained by natural, mechanical or biological processes. That is, the creation of such patterns by gravity, wind, plant development or other familiar processes appears unlikely on an intuitive level (as well as a reflective level). The inability to account for such apparently purposeful patterns through regular mechanistic or biological causation further motivates HADD to find agency behind the trace. Once HADD registers the crop circles as a trace of agency, it produces a nonreflective belief that crop circles were left deliberately by someone.

When constructing a reflective belief, HADD's identification of the crop circles as intentionally caused by some kind of agent cannot be easily shaken. Indeed, few who see crop circles believe they were not caused by an agent. What is disputed is what kind of agent produced them: people or superhuman agency? Though the hypothesis that a person or persons produced the crop circles receives intuitive support from HADD and other mental tools, it does not fit perfectly. Intuitively, people create things for purposes. The purpose or functionality of the crop circles is unclear. Further, additional, expected traces of human activity, such as footprints or tire tracks, often aren't discovered. Finally, as solid, physical objects, humans may be observed acting, and the witnesses of crop circles do not report having seen anyone do the work. On an intuitive, nonreflective level, nonnatural, superhuman agents can avoid all these difficulties, Invisible agents could do the work unseen, More powerful agents could do the work from a remote location, leaving no auxiliary traces. Less familiar agents (such as extraterrestrials) might have purposes in creating the patterns that people would not readily appreciate. Given these observations, once some extraterrestrial agency or other superhuman agency is suggested, its (reflective) plausibility is reinforced by the nonreflective beliefs produced by the constellation of mental tools triggered by HADD.

Though the case of crop circles vividly illustrates what I call "traces," traces mentioned in religious discourse frequently have more subtle features. For instance, in the Judeo-Christian story of Gideon (Judges 6), Gideon asks God for proof that God will indeed use Gideon to deliver Israel, God motivates Gideon's trust by making a fleece dew covered while the surrounding ground is dry and then making the fleece dry while the ground is wet with dew. Though not resembling what we normally think of as a symbolic communication, this too qualifies as a trace because Gideon saw the fleece's state as purposeful.

In identifying traces as the consequence of agency, HADD pays special attention to whether the trace (including objects) might be purposeful. This ability to discern purposefulness (accurately or inaccurately) sometimes carries the name *teleological reasoning* and permeates intuitive thought about artifacts and living things.⁷ We do not know all the factors that contribute to something being perceived as purposeful by the mental tools that do this work. What cognitive scientists have shown us is that from the preschool years of childhood, we eagerly attend to how the shape or structure of things may be useful to people (allowing for our sophisticated development and use of tools) or useful for other things, such as plants and animals. Handles are good for gripping. Having thorns is good for repelling predators. As the possession of useful or purposeful features (such as in artifacts) typically signals design by some intentional agent (such as by humans), detection of purposefulness excites HADD. Purposefulness that cannot be attributed to natural agents (as is the case for people's houses and birds' nests) may be attributed to nonnatural agents. Thus, the presence of spines on a porcupine or the prehensile tail of a monkey could suggest a designer or a creator.⁸

I return to these issues briefly in chapter 5, but here I make one point of clarification. I do not mean to suggest that the notion of or belief in gods originates with noticing order or apparent purposefulness

in the natural world. With the exception of very unusual cases such as crop circles, unlike HADD operating on events or objects, HADD's attribution of agency to traces probably serves to *reinforce* rather than *stimulate* god concepts. People who have already heard about a god might see a HADD trace as supportive of that concept and thereby encourage belief. But with few exceptions, seeing a HADD trace is unlikely to prompt the wholesale invention of a god. After all, even the Psalmist writes, "The heavens are telling of the glory of God; And their expanse is declaring the work of his hands," but not that it is by the heavens that God is made known.

HADD's Flexibility with Context

The degree of HADD's sensitivity varies, depending on personal and immediate contexts. By personal contexts, I refer to individual histories and dispositions. People are especially afraid of particular agents, perhaps because of previous experiences, might be more apt to detect an agent whether or not they are there. Someone with acute fear of spiders who feels a gentle tickle on her neck would be more likely to assume immediately and react as if a spider were there than someone without such a phobia. Similarly, someone who once was bitten by a venomous snake in tall grass might be primed to react to a garden hose as if it were a snake. People who believe in ghosts are more likely to see ghosts than nonbelievers. Being a believer—or even merely open to believing in a god makes one more sensitive to detecting the god's action or presence. For instance, a nonbeliever might find no reason to see divine intervention as a reasonable explanation for surviving the silo explosion.

In addition to what I have called the personal context, the immediate context also helps determine HADD's sensitivity and likelihood to detect agency. I refer primarily to the *urgency* of the situation for survival or at least for the success or failure of activities that might suggest survival to our prehistorically created minds. Situations in which we are desperately searching for possible prey or in which we suspect we might be prey for someone or something else or we are desperately in need of finding other people ratchet up the importance of HADD detecting agency given very little information. Missing agency in such urgent situations could prove disastrous, much more disastrous than when we are secure and well fed. To illustrate, imagine that a person walking through the woods hears what might be a rustling of leaves and cracking of twigs nearby. For the person on an afternoon stroll in a perfectly safe park with no large animals, such an occasion might be easily dismissed as "just the wind" or ignored completely. For a person having the same visual and auditory experience but out sport hunting for deer, the noise is likely to suggest the presence of a deer—HADD activated. For a person subsistence hunting for deer, HADD would be even more likely to shout, "There's a deer!"—metaphorically, of course. People not hunting who were just sauntering through the woods but minutes before had heard that a serial killer was loose in the woods would have their HADDs screaming at them.

Given that HADD becomes more sensitive in situations of urgency, it is no surprise that the most salient examples of misattributing agency are "bump in the night" scenarios. Likewise, people who live in situations in which their survival is more precarious often have both personal and immediate contexts encouraging the easy and rapid detection of agents. People in these contexts, who cannot easily attribute this agency to known humans, may be especially prone to detect ghosts, spirits, and gods in their midst. Not surprisingly, then, in more traditional societies, such as those tied to subsistence hunting or farming, where life is filled with nonhuman dangers, life is also filled with forest spirits, ghosts, witches, and ancestor spirits constantly and obviously at work.

Finding Supernatural Agents and Reinforcing Beliefs

Given HADD's eagerness to identify things as agents and to find agency around us, it is no wonder that we yell at our cars and computers, assume that the creaking of a settling house is caused by intruders, and easily understand colors and lines on film as actual characters with a rich mental life—a life for which we have no direct evidence. As suggested previously, such eagerness also contributes to generating and believing in supernatural agents such as gods.

Actual experiences—seeing a shadowy figure purposefully moving and then suddenly disappearing, being saved from an exploding building, or finding signs or messages not created by any human or animal may spark people to suggest and subsequently believe in gods, spirits, and other superhuman beings. The non-reflective beliefs generated by HADD, ToM, and other mental tools working together to make sense of unusual objects, events, or traces may become reflective beliefs when satisfactory alternative explanations fail to arise. Perhaps someone walking through the ruins of the old dairy saw something that looked like a humanoid figure and heard the sound of an unseen goat in the figure's general direction just before some debris fell dangerously close. Thanks to HADD, that person then acquired a sketchy and perhaps tentative belief in the Chivo Man.

But this function of HADD does not explain religious beliefs all by itself. Such events may be few and far between, arising mostly in high-urgency situations. Once things have calmed down, many of HADD's detections of agency turn out to be unfounded. They amount to false positives. "I thought I heard an intruder in the house, but it was just the wind," "I thought I saw a ghostly figure, but it was just a sheet on the clothesline." After all, HADD's initial detection of agency and the subsequent agent-based reasoning of ToM and other mental tools sometimes become disengaged, as when I discover it is not an insect crawling on my leg but a blade of grass brushing against it. If HADD couldn't be successfully disengaged, its hypersensitivity would lead to survival difficulties and not advantages. If the tiger I thought I saw in the brush turns out to be a rock, I'd better be able to respond to the rock as a rock and not continue to fear it might pounce on me. Otherwise I will expend lots of energy unnecessarily.

Even if HADD confidently and unrepentantly detected superhuman agents on a fairly common basis, these beliefs would not give rise to religion or any shared concepts that might be called cultural without these beliefs being able to successfully spread to other people. The *transmission* dynamics governing MCI ideas may help, but HADD does encourage the spread of these beliefs as well as their generation.

Even a temporary activation of HADD may promote memory for and belief in an agent. Consider the following situation. Jeff is hunting for deer in a forest. At one point he hears some noise in a thicket some fifty meters away. His HADD, being more sensitive than usual because of the predatory context, suggests a deer in the brush. Jeff stops, carefully evaluates the surroundings, looks around and listens for additional evidence of a deer, and finds none. He shrugs off the idea that was in the brush (maybe it was the wind? maybe it was a squirrel?) and continues on his way. Some exhausting hours later, no longer excited and not even interested in finding a deer, Jeff passes through the same thicket in which he had once suspected an agent. Because the identification of agency was never resolved, he looks around for additional evidence for what caused the rustling. He finds deer hair and droppings. Reflectively, Jeff believes a deer had indeed been there, and part of the reason (though not even most of the reason) was that HADD had told him so hours before. Perhaps HADD had been right after all,

Indeed, HADD may be most likely to find agency if given ambiguous inputs in urgent or frightening contexts, and HADD's agent detection may be subsequently disengaged or left without identifying a satisfactory agent (Hmmm, I thought someone was there...). As Jeff's deer hunt illustrates, the nonreflective belief HADD produces in the heat of the moment may leave a memory for agency that is still drawn on to form reflective beliefs at later times. Even this unlabeled or nonbelieved HADD-produced experience may reinforce subsequent belief.

HADD-produced experiences may contribute to the transmission of an idea a belief in it before or after exposure to the idea. While passing through the haunted dairy, Lupe's HADD "notices" an unseen agent there, but Lupe reflectively dismisses it. If at a later time she hears about the Chivo Man living at the haunted dairy, she may recollect her HADD experience, increasing the likelihood of remembering and believing the Chivo Man tale. In this way, Lupe's HADD experience, plus later exposure to the superhuman concept, leads to belief. But recall that in the example of Steve coming to believe in the Chivo Man (chapter 2), the process worked in just the opposite way. Steve had heard but not believed in Chivo Man until he had a HADD experience consistent with the Chivo Man tale. Both before and after

exposure to a superhuman agent concept, HADD may encourage belief even when the HADD experience itself was not sufficient to produce an enduring belief on its own.

At this point, if you have been raised in Europe or North America, you might be thinking that some half-person chimera such as the Chivo Man has little to do with belief in gods. Not so. Comparative religionists and anthropologists tell us that when looking at religions around the world, the category “gods” includes many chimeras and other beings that derive from nonhuman things. Mountains, trees, rocks, statues, and countless other things, often not at all resembling humans, play critical roles in religious systems and are worshiped, petitioned, and feared.⁹ In the Chivo Man example, behaviors beginning to suggest religion may begin to arise once Steve and Lupe start sharing and comparing their accounts with others. It may begin with simply avoiding unnecessarily entering the haunted dairy—regarding it as something like sacred ground. (Indeed, this may in fact be the case in the small Californian community near where the Chivo Man is said to dwell.) I could develop a similar example using an ephemeral humanlike being to whom people offer gifts to avoid wrath and incur blessings. Some HADD experience encourages the concept’s generation; others who have heard (but not necessarily believed) in the spirit subsequently have HADD experiences that encourage belief and spread of the idea. Over time, a critical mass of such transmissions and HADD experiences cement belief in the spirit as part of local consciousness and a set of behaviors acknowledging the belief develop. The spirit is now a god.

But it is true that a superhuman being—though perhaps a god in some minimal sense—does not always become part of the social life that might be properly labeled “religion.” In later chapters, I present some additional factors that help take Chivo Man from a minor cultural belief to the status of a god.

HADD, ToM, and Age and Sex Differences in Religiosity

Earlier in this chapter, I explained that if ToM can suggest the agent’s desires and aims relevant to the event, it affirms to HADD that the event was goal directed, increasing HADD’s confidence that agency has been discovered. Thus, HADD’s work is not in isolation, and ToM’s flexibility and readiness to explain subtle signs of agency encourage HADD’s touchiness. A relatively unimaginative ToM might refuse a “detection” of agency from HADD, in essence replying to HADD, “I can’t make heads or tails of why an agent would do that. Are you sure you really detected agency?”

One remarkably stable finding across religious traditions is that women tend to be more religiously involved and committed than men.¹⁰ For instance, they tend to pray more than men, attend worship services more regularly than men, and voluntarily read scripture more than men. Undoubtedly, many factors contribute to this sex difference, and one of these factors may be the relationship between ToM and HADD. Psychologists have noted that, in general, women may have more active ToM’s than men. They more readily reason about the beliefs, desires, motivations, emotions, perspectives, and intentions of others and use this ToM reasoning to make decisions and negotiate social exchanges. In fact, autism, a disorder characterized in part by a severe inability to understand others’ minds, has been called an extreme form of “male brainedness” and occurs much more frequently in males than females.¹¹ If this suspected gender difference in ToM activity is so, we would expect women to be more religious than men. While both men and women might have a similar rate of HADD detecting agency around that might get attributed to gods, men’s ToM’s might be stingier about affirming such a detection of supernatural agency. Women might be more able to readily explain and incorporate HADD’s detections of agency in terms of superhuman activity than men.

A similar account could be offered for the finding that people’s religiosity tends to increase with age.¹² Again, numerous factors (such as an increasing awareness of one’s own mortality) may contribute to this effect. Here is another possible factor. Some experimental evidence suggests that part of the wisdom of the elderly is an increase (relative to young adults, for instance) of social intelligence.¹³ While researchers have found that aging slows some thought processes and reduces certain types of memory, it also appears to increase our ability to reason about the mental states of others and thus to

effectively address social dilemmas. In other words, in contrast to some other reasoning faculties, ToM might continue to get stronger, more flexible, more creative, and more ambitious with age. Consequently, increases in religiosity with age might be (at least in part) attributable to ToM's increased willingness to entertain HADD's detections of agency and labeling them as the result of divine activity.

The Spreading Belief in Gods

For an idea or concept to be considered "religious," it must be shared among a group of individuals. One person believing in a superhuman being doesn't do the job. If no one else believes, the idea is just odd, not religious. Consequently, a critical part of accounting for god concepts and other religious ideas is explaining how they successfully spread from individual mind to individual mind and become believed by those individuals. Thus far, I have offered two ways in which ordinary mental tools encourage the belief in and spread of religious concepts.

First, concepts that may be regarded as MCI strike a balance between meeting the assumptions of categorizers and describers and possessing enough violations that make them interesting and having rich inferential potential. This balance motivates us to attend to them, remember them, and talk about them and makes them easy to reproduce accurately. That they satisfy the bulk of intuitive assumptions of categorizers and describers likewise makes them largely credible.

Second, our mental tools pay special attention to agency in the world around us. We find explanations that end with appeal to an agent's desire very attractive and powerful. Consequently, MCI agent concepts often enjoy a great ability to explain, predict, and make sense of memories, experiences, and other ideas. That is, MCI agent concepts (as compared with other agent concepts) are more likely to excite a large number of mental tools, further enhancing these agents' credibility. One particular mental tool, HADD, is quick to find agency in the environment. This survival-enhancing disposition encourages the production of superhuman agent concepts in many situations and makes MCI agent concepts even more salient, believable, and likely to be spread by anchoring them to personal experiences.

In the next chapter, I explore in more detail some of the additional mental tools or systems of tools that god concepts (and other superhuman agent concepts) activate, thereby enhancing gods' credibility.

Chapter 6

The Naturalness of Belief in God

To this point, it may seem that the cognitive science of religion accommodates all religions in the same manner; one religion is just like any other. Indeed, for very good scientific reasons, emphasizing cross-religion similarities is the way the science of religion is typically done. However, for very bad political reasons, scientific scholars of religion often ignore the differences between religions. Not all religions are created equal.

Assuming that all religions are the same—all equally profitable or costly, equally rational or irrational, and equally well supported by natural mental structures and processes—insulates observers from having to evaluate religions in their own right. A believer of a particular religion may write off the rest as equally worthless, and a nonbeliever may shun them all. But just as the philosophy of religion has shown that not all theologies are equally coherent, not all religions are equally supported and encouraged by human minds in the natural world.

Some religions are like rats and rabbits—fast-breeding, adaptable animals that suffer no danger of extinction. Other religions compare with koalas and California condors—slow breeding animals requiring fairly special ecological conditions and threatened with extinction.

In this chapter, I argue the somewhat controversial position that many basic aspects of Christian, Jewish, and Muslim theologies give these religions further advantages over some others.¹ These theologies, particularity Islam and Christianity, compare with rats and rabbits. Though including theological concepts that may have arrived relatively late in human history, their worldwide prominence and likely resilience against suppression efforts come (at least in part) from an unusually strong relationship with ordinary mental tools.

Horizontal versus Vertical Transmission

The transmission or spread of ideas and beliefs may be described as either horizontal or vertical. Horizontal transmission refers to beliefs or ideas moving from person to person within a generation. Thus, if I tell my wife a funny joke I heard and she tells it to her coworkers, the joke has spread horizontally. Vertical transmission entails passing on a belief or idea to subsequent generations. I teach my children about world history much the same way I was taught world history by my elders, and so I vertically transmit history to a new generation.

To this point, I have emphasized factors that contribute primarily to the horizontal spread of beliefs in gods. Such an account might explain why people tend to believe in gods and perhaps where beliefs in gods come from but says little about why beliefs continue as a generation of believers ages and passes on. But one of the striking marks of religious beliefs is how they remain relatively constant over vast numbers of generations. For much of this chapter, I now turn more deliberately to factors impacting vertical transmission.

Children Learning about God

The facility with which young children acquire and use god concepts is obvious. Much as in reasoning about other people, children from religious families easily form inferences, explanations, and predictions about gods' mind and behavior in novel and sometimes personal ways. From where does this religious fluency come? Part of the answer certainly lies in exposure to religious thought and action. Though some parents may carefully indoctrinate their children and threaten grave repercussions for disbelief, most religious belief in childhood seems to be more simply absorbed. Children believe because their parents (and other trusted adults) act as if they believe and talk as if they believe. Until given strong reason to believe otherwise, this testimony is powerful.

But such an account of vertical transmission would be overly simplistic if we did not consider the character of the beliefs being transmitted and how well they are accommodated by children's minds. Anyone who has taught children, as either a parent or a teacher, knows full well that children cannot be

easily taught just anything. Some ideas seem to stick better than others. Thus, the question to be answered is, why are many religious ideas so easy for children to adopt?

The Anthropomorphism Hypothesis

One answer to this question has been at the theoretical center of the scientific study of religion and especially in the psychology of religion for over a century. The answer might be called the “anthropomorphism hypothesis.” Children learn about people (including their minds and behaviors) and then analogically reason about gods. God concepts amount to taking a representation of humanness and projecting it onto “God” or the gods of any given religion.

The anthropomorphism hypothesis asserts that children merely conceptualize God in the same way that they conceptualize humans, and through development God looks less and less like a human. God begins as a big person living in the sky and then becomes (for many Abrahamic theists) an all-present, formless, unchanging, nontemporal, all-knowing, and all-powerful being. Crude, physical anthropomorphism gives way to God as an abstract being with unusual properties.

Alternative Answer

:In contrast to the anthropomorphism hypothesis, I argue that early-developing mental tools (such as the Theory of Mind [ToM]) are not specifically for representing humans and, in fact, actually facilitate the acquisition and use many feature of God concepts of the Abrahamic monotheisms. My contention is that children may easily form representations of God because the relevant underlying mental tools used for thinking about God have two favorable properties. First, rather than being dedicated solely to informing understandings of humans, ToM operates generally on any and all intentional agents. As such, ToM is quite capable of representing humans as well as any other intentional being, from God to ghosts to gorillas. ToM is flexible with regard to many properties that theologies teach that God (but not humans) possesses. Consequently, at least for children, many supernatural properties do not impose undue conceptual burdens.

A second feature of ToM in childhood is that it assumes that many superhuman properties are the norm simply by default. For example, when the hypersensitive agency detection device (HADD) identifies something as an intentional agent, a three-year-old’s ToM automatically assumes that the agent has the superhuman property of infallible beliefs (at least under certain parameters discussed later in this chapter). Developmental psychologists continue to find evidence that the godly properties of infallible beliefs, superknowledge superperception creative power, and immortality are quite intuitive, at least for young children. Concepts of God are easily accommodated because they play on many of these default assumptions rather than violate them.²

God as Superknowing

Over the past fifteen years, one of the most productive areas of cognitive developmental psychology has been the subfield often referred to as “theory of mind,” which concerns the mental tool I have been calling by the acronym ToM. This domain of conceptual development concerns how children come to predict and explain human action in terms of mental states, such as percepts, beliefs, and desires. When do children understand that people act so as to satisfy their desires? That beliefs regulate desires? That perception helps form belief? How do children come to this understanding? One of the latest turns in the theory-of-mind subfield has been concern over how children come to understand nonhuman minds, such as those of animals and gods. Some of this research bears directly on the question of whether children mentally represent God through anthropomorphism or whether they have a more general understanding of minds that may actually be biased to successfully represent God’s mind as it is understood by the Abrahamic monotheisms and some other traditions.

A well-documented and broadly accepted conclusion from work on ToM is that most children younger than four years old have difficulty understanding beliefs as potentially false or differing from person to person. By age five, most children understand that people may believe something that is not true or have false beliefs.³ To illustrate, an experimenter presents a young three-year-old with an or-

dinary cardboard soda-cracker box. The experimenter asks the child (familiar with such crackers) the contents of the box. The child answers that crackers are inside the box. The experimenter then shows the three-year-old that the box actually contains rocks and then recloses the box. After showing the rocks, the experimenter asks the child to suppose his mother enters the room and sees the closed cracker box for the first time. What would she think is inside the box? Most three-year-olds answer “rocks” to this question, indicating they do not appreciate that their mother would be fooled by the appearance of the box and thus form a false belief. In contrast, by age five, most children successfully understand that their mother may have a false belief regarding the contents of the box and assume that there are crackers in the box. Using tasks such as this one and a number of others, developmental psychologists have shown that children seem to progress from assuming that everyone’s beliefs are the same as the child’s understanding of reality to understanding that beliefs are representations of what might be the case. In other words, they begin with a default assumption that beliefs are infallible and must then learn that beliefs can be wrong.

How does this developmental story apply to children’s understanding of God? If the anthropomorphism hypothesis is correct, it suggests that children begin by assuming that God’s beliefs are infallible just like their mothers’ and shift to claiming that God’s beliefs are fallible just like their mothers’. Continuing along this line, children will be compelled to move from a “theologically accurate” understanding of God’s beliefs to an “inaccurate” one and back again as they age. But this is not what has been found.

Colleagues and I tested this hypothesis using the cracker box task described previously.⁴ We presented three- to six-year-old American Protestant children with the rock-containing cracker box. As in previous theory-of-mind research, most three- and four-year-olds answered that their mothers would think “rocks” were in the box, suggesting that they did not yet understand that Mom could entertain incorrect beliefs. Nearly all five- and six-year-old children answered “crackers,” knowing that Mom would be fooled by the appearance of the box. However, when asked what God would think was in the box, children at all ages were equally likely to answer “rocks,” appreciating that God would not be fooled by the appearance of the box. None of the three-year-olds and only one of the nine six-year-olds said that God would think there were crackers in the box. Collaborators of mine conducted a similar, culture-appropriate task with Maya children in southern Mexico and discovered comparable results. Not only did children seem to reason differently (and more accurately in theological terms) about God than their mothers, but they also reasoned differently about God and other gods and spirits who the Maya do not suppose are all-knowing.⁵

Thus, when reasoning about beliefs, a clear divergence in developmental patterns emerged between children’s reports of Mom’s beliefs and God’s beliefs. In reporting Mom’s beliefs, children developed from attributing belief that there were rocks in the box to the false belief that there were crackers in the box. But when reporting God’s beliefs, children consistently reported that God would believe there were rocks in the box. Contrary to the anthropomorphism hypothesis, children do not appear compelled to anthropomorphize along this dimension, nor must they move from “theologically accurate” to “theologically inaccurate.” Rather, children appeared to be theologically accurate from the first and did not lose this ability.

A similar line of research examining children’s assumptions about others’ previous knowledge of unfamiliar displays revealed a similar pattern.⁶ First, before age five, children seemed biased to overextend who might have pertinent knowledge. Second, three-year-olds more accurately reasoned about their mothers than about God (theologically speaking). Through development, they had to mature to the point of answering correctly for a person but needed only to maintain their naive default assumption to answer correctly for God. Additionally, these studies revealed that even the youngest children successfully discriminated between agents, not merely treating all minds as the same. Three-year-olds answered significantly differently for God and a dog, replying that God but not the dog would know the character of the hidden displays. Similarly, when the three- and four-year-olds were given the

prerequisite information for interpreting the displays, they tended to revise their assessment of their mothers' knowledge, perhaps using an "if I know it, Mom knows it" strategy. Only three-year-olds, however, significantly revised their estimates of what the dog knew in the face of being given more information about. At no age did the children significantly revise their estimate of God's knowledge. It seems that, contrary to the anthropomorphism hypothesis, children began discriminating between agents along this dimension of knowledge even before they possessed a robust understanding of prerequisite knowledge for interpreting visual displays.⁷

The tendency for kids to overestimate what others know makes children quite receptive to the idea of a superknowing God. Being superknowing or infallible seems to be a default assumption that must be outgrown. Thus, this bias may help 'children rapidly adopt concepts of gods with superknowledge (as opposed to those with not so much knowledge). But this facility does not apply only to children,

Though in development we spend a lot of energy learning when others know what we know or have information that we would like or don't know what we know, we often remain quite poor at these judgments. Even in adulthood we tend to overestimate (or underestimate) what others know, why? Primarily because of computational simplicity. To know whether someone knows something, we often have to figure out whether that person might have had the relevant experiences to acquire this knowledge. Generally, such computations are cumbersome or impossible. To remedy this problem, we simplify to an all-or-nothing proposition. We assume that others know all that we know (in a particular area) unless we have strong reasons to believe otherwise. Thus, all knowledge we have that is of the mundane sort we intuitively believe others have. However, if some bit of knowledge was hard for us to come by or we acquired only recently, we may actually make the alternative (simple) assumption that others do not have it. This all-or-nothing kind of strategy works well in most situations. As long as we are dealing with people who are like us and have had similar experiences to ours, it fairly accurately predicts others' knowledge. Until the past few centuries, fairly homogenous communities were the rule, and so such a strategy may have been quite accurate throughout the bulk of human existence. Today this heuristic leads to awkward social interactions as when we assume others know what we are talking about when they don't or when we tediously explain to another things they already know quite well.

The upshot of an all-or-nothing strategy for adult reasoning about God is that we find thinking about God as superknowing or infallible rather easy. Consequently, people may find understanding and believing in God as superknowing easier than understanding and believing in a god as only knowing certain things in certain times and places.

I describe God here as superknowing or infallible instead of "omniscient" because it is unlikely that children, or adults for that matter, can truly think about God as knowing absolutely everything. Wrapping our minds around what it might mean to know absolutely everything is not easy or practical. By saying God knows everything, I believe we actually mean that for everything we care to consider whether God knows, God does. We also mean that God is never mistaken, hence infallible.

God as Superperceiving

Another aspect of understanding minds that has been thoroughly investigated is the nature of perception. Research has revealed a developmental progression quite similar to understanding false beliefs. Three-year-olds often have difficulty understanding that just because they see something a certain way, not anyone or everyone else sees it the same way. Consequently, they might mistakenly assume that the book page that appears right side up to them also appears right side up to their mothers, for whom it is actually upside down. By age five, children's ability to appreciate another's visual perspective approximates that of adults. Such a developmental course invites another examination of God concepts along the same dimension.

In one experiment conducted by developmental psychologist Rebekah Richert,⁸ children ages three to eight looked through the slit in the top of a darkened shoe box and were asked, "What do you see inside the box?" After the children reported seeing nothing, the experimenter shined the flashlight through a hole, revealing a wooden block inside. Turning off the light, the experimenter then invited the child to

look again. Then the experimenter told the child that cats can see in the dark because of their special eyes. Then the experimenter asked the child what a human puppet, a cat puppet, a monkey puppet, and God saw in the darkened box. While most three-year-olds reported that the human puppet could see the block in the darkened box (which had been invisible to themselves), a minority of five-year-olds did so. In contrast, children's answers for God and the cat puppet were importantly different from their answers for either the human puppet or the monkey puppet. A comparable large majority of the three- and five-year-olds answered that God and the cat would see the block—as high as 90 percent in some cases. Once again, even young children embraced decidedly different properties for as compared with humans. Thus, children's agent concepts supported by ToM appear flexible enough to accommodate superhuman properties.

A second set of studies by Richert, investigating children's understanding of seeing, hearing, and smelling, support these findings.⁹ Results revealed that preschoolers may differentiate between various agents when predicting various perceptual experiences. Once again, as with the cracker box task, the previous knowledge tasks, and the darkened box task, as soon as children began to demonstrate understanding of a particular dimension of human minds, they likewise showed discrimination regarding to which minds that dimension applies and read-to God. They did not exhibit the wholesale anthropomorphism hypothesis.

God as Immortal

In chapter 4, I mentioned some recent studies of children's and adults' understanding of death. These studies show that, at least when reasoning about animals that have been killed, preschoolers have surprisingly clear notions about the biological consequences of death, but adults and children seem to have much harder times seeing death as the termination of psychological activities. I argued that the way children (and adults) intuitively reason about death contributes to life-after-death ideas and the notion of ghosts and spirits. What we still know fairly little about is whether children understand development, aging, and death as inevitable processes. Short of being killed by a violent act, do children understand that people but not gods will eventually die?

Unlike children's understanding of minds, children's understanding of mortality has received relatively little attention, especially God's mortality. One complicating factor in examining children's understanding of God's mortality/immortality in the traditionally Christian world is the salience of the Incarnation. Christianity holds that God was born and did die in the person of Jesus of Nazareth, and this story is reiterated annually at Christmastime. Thus, the theological claim that the Christian God is immortal could be especially difficult for children in such a cultural context. Nevertheless, at least one recent study has explored children's understanding of God's immortality and yielded results consonant with the other findings presented here regarding their strong ability to reason about divine properties.

Developmental psychologist Marta Gimenez and collaborators asked Spanish three- to five-year-olds questions regarding the mortality of a friend versus God's mortality.¹⁰ These questions concerned whether God or their friends were alive at the time of dinosaurs, were ever babies, would grow old, and would die. Answers were compiled for a mortality score. Not unlike in the cracker box task, three-year-olds did not distinguish between a friend and God. Children did not clearly grant mortality to either being. But by age five, children uniformly and accurately attributed mortality to a friend but not to God, for instance, regarding a friend as more likely to age and die than God. Children showed no age-related change in attributing mortality to God, and four- and five-year-olds ascribed mortality to their friends significantly more often than to God. Thus, the anthropomorphism hypothesis failed.

But was there evidence that children were especially receptive to understanding God as immortal? The results were not clear but suggestive. As noted previously, the Incarnation complicates measuring the understanding of immortality, especially when one fourth of the mortality score was based on whether God was ever a baby. It is not at all unreasonable for a Christian child or a child in a Christianized culture to answer that a long time ago God was born as a baby. That is what they are taught every December. Placing this concern aside, the data are still promising. Three-year-olds showed no evidence

of entering the task with a default assumption that God and people are mortal; rather, immortality appears to be just as natural an assumption. These young children also tended in the direction of embracing God's immortality more eagerly than their friends' mortality. Perhaps in a predominantly Muslim or Jewish nation where the salience of an incarnational deity is not so strong, ambiguity in questioning children about God's birth and death would be reduced.

Though the body of research is still thin concerning children's understanding of God's immortality versus the mortality of people, available data are consistent with the other research presented earlier. Preschool-aged children need not anthropomorphize God with regard to mortality and, if anything, seem biased to overextend immortality. That is, children may have an early bias to represent intentional agents as immortal. And why not? The inevitability of biological death through natural causes (as opposed to violent ones) may not be obvious in the day-to-day life of most children. Indeed, it seems that even into adolescence, it is children's lack of appreciation of their own mortality that keeps parents on their toes.

God as Superpowerful

Jean Piaget, arguably the most influential developmental psychologist of the twentieth century, advanced the anthropomorphism hypothesis as applied to children's reasoning about God.¹¹ Piaget's discussion of God concepts drew from two primary observations. First, Piaget noted that many children seven years old or younger seemed to believe that the natural world had been created human beings. He termed this phenomenon "childhood artificialism". In his interviews, children reported that lakes, clouds, rocks, and other natural things were both younger than humanity and created by humans. Second, Piaget believed that children younger than about seven years old endow their parents and other adults with the properties of omniscience and omnipotence. Through his interviews, repeatedly Piaget found that children believed that adults possessed superpowers that enabled them not only to create mountains and lakes but also to do countless other feats of strength and might. Additionally, Piaget cited the "crisis" that children reportedly face when they find that some things are outside their parents' control or knowledge. Until children outgrow this stage and begin to appreciate human fallibility, God is just another human who just happens to live in the sky. After children understand that humans do not, in fact, possess Godlike properties, God is left as the only member of the pantheon. God is thus a residual of childhood naiveté supported by theological instruction.

Though Piaget underestimated the sophistication of children's ability to think about God and other nonhuman agents, to date I am aware of no evidence that challenges Piaget's observation that young children assume adults have superpowers. Indeed, on this point, it seems likely that Piaget was correct. Children assume that all agents, including God and their parents, have superpowers and then pare back parents' abilities as they discover human limitations. Thus, as with understanding God's mental abilities and immortality, young children seem to understand God more accurately than people. They must learn where human limitations of power lie but simplistically allow for God's omnipotence.

God as a Creator

Piaget's version of the anthropomorphism hypothesis was inspired largely by his discovery of "childhood artificialism," the notion that the natural world was created by people. If people can create natural things such as animals, lakes, and rocks, then God doing so places God's power on par with that of humans, and so it is not something special. However, newer investigations have questioned the prevalence of artificialism and suggest that very young children can understand God as distinct from humans in creative capability.

For example, psychologist Olivera Petrovich presented British preschool children with pairs of photographs of various objects such as animals (a dog), plants (daffodils), other natural things (snow and leaves), toy animals and plants, and common artifacts (chair and books).¹² The experimenter asked the children whether either of the two photographs was something that could be made by people. When the pair included a clearly natural thing (such as a leaf) in contrast with an artifact (such as a bus), nearly always children accurately answered which one could be made by people. Only when the pair contained

an artificial imitation of a natural kind (such as a toy cow) did children seem to be confused. On the basis of these and other data, Petrovich concluded that when considering origins, preschoolers clearly discriminate between the natural world and the artificial.

In another set of studies, Petrovich connected children's understanding of origins more closely to their concepts of God.¹³ British preschoolers answered questions regarding the first origins of either plants, animals, or natural things such as the sky, earth, and large rocks—the same sorts of things Piaget asked about. Given three options—that the things were made by people, made by God, or no one knows—preschoolers were neatly seven times more likely to answer that God was the source of the natural world than people. Taken with the finding that children clearly dismissed the possibility that natural things are made by people, these results seem to suggest that preschoolers may indeed understand God as possessing importantly different creative power than people.

Petrovich's studies undermine the strength of childhood artificialism and provide strong evidence that four-year-old children are capable of representing God as having nonanthropomorphic power. The early age at which children have this capability suggests the ease with which their mental tools invite God to be the cause of natural things. Piaget's fundamental observation that young children are biased to overestimate the power of adults has not been challenged. Perhaps we have good reason to believe that children have a default tendency to represent intentional agents—gods or people—as being superpowerful. What has been challenged is that this superpower bias is a distinctively and indiscriminately human attribute that then gets extended to other agents. It now appears that preschool children can successfully “turn off” the bias when considering the role of humans in origins of the natural world and extend superpowers only to God.

Other studies support the notion that children may have strong dispositions to understand the world as created but not created by humans. Developmental psychologist E. Margaret Evans examined explanations of the origins of things given by five- to seven-year-old and eight- to ten-year-old American children from both fundamentalist Christian communities and nonfundamentalist communities.¹⁴ Evans asked children to rate their agreement with various origin accounts, and she found that regardless of whether parents taught evolution-based origins to their children, children vastly favored creationist accounts of origins for animals and other natural kinds over either evolutionist, artificialist, or emergentist accounts (that animals just appeared). Similarly, psychologist Deborah Kelemen has found that young children have strong inclinations to understand both living and nonliving things as purposeful.¹⁵ They see living and nonliving things as possessing attributes designed to help or to serve themselves or other things. Thus, pointy rocks aren't pointy because some physical process happened to make them pointy; rather, young children tend to accept that rocks are pointy because pointy-ness serves some function, such as keeping them from being sat on. These and other studies have led many psychologists to suspect a bias, arising in childhood, to accept the natural world as created by a nonhuman superbeing. Kelemen has even raised the possibility that children naturally develop as “intuitive theists,” and religious instruction merely fills in the forms that already exist in children's minds.¹⁶

A tendency to see the world as created by a nonhuman superbeing and the ease with which children understand God as the cause of the natural world make acquiring a God concept including supercreative power fairly easy for children. Consequently, a God concept with these powers stands a strong likelihood of successful vertical transmission, ensuring its survival across generations. Further, these early emerging biases may make a God who has created the world very intuitive and easy to believe in, both in childhood and in adulthood.

Perfect Goodness?

At this point, I lack confidence that a similar argument could be made for the naturalness of perfect moral goodness as a divine trait. However, it should come as no surprise that God, being ascribed all-powerfulness, all-knowingness, and immortality, might also be adored as perfectly good. The superhuman divine properties attributed to God, when present together, might make belief in God's

goodness more intuitive than attributing to God fallible morality or even supreme badness.

Indeed, along the same lines that children might overestimate all agents' knowledge, perception, and power, children might overestimate all agents' morality. That is, they assume supermorality until they gain enough evidence to the contrary (such as by observing that others act immorally or being confronted with their own immoral behavior). They then learn the various moral shortcomings of themselves and others but with proper theological encouragement may retain the idea that God is perfectly moral. The idea that God, and perhaps only God, is perfectly good (morally) may turn out to have a fairly strong intuitive, nonreflective foundation based on our nonreflective beliefs regarding the relationship between knowledge and morality and the relationship between desires and actions.

As intuitive moral realists, holding that there is ultimately one normative moral system, believing that an all-knowing God likewise knows about perfect morality follows naturally. If knowing the moral truth of a situation simply requires knowing all there is to know about the behaviors and intentions involved, then an all-knowing God has perfect moral knowledge.

We assume (because of ToM) that the desires of intentional beings motivate their actions. If I want something, I will act in such a way as to get it. But what might this mean for an all-powerful, immortal God? What could such a being lack or want? Unlike humans, for which we know that frustrated desires often lead to treachery, deceit, and violence to satisfy those desires, it seems that an all-powerful God cannot have frustrated desires. Lacking nothing, God would have no intuitively satisfying reason to behave selfishly, immorally. I am not suggesting that a theology could not be developed in which an all-powerful, all-knowing God behaves selfishly and immorally. Rather, such a theology seems to have less intuitive support from the ordinary operation of mental tools. Having no selfish desires makes immoral behaviors for God (if committed) counterintuitive.

Perhaps the only complicating factor is free will, ToM assumes that agents may freely choose how to behave. If God desires people to behave in certain ways, as free beings, people may act in ways that frustrate God's desires. For instance, God could not make people freely love him. Coerced love isn't love at all. So perhaps in domains that deal with God's interactions with humans, especially humans behaving in ways God might deem objectionable, our intuitive thought might allow for an all-knowing, all-powerful god to act in ways that violate moral norms.

Divine Properties That Are Not Developmentally Privileged

Developmental evidence suggests that children have built-in biases that encourage them to understand and believe (at least in some rudimentary sense) in superknowing, superperceiving, immortal, superpowerful creator gods. God concepts (such as those in Christianity, Islam, Judaism, and some forms of Hinduism) that have these properties enjoy some transmission advantages over other god concepts. Thus, once introduced into a population, God concepts hold strong promise to spread rapidly and gain tenacious adherents. The histories of Christianity and Islam illustrate this claim.

However, not all properties commonly credited to God receive any special support. Indeed, some features of God are downright difficult for kids, let alone adults, to understand. One God existing as three persons, as claimed in Christianity by some formulations, is logically possible but does not spring easily from non-reflective beliefs. The Trinity is a fine example of a belief that is believed only on a reflective level, receiving no nonreflective support. The notion that God is nontemporal or somehow outside of time, a belief of many Christians, Jews, and Muslims, also proves difficult for mental tools to comprehend in any consistent manner. A third example of a God property with no special natural support is omnipresence or having no spatial location. The Divine having nonnatural spatial properties occurs in the Abrahamic religions and many others, including forms of Hinduism. However, the widespread nature of this theological idea does not make it very natural in the sense that being superknowing or immortal is natural. Children and adults may easily think about God as being very large or living in the sky or existing somewhere outside the universe like a person watching a fishbowl, but to conceive of God as having absolutely no location in space or being everywhere in space presents conceptual difficulties. In chapter 1, I mentioned the difference between people's explicitly embraced

theological concepts and those god concepts used in the real-time production of thoughts, explanations, and predictions. In the narrative comprehension experiments that documented these differences, the properties that were especially hard to maintain when trying to understand and remember the stories were God being nonspatial and nontemporal.

God Really Minimally Counterintuitive?

At first glance, God seems far more counterintuitive than would qualify as minimally counterintuitive (MCI; Chapter 2). God has funny physical, biological, and psychological properties. So much for one or two violations of intuitive expectations. But a closer look at developmental evidence suggests that many of God's fancier properties are not counterintuitive at all. ToM allows for a mind to be superknowing and superperceiving and to be divorced from a biological body. Likewise, mental tools do not require a disembodied mind to be mortal. We have no reason to believe that God's superpowers present any special difficulty. On the contrary, mental tools suggest that someone has intelligently designed much of the natural world and may willingly embrace God as the Creator. On careful examination, it may be that God's only counterintuitive properties concern God's physicality, such as being omnipresent or 'having no location in space and time. If so, God nicely fits the parameters for a minimally counterintuitive concept, or MCI.

Additional Factors That Favor the Abrahamic Religions

Add the processes described in the first five chapters of this book to the developmental biases discussed in this chapter, and the monotheisms traced back to Abraham enjoy very special selective advantages over most other religions. Not only does the concept of God enjoy the horizontal transmission advantages due to being MCI, serving as a reasonable target for the activities of HADD and ToM and having the knowledge and power to be easily tied into moral and other social concerns, but God meets a broad range of developmental biases encouraging vertical spread of belief as well. In this section, I amplify a bit further two of the nondevelopmental strengths of the concept of God.

Rituals in the Abrahamic Traditions

In chapter 5, I mentioned that rituals with strong conceptual control stand a greater likelihood of survival than others and, consequently, serve to support rather than undermine the theological foundations from which they spring forth. The ritual systems of Christianity, Islam, and Judaism consist almost entirely of these rituals with strong conceptual control. Many local religions folded (or are folding) under competition from other faiths and from scientific and philosophical inquiry in part because their mental systems lack the conceptual control to survive changing demands of validity. Shamans, traditional healers, and other spiritual leaders have had to learn about modern medicine to retain their positions of religious leadership, whereas imams, priests, and rabbis have had to make few if any procedural adjustments to ritual performances. They were never in the primary business of bringing rain, healing the sick, making crops grow, making people beautiful, or ensuring the birth of boys. So any failure in these areas or any ability for science and technology to do better at explaining or manipulating these domains has had much less impact on these religions.

Being Generally Superknowing

Gods come in different flavors around the world. Some know a lot about a lot, with the Abrahamic God being a limiting case: knowing everything. Other gods know everything about a particular domain, such as the forest or domestic life. Other gods do not have particularly special minds; they just have been around a long time or can learn things people can't because of their keen eavesdropping abilities that Invisibility affords. Still other gods are fairly dumb, easily deceived and requiring information to be deliberately brought to them in just the right way.

Knowing that other beings have limited access to information is essential for social interaction, (One feature of severe autism, a disorder characterized by an inability to have normal social relations, is not being able to calculate the limits of others' knowledge and beliefs.)¹⁷ As mentioned in chapter 4, agents

that know something of particular relevance to you, especially related to survival or reproduction, demand greater attention. Such beings possess “strategic information.” These agents may be able to impart to us information that is valuable in its own right or that increases our social standing (because someone else might want the information). Thus, gods who have this property are more likely to be pondered and transmitted than gods whose knowledge is trivial or irrelevant, God, who knows everything, certainly has strategic information. In fact, God has all the strategic information and is thereby relevant in many different contexts. Unlike the Maya “Masters of the Forest,” who know everything about the forest,¹⁸ God knows everything strategic about the forest and the home and wherever else,

By knowing about strategic information in every domain of human concern, God becomes relevant to thought in many different contexts. Whether I am concerned about the weather, the harvest, whether my neighbor is stealing from me, the behavior of my children, or the actions of faraway government officials, God knows and may be concerned and involved. Being potentially involved in so many different spheres broadens the range of mental tools that may form nonreflective belief in God and increases the opportunities to exercise (and thereby strengthen) these nonreflective beliefs. Thus, in comparison with gods who know little or operate only in restricted domains, the concept of God may have more opportunity be finely enmeshed in a spectrum of activities of thought and action and hence spread and believed.

Monotheism Privileged?

I have argued that a superknowing, superperceiving, superpowerful, immortal and (perhaps) supergood god possesses strong selective advantages, such that once it is introduced, belief in such a god should spread quite well. This supergod concept matches well (but not perfectly) with the God of Christianity, Islam and Judaism, and other religious traditions as well. However, belief in a deity such as God does not preclude a belief in minor gods, particularly ghosts and ancestor spirits. As discussed in chapter 4, the death of familiar people and the subsequent presence of a corpse and HADD experiences consonant with the decreased continuing to act easily prompt belief in ghosts and ancestors. Nothing in the previous discussion precludes the possibility that these spirits (or others) might act locally while a supreme God takes care of cosmic business or serves in a management capacity. I find the historical fact that ancestor worship, saint cults, and other peripheral religious activities continue to exist alongside “monotheistic” traditions unsurprising. Monotheism does not appear to be a cognitively privileged form of theology except perhaps through considerations of parsimony.

A Progress Report

Belief in God (or gods) comes from the same mental processes that the vast majority of beliefs come from: the operation of mostly nonconscious mental tools. These mental tools give us nonreflective beliefs that we use automatically to make sense of the world around us, to generate inferences, to make predictions, and to explain things “off the cuff” or “on the fly.” When reflectively determining what we believe, these nonreflective beliefs serve as our first and best guesses. Unless we have compelling reflectively accessible reasons to believe otherwise, the tabulation of our nonreflective beliefs becomes our reflective beliefs.

The way our minds are put together encourages us to nonreflectively (and hence reflectively) believe in gods generally and God particularly:

- We find MCI agent concepts particularly memorable and attention demanding because of their peculiar fit with intuitive expectations of mental tools plus strong inferential potential.¹⁹
- Our HADD, working with an aggressive ToM tool, prompts us to find agency among ambiguous information around us. We eagerly search and often find evidence of agents acting around us. Such a tendency warmly receives the idea of gods and makes belief in gods very natural.
- Gods that have special physical properties (such as invisibility) or special mental properties (such as being superperceiving, superknowing, or able to read minds) likewise get easily incorporated

into reasoning about social interactions and moral concerns. As agents with “strategic information,” we find them important as potential allies or enemies and incorporate them into many different spheres of reasoning, thus enhancing their nonreflective credibility.

- The way two different systems of mental tools deal with the death of people encourages us to believe in life after death and to find reasoning about disembodied minds very natural. Our intuitive assumption that mental processes continue after death may be married with HADD experiences that the dead person has acted and thus encourage belief in ghosts or ancestor spirits.
- Religious actions, including ceremonies, rituals, and prayer, encourage belief in gods. Acting as if gods exist serves to strengthen our resolve that they do. Observing others act as if gods exist serves as testimony that others likewise have reasons to believe in gods. Some particularly emotional religious events even make us feel the activity of the divine.
- Concepts of God (as in Christianity, Islam, or Judaism) find special encouragement through the way our mental tools develop. In childhood, our standard, default assumption is that people and God are superknowing, superperceiving, and superpowerful. We must work to learn that this is not so of people, whereas theologically appropriate notions of God come with little struggle. We find the idea that the natural world was designed by a god very natural to accept and contrary notions (such as evolution accounting for life as we know it) peculiar. We find the notions of God being immortal easier to understand and accept than human mortality. Children may find the notion of a supergod being supergood an easy assumption or natural extension of God’s other properties.

These observations imply that there is nothing particularly strange about believing in gods. In fact, belief in gods in human groups may be an inevitable consequence of the sorts of minds we are born with in the sort of world we are born into. More specifically, belief in God may be among the most selectively privileged of religious beliefs.

Chapter 8

Why Would Anyone *Not* Believe in God?

To this point, I have tried to answer the question “Why would anyone believe in God?” I contend that people commonly believe in gods because of the way our minds work in the sorts of natural and social environments we inhabit,

We believe most of what we do—including what we believe exists in the world—because of the operation of numerous mental tools, operating mostly below conscious awareness. These mental tools, designed to enable rapid processing of information in various particular domains, generate nonreflective beliefs. When creating what might be called reflective beliefs, unless given strong reason to the contrary, we simply adopt these nonreflective beliefs as reflective beliefs. Consequently, any belief such as a belief in God, that receives strong support from mental tools, that is nonreflectively believed, is a strong candidate for widespread reflective belief.

Our minds find ideas about minimally counterintuitive (MCI) agents particularly memorable and easy to share with others. These MCI agents also prove very useful in making sense of or addressing numerous phenomena around us. Additionally, a particular mental tool, the hypersensitive agency detection device (HADD) easily detects agents and agency in the environment given incomplete or inconclusive evidence. Though the bulk of these agent detections may be rejected, after further evidence gathering, some become recognized as gods. If the detected agent or agency is attributed to a known god, such HADD activity encourages belief in and the spread of the god concept. In rare cases, HADD could also encourage the postulation of a new god.

Further, because gods are agents with special properties, such as having superaccess to “strategic information” governing human affairs, they also receive support from a host of mental tools related to human interaction. When reasoning morally, incorporating the presence of a god into consideration mutually reinforces our intuitions that moral rules exist objectively. Thus, the notion that a god sees someone’s immoral behavior and disapproves is quite intuitive. Because moral reasoning impacts social exchange, status, and other relations, it is easy for belief in a god or gods to become intricately connected to the actions of numerous other mental tools.

Concepts of a superpowerful, superperceiving, superknowing, and immortal supreme God receive further support and encouragement by the character of natural human conceptual development. Children seem to naturally assume that agents have these divine properties and have to learn that people and animals do not have them. Consequently, it is easy for children to learn about God and form a rudimentary, theological notion of God. In this way, God concepts (in comparison with god concepts) may find an even easier time being spread from one generation to the next.

Thus, believing in God is a natural, almost inevitable consequence of the types of minds we have living in the sort of world we inhabit, similar to why it is that people almost universally believe in minds of humans and many animals. We have no scientific or even directly observable evidence for God or minds, yet belief in both is extremely common and tenaciously held. Why? Because both arise from natural workings of the human mind.

But a complete scientific account of belief in God must explain not only why it is that people believe but also why sometimes they don’t believe in God or gods. After presenting this argument to colleagues in the academy, I sometimes get these sorts of questions: Well, if religion comes so naturally, what accounts for atheism? Are you saying that atheism is unnatural? But how could it be if so many of us are atheists? In this chapter, I argue that atheism (the disbelief in any gods) as a shared worldview arises only under special conditions and is indeed the exception to the rule. Compared to theism, atheism is relatively unnatural and, unsurprisingly, a very uncommon worldview.

The Difficulty with Being an Atheist

Being an atheist is not easy. In many ways, it just goes against the grain. As odd as it sounds, it isn’t natural to reject all supernatural agents. I’m not saying all atheists have the conscious experience of

angst over being an atheist or struggle with such a worldview. Much as skilled pianists don't find playing the piano difficult, trained social scientists don't find it particularly difficult to reason statistically, and philosophers don't find it terribly difficult to avoid basic errors of logic, many atheists do not find atheism consciously taxing. In addition to the special environments they thrive in, to which I'll turn shortly, they have become accustomed to or well practiced at such thought. What such fluency masks is the relative difficulty in being an atheist (at least in many environments).

Each of the factors that encourage theism poses challenges to atheism that must be overcome. I'll present four of these factors that pose special problems for atheism and then offer suggestions for how atheists may attempt to solve these problems.

HADD and ToM

As discussed in chapter 3, our mental tools, specifically HADD working with the Theory of Mind (ToM) tool, make us prone to find agents, agency, and the consequences of agency in our environment. Such detections may be satisfied by any number of agent identifications, but the unusual character of them discourages us from positing that the agency is human. Often ghosts, spirits, or gods, fit the job description better. But for the strict atheist, only two options remain: any detected agency could be attributed to natural agents such as humans or animals, or the agency could be rejected. An atheist could reflectively override HADD's detection of agency.

To return to Doug, the farmworker who survived the silo explosion, most theist and atheists alike intuitively detect agency in his story. Our HADDs ask, "*Who* saved him from the silo?" The theist may answer the question with God or angels or with any number of other options, depending on their religious background, and such an answer holds great intuitive satisfaction. The atheist may answer HADD with, "Some unseen coworker saved him," But then ToM asks why Doug didn't see the coworker. The mental tools that store properties of humans would then ask how the coworker managed to lift Doug out of a second-story window. The cacophony of questions from mental tools makes the "human" identification extremely unsatisfying. But the atheist has another option, rejecting the detection of agency: HADD was wrong, and no agent or agency was present. Some unknown physical property protected Doug from the initial explosion and propelled Doug out of the second-floor window unharmed, or it happened just by chance. But this type of explanation is no explanation at all. What it amounts to is a promissory note: I don't know how to explain it, but I'm sure there is an explanation that has nothing to do with agency.

Satisfying HADD's detection of agency with a human (or animal) agent identification often presents difficulty. We know a lot about the properties of people and animals and what they can and cannot do. Just the fact that people and animals are visible makes unseen agency difficult to attribute to them. Our knowledge of people and animals drastically restricts the range of cases for which they to satisfy HADD.

Rejecting HADD's detection of agency may sound easy, but it is not. One of the strengths of the human mind is its ferocious desire to explain, make sense, and find meaning. If we tell HADD that it has misexplained something, it demands that we come up with a satisfactory counterexplanation. Finding such a counter-explanation is not always simple: it requires conscious, reflective thought; it is slow; and it may require tapping our long-term memories for knowledge we incompletely hold. Even if this cumbersome reasoning process yields a counterexplanation that seems satisfying to the self, others, not sharing the same knowledge base, may find it dissatisfying because of its poor foundation in nonreflective belief systems.

Recall that HADD's insistence that it has detected agency may increase under conditions of urgency, as when survival or physical well-being is on the line. Similarly, denying HADD and settling on a satisfactory counterexplanation in urgent situations may be all the more difficult.

Stories like Doug's are relatively uncommon. Not all instances of HADD experiences present great difficulties to atheists, and the more clever and creative you are, the more likely you are to hit on some counterexplanation that has a ring of plausibility to yourself and others. But HADD experiences are

common, occasionally occur when rapid explanation is required, and often cannot be easily explained in purely naturalistic terms.

Moral Realism

Theists may casually go about making moral judgments, feeling guilt for having done something wrong, or feeling moral indignation for having been wronged. A god has seen and agrees with their moral assessment and may reward the just or smite the wicked. If some fortune or misfortune befalls a person, the god may be acting, or the event is a natural consequence of previous actions.

For atheists, things are not so simple. Their intuitive sense of morality continues to function very much like the theists but with no reason for moral certitude. Consequently, atheists, unlike theists, have a burden to concoct theories of morality that justify their moral certainty or abandon it. And abandoning is no easy business, and rarely, if ever, is it done successfully. I may be a champion of moral relativism, regarding morality as completely subjective, right up until I am wronged.

Dealing with Death

Theists may understand that strange sense that a recently departed loved one still cares about them and is aware-of things as a simple by-product of the dead still being present in spirit or disembodied form. Visiting the grave and talking to the deceased makes a certain amount of sense. Though the dead typically do not respond, they may understand the affections of the living. For atheists, these feelings and behaviors require other explanation. Denying disembodied agency, atheists have reason to view a dead body, even of a loved one, only as perhaps a reminder of mortality but having the agency and sacredness of a rock on the road. Musing about what a loved one who has died must be thinking or feeling or attempting communication with the dead is utter absurdity. Feel angry at being left behind? Nonsense. Feel betrayed or lonely at another's passing? Rubbish. Such impulses must be regarded only as irrational. Yet there they are.

Overcoming Native Creationism

As suggested in chapter 3 and developed in chapter 6, we may develop as children with a formidable bias toward seeing the natural world as being purposefully designed. Accordingly, children seem eager to embrace creationist accounts of the origins of living things. For atheism to thrive and spread, not only must this bias be overcome by adult atheists, but somehow they must be able to pass their atheism on to their kids, against the objections of their mental tools that tell them the world was created with purposeful design.

Reflective Problems for Atheists

In addition to reinterpreting nonreflective beliefs that suggest superhuman agency, atheism requires combating conscious, reflective arguments for theistic thought. In some ways, the burden for certainty is greater for atheists than for theists. As I have tried to show, the bulk of theists need not reflectively work out reasons for believing in God (or gods). Given the sort of experiences they have, including the suggestion from others that God does exist, belief enjoys such rich intuitive support that no justification seems necessary. (Perhaps this is why some believers are such easy marks for those college professors that are hell-bent on dissuading them of their faith. They have few if any explicit reasons they can articulate for belief.) Atheism, on the other hand, has less in terms of intuitive support but brings more explicit rationale to the table. As a more reflective belief system, frequently intellectually discovered, atheism has more reflective opportunity for being challenged (as well as encouraged). Hence, explicit reasons for theism generally require some attention from the atheist.

Historically, theists have offered various arguments or "proofs" for some sort of god. For instance, teleological cases or arguments appealing to the apparent design and purposefulness of the world historically have held great sway.¹ Nonreflectively, our mental tools for detecting traces of agency and purposeful activity and utility find evidence all around. Reflectively, the design of the world seems intuitively reasonable and an easy belief to hold. How, then, is there design? God seems like a

reasonable candidate. It wasn't until Darwinism became widely embraced that atheists had a satisfying defense against their own intuitive sense that the world was designed and the congruent claims of theists. Darwinism seemed to offer a god-free explanation for observed order. Though the Darwinist defense actually addresses only order in complex living systems and not the origin of life or the mechanical fine-tuning that many astronomers and physicists have recently noted,² such intellectual arguments help bolster the credibility and distribution of atheist beliefs.

Atheists may also have epistemological difficulties that theists (depending on theology) do not have. Theists may confidently hold reflective beliefs operating under the assumption that their mind was designed by an intelligent being to provide truth, at least in many domains. For the atheist, another explanation for the certitude of beliefs must be found, or certitude must be abandoned. If our very existence is a cosmological accident and our minds have been shaped by a series of random mutations whittled by survival pressures (not necessarily demanding truth, only survival and reproduction, as a rat, fly, or bacteria can pull off with their "minds"), then why should we feel confident in any belief? And if we can't feel confident in our beliefs, why do we go through life pretending we can? These questions may have satisfactory answers. The point is that unlike the theist, the atheist has far more explaining to do. This, too, makes atheism harder.

Fighting Back Theism

By listing these examples of problems atheists must face, I do not mean to suggest that theism cannot be successfully challenged and fought back in the lives of large numbers of people. Atheism just requires some special conditions to help it struggle against theism. In the following sections, I list a number of strategies for fighting theistic tendencies,

Strategy 1: Consider Additional Candidates for Belief

As we form beliefs reflectively though "reading off" beliefs from mental tools, the natural tendency toward theistic beliefs must be countered by salient alternative candidates. Since these candidates will not typically come through nonreflective channels, they must be sought explicitly. Someone hoping to be a successful atheist would do well to spend time with other atheists who can help provide naturalistic explanations for events and phenomena that invite theistic thought.

To illustrate, overcoming the natural tendency to see the world as intelligently designed by a god may best be combated by explicitly offering the mental tools a different candidate explanation. When I was a graduate student, a professor at my university prided himself on turning Christians into atheists through the term of his course on evolution. (Never mind that belief in evolution peacefully coexists with Christian theism in many minds.) The reason this course was successful in turning students away from God was because it offered alternative frames for reflectively interpreting mental tool outputs concerning apparent design and purpose in the world. The agency of God was systematically replaced by the agency of natural selection. And I do mean *agency*. One of the embarrassing realities for evolutionary theorists is the difficulty of consistently thinking or talking about natural selection without using mental-states language. At an implicit level, natural selection amounts to a sanitized and scientifically sanctioned "god" that may displace God.

Strategy 2: Reduce Theism-Consistent Outputs from Mental Tools

Since reflective plausibility of God gains strength from the number of mental tools offering confident nonreflective beliefs consonant with God's existence, atheism becomes easier to hold if these nonreflective beliefs can be reduced. But how might this be accomplished since these nonreflective beliefs spring forth from the kinds of minds we have? The answer is to change the environment in which mental tools operate.

Strategy 2A: Limit HADD Outputs By Reducing Urgency

A good specific strategy is to strike at the heart of the primary systems responsible for encouraging nonreflective theistic beliefs: HADD. Recall that HADD becomes especially prone to detect agency (and

thereby support theism) in urgent situations. Thus, reduce urgency. It is said that there are no atheists in foxholes, but it is also much harder to be an atheist when your day-to-day activities directly impact the survival of you and your family. If your livelihood is based on subsistence hunting or on agriculture and the decisions you make regularly directly impact how much food you and your family might have, atheism becomes more difficult. Similarly, poverty does not improve the likelihood of becoming an atheist. A wealthier existence typically has less urgency in the specific sense relevant to HADD.

Strategy 2B: Make Sure HADD Sees Only Human Agency

Of course, HADD and its friend ToM become most problematic for atheism when the agency with which they reason does not appear to be human. Thus, another strategy for fighting theism is to submerge oneself in a context in which the agency all around is obviously human. Little or no room is left to detect ambiguous agency that might be labeled godly. Living in a fully urban setting is a good step in the right direction. Life surrounded by wilderness or natural systems would be a mistake.

Strategy 3: Reduce Secondhand Accounts That Might Become Evidence for God

In chapter 1, I discussed how reflective plausibility of religious beliefs also gains support because existing nonreflective religious beliefs shape and filter memories for experience. This shaping and filtering also applies to the accounts of others' experiences in a religious community. These accounts thus provide supporting evidence for some religious beliefs. Avoiding religious people altogether so that you do not hear their stories would help avoid troublesome "evidence" that seems to support God.

Short of completely avoiding religious people, another strategy is available: become immersed in a pluralistic society in which others' experiences hold little importance to you. In contexts in which everyone is a farmer, everyone is a hunter or gatherer, or everyone's livelihood depends on the annual salmon runs, experiences have common relevance and are hard to ignore. Let's return to Scott Atran's account of the Maya hunter bitten by a deadly viper. For another Maya hunter, this story has tremendous relevance for forest behavior and reinforces existing beliefs about the existence and powers of the forest spirits. But I imagine that most American or European urbanites or suburbanites can easily dismiss the story as a bit puzzling but not worth much careful evaluation. Why not? My hunch is that part of the answer lies not with some inherent incredibility about the event but because the experience of some hunter in Central America has little inherent importance for European or American professionals. We live in a social environment in which there is a great plurality of daily demands and experiences, and consequently others' experiences are (intuitively) a less important database for evaluating beliefs.

Strategy 4: Surround Yourselves with Ample Opportunities for Exercising Reflective Thought

As it is nonreflective beliefs that may promote belief in God or gods, plentiful opportunities for overriding nonreflective beliefs may serve as defense against theism. Of course, reflective thought requires time and is helped by a community of others who likewise engage in intellectual exercises. Such an environment provides the luxury of disinterested reflection on issues such as whether gods exist without such musings interfering with successful hunting or harvesting. As I mentioned previously, reflective thought may present problems for atheists for which nonreflective theists need not concern themselves, but if the reflective environment is sufficiently pluralistic and sufficiently nontheistic in orientation, it may still heartily contribute to the successful embrace and spread of atheism.

In these reflective environments, events and phenomena that might encourage theism may be handled with cool consideration, and alternative frames of reasoning may be developed. For example, alleged "miracles" or acts of God may be relabeled as simple chance occurrences, for although "chance" does not qualify as a satisfactory explanation, with proper statistical and probabilistic training, "chance" can go a long way toward avoiding needless hypothesizing about why something happened in the reflective mode. Similarly, medical "miracles" or what might be seen as the healing power of a god could be re-explained in the terms of medical science. Those events that may be truly explained could be reflectively explained with no appeal to deities. Those that cannot truly be explained might be labeled in appropriate jargon suggesting that they need not be explained, as in cases of spontaneous remission or placebo

effects.

Why Atheism Is Where We See It

Compared with the near inevitability of theism, atheism appears to lack the natural, intuitive support to become a widespread type of worldview. Nevertheless, the past fifty years has seen atheism become fairly widespread in segments of Europe and North America. Though still a minority position—even in some former Soviet-controlled nations where theism was illegal and even in academic communities—atheism seems to have found some fertile soil in the so-called Western world. But why so?

One opinion, popular among atheists, is that theism can exist only with ignorance. Educated people who understand reason and science inevitably reject theism, hence the relative recent rise in atheism among scientifically and technologically advanced societies and its prominence in nations with strong education systems. Whereas this hypothesis strokes elitist egos, it fails to account for the high rate of theism in a well-educated nation such as the United States and for the weak correlation between atheism and education within Europe, Canada, and the United States.³ Neither does it explain why so many reputable scholars—including philosophers and scientists—are theists. Formal education does impact the success of atheism, but the relationship is not the simple “only dumb people believe in God” that seems so common among academics.

Another opinion, gleaned from Marx and Freud, is that religion amounts to a crutch for the poor, suffering, and disenfranchised of the world. Not surprisingly, then, we find that in communities where technology has reduced mortality, poverty,⁷ and suffering, religious belief has also declined. Such a simplistic explanation gains strength on the ability for religious commitment to comfort and to encourage psychological adjustment, which has been well documented by psychologists of religion. However, this account ignores the fact that religion also has the ability to terrorize and oppress. The promise of heaven may make death less threatening, but what about hell? Morality, poverty, and suffering may be related to religious commitment but with more nuance than the “religion as a crutch” hypothesis suggests.

Historically, a small number of individual thinkers in many different societies have rejected belief in gods. However, the markers of the societies in which atheism seems to be able to spread and develop a noticeable following seem to have emerged late in history. Before the industrial revolution, atheism almost did not exist. People might have rejected organized religions, but they did not cease to believe in God or gods of some sort, including ghosts and spirits. The industrial revolution opened the door, but few walked through until after World War II. The distinctive characteristics of societies in which atheism seems to have a foothold include urbanization, industrial or postindustrial economies, enough wealth to support systems of higher education and leisure time, and prominent development of science and technology.

Urban settings contribute to atheism in at least two ways. First, urbanization brings a diversity of people and perspectives into close contact. This diversity of concerns and beliefs may reduce religious thought by providing alternative frames for reflectively interpreting nonreflective beliefs consistent with theism. Similarly, differences in jobs, experiences, and values reduce the intuitive relevance of others' experiences. So, what if someone from across town experienced something that seems to support the existence of God? What is that to my life? Second, urbanization reduces the amount of the day-to-day world that has not been designed by humans or is not under the control of humans. As an urban dweller makes sense of the world around, HADD detects agency everywhere. But almost everything is easily and satisfactorily labeled as the consequence of human agency. No need for gods. Even cases of unusual fortune and misfortune may be attributed to anthropomorphic abstractions, such as “society,” “the education system,” “the market,” and “the government.”

The distance that urbanization provides from natural systems grows even greater in societies that have primarily industrial or postindustrial economies. City dwellers before the industrial revolution still had a tangible relationship with the seasonal cycles, weather patterns, plagues, blights, and other natural factors that impacted such basic needs as food. Now in the so-called postindustrial era, many living in

Canada, Europe, and the United States really have no sense of where food comes from. It seems to grow on the market shelves, if it isn't there, it is because of human mistakes, not because of a storm, drought, or pestilence. The ability to attribute all agency to human agency is enhanced under these economic conditions. Further, the urgency with which HADD searches for agency is reduced, Life and death do not rise and fall on the coming of rain clouds or a successful hunt. The postindustrial urban center regularizes and reduces apparent threats to welfare. Those that remain, such as criminal violence, clearly have human and not divine origins.

We've all heard the saying that there are no atheists in foxholes. A safer claim is that there are no atheists in the preindustrialized world. Subsistence hunter—gatherers, farmers, and others with traditional, organic lifestyles are almost uniformly theists of one sort or another and always have been. With any distribution beyond a few peculiar individuals, true atheism (the rejection of all superhuman agents, including gods, ghosts, ancestors, demons, and spirits) has occurred only in communities largely divorced from natural subsistence and hence only in industrialized or postindustrialized contexts. On examination, the preindustrialized world and foxholes have much in common to encourage theism: survival-related urgency to make sense of the world, a reliance on natural and not human processes for survival, and being surrounded by apparent agency that cannot be simply attributed to human endeavor or simply ignored.

Industrial and postindustrial urban populations enjoy time and resources that provide for the exchange of ideas and for reflection. As labor demands have gone beyond the general knowledge of hunting or farming or even low-skill industrial work, educational systems have developed. The diversity of knowledge required for the diversity of jobs in postindustrial society requires more specialized (that is, less natural) education than in previous societies. Thus, more economic resources have been dedicated to exchanging ideas and opportunities to exercise reflective thought. As I suggested previously, the ability to reflectively consider alternative interpretations of the nonreflective beliefs that seem to support theism is a frontline defense for the atheist. Consequently, formal education may be a critical factor in dissuading someone from theism. Note that this connection between education or reflective contemplation and atheism does not mean that atheists are smarter than theists. Similarly, having the time to contemplatively consider various ideas does not *necessarily* lead to atheism. Plenty of atheist scholars have actually reflectively found their way to theism. My point is that the naturalness of religion may be discouraged by the artificial (meaning human-made) pursuit of knowledge.

Finally, industrialization, urbanization, and the development of educational systems have encouraged advances in sciences and technologies. Science is a double-edged sword for religious thought. On one side, science has documented the wonderful complexity of our universe, our world, and ourselves, enhancing the powerful urge to see it all as designed by an intelligent being. On the other side, phenomena previously understood only in terms of the activity of gods now can be understood either in completely naturalistic terms or in some complex combination of natural and divine causes. Technology has provided humans with more and more power to impact natural forces. Humans can create marvelous things and inflict horrible destruction. At one point in history, a shiny silver object flying through the sky was a dead-ringer for the work of a god. Now it is the commonplace activity of humans. The obliteration of Sodom and Gomorrah by fire from heaven could only have been an act of God. The similar annihilation of Hiroshima and Nagasaki could only have been the act of humans.

But perhaps science's greatest assault on theism has not come from the truths people have gained through it or the technologies produced by it. Rather, our faith in the sciences has spawned *scientism*, a worldview dedicated to the notion that science ultimately can answer all questions and solve all problems. Though science cannot really explain why the universe is fine-tuned to support intelligent life or why we *should* behave morally, perhaps some day it will. This unbridled optimism in the power of science finds faithful followers among many educated citizens of urban Australia, Canada, Europe, and the United States, though professional scientists and philosophers of science tend to be less sanguine than intellectuals a step or two removed from the art. Scientism serves as a reflective safety net for

atheists. As I have argued, theists do not believe in God because of apparent design in the universe, but belief in design finds a mutually supportive match with the idea of God. However, issues such as apparent design may be problematic for atheists unless they have a device such as scientism to assure them that even if they do not personally have a satisfactory explanation for apparent design, surely science either has one or will come up with one.

To summarize, atheism has a chance to emerge and spread only among the more privileged members of the developed nations of the world—in Europe and North America particularly. As a testament to its naturalness, even in places where oppressive, totalitarian regimes have tried to crush theism, such as in China or the former Soviet Union, theism remains strong, though hidden, among common folk. Only privileged minorities enjoy atheism. If religion is the opiate of the masses, atheism is a luxury of the elite. This may be especially true of academics not because we are so much smarter (though we like to think so) or so scientifically minded (a higher proportion of physicists than sociologists are theists) but because we enjoy an environment especially designed to short-circuit intuitive judgments tied to natural day-to-day demands and experiences. This is why atheism may seem so natural to those in the academy when evidence suggests otherwise. To adapt a simile from anthropologist and developmental psychologist Larry Hirschfeld, atheist academics marveling about how strange it is for people to be religious is a bit like two-headed people discovering one-headed people and thinking how odd *they* are. Religious belief is the natural backdrop to the oddity that is atheism,

Notes for Chapter 1

1. Dan Sperher (1997) makes a similar distinction, using the terms “intuitive beliefs” and “reflective beliefs, and “reflective beliefs”.
2. I realize some philosophers may wince at the way I use “belief”—especially “nonreflective beliefs”—but remember that my business here is to show why people go about holding the beliefs they hold (whether or not they know they hold them) and not whether they *should* hold these beliefs. “Nonreflective beliefs” may more closely approach what philosophers sometimes call “knowledge.” I include among nonreflective beliefs both tacit knowledge that has been made explicit (such as that a wooden floor would support human weight) and those implicit expectations we have of things that apply to novel situations and things (such as that all objects require support or else fall to the earth). I have chosen not to use the term “knowledge” because it obscures some important relationships and differences between reflective and nonreflective beliefs.
3. Anthropologist John Toohy and psychologist Leda Cosmides (Cosmides, Toohy, & Barkow, 1992; Toohy & Cosmides, 1992) argue similarly that the mind might be thought of as akin to a Swiss Army knife, having many specialized tools. For an accessible overview of the mind’s specialized functions, I recommend Steven Pinker’s *How the Mind Works* (1997).
4. The names for the different tools are mine with the exception of the Theory of Mind (ToM) device. Evidence for the existence of these specialized tools comes primarily from experimental work in cognitive developmental psychology. Two volumes that provide thorough introductions to this area of research are *Mapping the Mind: Domain Specificity in cognition and Culture* (Hirschfeld & Gelman, 1994) and the more rigorous but less accessible *causal cognition: A Multidisciplinary Debate* (Sperber, Premack, & Premack, 1995).
5. For this fascinating line of research on babies’ ability to imitate facial expressions, see works by Meltzoff and Moore (1983, 1989, 1992, 1994).
6. Some disagreement exists over whether the same mental device is used for identifying an object and then for generating descriptions and other inferences about it. It may be that in many cases the two functions are subserved by the same structures in the brain.
7. Spelke (1991); Spelke, Phillips, and Woodward (1995); Spelke and Van de Walle (1993).
8. Keil (1989, 1992, 1994, 1995); Simons and Keil (1995).
9. For a recent review of research in the theory of mind area, see Wellman, Cross, and Watson (2001).
10. Cosmides (1989) and Cosmides and Toohy (1989) have championed the existence of such a mental tool using evolutionary, cross-cultural, and experimental observations.
11. Henrich and Gil-White (2001).
12. See Katz (2000) for evolutionary perspectives and Turiel (1998) for a child developmental perspective.
13. Bloom (1998); Gelman, Durgin, and Kaufman (1995); Spelke et al. (1995).
14. For example, consider Clifford and Walster (1973) and Dion (1972). Myers (1990) accessibly describes the physical attractiveness stereotype and some of the supporting evidence that, sometimes quite unaware, people view those **who** are physically attractive as possessing numerous desirable traits. As Myers sums up, “Added together, the findings point to a *physical—attractiveness stereotype: What is beautiful is good*” (p. 421; emphasis in the original).
15. Work by M. Banaji and others (Banaji & Bhaskar, 2000; Banaji & Greenwald, 1994) shows, using carefully designed computer tasks, that people who disavow any racist attitudes may show racist biases in their automatic abilities to connect ideas. For instance, when asked to sort words in a time-pressured task, American adults (of all races) tend to more rapidly sort negative-valence words with African American faces than with white faces. For demonstrations and additional details of these effects, see
16. Sometimes nonreflective or intuitive cognition also fills in the blanks that theology leaves, For example, in Christianity exactly what sorts of things might be intuitively more sensible to pray for seems to be guided by completely nontheological activities of mental tools (Barrett, 2001).
17. Barrett (1998); Barrett and Keil (1996); Barrett and Van Orman (1996). See Barrett (1999) for a review and discussion of implications for the study of religious concepts. Tremplin (2002) has developed these ideas even further to account for recurrent patterns of religious thought and development.
18. Anthropologist and psychologist Pascal Boyer (2001) makes a similar observation in chapter 9 of his book *Religion Explained: The Evolutionary Origins of Religion Development*.
19. Though some cognitive scientists assume that because our brains and their functions have been “designed” by natural selection we can trust them to tell us the truth, such an assumption is epistemologically dubious. Just because we can successfully survive and reproduce in no way ensures that our minds as a whole tell us the truth about anything—especially when it comes to sophisticated thinking. Being able to understand quantum physics is something our minds can do, but it is far from obvious that the prerequisite capacities were *necessary* for survival in our prehistorical past. Indeed, some (perhaps most) of us do not have the mental capacities for understanding the truth claims in quantum physics or simpler scientific truths, but that doesn’t impede our ability to survive and reproduce. Similarly, plenty of organisms survive and reproduce without their simpler nervous systems producing much that we should feel comfortable calling “truth.” Further, psychologists have proven repeatedly that our minds are *not* naturally tuned to represent truth. Even in basic perception, we get things wrong all the time by selectively attending to and distorting information as it comes in. What a completely naturalistic view of the human mind may safely embrace is merely that our minds were good for survival *in the past*.
20. I talk throughout this book as if the mind stores and evaluates propositions and times as if the mind is a symbolic processor. I find this a convenient way to make of the functions of the mind but am not advocating that propositions or symbols ally find residence in the brain itself. My story could be retold in a comparable man-by referring to the functional outcomes of connectionist systems.

Notes Chapter 2

1. I discuss “God” more specifically in chapters 6 and 7.
2. I introduced this term in Barrett (2000), but the theoretical insights behind the notion should be credited to Boyer.
3. For Boyer’s treatment of these widespread cultural concepts, see Boyer (1993, 1994, 1995, 1996, 1998, 2000, 2001, especially chapters 1 and 2), and Boyer and Walker (2000).
4. For instance, observe the distance from which Roman Catholics address images of saints,
5. For experimental evidence supporting these claims, see Barrett and Nyhof (2001), Boyer and Ramble (2001) provide corroborating cross-cultural data,

6. Sperber and Wilson (1995) comparably argue that in communicative settings, human minds seek out the most information for attentional investment. This ratio of inferential potential per conceptual investment may be termed “relevance.”
7. The Chivo Man concept is not purely local but may be found in parts of Mexico as well. Thus, the local “invention” of a Chivo Man inhabiting the haunted dairy may more accurately amount to the importation of a concept acquired elsewhere. For the purposes of illustration, however, I will speak of just the one Chivo Man.

Notes for Chapter 3

1. Guthrie (1993).
2. Guthrie does not use the term ADD or HADD. These are acronyms that I introduce to capture and develop Guthrie’s observations (Barrett, 2000).
3. For a review of this work in adults, see Scholl and Tremoulet (2000); see also Bassili (1976); Berry, Misovich, Keen, and Baron (1992); White (1995); and White and Milne (1999). For examples of developmental studies, see Gelman, Durgin, and Kaufman (1995); Gergely and Csibra (2003); Gergely, Nadasdy, Csibra, and Biro (1995); Leslie (1995); Premack (1990); Premack and Premack (1995); and Rochat, Morgan, and Carpenter (1997).
4. Classic studies demonstrating the seductiveness of simple movements in geometric shapes to trigger overzealous agent attributions (see Heider & Simmel, 1944; Michotte, 1963). Both found that adults readily attribute beliefs, desires, emotions, and even genders and personality traits to dots under certain conditions.
5. Barrett and Johnson (2003).
6. For more on mental systems concerned with artifacts, see Bloom (1998).
7. In addition to Bloom (1998), see Keil (1989, 1992, 1995) and Kelemen (1999a, 1999b, 1999c, 1999d).
8. Kelemen (in press).
9. For examples, see Lawson (1985).
10. Paloutzian (1996).
11. Baron-Cohen (2002); Happe (1995).
12. Paloutzian (1996).
13. Happe, Winner, and Brownell (1998).

Notes Chapter 6

1. Though these religious traditions may have advantages over others because their central God concepts enjoy additional advantages over those of other religions, this claim does not imply that the adoption of these traditions is inevitable. The case of Hindu India is instructive in this regard. Periods of conquest, colonization, and missionization by Muslims and Christians has not left India predominantly Muslim or Christian. These religious traditions have not largely become acquired. However, Hindus today do commonly embrace superattributes of their major gods, such as Shiva, Vishnu, and Brahma—attributes comparable to the superattributes of the Christian God and the Muslim Allah. Though the Abrahamic religious traditions have not been terribly contagious in India, the supergod concept I argue is quite natural and is common to Abrahamic traditions; indeed, it has become very common in India. I also do not mean to suggest that the relative success of religions can be wholly explained by cognitive factors. Social, political, and other historical factors undoubtedly contribute as well. For example, in China, a supergod concept has remained fairly scarce despite missionary efforts.
2. Rehekah Richert and I have presented this thesis and more detailed summaries of elsewhere (Barrett & Richert, 2003).
3. For a review see Wellman, Cross and Watson (2001).
4. Barrett, Richert, and Driesenga (2001).
5. Knight, Sousa, Barrett, and Atran (in press).
6. Barrett, Newman, and Richert (2003). In a similar line of research examining children’s understanding of the role of previous knowledge in forming beliefs, the same sort of pattern emerged. Three- through seven-year-old American Christian children were interviewed on three tasks, all of which were concerned with the general question: Do children consider the role of visual access and previous knowledge in predicting what their mothers, a dog, and God would know about a display? All three tasks used the same basic form. First, the experimenter presented children with a display that could not be fully understood initially and asked whether the children’s mothers, a dog, or God would be able to understand the display. Second, the experimenter provided the relevant information for understanding the display to the children but not to the other agents. Finally, the experimenter asked the children again if their mothers, a dog, or God would be able to understand the display under the same initial conditions.

In one task, the experimenter presented the children with a picture that was covered to the extent that the actual content of the picture was impossible to discern through the visible part. Each child was asked if he or she, his or her mother, a dog, or God would know what the entire drawing depicted. The entire picture was revealed, then partially occluded as before, and then the questions were repeated. In a secret code task, the experimenter showed children three unfamiliar symbols and told them that each stood for something. The experimenter asked whether the child and/or each of the three agents would know what one of the symbols meant. The questions were asked again after each symbol was explained. In a secret game task, the experimenter began playing a novel game. After children said that they did not know what the experimenter was doing, the experimenter asked whether each of the three agents would know what the experimenter was doing. Then the experimenter explained the activity to be a secret game invented by the experimenter and repeated the questions.

7. Another way to interpret what might be going on with children in these tasks is consistent with Piaget’s claim that young children are egocentric with regard to determining what others know. Instead of anthropomorphizing, perhaps children simply use a heuristic that amounts to “if I know it, then others know it.” Through development, children learn that this is not always the case, though the heuristic remains fruitful in many situations. I do not disagree that such egocentric reasoning could be at play in these studies I have presented. Note, however, that such an account still predicts (accurately) that children will have more difficulty understanding their parents’ beliefs accurately compared with understanding God’s beliefs. Further, in the tasks employing an understanding of previous knowledge for interpreting visual displays (such as the partially covered picture), children showed a strong tendency to revise their

estimates of their mothers' beliefs on the basis of their own knowledge but showed a weaker inclination when reasoning about a dog and no such strategy for estimating God's beliefs regarding the displays. This casts some doubt on the egocentrism hypothesis as applied to nonhuman agents. Perhaps even preschool-aged children possess sensitivity to the fact that other people may be better targets of an analogy or simulation than nonhumans when using their own minds as the analogy's source,

8. Barrett et al. (2001), experiment 3.
9. Richert and Barrett (in press). Another group of American children (ages three to seven) predicted the seeing, hearing, and smelling not only of humans but also of animals with special senses and God. For the visual task, children saw a white piece of paper with a small yellow happy face in the center that was approximately one centimeter across and could be seen only when close to the paper. The hearing task involved a standard tape recorder/player and a tape of various children's songs playing 'very softly. The smelling task used a 35-mm film container with a small slit cut in the lid and peanut butter inside. Initially, in each condition, children reported they could not perceive the stimulus. Then children were asked to move closely enough to each stimulus to either see, hear, or smell it and to return to their original position. All children first reported their own perception and then predicted the perspectives of a special agent (an eagle with special eyes, a fox with special ears, or a dog with a special nose), a monkey, a human puppet, and God.
10. Gimenez, Guerrero, and Harris (in press). The questions were the following:
 1. "Right now there aren't any dinosaurs in the world, but a long time ago there were lots of dinosaurs in the world, like this (show picture). Now what about _____? When there were dinosaurs in the world, did _____ exist?"
 2. "Right now you're a little boy/girl but a long time ago you were a little baby right? How about _____? Was s/he a little _____ baby a long time ago?"
 3. "What's going to happen to _____ next year and the year after that? Will he get older and older or will he stay Just the _____ same?"
 4. "What will happen to _____ a long, long time from now? Will die or will s/he go on living for ever and ever?"
11. Piaget (1929).
12. Petrovich (1997).
13. Petrovich (1999).
14. Evans (2001).
15. Kelemen (1999a, 1999h, 1999c, 1999d).
16. Kelemen (in press).
17. Baron-Cohen (1995).
18. See, for instance, Knight et al. (in press).
19. Perhaps by this point it may be clear that what counts as "minimally counterintuitive" includes a fair number of superproperties that seem striking and anything but ordinary. But all that being bizarre and being counterintuitive are two different things.

Notes Chapter 8

1. For a fairly contemporary version of such an argument that avoids many traditional pitfalls, see Swinburne (1992).
2. Much of the cosmological work that details the fine-tuned nature of the universe has been captured under the "anthropic principle" (Leslie, 1982, 1983; see also Carter, 2002).
3. International Social Survey Program (1991).