An Applied Epistemology, General and Religious

ASIPT Curricular Essay Series

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Chapter 1

INTRODUCTION

Both to ourselves and in conversation with other people, we find that there are things we assert and hold to be true. In some cases our assertions aren't very important to us nor to anyone else, so we don't think much about how or why they are true. This applies, for instance, to casual opinions, like when you state that the new acquaintance you just met briefly seemed like a decent person. But in other cases our assertions are important; sometimes, they are so important that everything depends on their being true. This applies, for instance, to the core doctrines of our religion, like monotheism and prophethood. When you state that there is one God, you don't treat it as some probable fact that just happened to seem true the last time you checked. Because the question is important and the stakes are high, your mind demands more than just opinion, guesswork, or first impressions. It demands *knowledge*: the what, the why, the how. The same goes when you try to rationally defend monotheism to someone else whose mind is neutral or even skeptical about the question; he won't be satisfied unless you can explain what monotheism is, why it is true, and how one arrives at that knowledge. This is because the statement 'God is one' is a proposition, an assertion that may or may not be backed by knowledge. More than likely, if you can't provide the what, the why, and the how for your proposition, your interlocutor has a better chance of convincing you to give it up than you have of convincing him to accept it.

It's common to hear that society today exists in a "post-truth" world where there are no absolutes and where people pick their own "truths." (We'll address these prevalent ideas in the next chapter, on reality and sophistry.) This only makes the pursuit of truth and knowledge all the more crucial, because it means that so many of the propositions that our religion affirms as absolutely true are called into question or relativized. In order to maintain rational belief in the propositions of your religion against these challenges, you need *epistemology*.

Epistemology is the study of knowledge. It has both a theoretical and a practical component. The theoretical component investigates the nature of knowledge, the different kinds of knowledge, and how humans acquire knowledge. The practical component applies this to real questions and propositions in order to assess them. Once you can identify the general category or science to which a proposition belongs, you're equipped to figure out a number of things, including the claim's logical foundations and the level of confidence it deserves.

It's an understatement to say that the Islamic tradition is loaded with epistemology. First of all, it's crucial to recognize that Islamic scholarship does not take anything, not even a single belief, merely "on faith" in the common sense of the phrase. *Īmān* (faith) in the Islamic conception is *never* a kind of faith that stands without or against knowledge and reason. *Īmān* is cognitive as well as spiritual; it is tied together with knowledge (*'ilm*). The Quran enjoins knowledge, for instance, on the most central article of faith: *Know then* (*fa-'lam*) *that there is no god but Allah* (47:19). The religious centrality of knowledge is a constant theme in the Quran, which repeatedly praises knowledge, censures ignorance, and tells humanity to understand (*tafaqquh*), reflect (*tafakkur*), and use the intellect (*ta'aqqul*).

The basic structure of the religion is informed by epistemology. Epistemology distinguishes between the various levels of knowledge, the highest of which is certainty (*yaqīn*) and the lowest of which is barely knowledge at all. The religious sciences both of creed (*'aqīda*) and jurisprudence (*fiqh*) reflect this epistemological distinction: they include some doctrines that are established with certainty, which are the backbone of Islamic belief and practice and common to all Muslims, and some doctrines that allow various interpretations and differences among Muslim scholars and groups. A nuanced understanding of epistemology has historically allowed Islamic civilization and scholarship to tolerate human differences while maintaining universal agreement on the fundamentals. There are some doctrines, like monotheism, whose rejection entails disbelief; others whose denial entails deviancy or innovation; and others whose denial is harmless. Not all knowledge is the same, and thus not all religious doctrines are the same. Thus it only makes sense that educated Muslims should have enough understanding of epistemology to determine the level and significance of different points of doctrine.

In today's intellectual setting, there are endless questions that confuse educated Muslims about their religion. In most cases, these questions beg for a basic understanding of epistemology. If we were to try to group together, for illustration, a few common areas in which questions arise, we might come up with a list like the following:

- Moral questions about social justice, social roles, religious penalties, etc.
- Historical questions about the transmission of religious sources, the preservation of the Quran and Sunna, the development of jurisprudential and creedal schools, etc.
- Scientific questions about premodern religious beliefs and narrations, miracles, metaphysics, and the realm of the unseen.
- Philosophical questions about the possibility of objective religious knowledge and ideas like knowledge-construction and contextuality.
- Primary theological questions about Allah, His prophets, His books, predestination, etc.

- Secondary theological questions about the status of nonbelievers, evil and suffering, other world religions, etc.
- Political questions about the role of government in religion, life under non-Muslim governments, the lack of a religious caliphate, the permissibility of rebellion, etc.

The list is meant to be representative, not exhaustive. Each area in the list above has something that unites the questions that fall into it, namely a specific subject matter. Each subject matter has one or more sciences that use subject-appropriate methods of reasoning to answer such questions. Identifying the appropriate methods to answer a question means doing epistemology.

What epistemology provides is a universal methodology that you can use to categorize any particular question in order to know where and how to find the answers. The Islamic scholarly tradition articulated this universal methodology as such by building on centuries of experience. Because Islam cherishes knowledge, it was imperative from the early years of Islamic civilization to have rigorous systems in place for understanding and transmitting religious traditions and practices. Over time, the universal principles of epistemology were expressed especially in the sciences of logic (*manṭiq*), rational theology (*kalām*), and juridical methodology (*uṣūl al-fiqh*). Although epistemology is essentially a universal inquiry, the especial concern with religious application was never lost. For example, one of the most thoroughly developed areas in epistemology as developed by the Islamic tradition is the epistemology of transmitted knowledge and textual interpretation. This is no wonder when one considers that the ultimate source of knowledge for religious belief and practice is revelation as expressed in the Arabic language and transmitted from the time of the Prophet. The emphasis of this essay series reflects this area of concern: all of the areas of questions in the list above relate either directly or indirectly to either religious belief or religious practice. In fact, this is precisely the reason why the questions on the list are of concern to Muslims today. Ultimately, we want to know how to understand our religion in light of today's intellectual world.

There are consequences to lacking a proper understanding of epistemology. One symptom of this is that a person be uncritical and dogmatic in matters of religion, having strong unfounded opinions about "what Islam says" and stubbornly refusing to alter them when one should. Such an attitude might indicate that one isn't yet equipped to approach religious doctrine as *knowledge*, which must be acquired through careful study and is not just an assertive act. To obstinately insist on one's own mental comfort zone is inadequate, especially in an educated society. The purpose of education, after all, is knowledge. If one aspires to knowledge in secular fields but sticks to uncritical dogma in religion, this misuse of education threatens not only one's own religion but also the religion of one's children, who may find have different comfort zones. Once you have trained yourself to think epistemologically, you understand that all your important assertions are in a sense propositions: they can't stand merely on culture, upbringing, or comfort zones.

A closely related symptom of inadequate understanding of epistemology is to mentally partition reason and religion as distinct categories of knowledge. Educated Muslims do this without even noticing, like when it comes to the theoretical aspects of the practical knowledge they've acquired through their careers. For example, careers in engineering call for a certain way of viewing the physical universe, and careers in finance call for a certain way of viewing society and human behavior. But how often do people in these careers view the physical universe or human society in the same way at work and when reading and contemplating the Quran? There's a temptation to see one's career-related knowledge as being "for utility," which grants one a license to think freely, critically, and well. But this doesn't always extend to one's religious worldview. Such an artificial separation suppresses the growth of knowledge, especially religious knowledge, because in place of rational thinking, it encourages the dogmatic kind of thinking we just discussed. Moreover, it reveals a deep misunderstanding. In truth, religion and reason are not distinct categories of knowledge; they are *sources* of knowledge. Knowledge is knowledge; although we acquire it through various channels, it has only one definition (which we will discuss in this essay).

Another symptom of lacking epistemology is to have difficulty understanding what it means to seek knowledge in general and for itself. This happens when one isn't able to relate distinct fields of knowledge. Some explanation is in order. When you consider the various fields of knowledge you encounter—for instance, science, history, math, psychology, medicine, ethics, anthropology—you'll recognize that each has its own subject matter, purpose, and methodology. In this sense, each is a distinct field that is complete in itself. But reflect: does knowledge exist only in isolated chunks? Would medicine be possible without science, or ethics without psychology?

In truth, not only do distinct fields depend on each other, but every field is connected with all others in the sense that each, from some perspective, studies reality, whether its subject matter be the physical makeup of the universe, the past, or the human being. As a result, if you were (for hypothesis!) to study *every* field of knowledge in order to understand reality, you would have the most complete theoretical knowledge of reality possible. You would have achieved knowledge in general and for itself. Now, such an achievement might not seem significant in a secular society where knowledge is compartmentalized into university departments, its purpose obscured by utility and careers. But the significance is obvious when you have a religious worldview in which all reality is signs (*āyāt*) pointing to God and the purpose of all pursuit is to know God and worship Him on the basis of that knowledge. The key lies in seeing the unity in all fields of knowledge. Because epistemology is universal and studies knowledge in general, it provides this bird's eye view.

One advantage to this kind of view of knowledge is the ability to make sense of religious disagreement. When you can differentiate the pillars of the religion from the other aspects, you can appreciate the difference in epistemic methods that leads to different conclusions on less

foundational questions. This is especially so in matters of religious practice: different schools of jurisprudence use different methods to arrive at their conclusions about sacred law. Yet all valid schools recognize the same ultimate sources of knowledge and agree about what those sources say on fundamental questions. Epistemological training allows one to see that much of the disagreement that happens regards the dynamic aspects of jurisprudence which consider factors like empirical knowledge and cultural context. For example, disagreements on questions like moonsighting and clothing are never creedal issues with consequences like heresy and disbelief. Nevertheless, dogmatic thinking and inadequate knowledge can drive Muslims to create overly belligerent rifts around these kinds of questions when they don't understand the place these questions have in the larger frame of the religion.

Chapter 2

REALITY & SOPHISTRY

Traditionally, discussions about knowledge begin with a preface that addresses a potentially problematic mindset: a mindset of sophistry or unreasonable skepticism. In this context, *sophistry* and *skepticism* refer to any form of (a) denial that reality exists independently of our minds or (b) denial that knowledge of reality is possible. We all find such a denial counterintuitive when stated as such. Yet there are forms of sophistry smuggled into contemporary ways of thinking, and it's important to see them clearly for what they are. For example, a completely scientistic worldview usually takes for granted the sophistic unproven assumption that nothing exists beyond what can be observed. It can be surprisingly easy to miss the fact that this is sophistry—a denial of the possibility of knowledge about a specific aspect of reality (the non-physical aspect) based only on the prejudice of the age.

Before we discuss ideas like scientism, let's return to our two basic principles: (1) reality exists independently of our minds, and (2) knowledge of reality is possible. With illustration these principles are undeniable. If you found yourself cornered by a lion in its den, there are a number of things about reality that you would know with certainty. You would know that you are afraid, your fear manifest within your body and mind in the full sense of "fight or flight." Your heart racing, blood pumping through your veins, adrenaline cycling through your system, there would be no doubt that you are experiencing a screaming concern for your life and the recognition of a clear and present danger.

Likewise, on a hot summer day, while walking barefoot on a beach, your senses would register the hot sand underneath your feet, the coarse granules moving as your weight shifts from one foot to the next, the sun beating down on your face, its light causing your eyes to squint, the sounds of ocean waves crashing, the scent of saltwater filling your nostrils, and the taste of a cold glass of fruit juice which you sip to quench your thirst. Whether stimuli of the five senses, or the internal experiences of hunger, thirst, fear, or joy, our immediate sensory experiences and the way we understand them reveal that we are certain of at least some mind-independent reality and some knowledge of that reality.

Yet history records the occasional radical skeptic. One skeptic claims that all that we think to be real is just an illusion. He denies that we can ever know that a cat is a meowing animal, that a lemon is sour citrus fruit, or that our hands are bodily limbs with which we grasp. He claims that what we believe to be true of cats, lemons, and hands are in fact illusions, like a mirage appears to be water to the desert traveler. Another claims that what we suppose to be objectively real is in fact malleable and

its essential nature is a matter of belief or perspective. He wouldn't deny that if you believe an apple to be a rowboat, then it's as you believe, and if you believe water to be fire than you can burn down your house with a bucket of water. Other skeptics take this sophistry all the way, refusing to acknowledge that anything exists, that anything can be known, or even that they are skeptics.

The Islamic philosophers and theologians discuss skeptical claims in a general way in order to teach students how to recognize and address them. The following are general categories:

1. To deny existence, i.e., that the things in the world truly exist. Examples of such a denial would be to claim that we are all mistaken when we assume that there is an earth or sky or that there are humans, animals, clouds, rocks, mountains, etc. Any claim like this would be guilty of what we could call a *matrix fallacy*: taking our sense of reality to be just misguided illusions, in the spirit of a science fiction matrix world.

2. To deny essence, i.e., that the things in the world are what they are independently of people's beliefs about them. Examples of such a denial would be to claim not only that there is nothing that makes you a human being but also that there is nothing that makes you yourself, that makes Zayd Zayd, or that makes this very essay this essay besides the fact that you believe yourself to be yourself and so on. If you were to believe yourself to be the sun, you would be the sun. Any claim like this would be guilty of what we could call a *subjectivist fallacy*: taking reality to be ultimately "subjective," or dependent on the viewer's mind and perspective.

3. To deny knowledge, e.g., knowledge of whether you exist, whether you are a human being, whether you are reading an essay, whether your head hurts, whether water quenches thirst, and even whether you can know anything. Any claim like this would be guilty of what we could call an *agnostic fallacy*: adopting a position of extreme skepticism and doubt and refusing to acknowledge that one has knowledge when one does.

These three sophistical fallacies share one central feature: categorical denial of reality or knowledge in some form or another. It's important to remember that anyone can deny anything. Denial is a human act, an act of will. As a human act, it can be the right thing to do (i.e., when there's good reason) and it can be the wrong thing to do (i.e., when there isn't). The mere act of denying reality doesn't put the burden of proof on those who affirm reality. (As we'll discuss in Chapter 4, the burden of proof only applies to specific kinds of propositions, those that aren't *immediate* [*ḍarūrī*]).

That being said, a rational person (especially a Muslim) can still be taken aback when confronted with a blatant denial of reality in the form of one of the three fallacies above, like when a Muslim college student takes a course in college with an atheistic philosophy professor who's a skeptic and who makes it sound like believing in reality is some kind of unsophisticated dogma. The professor may attempt to make the case for skepticism look like a well-reasoned philosophical argument. He may (a) challenge the possibility of knowledge by the five senses, pointing out that our senses are

sometimes mistaken, as in the case of seeing a mirage on the street on a hot day or thinking a rod is bent when it is only refracting in the water, and concluding that our senses aren't reliable. Or he may (b) challenge the possibility of reasoning one's way to knowledge by rational inference, pointing out that intelligent people—theorists, philosophers, scientists—disagree on fundamental questions, and concluding that the human capacity to reason is not reliable. Both lines of argument are fallacious because the conclusion does not follow from the premises. The fact that we *sometimes* make mistakes in our perception or reasoning does not entail that we *always* make mistakes in our perception and reasoning. The argument is just about as illogical as categorically refusing to ever purchase any product from another human being because, having heard multiple stories of used car salesmen cheating their customers, you have concluded that the entire human institution of buying and selling is unreliable. The rational solution is to take measures to ensure you're buying from a trustworthy seller. In the same way, the rational thing is to take measures to ensure your senses are operating well and your environmental conditions are good before being certain about your perception, and to take measure to ensure your reasoning is good (by applying the rules of logic) before being certain about your rational inferences.

In the end, there isn't a strong philosophical case to be made for radical skepticism, or a categorical denial of reality or knowledge. Yet, for various reasons, you'll occasionally encounter people with skeptical tendencies, especially in secular academic environments. There are three possible approaches you can take to dealing with such people and their denial of reality or knowledge. We'll discuss them in turn.

1. *Noting the incoherence of the denial.* Above, we looked at three kinds of sophistical fallacies: the matrix fallacy, the subjectivist fallacy, and the agnostic fallacy. When followed to their implications, the matrix fallacy and the subjectivist fallacy are self-defeating. This is because anyone who categorically denies or doubts either the existence or essence of real things can't coherently or consistently affirm his own denial or doubt. If we were to suppose along with him that nothing exists, then his act of denial wouldn't either. If we were to suppose along with him that nothing is what it is independently of people's belief, then his denial that things are what they are independently of people's belief is itself just a matter of perspective. In both cases, the skeptic can't coherently insist that his view is, *in objective reality*, the correct one. If he were to insist on that, then he would be undermining his own denial. The agnostic fallacy is self-defeating in the same way if the skeptic claims that he *knows* that nothing can be known. He would be undermining his own denial that knowledge is possible. And if he doesn't deny that knowledge is possible, that is all the better.

2. *Noting that the denial doesn't extend to practice.* Return to the example of the lion's den. A skeptic finds himself at a lion's den and hears a growl from inside—Does he disregard the growl, since he denies the existence of any real lion and believes the growl to be an illusion? Does he focus his

mental powers and try to make the lion into a harmless turtle by believing it to be so? Does he dismiss the situation, believing that he has no knowledge whether there is or isn't actually a lion? Or does he panic and sprint off? Consider this: if you were to meet someone who denied reality and you stepped on his toes, would it be consistent for him to get angry? The fact is that in ordinary life almost everything we do reveals some knowledge. When your skeptical friend gets angry at you for stepping on his toes, he's implicitly acknowledged the experience of pain, which is a form of sensory knowledge. He's also implicitly acknowledged that he can distinguish pain from pleasure, which is an abstract cognitive distinction, a form of self-evident knowledge. (We will discuss these and other kinds of knowledge in Chapters 3 and 4.) The skeptic's denial of reality simply does not extend to his lived practice, and it's not hard to see why. Let's imagine what a truly lived and practiced skepticism would look like. If, for the sake of argument, we were to agree with the skeptic and categorically deny mind-independent reality and knowledge, we'd find that there isn't ever any reason to take any action at all. It would be perfectly rational to lie in place completely still until one's body begins to decay. After all, any reason to act presupposes that there's a real mind-independent outcome, it presupposes that the person acting knows there's an expected outcome, and it presupposes not only an outcome but even the very action itself!

3. *Noting that there are always motives for the denial*. Behind any set of philosophical reasons a skeptic may try to give for his radical skepticism, more often than not, there are compelling psychological motives that have driven him to assert the denial of reality or knowledge. This might be the most important thing to consider because motives are not always good reasons. Detrimental kinds of motives can drive one away from the truth. One such especially detrimental yet powerful motive is the desire to conform to intellectual trends and evade mockery. Giving in to peer pressure is a universal vice, but it's especially harmful among intellectuals discussing fundamentals like truth, reality, and knowledge. Yet you'll find that in the secular atmosphere there are usually strong undercurrents of skepticism, subjectivism, and agnostic denials of knowledge, and they tend to break above the surface when the discussion turns to religion. The idea that one can know whether God exists, for example, gets discredited and ridiculed by being lumped together with naïve, antiquated, and superstitious beliefs. Too often this is done without warrant or reasoning, and too often it gets a pass because it's a popular attitude towards religion among academics and professors. Intellectual peer pressure, as we might call it, is reinforced by other motives for sophistry, including laziness. Someone who doesn't want to bother about setting his own life straight will be inclined to discredit religious claims about reality, accountability, or an afterlife. And beyond these general motives, there are endless kinds of personal motives that might draw someone to make skeptical claims. There may be negative associations in a person's consciousness or memory attached to a particular topic that make a person not want to believe certain things about it. Such associations can be strongly

influenced by the media, messages from marketing and propaganda, imagery to which one has been exposed, impactful experiences in specific interpersonal relationships, longstanding personal prejudices, etc.

Chapter 3

KNOWLEDGE

◣ What is knowledge?
◣ A classification of knowledge
◣ The self and the channels and objects of its knowledge
◣ Intellectual assessment and willful judgment

This chapter will lay the foundations for the remainder of the essay by introducing the foundational terms and concepts of epistemology, beginning with the central idea of knowledge.

◣ What is Knowledge?

In everyday situations, there's no need to define knowledge. We all know what it means to *know* our names, to *know* that the object on the doorstep is a cat, or to *know* that one plus one equals two. In the same way, we know what it means *not* to know, that is, to be ignorant, whether of the names of the angels in the vicinity, of the number of stars in the universe, or of the location of every molecule on earth. In spite of the fact that we all know what knowledge means for general purposes, the concept of knowledge is so foundational that the tradition of the Islamic scholarship is rigorous in discussing its definition, beginning with the question whether the concept of knowledge can even be precisely defined in the first place.

The upshot of the discussion is that knowledge in the broadest technical sense can be described as a kind of attribute in the self—namely, a kind of perception or apprehension (*idrāk*).[1] This is a comprehensive technical description that's meant to include all types of perceptions, from the sensory perception of an external object like a cat to the mental perception of an imagined object like a unicorn to the intellectual perception of a completely abstract concept like 'justice' or the intellectual perception of the fact that blue is a color.

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[1] A popular traditional expression of this definition is that knowledge is "an attribute by which something mentionable is manifested to the person in whom that attribute subsists" (*ṣifatun yatajallā bi-hā al-madhkūru li-man qāmat hiya bi-hi*). This is a broad definition because it includes the manifestation of both existent and nonexistent things (e.g., our mental perception of the meaning of 'unicorn'), the manifestation of both sensory and non-sensory objects, the manifestation of both concepts and propositions, and the manifestation of both absolutely clear and partially clear things (i.e., certain knowledge and probable knowledge).

But it's important to remember that one and the same term can be defined in different ways depending on the purpose of the definition. Thus, although this technical definition of the term *knowledge* is applicable when you intend to speak about knowledge in the most inclusive sense, it doesn't always suit the purpose. Often, we use the term *knowledge* with the more specific meaning of intellectual apprehension of what is or is not the case (or knowledge *that* such and such rather than knowledge *of* such and such).[2] From the list above, this would include knowledge of the fact that blue is a color, but it would not include any of the other examples. Thus, we have two usages of the term *knowledge*, one general and one specific. The use of either is correct depending on what exactly you want to refer to by your usage of the term.

- *Knowledge (in a general sense) is any kind of perception in the self.*
- *Knowledge (in its main specific sense) is an intellectual apprehension of what is or is not the case.*

We begin by discussing knowledge in both senses and then narrow our focus to the specific sense in Chapter 4 and onward.

◣ A Classification of Knowledge

Let's demonstrate the relation between the general and the specific with a classification of knowledge. Knowledge as any kind of perception or apprehension (the general sense), can be divided into two categories: assentive knowledge (the specific sense) and non-assentive knowledge.
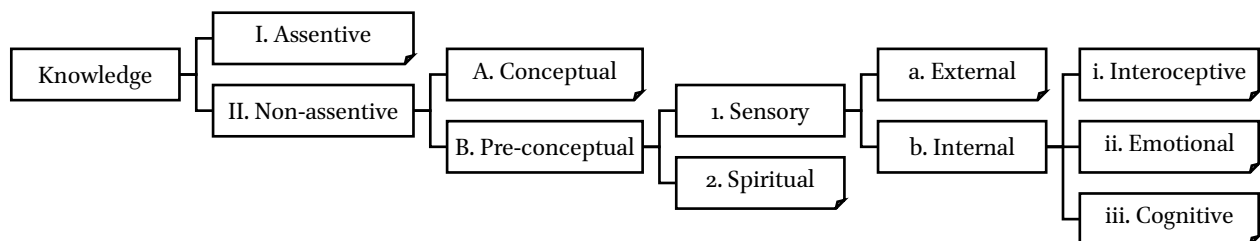
I. Assentive Knowledge

Assentive knowledge, or *assent* (*taṣdīq*), is to intellectually apprehend that something is or is not the case. This is the kind of knowledge that would be expressed in a complete statement, or *proposition* (*qaḍiyya*), like 'The United States is a country of English-speaking people', as opposed to knowledge of

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[2] Although defining knowledge is tricky, a common definition that can be given to kickstart the philosophical conversation on how to precisely define knowledge is that knowledge is 'justified true belief'. This corresponds to the traditional definition of *certain knowledge* (*yaqīn*) as "belief that is held with conviction, corresponds to reality, and is justified with evidence" (*al-iʿtiqād al-jāzim al-muṭābiq li-l-wāqiʿ al-thābit ʿan dalīl*).

the kind that would be expressed in an isolated word or phrase, like 'country' and 'country of English-speaking people'.

Expressed in language, a proposition is a declarative sentence, a complete unit of language that makes a statement. In this essay, however, we're mainly concerned with propositions not as linguistic sentences but rather with respect to the conceptual meanings these sentences express. With that in mind, we may say that the simplest kind of proposition has three main conceptual parts: subject, predicate, and judgmental link.[3] The *judgmental link* (*nisba ḥukmiyya*) is the proposition's affirmation or negation of the predicate with respect to the subject. This is illustrated in the example below.

Example 1: The parts of a categorical proposition	
Example proposition	The United States is not an Arabic-speaking country.
Subject (*mawḍūʿ*)	'the United States'
Predicate (*maḥmūl*)	'an Arabic-speaking country'
Judgmental link (*nisba ḥukmiyya*)	the negation that the United States is an Arabic-speaking country

What we term *assent* is the intellect's perception of the truth of a proposition by determining that this judgmental link is actually the case. In other words, we could say that there are two "judgments." First, there is the judgmental link that the proposition contains, e.g., the negation that the United States is an Arabic-speaking country. Second, there is the judgment that your intellect passes in confirming that this judgmental link truly corresponds to reality, e.g., by judging that this judgmental link does reflect reality because the United States is indeed not an Arabic-speaking country. The second judgment is the *assent*.

Note that some kinds of propositions are arranged in the more complex antecedent–consequent form (e.g., 'If A is B then C is D') instead of in subject–predicate form. In such propositions, the judgmental link concerns a relation between the antecedent and consequent. We won't go into detail on these kinds of propositions here, but the following example illustrates how this works.

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[3] There is extensive discussion on the minute, technical aspects of the parts of a proposition and of the precise relationship between propositions and assents. The position presented here is straightforward and consistent with that of Muḥibbullāh al-Bihārī's *Sullam al-ʿulūm*. Advanced readers may refer to Khaled El-Rouayheb, "Does a Proposition Have Three Parts or Four? A Debate in Later Arabic Logic," *Oriens* 44, no. 3/4 (2016).

Example 2: The parts of a conditional proposition	
Example proposition	If I speak Arabic, most Americans won't understand what I'm saying.
Antecedent (*muqaddam*)	'I speak Arabic'
Consequent (*tālī*)	'Most Americans won't understand what I'm saying'
Judgmental link (*nisba ḥukmiyya*)	the affirmation that my speaking Arabic *entails* that most Americans won't understand what I'm saying

II. Non-Assentive Knowledge

As mentioned before, the term *knowledge* in the most general technical sense includes non-assentive types of knowledge as well.[4] Non-assentive knowledge can be divided into two types: conceptual and pre-conceptual.

(A) *Conceptual knowledge*, or *conception* (*taṣawwur ʿaqlī*), is the perception of *concepts* (*ṣuwar ʿaqliyya*), which are abstract meanings perceived by the intellect. That concepts are abstract means that although they are objects of perception, they do not have particular qualities like particular shape, color, size, scent, texture, etc. Concepts are just not the kind of thing it even makes sense to call round or red or little or fresh or smooth in any literal sense. That isn't to say that you can't have concepts *of* roundness or redness. But while you surely do have such concepts, you wouldn't describe the concepts *themselves* as round or red. Instead, you could say that the concept *represents* things that are round or red.

    We express concepts with language and understand them with the intellect. For example, the phrase "an English-speaking country" (the subject of an example proposition we examined above) expresses a concept that your intellect understands. Similarly, the declarative sentence "The United States is an English-speaking country" expresses a composite three-part concept that your intellect understands (that is, you conceive the subject, predicate, and judgmental link and understand what it means for the United States to be an English-speaking country).[5] To consider another example, everyone who's seen cats has formed a conception of 'cat'. Unlike the direct perception of actual cats, your conception of 'cat' is knowledge of an abstract meaning, a concept, formed by your intellect to

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[4] Non-assentive knowledge is sometimes termed *simple apprehension* (*taṣawwur sādhij*).

[5] You can see how conceptual knowledge (*taṣawwur*) is a prerequisite for assentive knowledge (*taṣdīq*): one cannot assent to a proposition without first conceiving it.

represent the real cats in the world. It is because your intellect has formed a representative general concept of cat that you can form general propositions like 'Cats have paws'.

Conceptual knowledge can also be used to formulate definitions, like "Cats are meowing animals." A *definition* (*taʿrīf*), in fact, is another composite type of conceptual knowledge where a *defining concept* (in this case, 'meowing animals') is used to provide knowledge of another concept (in this case, 'cats'). Thus, if someone didn't know what a cat is but knew the concepts 'meowing' and 'animal', you could put these concepts together for him into the composite concept 'meowing animal'. By telling that person that cats are meowing animals, you'd give that person conceptual knowledge of the concept 'cats'.

(B) *Pre-conceptual knowledge*, in contrast to conceptual knowledge, refers to perception that occurs through a channel other than the intellect. This kind of knowledge therefore doesn't pertain to abstract meanings. For example, when you see a cat on your doorstep, in that very moment of visual perception, you're having a sensory bodily experience, and that experiential perception of the cat is a type of knowledge. Now, as a result of that pre-conceptual perception, it may *also* be the case that your intellect will instantly represent the cat by the abstract conception of 'cat' (conceptual knowledge) and will apprehend that the cat is there (assentive knowledge), but this is all additional to the pre-conceptual knowledge you had. (This illustrates that the different kinds of knowledge are in reality all related and that they usually occur together, even though it's useful for our purposes to distinguish them in this essay.)

Pre-conceptual knowledge can be further divided into (1) *sensory knowledge* and (2) *spiritual knowledge*. We won't say much here regarding spiritual knowledge, but this category includes the spiritual experiences gifted to prophets and saints, in which spiritual realities are unveiled such that they perceive these realities directly—that is, without the function of bodily perceptive faculties (*ālāt*). As for sensory knowledge, this is knowledge, by means of bodily perceptive faculties, of objects with particular perceptible qualities. Sensory knowledge can be subdivided into (a) external and (b) internal.

(a) External sensory knowledge, or *external sensation* (*ḥiss ẓāhir*), occurs through the stimulus of your basic external sense organs: the eyes, ears, skin, nose, and mouth. Your perception of the cat with your eyes is an example of this, as is your hearing it meow.

(b) Internal sensory knowledge, or *internal sensation* (*ḥiss bāṭin*),[6] is sensory knowledge that occurs through internal faculties and relates to objects of perception within one's own body or mind. This includes the following:

- (i) Interoceptive sensory knowledge: internal bodily sensations like hunger and thirst, the sensation of moving your arms and legs, various pains and pleasures, etc.
- (ii) Emotional sensory knowledge: internal psychological sensations of emotions like joy, anger, calmness, fear, etc.
- (iii) Cognitive sensory knowledge: internal mental sensations (not to be confused with intellectual perceptions) that result from the cognitive "processing" of prior sensations by sense-integration, memory, imagination, or estimation. We'll discuss this category further in the next section.

All of these types of pre-conceptual knowledge (aside from spiritual knowledge) are categorized as sensory because they take as their objects things with sensory qualities. These objects and their sensory qualities are perceived by the function of the appropriate faculties—external organs and the neural functions responsible for external sensation, internal receptors and the systemic functions responsible for interoceptive sensation, hormones and the endocrine functions responsible for psychological sensation, and the brain and the various cerebral functions responsible for cognitive sensation. Unlike assents and conceptions, which are types of abstract knowledge formed by the intellect, sense perceptions always entail qualities that are specifically present in the object, like the color of a visually perceived cat, the physical intensity of a particular instance of hunger in oneself, or certain vivid aspects of an old sensory memory.

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[6] Some theologians traditionally maintained the possibility that internal sensation, or *introspection* (*wijdān*), might be purely a function of the intellect, while others attributed it to faculties located in the brain, which were termed the *internal senses* (*ḥawāss bāṭina*). Given advances in cognitive science, it is clear that not only the brain but also other bodily systems are involved in these sensations. Thus, we present here a theory that utilizes and slightly revises the theory of the internal senses; it is meant to be simple, familiar, and intuitive and draws on uncontroversial developments in physiology and cognitive science. Internal sensations that were attributed to the sense of *estimation* (*wahm*) in the traditional theory are here distributed between not only a cognitive function we can call estimation but also the interoceptive senses (responsible for sensations like hunger and pain) and the emotions (responsible for perceptions like anger and joy); those attributed to the *common sense* (*ḥiss mushtarak*), *imaginal memory* (*khayāl*), *non-imaginal memory* (*ḥāfiẓa dhākira*), and *creative imagination* (*mutakhayyila*) are here distributed among the other cognitive senses. See the table below titled "Sensory Channels and their Objects." (For an accessible reference on the various kinds of sensations we categorize here as interoceptive, see Tony Cheng, "Bodily Awareness," *Internet Encyclopedia of Philosophy*, https://iep.utm.edu/bodily-awareness/#H1.)

◣ The Self and the Channels and Objects of its Knowledge

We've mentioned a number of times now that knowledge is a kind of perception. But a perception necessarily involves a perceiver and an object. That perceiver is traditionally identified as the *self* (*nafs*),[7] which may also be called the *mind* (*dhihn*) in the context of epistemology, and which is differentiated from its *instrumental faculties of perception* (*ālāt al-idrāk*). When the self knows, this means that it perceives some object in some way either directly or by means of its instrumental faculties. We now turn our discussion to these "ways" of perceiving objects, the *channels of knowledge*[8] by which the knowing self arrives at the various types of knowledge. The self possesses three primary channels of knowledge: the senses, the intellect, and the soul, and each is associated with particular kinds of objects of knowledge.

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[7] The term *self* (*nafs*) here shouldn't be confused with the term *nafs* as used in contexts outside of epistemology. In epistemology, the term *nafs* does not require a specific ontological position on the nature of the self: one may believe that the self is a subtle corporeal entity (*jism laṭīf*) known as the soul, one may believe that the self is an immaterial entity (*jawhar mujarrad*) known as the soul, and one may even believe that the self is simply the body or the brain. We leave this discussion for the context of metaphysics (*ilāhiyyāt*), where it belongs. Nor should our context be conflated with that of spiritual purification (*tazkiyat al-nafs*), where the term *nafs* is usually used to refer to the lower self, or the evil-commanding aspect of the soul (*al-nafs al-ammāra bi-l-sūʾ*). In epistemology, the *self* (*nafs*) is the "I" or "me" that serves as the subject of consciousness and thought and the object of introspection, regardless of its ontological and spiritual dimensions.

[8] Students of rational theology (*kalām*) may be familiar with the three-part classification of the "means of knowledge" (*asbāb al-ʿilm*) in a teaching text like Saʿd al-Dīn al-Taftāzānī's *Sharḥ al-ʿAqāʾid*: sensation (*al-ḥiss*), the intellect (*al-ʿaql*), and the truthful report (*al-khabar al-ṣādiq*). As explained by commentators, the aim of that classification isn't necessarily to be systematic and comprehensive but rather to succinctly highlight the most important ways of arriving at knowledge pertaining to theological doctrine. They point out that, technically speaking, truthful reports are a subclass of knowledge attained through both the senses (i.e., hearing the spoken report) and the intellect (i.e., understanding the report and reasoning that it is truthful). We might add furthermore that there are different ways in which the three means of knowledge in that classification serve as "means" (*asbāb*) of knowledge: while the senses and the intellect are faculties that serve as *channels* of knowledge, the truthful report is an *object* of knowledge that we consider and reason about. Both lead to knowledge, but from different perspectives. Again, this isn't a problem given the practical purpose of the classification in the text. However, since this essay is not confined to the study of theology, our aim is to provide a systematic approach to the means of knowledge in general, and we do this by drawing helpful distinctions, like the distinction between channels and objects, and by considering types of knowledge that aren't given primary consideration within the science of theology, like spiritual knowledge. This will allow students familiar with the classification in *Sharḥ al-ʿAqāʾid* to benefit from comparing that classification with the more generally applicable and more detailed one presented in this essay.

1. The Senses

The senses (*al-ḥawāss*) is a general term used to refer to the channel of knowledge for all of the kinds of sensory knowledge we saw in the classification above. This channel includes the internal senses, which operate by means of internal faculties, as well as the external senses, which operate by means of the basic sense organs. Above, we classified sensation into (1) external, (2) interoceptive, (3) emotional, and (4) cognitive, the latter three being different types of internal sensation. Let us discuss the senses responsible for these respective sensations.[9]

1. The external senses function by the operation of your external sense organs: your eyes, ears, nose, mouth, and skin. Each of these organs contains sensory receptors that receive stimulation from the appropriate kinds of sensory objects. For example, your eyes can be stimulated by bright things while the skin on your hand can be stimulated by soft things. In each case, the organ is connected to nerves that transmit the sensory input from your receptors to your brain. When the input is received in your brain, your self (*nafs*) as the knower consequently perceives the sensory object that stimulated your sense organ.[10] As a result of this perception, you acquire knowledge about specific qualities appropriate to the particular sense in question: for objects of sight, you acquire knowledge of qualities like color and brightness; for objects of hearing, you acquire knowledge of qualities like volume and pitch; and so on. Some qualities are common to multiple senses—shape, for example, can be perceived through sight and through touch.

2. The interoceptive senses function by the operation of various kinds of sensory receptors located inside your body, each of which is sensitive to the kind of stimulation appropriate to it. Proprioceptors, which are receptors located in the muscles, tendons, and joints throughout your body, detect the movement and position of your body parts. Minute hair cells located in your inner ear

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[9] The following exposition of the senses is not quite the one you will find in a *kalām* text, nor is it quite the one you will find in related contemporary fields like cognitive science, human physiology, or the philosophy of mind. What we present here is a revision of the traditional classification of the senses that preserves what is fundamental to the theory—that is, an inclusive notion of sensation that incorporates emotions and cognitive functions and a distinction between external and internal senses—while spelling out the details and introducing new distinctions to accommodate scientific developments in a way that is likely to be more familiar and helpful to the contemporary reader. For the traditional classification, see the commentary and super-commentary of Shams al-Dīn al-Iṣfahānī and al-Sharīf al-Jurjānī in *Tasdīd al-qawāʿid fī sharḥ Tajrīd al-ʿaqāʾid* (Istanbul: Markaz al-Buḥūth al-Islāmiyya, 2020), 3:226–31. For an introduction to the contemporary state of the field, see E. Bruce Goldstein and Laura Cacciamani, "Introduction to Perception," in *Sensation and Perception*, 11th ed. (Boston: Cengage Learning, 2022).

[10] Due to the limits of our scientific knowledge, we lack a mechanical explanation for this final link in the causal chain, namely, how brain function brings about perception in the self. What we do know is that, in reality, Allah creates everything, including the perception, the brain activity, and all the preceding causes.

The Senses and Their Objects		
Channel	**Functions**	**Objects Perceived**
External Senses (*ḥawāss ẓāhira*)	Sight (*baṣar*)	Color, brightness, shape, etc.
	Hearing (*samʿ*)	Volume, pitch, etc.
	Smell (*shamm*)	Pungency, sweetness, etc.
	Touch (*lams*)	Texture, heat, hardness, etc.
	Taste (*dhawq*)	Sweetness, sourness, saltiness, etc.
Internal Senses (*ḥawāss bāṭina*) — **Interoceptive Senses** *Related to stimuli originating inside the body*	Proprioception and equilibrioception	Self-movement, position and location of body parts, balance, spatial orientation
	Sensations of lack, discomfort, pain, or pleasure	Hunger, thirst, sleepiness, bodily pain and pleasure, nausea, suffocation, fever, etc.
Emotions *Related to states originating from thoughts*	Emotional perception	Joy, love, gratitude, grief, hatred, fear, etc.
Cognitive Senses *Related to objects of prior sensation*	Sense-integration (*taṣawwur ḥissī*)	External sensations integrated into a single sensory experience
	Memory (*khayal & ḥifẓ*)	External and internal sensations retained and recalled mentally
	Imagination (*takhayyul*)	Objects arranged and perceived mentally
	Estimation (*wahm*)	Mentally produced qualities directly dependent on external sensation

detect changes in balance. Other types of receptors detect specific stimuli from various organs and systems, including those responsible for signaling needs like the need for food, water, sleep, or oxygen. In each case, your nerves transmit the input to your brain, and you consequently have a sensory experience. The "object" of such a perception is technically always the same, namely, your own body as qualified by these various sensations.

3. The emotions function by the operation of a number of bodily systems in response to events or situations in your daily life. Depending on how you mentally perceive an event or situation like good or bad news, your brain triggers a bodily response especially in your endocrine system, which regulates your hormones, and in your nervous system. These bodily changes are then transmitted to your brain, and you consequently perceive the corresponding emotion, whether joy, sadness, anger, fear, etc.

4. The cognitive senses function by the operation of your brain, which processes your external and internal sensations in various ways to allow you to think and perceive in a holistic way beyond just your direct, instantaneous relation to the sensory object. One of the crucial tasks your brain performs is sense-integration. You can think of this function as the "putting together" of all the data that the brain receives from the five external senses into a complete sensory experience. This makes it so that qualities that you perceive through different senses don't remain isolated from one another: the loud siren is also flashing red and blue, and the smooth soap bar is round and scented. Brain processing also makes it possible to perceive continuity and change in the qualities of external objects, like the motion of a raindrop; while external sensation through the eye can only detect the raindrop in a specific location and then a different location, the brain functions to integrate these many individual visual sensations into the experience of a falling droplet. The brain is also responsible for the function of memory, that is, retaining sensory objects, both external and internal, for later recall and mental perception. Finally, the brain has an active role in creative imagination: it is able to combine sensory qualities to build and mentally perceive new sensory objects, like mythical creatures. All of these cognitive senses and more, including the sense of estimation, which is responsible for the apprehension of non-external qualities like beauty and friendliness, are crucial for ordinary human thought and perception.

When considering the channel of the senses in isolation from that of the intellect, sensory perceptions never involve concepts or propositions, because conception and assent are the work not of the senses but of the intellect. In actual practice, though, conception and assent are inseparable from sensory experience because the senses and the intellect work hand in hand; as soon as you have the experience of seeing a red tomato, your intellect uses the concepts 'tomato' and 'red' to form propositional assents like 'This object is a tomato' and 'The tomato is red'. Nevertheless, for the purpose of understanding the difference between the senses and the intellect, it's important to

distinguish these abstract conceptions and assents from the mere sensory experience of just *seeing* that red, round, smooth object. When we speak of the senses as a channel of knowledge, we're talking about the channel responsible for just that raw experience.

Although we've spoken about the objects of this channel of knowledge as "sensory objects," it's important that objects are subject to multiple angles of consideration. Something that is a sensory object from one perspective may additionally be an object for other channels of knowledge from other perspectives. One of the most significant examples of this is spoken human language. Language is communicated in uttered sounds or visual markings, and from that perspective it's an object of the external senses—hearing and sight. But language is more than a mere sensory phenomenon; it points beyond itself, *signifying* meaning. As we mentioned previously, concepts and propositions are ultimately abstract meanings, even though they are expressible in sensory words, phrases, and sentences. That is to say that while words, phrases, and sentences are sensory objects perceived by the senses, they also become objects of the intellect when their meanings are conceived in the intellect, since the intellect is the channel of conceptual and propositional knowledge.

2. The Intellect

The *intellect* (*ʿaql*)[11] is the faculty of the knowing self by which it conceives and assents, or the channel of conceptual and assentive knowledge. Every conception and assent, even if originally based on input from the senses or the soul, is ultimately a function of the intellect. For example, although we'd need input from the sensory channel of taste to know that ripe mangoes are sweet—that is, we'd need to actually have the sensory experience of tasting ripe mangoes—the assent based on that experience is made by the intellect. After receiving the experiential input of the senses, the intellect affirms the judgmental link between the subject 'ripe mangoes' and the predicate 'sweet'. In general, then, every proposition and assent is formed by the intellect, even if other channels are needed as sources of input for the conception of the proposition's parts or the assent to its judgmental link.

Let's more closely examine the objects of perception in intellectual knowledge, beginning with conception. When one conceives through the intellect, the object of one's perception is a concept. *Concepts* (*ṣuwar ʿaqliyya*) can be divided into *simple* (*mufrad*) and *composite* (*murakkab*). Simple concepts, like 'cat', can be brought together to form composite concepts, like 'big cat'. Composite concepts include *definitions* (*taʿrīfāt*), which bring together concepts to generate concepts that are more complex, such that when all the parts of the definition are conceived, one arrives at conceptual

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[11] To remain within the scope of this essay, we'll discuss the logical function of the intellect without directly engaging philosophical questions about the relationship between the intellect and the brain. We'll simply note that such discussions don't impact what we present here.

knowledge of the thing defined. They also include *propositions* (*qaḍāyā*),[12] which as we have already seen, are combinations of concepts brought together by another concept, namely, an affirmative or negative judgmental link.

When one assents to a proposition through the intellect, the object of perception is the judgmental link, which having already been perceived in the way of conceptual understanding (*taṣawwur*) is additionally perceived in the way of acceptance (*idhʿān*). For example, when you assent to the proposition 'Two is half of four', you perceive and accept the affirmation that two is half of four.

In addition to assenting, the intellect provides knowledge of the *modality* of propositions, or knowledge of whether the judgmental link is necessary, impossible, or possible.[13] That is, the intellect provides not only the assent that X is Y, but also whether this is necessarily or merely possibly the case. A square necessarily has four angles, and it is impossible that it have no angles. But it is possible that a square's sides be three inches long, while it is also possible that they be longer or shorter.

The Intellect and its Objects		
Channel	*Functions*	*Objects Perceived*
The Intellect (*ʿaql*)	Conception (*taṣawwur*)	Concepts (*ṣuwar ʿaqliyya*), including definitions (*taʿrīfāt*) and propositions (*qaḍāyā*)
	Assent (*taṣdīq*)	Judgmental links (*nisab ḥukmiyya*) and their modality (*kayfiyya*)

3. The Soul

The scholars of theology and spirituality agree that it is possible for the self to possess knowledge directly, without any intermediary, instrumental means. In this essay we use the term *soul* (*rūḥ*) to indicate that aspect of the self through which it obtains knowledge directly, without the instrumental faculties of the senses and the intellect, and we refer to this aspect of the self, the soul, as the third channel of knowledge. As technical terms, *self* and *soul* refer to the same entity, describing it from different perspectives; *self* describes it as the subject of perception, while *soul* describes it as the channel of direct knowledge. Direct knowledge includes self-consciousness, or the perception of one's own existence, and spiritual knowledge.

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[12] Although we are technically classifying propositions as concepts, note that concepts and propositions are usually regarded as mutually distinct in typical usage.

[13] We discuss modality in the next section of this chapter.

Although spiritual knowledge is not the main subject of this essay, it is worth noting that the modes of knowledge that belong to this channel include divinely inspired knowledge (*ilhām*), mystically unveiled knowledge (*kashf*), revealed prophetic knowledge (*waḥy*), and knowledge that is granted through a true dream (*ruʾyā ṣādiqa*). For an example of spiritual knowledge, we have many reports from those present at a Friday sermon in Madina given by the blessed companion ʿUmar (may Allah be pleased with him) that he was inspired to call aloud to Sāriya (may Allah be pleased with him), his deputy commander in Persia at the time, who was about to be overwhelmed on the battlefield but heard him and took heed. Another kind of spiritual knowledge is mystical knowledge, or Allah's self-disclosure to a prophet or saintly person in a manner that befits His Majesty. These are kinds of perceptions that are gifted to the soul as pre-conceptual knowledge, irrespective of whether they are formulated afterward as concepts and propositions by means of the intellect and then articulated in language to other people.

◣ Intellectual Assessment and Willful Judgment

The chief purpose of epistemology as concerns this essay is to assess claims of knowledge—specifically, propositions[14]—for the sake of determining what to believe. To this end, we distinguish intellectual assent from *willful belief*.[15] Assent, as knowledge, is the intellect's perception of how things are based on reflection or immediacy (as we will see in the next chapter). This is different from one's personal will to believe a proposition, which is an intentional psychological act that may either align with one's knowledge or stand against it. It is also different from passive and uncritical belief in propositions that one simply accepts without properly conceiving of them (which sometimes happens, for instance, when one hears about events by way of rumor). Due to either uncritical negligence, active obstinacy, or some other psychological factor that might lead one to be dishonest with oneself, one may end up firmly believing propositions that one does not actually know to be true, just as one may end up vehemently denying propositions that one does ultimately know to be true.

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[14] In a loose sense, one could also consider definitions to be claims of knowledge, specifically when a definition is intended as a *real definition* (*taʿrīf ḥaqīqī*), a definition of something that actually exists as it truly is. Such definitions combine conceptual and assentive knowledge because in addition to conception, they involve the assent that the definition in question represents reality. Although we are primarily concerned with assent, conceptual knowledge also deserves careful attention because it's easy to fall into a great deal of confusion on account of unclear, incoherent, or badly defined concepts. For the rules and methods of proper definition, we refer the reader to the sciences of logic (*manṭiq*) and dialectical disputation (*munāẓara*).

[15] The idea of willful belief is analogous to the idea of knowledge-confirming internal speech (*ḥadīth al-nafs al-tābiʿ li-l-maʿrifa*), which distinguishes religious believers from disbelievers who psychologically suppress their knowledge. See Muḥammad al-Dasūqī, *Ḥāshiyat al-Dasūqī ʿalā Umm al-barāhīn* (Cairo: Dār Iḥyāʾ al-Kutub al-ʿIlmiyya, n.d.), 53.

Ideally, how one willfully judges a proposition should always directly correspond to one's intellectual assessment of a proposition. This section introduces a number of important terms to describe this relationship between intellectual knowledge and willful belief. In doing so, it establishes guidelines for willful belief some of which will directly frame Chapter 4.

1. Intellectual Assessment: Confidence

Once the intellect has properly conceived a proposition and met a number of conditions, which may include acquiring any relevant prerequisite knowledge or undergoing any necessary reflection (see Chapter 4), it is prepared to make an assessment of its level of confidence in the proposition's judgmental link. We might think of this as the intellect's "grading" of the proposition. Propositions with a passing grade earn the assent of the intellect, but this assent comes at different levels. The best propositions earn not only the assent but also the conviction or certitude of the intellect, while other propositions earn assents that are only tentative or probable.[16] Tentative assents, for their part, come at various levels of confidence, the highest being that of near certainty, and the weakest being barely enough to qualify as an assent at all. As for propositions to which the intellect assigns a failing grade and does *not* assent, such propositions may rank anywhere from being exactly on the failing line to being absolutely out of the question.

The difference between a *certain* (*yaqīnī*) assessment and one that is *tentative* or *probable* (*ẓannī*) is that certainty does not allow for the possibility of the contradictory opposite of the proposition while probability allows for such a possibility. The *contradictory opposite* (*naqīḍ*) of a given proposition is the proposition that would necessarily be true if the given proposition were false and would necessarily be false if the given proposition were true, and vice versa.[17] For example, the contradictory opposite of 'Every schoolgirl wears a blue dress' is 'Some schoolgirls do not wear a blue dress', and vice versa, and the contradictory opposite of 'Some schoolgirls wear a blue dress' is 'No schoolgirl wears a blue dress', and vice versa. If the intellect were *certain* of the proposition 'Some schoolgirls wear a blue dress', this means that it would not allow the possibility of the contradictory opposite, which is 'No schoolgirls wear a blue dress'. Moreover, when the intellect makes a *tentative* or *probable* assessment of a given proposition, it assigns the contradictory opposite an inversely proportional grade. Suppose for the sake of example that, on the basis of the meteorological data, your intellect assents to the proposition 'It will rain tomorrow' with a high grade of 85%. This means that if

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[16] To avoid statistical connotations, we could also use the term *preponderant* (*rājiḥ*) in the place of *probable* since the term *ẓannī* does not specifically denote statistical probability.

[17] We will not discuss here the rules for determining the contradictory opposite of a proposition, but the student is referred to the texts of logic.

it conceived the proposition 'It will not rain tomorrow', it would give it a grade of 15%. (Note, of course, that these numbers are given for illustration; the intellect does not actually produce numerical grades in this manner!)

With this in mind, we can categorize propositions into the following five categories in terms of the intellect's assessment:

Level of Intellectual Confidence	What this Means
Certain: 100% (*yaqīnī*)	The intellect assents to the proposition with certainty. It does not allow the possibility of the contradictory opposite.
Probable: 51–99% (*ẓannī*)	The intellect assents to the proposition without certainty. It allows the possibility of the contradictory opposite.
Doubtful: 50% (*shakkī*)	The intellect does not assent to the proposition, nor would it assent to the contradictory opposite. It allows the possibility of either.
Improbable: 1–49% (*wahmī*)	The intellect does not assent to the proposition but allows its possibility. It would assent to the contradictory opposite but without certainty.
Unthinkable: 0% (*takhyīlī*)	The intellect does not assent to the proposition nor allow its possibility. It would assent to the contradictory opposite with certainty.

2. Willful Judgment

At the beginning of this section, we introduced the distinction between intellectual assessment and willful judgment. The intellect, we have seen, is able to assess propositions not only with respect to assent and the lack of assent but also with respect to modality and confidence. But in addition to the assessment of the intellect, a person is able to take one of three willful mental actions with respect to a given proposition:

- *Willful belief*, i.e., the intentional psychological acceptance of a proposition, whether or not it corresponds to one's knowledge.
- *Willful denial*, i.e., the intentional psychological rejection of a proposition, whether or not it corresponds to one's knowledge.
- *Willful noncommitment*, i.e., the intentional psychological suspension of belief or denial.

Moreover, a person may willfully believe or deny at different levels of confidence: you may willfully believe or deny a proposition confidently and decisively, or you may willfully believe or deny a proposition tentatively and indecisively.

As we noted at the beginning of the section, how one willfully judges a proposition should always directly correspond to one's intellectual assessment of the proposition. That is, a willful judgment is *warranted* when it directly corresponds to the assessment of one's intellect after one has thoughtfully

considered and conceived the proposition.[18] With respect to the intellectual assessment of confidence, the warranted willful judgments are represented below:

Level of Intellectual Confidence	What this Warrants
Certain: 100%	Confident willful belief
Probable: 51–99%	Tentative willful belief
Doubtful: 50%	Willful noncommitment
Improbable: 1–49%	Tentative willful denial
Unthinkable: 0%	Confident willful denial

Each of the three willful mental actions—belief, denial, and noncommitment—is *unwarranted* whenever it does not directly correspond to the matching assessment at the matching level of intellectual confidence. For example, a tentative belief is unwarranted for a proposition that the intellect judges to be certain, and a confident denial is unwarranted for a proposition that the intellect judges to be merely improbable but not unthinkable. In the same way, noncommitment is unwarranted for probable or improbable propositions. A probable proposition is one that is preponderant, meaning that you have reason to believe it and should do so, even if not at full confidence.

Notice that a belief's being *warranted* or *unwarranted* is not exactly the same as its being *true* or *false*. That a belief be *true* means that the judgmental link within the proposition corresponds to reality; that a belief be *false* means that this is not so. Now, it may be the case that a proposition is true because its judgmental link corresponds to reality while at the same time also being the case that the intellect does not assent to the proposition, in the absence of knowledge about the relevant facts. In such a case, the proposition would be true but belief in the proposition would be unwarranted. This would be the situation, for example, with regard to a belief by the average Sarah or Majid about the number of angels in the world that happens by lucky chance to be true.

An instructive point to draw from this explanation is that neither assent nor warrant are necessarily inherent properties in propositions; they can vary by personal circumstance. This is *not* because intellectual assent is subjective or relative. On the contrary, the standard of the intellect is an objective standard that stands universally for everyone. There are several reasons why it may nevertheless be the case that one person's intellect assents to a proposition that another person's intellect does not assent to. First, most types of propositional knowledge, with the exception of

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[18] The term "warrant" is sometimes used in the definition of knowledge in contemporary philosophy, but that is not how we use the term here.

knowledge of self-evident propositions, require the knowledge of other objects besides the concepts in the proposition itself. This applies, for example, to propositional knowledge that requires sensation, as will become clear in the next chapter. Someone who lacks the requisite knowledge will not arrive at an assent. Second, a great deal of propositional knowledge requires a clear conception of the terms, and someone who has done a more rigorous investigation into the concepts, has access to a better instructor or textbook, or simply has a sharper and more capable intellect is more likely to understand the terms in the proposition properly and hence to assent to it. Third, many propositions are such that the assent to them requires the active process of reflective reasoning, which must observe the rules of logical inference. Someone who struggles to carry out this process, whether due to fallacious reasoning or due to the limits of his intellectual capacity, may not arrive at an assent where another person does. For all of these reasons, we can't always label a given proposition as one that "warrants belief" in an absolute sense. Rather, we must consider an individual's circumstance and knowledge to determine whether belief in the proposition is warranted for *that individual in that situation*.

3. Availability

When determining whether belief in a given proposition is warranted, it is important to bear in mind the notion of *availability*. Availability refers to the reasonable expectation that the general public can share in the warrant for a belief through the same channel of knowledge. If the warrant for a belief results from a channel of knowledge that is common to everyone, it is *public* because anyone can be reasonably expected to share the propositional knowledge that makes the belief warranted. But if the warrant for a belief is for some reason inaccessible to the general public, the belief is *private*. For example, your belief about what you're thinking this moment is private because you possess that knowledge by introspection, or internal sensation, and nobody else can use introspection to arrive at knowledge about *your* internal thoughts. By contrast, your belief about the colors in a rainbow is public because you acquired that knowledge by observing a rainbow, and anyone who's seen a rainbow can arrive at the same knowledge in the same way.

Although the warrant for public beliefs can *in principle* be common to all members of the general public, most public beliefs are not *actually public* in the sense that their warrant is actually common to everyone. This is because, for many such beliefs, actual warrant requires prerequisite knowledge or experience, like the experience of actually going outside and seeing a rainbow. Someone who has never seen a rainbow does not carry the warrant of his senses regarding the colors of a rainbow. Other beliefs, like belief in the self-evident principle that the whole is greater than its part, are warranted for all rational people. We'll examine in detail the conditions for the publicity of the various kinds of beliefs in Chapter 4.

- *Actually public*: A belief which is warranted through the same channel of knowledge to all other mentally sound, rational adults.
- *Potentially public*: A belief which would be warranted through the same channel of knowledge to any other mentally sound, rational adult, given some generally accessible prerequisite knowledge or experience.
- *Private*: A belief which is not and would not be warranted through the same channel of knowledge to all other mentally sound, rational adults with generally accessible knowledge and experience.

There is a nuance to the concept of availability, which is that a belief may be private in one respect and public in another. This happens when knowledge of the proposition is attainable through multiple different channels of knowledge. For example, if a man with whom you're speaking is currently thinking about pizza, his belief that he is currently thinking about pizza through the channel of introspection is *private*; however, if he's an honest man and he says aloud that he's currently thinking about pizza, that same belief through the channel of intellectually reasoning from the man's honesty to the truth of his statement is also *public*.

The availability of a belief has noteworthy implications in two regards. First, when you're presenting a rational argument to convince another person of something, you can found your argument only on premises that the two of you hold in common. (Otherwise, there would be no point in using them to support your argument.) For the premises to be held in common, you'd have to use premises expressing beliefs that are either actually public or potentially public, knowing in the latter case that your interlocutor has met the prerequisite conditions for warranted belief. A private belief would thus be misplaced in a context like a debate that involves giving good reasons for another person to believe a claim.

Second, it's not advisable to base any moral, ethical, religious, or legal conclusion about how others should act or practice on a private belief, unless it can be corroborated by a public belief. Thus, one consequence of the availability of a belief is its *actionability* among others. From an epistemological perspective, the dream or inspiration of one person, for example, can't be used alone as a foundation for generally applicable legal rulings about how to perform the hajj pilgrimage or how to lawfully pay off a rent.

[ADVANCED] Intellectual Assessment: Modality

Part of the intellect's assessment of a proposition's judgmental link is its assessment of its *modality*.[19] That is, the intellect assesses whether the affirmation or negation asserted by the proposition is

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[19] Sometimes, the assessment of modality is not immediate but rather requires reflective reasoning.

necessary (*wājib*), *impossible* (*mumtaniʿ*), or *possible* (*mumkin*).[20] Every affirmation or negation, upon assessment, must belong to one of these three categories. Necessity means that the affirmation or negation asserted by the proposition *absolutely must* be the case, impossibility means that it *absolutely cannot* be the case, and possibility means that it neither must nor cannot be the case.

Before illustrating with examples, we have to complicate things a bit. There are various ways that a judgmental link can be necessary, impossible, or possible. We can call these *modal standards*. The most important modal standard is the standard of *intrinsic modality* (*mādda*), which describes the correspondence of the judgmental link with the intrinsic reality of the relation between the subject and the predicate.[21] Thus, an *intrinsically necessary* proposition is one where not only is the judgmental link necessary; it is necessary due to the intrinsic reality of the relation between the subject and predicate. Similarly, an *intrinsically impossible* proposition is one where the judgmental link is impossible in consideration of the intrinsic reality of the relation between the subject and predicate, and an *intrinsically possible* proposition is one where the judgmental link is neither necessary nor impossible in consideration of the intrinsic reality of the relation between the subject and predicate. Here are some examples:

Examples of intrinsic modality	
Intrinsic necessity (*wujūb dhātī*)	'Every causal effect has a cause'. 'I am not a rock'.
Intrinsic impossibility (*imtināʿ dhātī*)	'Multiple self-sufficient and all-powerful beings exist'. 'I am a rock'.
Intrinsic possibility (*imkān dhātī*)	'The books on my shelf are arranged by topic'. 'Believers will be granted paradise'.

You can see how the subjects and predicates in these example propositions intrinsically determine the necessity, impossibility, or possibility of the propositions. For example, it is due to the intrinsic relation between the subject 'causal effect' and the predicate 'thing that has a cause' that the affirmation that every causal effect has a cause is necessary. By the mere meaning of the terms, it would be absurd for a causal effect not to have a cause. Causal effects have causes by definition.

However, not all intrinsic modalities apply simply by definition. Consider the intrinsically impossible proposition 'There are multiple self-sufficient and all-powerful beings'. In itself, this
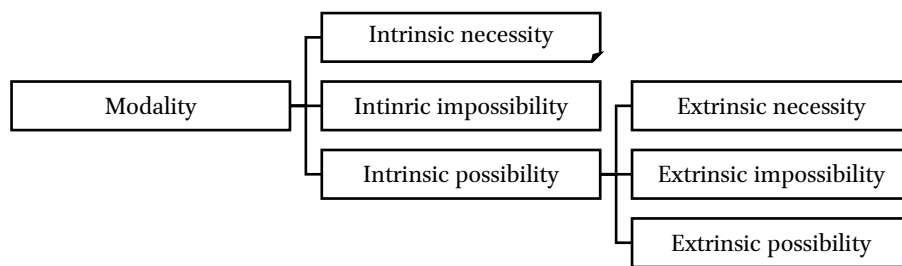
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[20] Possibility in this sense is *strict possibility* (*imkān khāṣṣ*): it is the absence not only of impossibility but also of necessity.

[21] See ʿAbdallāh al-Sharqāwī, *Ḥāshiyat al-Sharqāwī ʿalā sharḥ al-Hudhudī ʿalā Umm al-barāhīn* (Cairo: Maṭbaʿat Muṣṭafā al-Bābī al-Ḥalabī, n.d.), 18.

proposition is not a contradiction in terms. Yet, as students of rational theology learn, reflective reasoning reveals that this proposition entails absurdity. In reality, the relation between the subject and the predicate is intrinsically impossible.

Finally, consider the intrinsically possible proposition 'The books on my shelf are arranged by topic'. This proposition is possible because neither its truth nor its falsity would entail absurdity. It is equally possible, in virtue of what they are intrinsically, for the books on my shelf or anyone's shelf to be arranged by topic, by author, by date, or in any arbitrary order.

Now, a judgmental link that is intrinsically possible may also be subject to other modal standards by which it is necessary, impossible, or again possible. Any such modal standard we can call a standard of *extrinsic modality*.

	Intrinsic necessity	
Modality	Intinric impossibility	Extrinsic necessity
	Intrinsic possibility	Extrinsic impossibility
		Extrinsic possibility

The tradition of Islamic theology makes use of three standards of extrinsic modality: the *revelational* (*sharʿī*), the *nomic* (*ʿādī*),[22] and the *conventional* (*waḍʿī*).[23]

- *Revelational modality* considers how the judgmental link corresponds with what we can know through revelation (*sharʿ*). An intrinsically possible affirmation, as in 'Believers will be granted paradise', can at the same time be *revelationally necessary* when revelation unambiguously affirms the proposition.
- *Nomic modality* considers how the judgmental link corresponds with what we can know through the regular norms (*ʿāda*) of the created universe, like the "laws of nature," which reflect the way Allah the Exalted has chosen to govern the universe and are not intrinsically necessary. For example, while it is not intrinsically necessary for water to quench thirst, this is nomically necessary.

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[22] "Nomic" (*ʿādī*) can also be translated as "customary" or "habitual," understood to refer to the way that Allah the Exalted governs the universe with consistent regularity.

[23] Revelational modality is sometimes classified as a type of conventional modality, with revelation understood as a *divine convention* (*waḍʿ ilāhī*).

- *Conventional modality* considers how the judgmental link corresponds with any other standard or conventional rule (*waḍʿ*) imposed or implemented by human beings, like the standards and rules of law, language, or games. That a pawn cannot move five squares at once is not intrinsically necessary, but it is necessary by the rules of chess.

The following table provides examples.

Examples of extrinsic modality		
Revelational (*sharʿī*)	Revelational necessity (*wujūb sharʿī*)	'Allah will grant believers paradise'. 'Human beings will be resurrected'.
	Revelational impossibility (*imtināʿ sharʿī*)	'Allah will never grant anyone paradise'. 'Satan will become a righteous believer'.
	Revelational possibility (*imkān sharʿī*)	'Aliens exist in another galaxy'. 'This particular sinner will be forgiven and granted paradise'.
Nomic (*ʿādī*)	Nomic necessity (*wujūb ʿādī*)	'Swallowing rocks does not quench thirst'. 'Ice floats on water'.
	Nomic impossibility (*imtināʿ ʿādī*)	'Swallowing rocks quenches thirst'. 'Bears fly to hunt airborne prey'.
	Nomic possibility (*imkān ʿādī*)	'The falling candle will burn down the house'. 'The falling candle will not burn down the house'.
Conventional (*waḍʿī*)	Conventional necessity (*wujūb waḍʿī*)	'The pawn does not move five squares at once'. 'The subject and verb agree in number'.
	Conventional impossibility (*imtināʿ waḍʿī*)	'The pawn moves five squares at once'. 'The singular subject has a plural verb'.
	Conventional possibility (*imkān waḍʿī*)	'The knight takes the rook'. 'The statement contains an adjective'.

Chapter 4

THE EPISTEMOLOGY OF ASSENT

REFLECTIVE ASSENT

◣ The form of logical arguments

◣ The matter of logical arguments

IMMEDIATE ASSENT

◣ Assent through conception

◣ Assent through experience

◣ Assent through insight

Now that we've defined knowledge and seen some of its basic properties and divisions, let's use what we've learned to get at the main purpose of this essay. That purpose, as explained in the introduction, is to develop a framework and method for critically assessing propositions of any sort. Critically assessing a proposition means analyzing it in order to determine whether and how confidently you should believe or deny it and whether and how confidently others should believe or deny it. So, in this chapter, we build a framework, a general rubric, for determining the following about any proposition:

- Does the proposition warrant my belief?
- Does the proposition warrant my confidence?
- Does the proposition warrant the belief or confidence of others?

The way we can answer these questions will vary depending on the kind of proposition that we're considering. This is because assent is the result of an intellectual process, and the process is different for different types of propositions. The specific process by which the intellect assents to a specific kind of proposition dictates the conditions for warrant, confidence, and availability in any corresponding belief.

This chapter builds on the fact that not all kinds of assents are formed in the same way. Try to think about where the differences lie. For one thing, assents don't all involve the same channels of knowledge. While it's true that the intellect is always the channel that ultimately assents, we've seen that the intellect sometimes relies on input from other channels in order to do this. For example, the way you know 'One is half of two' is different from the way you know 'A hot and humid day makes me sweat'; the latter draws on input from your senses, whereas the former doesn't. But the use of different

channels is not the only way that the different processes of assent vary. As we'll see, different kinds of assents can utilize the same channels in different ways. To explain these differences and their implications for a belief's warrant, confidence, and availability, we'll need to draw up a classification of the processes of assent. That will be the task of this chapter.

At the highest level, there are two categories of assent: *immediate* (*ḍarūrī*) and *reflective* (*naẓarī*). These two categories reflect a fundamental difference in the process of assent: as opposed to reflective assents, immediate assents are assents that the intellect is able to make without *reflective reasoning* (*naẓar*). Reflective reasoning, as such, is the central notion that will divide the material in this chapter. In short, the process by which reflective assents are made is voluntary, conscious, and deliberate, while the process by which immediate assents are made is involuntary, unconscious, and non-deliberate. Because these two categories are distinguished by the notion of reflective reasoning, we'll begin by describing this process and the assents it produces. Then, in the second part of this chapter, we'll turn to the processes by which the intellect is able to make immediate assents without reflective reasoning. As we'll see, both the reflective and immediate processes of assent themselves have various subclasses with different properties.

REFLECTIVE ASSENT

Reflective reasoning (*naẓar*) is the mental process of using one's existing knowledge to arrive at some desired knowledge. This is a two-step process that begins by having in mind an initial conception of some potential object of knowledge that you want to know something about. Once you direct your mind to this object, you undertake the first step—traditionally called the first *motion* (*ḥaraka*)—which we might call the act of *reflection*: your intellect considers the sum of your existing knowledge and picks out those specific items within your existing knowledge from which you could derive the desired knowledge. Because the intellect has the capacity to discern the relations between concepts, you can identify those items of existing knowledge that are appropriately related to the desired knowledge such that you could derive it from them. Once these are identified, your mind proceeds with the second step, or the second motion, which we might call the act of *inference*: putting together these specific items of existing knowledge in an arrangement by means of which you actually derive the desired knowledge.

We used general terms like "object of knowledge" and "items of knowledge" in order to be inclusive in describing this process. This is because reflective reasoning applies to both conception and assent; it's used to produce new conceptions out of existing ones through definition just as it's used to produce new assents out of existing ones through inference. Now, since our primary concern is assents, we'll describe the process a second time in more specific terms.

Recall the three parts of a proposition introduced in Chapter 3: subject, predicate, and judgmental link. When you consider the judgment that a proposition asserts between a subject and predicate but your intellect hasn't yet assessed that judgment—that is, you don't know whether to affirm or deny the proposition in question—you sometimes must go through the process of reflective reasoning to arrive at that judgment. The first step, then, is that you *reflect* on what you do already know about the subject and predicate. With the assistance of your intellect, your mind will try to identify a third term that is appropriately related to both the subject and the predicate such that it might validate the judgmental link. Once you have found the appropriate third term, your mind begins the second step, the *inference*: you form two propositions, one with the subject and the third term and one with the predicate and the third term. Again, you arrange these propositions as premises in a particular way—in logic, this "way" of arranging the premises is the *figure* (*shakl*) and the *mood* (*ḍarb*)[24]—that allows you to reach an assent about the proposition in question.

Let's illustrate. Suppose that, having never really thought about the matter yourself, you hear your friend claim that starfish are plants. Here, we have the proposition 'Starfish are plants', where the subject is 'starfish', the predicate is 'plants', and the judgmental link is the affirmation of 'starfish being plants'. Having conceived that judgmental link, you seek propositional knowledge, so you direct your mind to the question and employ your intellect to reflect on your existing knowledge. With the aid of your intellect, your mind surveys what you know about starfish and plants, and it soon hits upon a pertinent third concept—photosynthesis. You recall from biology class that photosynthesis marks an important distinction between plants and animals; unlike animals, plants derive their energy directly from the sun. Having succeeded in finding an appropriate link between your subject and predicate, you promptly take the second step and mentally arrange the three terms—'starfish', 'plants', and 'thing that derives its energy through photosynthesis'—into premises. You draw the following inference:

Example inference in reflective reasoning	
Premise 1	Every plant is a thing that derives its energy through photosynthesis.
Premise 2	No starfish is a thing that derives its energy through photosynthesis.
Conclusion	No starfish is a plant.

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[24] Of course, as a human being with an intellect, you're able to do all of this without having studied logic and without knowing all of these technical terms. Here we're describing in a lot of words a process that is completely natural and essential to being a rational, thinking being.

By the rules of logic, this is a valid inference, which means that the premises entail the conclusion, 'No starfish is a plant'. Your intellect assents to this conclusion and perceives that it is incompatible with the assertion of your friend. Thus, through reflective reasoning, you have realized that your friend must be mistaken, and you deny his claim. The table below summarizes the steps in this process.

Summary of reflective reasoning about an example judgment		
Step 1	Reflecting on existing knowledge	After directing your mind to the relation between starfish and plants, you recognized the third term 'thing that derives its energy through photosynthesis'.
Step 2	Inferring a proposition	You arranged your three terms into two premises and inferred 'No starfish are plants'.

On the basis of this example, we can classify the knowledge that no starfish is a plant as a *reflective assent*, an assent that the intellect makes directly through a process of reflective reasoning. By contrast, we can tell that an assent like the assent that a whole is greater than one of its parts is *not* a reflective assent because it requires no reflection and inference; it's true by definition. This makes it an *immediate assent*, an assent that the intellect doesn't make directly through a process of reflective reasoning. While the process of arriving at reflective assent is a voluntary process of conscious thought and inference, the process of arriving at immediate assent is due to the involuntary, subconscious operation of the intellect. We'll examine immediate assent more closely later, but for now let our focus remain on reflective assent.

At the beginning of this chapter, we said that the process by which an assent is formed determines how we critically assess it. Since reflective propositions result from a process of logical inference, we need to look more closely at what makes a logical inference in order to build a framework for critically assessing reflective propositions. The expression of a logical inference is termed a *logical argument*. Traditionally, logical arguments are divided into two parts: the *formal component*, or the *form* (*ṣūra*) of the argument, and the *material component*, or the *matter* (*mādda*) of the argument. The formal component is the mutual arrangement of the premises by which the argument logically entails the conclusion. The material component is the actual terms and the actual premises that are used to prove the conclusion. Thus, the conditions for critically assessing a reflective proposition are determined by the form and matter of the arguments used to infer it. Returning to our guiding questions, we may give the following general guidelines, which will be elucidated as we progress through this section:

- When does a reflective proposition warrant my belief?

  A reflective proposition warrants my belief if and only if it can be expressed as the conclusion of a valid argument (form) *and the premises of that argument themselves warrant my belief* (matter).
- When does a reflective proposition warrant my confidence?

  A reflective proposition warrants my confidence if and only if it can be expressed as the conclusion of a valid syllogistic argument (form) *and the premises of that argument are themselves certain* (matter).
- When does a reflective proposition that warrants my belief or confidence also warrant the belief or confidence of others?

  A reflective proposition that warrants my belief or confidence also warrants the belief or confidence of others if and only if the premises of the argument are public (matter).

We now turn to the form and matter of arguments in turn to see how these criteria apply.

◣ The Form of Logical Arguments

The study of logical form is properly the domain of formal logic. Specifically, formal logic investigates the forms of arguments with regard to validity. A *valid argument* is one in which the premises are arranged such that the conclusion would be true *if* the premises were true, whether or not they actually are true. You can see how this is the case in the following simple form:

Example 1: Valid argument with meaningless terms		
Premise 1	Every frenzybog is a sitelywig.	(Every A is B.)
Premise 2	Every sitelywig is a phinzaran.	(Every B is C.)
Conclusion	Every frenzybog is a phinzaran.	(Every A is C.)

Although the terms in this argument are meaningless, you can see that the premises entail the conclusion. This is because the form of the argument is valid. Importantly, form and validity are topic-neutral, which makes the rules of formal logic applicable to all topics and all propositions, regardless of their content and regardless of their truth. For example, the following argument, which is identical in form to the argument above, uses false a premise but remains valid:

Example 2: Valid argument with false premises		
Premise 1	Every business owner is a pasta noodle.	(Every A is B.)
Premise 2	Every pasta noodle is edible.	(Every B is C.)

| Conclusion | Every business owner is edible. | (Every A is C.) |

To drive the point home in showing the difference between truth and validity, the following argument is *invalid* even though its premises are true:

Example 3: Invalid argument with true premises		
Premise 1	Every business owner is a human being.	(Every A is B.)
Premise 2	Every salesperson is a human being.	(Every C is B.)
Conclusion	Every business owner is a salesperson.	(Every A is C.)

Finally, the following is a sound argument, that is, a valid argument with true premises. Note that it has the same form as Examples 1 and 2:

Example 4: Valid argument with true premises		
Premise 1	Every business owner is a human being.	(Every A is B.)
Premise 2	Every human being is a living organism.	(Every B is C.)
Conclusion	Every business owner is a living organism.	(Every A is C.)

Although the valid arguments in Examples 1, 2, and 4 all have the same form, this is far from the only valid form that a logical argument may assume. To get a better idea of the variety of valid forms, we'll briefly look at two categories of valid arguments: arguments with syllogistic forms and arguments with non-syllogistic forms.

1. Syllogistic Forms

A *syllogism* (*qiyās*), or a logical argument with a syllogistic form, is a logical argument that has the property of *formal entailment*, which means that assent to its premises entails assent to another proposition necessarily and inherently on account of the argument's form. Thus, the distinctive feature of syllogistic arguments is necessary entailment. This is important for us because necessary entailment is a necessary (but not sufficient)[25] condition for certainty in the conclusion. Thus, it is a special feature of syllogistic arguments that they can lead to reflective assents that are *certain*.

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[25] Syllogistic form alone isn't a sufficient condition for certainty in the conclusion because it's possible for the premises to be false, let alone uncertain. In order for the conclusion to be certain, the argument must have necessary entailment through syllogistic form in addition to the premises being certain.

There are a number of kinds of syllogistic arguments. The most basic is the *conjoining syllogism* (*qiyās iqtirānī*). In a conjoining syllogism, each of the two parts of the conclusion is present in a premise together with a third term. This may occur in one of two ways. It may occur with propositions that are in subject-predicate form. Since this is the case in all the preceding examples in this chapter, we won't reiterate with another. Alternatively, a conjoining syllogism may occur with propositions that are in antecedent–consequent form, as follows:

Example 5: Conjoining syllogism with propositions in antecedent–consequent form		
Premise 1	If the time is 10:00 a.m., the session has begun.	(If A is B then C is D.)
Premise 2	If the session has begun, the doors are closed.	(If C is D then E is F.)
Conclusion	If the time is 10:00 a.m., the doors are closed.	(If A is B then E is F.)

Another kind of syllogistic argument is the *subjoining syllogism* (*qiyās istithnā'ī*), which begins with a hypothetical proposition composed of sub-propositions (in antecedent–consequent form) and then affirms or negates one of those sub-propositions. This also may occur in two ways. It may occur when the hypothetical proposition is a conditional statement in "if–then" form, as follows:

Example 6: Subjoining syllogism with conditional proposition		
Premise 1	If the meteor hit the ocean, there was a splash.	(If P, Q.)
Premise 2	The meteor hit the ocean.	(P.)
Conclusion	There was a splash.	(Q.)

Alternatively, a subjoining syllogism may occur when the hypothetical proposition is a disjunctive statement in "either–or" form, as follows:

Example 7: Subjoining syllogism with disjunctive proposition		
Premise 1	Either the little girl got ice cream or she cried.	(Either P or Q.)
Premise 2	The little girl did not cry.	(Not Q.)
Conclusion	The little girl got ice cream.	(P.)

The forms above are the ones discussed at length in standard logic books, but other forms of syllogistic arguments are sometimes recognized as well. The following *relational syllogism* provides an example:

Example 8: Relational syllogism		
Premise 1	The commander of the fatigued army was slain.	(The X of A is B.)
Premise 2	The fatigued army was defeated.	(A is C.)
Conclusion	The commander of the defeated army was slain.	(The X of C is B.)

Each of the syllogistic forms introduced above can be reconfigured in a variety of ways, retaining its validity with various orderings of terms, negations and affirmations of premises, and universalizations and particularizations of premises. Again, we refer the reader to the study of logic for this detail.

However, this sampling should be enough to show that all of these forms of argument have the property of necessary formal entailment. They are all ways of doing deductive reasoning, deducing a truth from other truths with absolute certainty as long as the premises are themselves absolutely certain. In all of the examples above, there is no way to doubt the conclusion unless you doubt either Premise 1 or Premise 2. This possibility of certainty is unique to syllogistic reasoning; it isn't shared by the non-syllogistic forms of argument to which we now turn.

2. Non-Syllogistic Forms

Logical inference doesn't always have a form that necessitates the conclusion. Non-syllogistic arguments use forms of inference that, when valid, entail the conclusion without absolute logical necessity, that is, tentatively. We might think of them as forms of argument that, while useful and sometimes even indispensable, aren't completely airtight. One common non-syllogistic form is the *inductive argument* (*istiqrā'*). Inductive arguments consist of an indefinite number of premises each of which contains the same judgment about a different individual that belongs to a common group, these individuals constituting the majority of the group. They conclude by generalizing that majority judgment to the group as a whole. For example:

Example 9: Inductive argument		
Premise 1	Parrots lay eggs.	(A is Y.)
Premise 2	Ostriches lay eggs.	(B is Y.)
Premise 3	Ravens lay eggs.	(C is Y.)
Premise 4...	Penguins lay eggs.	(D is Y.)

Conclusion	Every kind of bird lays eggs.	(Every X is Y.)

Assume that most kinds of birds are listed in the argument. Upon inspection, you'll notice that there's nothing about how the premises are related to each other that leads logically to the conclusion. Instead of formal entailment, the inference is founded merely on the stacking of cumulative evidence that makes the conclusion more probable. Inductive arguments derive their force from the sheer number of individual cases that are marshalled to support the conclusion. But this leaves them with a fundamental weakness: unless every last individual in the group is surveyed,[26] mere induction always leaves the possibility of a counterexample. A classic example of this is the case of black swans. In reality, black swans always lived in Australia. However, according to the record of European induction before the 17th century, black swans didn't exist.

Because of this weakness in the form of inductive arguments, the entailment in an inductive argument is never rationally necessary. As a result, such arguments never entail certainty in the conclusion, even if the premises are absolutely certain. Certainty in the conclusion requires *both* certain premises *and* an "airtight" form that makes the entailment necessary. Without an "airtight" syllogistic form, so to speak, the certainty in the premises "leaks" at the entailment step.

Despite this limitation, inductive arguments can be useful. In the absence of certainty, a tentative but probable judgment is better than no judgment at all. Moreover, it's easy to reformulate an inductive argument as a syllogism. For example, we can add to the argument above the conditional premise 'If parrots, ostriches, ravens, penguins, etc. lay eggs, then every kind of bird lays eggs', making the argument a subjoining syllogism. Although this maneuver does not change the strength of the argument, it shifts the point of weakness from a weakness in *form* to a weakness in *matter*, that is, in the new premise. With an airtight syllogistic form, the soundness and strength of the argument now rests entirely on the reasons we can give for this new premise.

Another non-syllogistic form of argument is the *analogical argument* (*tamthīl*). Analogical arguments consist of two premises: one that predicates some property (P) of some original thing (X) and another that compares a second thing (Y) to that original thing, asserting the presence of some crucial analogy or similarity between the two. Assuming that the analogy is a good one, we infer that Y must have the same property as X. The following example illustrates this.

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[26] When every individual is surveyed, the argument is an *exhaustive inductive argument* (*istiqrāʾ tāmm*), which is in fact a syllogistic argument rather than an inductive argument in the sense discussed here. As a syllogistic argument, it includes a disjunctive premise of the form 'A bird is either a parrot, an ostrich, a raven, a penguin…', listing every type of bird. This makes it such that if the premises are true then the conclusion is necessarily true.

Example 10: Analogical argument		
Premise 1	Speech is protected by the First Amendment.	(X has the property P.)
Premise 2	Speech and flag burning are both ways of expressing ideas.	(Y is analogous to X.)
Conclusion	Flag burning is protected by the First Amendment.	(Y has the property P.)

You might have noticed that there's an unstated assumption here, namely, the assumption that the analogy between speech and flag burning as ways of expressing ideas is a sufficient reason to conclude that they are equally protected by the First Amendment of the U.S. Constitution. In short, the entailment depends on the relevance of the analogy. Even when both premises are true, an irrelevant analogy can still lead to a false conclusion. For example, the analogy would clearly be irrelevant in the example above if we'd said instead that speech and flag burning are both acts that can provide sensational newspaper headlines. The potential to provide sensational newspaper headlines, even though truly common to both, lacks relevance because it isn't a reason for constitutional protection. We find, then, that the premises in an analogical argument can both be true but still not lead to the conclusion. Thus, analogical arguments lack formal entailment.

Despite this limitation, the basic idea behind the analogical form of inference has intuitive applications. This is especially true in legal reasoning, whether secular or religious. Just as religious jurists attempt to determine the divine ruling on one kind of act by reference to the divine ruling on an analogous kind of act, students of secular law study court precedent in historical cases to determine the underlying reasoning so that they can extend it to future cases.

Like inductive arguments, analogical arguments can be reformulated as syllogisms. For example, our argument above could be recast into the following two premises: 'Speech is a way of expressing ideas' and 'Every way of expressing ideas is protected by the First Amendment'. This removes the formal weakness of the argument, allowing us to focus on the problem at hand: is every way of expressing ideas truly protected by the First Amendment? If one can demonstrate with certainty that it is, then this restated syllogistic argument can lead to a conclusion that is certain.

Thus, whenever it's important to assess the warranted level of confidence in a reflective proposition, it's advisable to reformulate non-syllogistic arguments as syllogisms so that the assumptions—the assumption of the absence of counterexamples in the case of inductive arguments and the assumption of analogical relevance in the case of analogical arguments—are made explicit as premises that can be discussed and assessed as propositions in their own right. Doing this will allow you to see clearly where exactly the certainty in a given reflective judgment is lost rather than forfeiting that certainty simply by virtue of the non-syllogistic form of the argument.

◥ The Matter of Logical Arguments

Assessing the matter of a logical argument means assessing its premises. When we speak of premises, keep in mind that all premises are propositions; as such, they may be either immediate or reflective. Since every reflective assent is inferred from other assents, every reflective assent must ultimately be inferred from immediate assents; otherwise, we would have an infinite regress of never-ending assents and propositions. We say it must *ultimately* be inferred from immediate assents because it is possible for the reflective assent to be inferred from reflective assents that themselves are inferred from immediate assents, or that are also inferred from reflective assents that in turn are inferred from immediate assents, and so on. The point is that every inference must ultimately return to immediate premises and terminate there. If the inference has two immediate premises, it terminates there, and there is only a single inference. If it has at least one reflective premise, there must be a chain of inference.

The concept of a *chain of inference* can be illustrated as follows. Adam is trying some new candy, Gasp Gummies, and he forms the reflective assent that whenever someone eats Gasp Gummies, that person's friends will laugh. Adam draws this conclusion through Inference A (below), which has one immediate premise and one reflective premise. The reflective premise in turn has two immediate premises, shown in Inference B below.

Inference A		
Premise A1	These Gasp Gummies are extremely sour.	Immediate (Observation)
Premise A2	Whenever someone eats something extremely sour, his friends will laugh.	Reflective (*Inference B*)
Conclusion A	Whenever someone eats these Gasp Gummies, his friends will laugh.	Reflective (This inference)

Inference B		
Premise B1	Whenever someone eats something extremely sour, he will react strongly.	Immediate (Causal association)
Premise B2	Whenever someone reacts strongly, his friends will laugh.	Immediate (Causal association)
Conclusion B	Whenever someone eats something extremely sour, his friends will laugh.	Reflective (This inference)

Adam's final conclusion is Conclusion A. If Adam were to stop for a moment to assess Conclusion A, he'd have to begin by assessing Premises A1 and A2. Because Premise A2 is itself also a reflective proposition, he'd in turn have to assess the two premises in Inference B, Premises B1 and B2. Since

both of these last premises are immediate, there is no need for further assessment; the chain of inference ends with Inference B.

Articulating the full chain of inference for a conclusion is an epistemological ideal (though difficult in practice) because this allows you to completely assess the matter of the inference. The highest appraisal you could give a reflective judgment with respect to the matter of the argument is that all its premises are both true and certain. For immediate premises, this means that they meet the conditions for truth and certainty which we'll discuss shortly. For reflective premises, it means that they in turn must be conclusions of syllogisms with true and certain premises.

We conclude our discussion of the process of reflective assent by returning to our three initial questions, those regarding the warrant for belief, the warrant for confidence, and the warrant for the belief or confidence of others. Belief in a reflective proposition is warranted on two conditions: the logical validity of the argument's form and the warrant for belief in the premises that are the matter of the argument. Complete confidence in the belief is likewise warranted on two conditions: syllogistic form and certain premises. Finally, warrant for the belief or confidence of others depends on the publicity of the premises. The form of an argument has no bearing on this last consideration because the forms of inference are all public in the sense that they are common to all rational people.

We can see from this summary that an argument's premises all but dictate whether and how one is warranted in believing in the conclusion. And when those premises are themselves also reflective, one's warrant for believing them is in turn dictated by prior premises. Ultimately, then, the answers to our initial questions regarding belief in reflective propositions are based on the immediate propositions from which these reflective propositions are inferred. To these we now turn our attention.

IMMEDIATE ASSENT

Immediate assent can be helpfully categorized into three broad sub-categories: (1) assent through conception, (2) assent through experience, and (3) assent through insight. These are broad terms, so let's give broad definitions before diving into the specifics of the categorization. Assent *through conception* refers to the process of forming an assent directly[27] from one's conception of the terms in a proposition and the relation between them. Assent *through experience* refers to the process of forming an assent directly from one's *experience*, specifically, one's sensory perceptions (external or internal) and immediate inferences based on such perceptions. Finally, assent *through insight* refers to the process of forming an assent directly from knowledge acquired through special non-sensory experiences of the kind most people would not be able to replicate themselves, whether by means of the intellect, as in a sudden flash of intuitive realization, or by means of the soul, as in the mystical unveilings of saintly people. Each of these three classes includes various subclasses, as we'll see below.
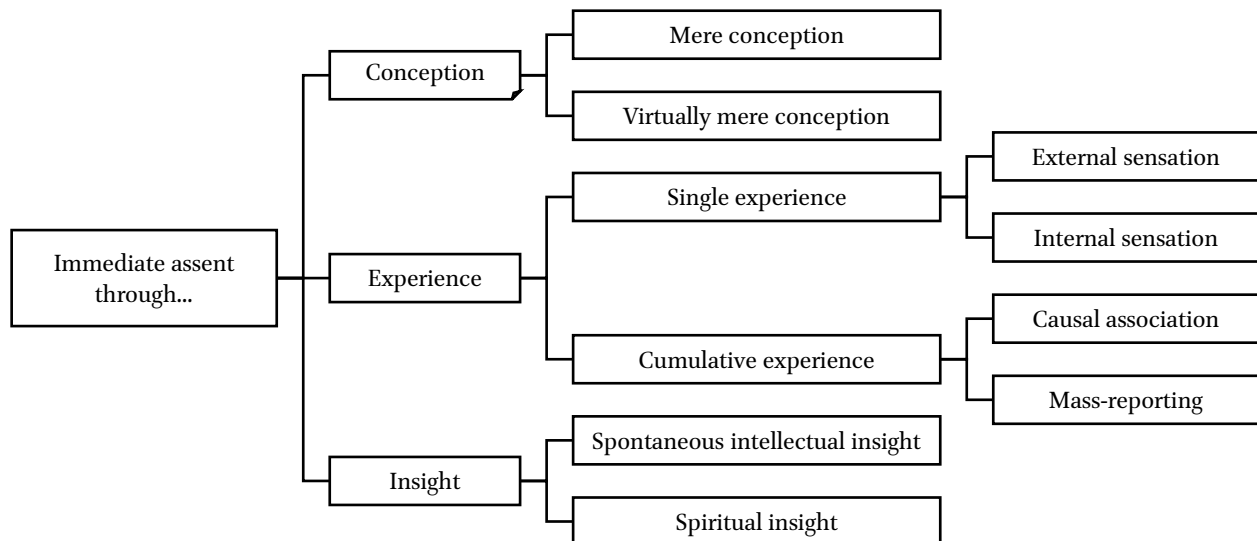
Once again, the purpose of this classification is that the process by which the intellect assesses a proposition dictates the conditions for warranted belief and confidence. Let's therefore dive into our classification of the processes of immediate assent. With each process, we'll proceed by describing the process first and then examining our initial questions:

- When does an immediate proposition of this kind warrant my belief?

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[27] The purpose of the qualification "directly" in these three definitions is to exclude judgments that draw on conception, experience, or insight for the inference of new knowledge through reflective reasoning. In this part of the chapter we're concerned solely with immediate judgments.

- When does it warrant my confidence?
- When does it warrant the belief or confidence of others?

We begin with the processes under the class of *assent through conception*.

◣ Assent Through Conception

Think about your knowledge that a whole is greater than any of its parts. In itself, this knowledge is not acquired through experience or special insight nor is it acquired through reasoning. Assuming one knows what's meant by the terms 'whole', 'part', and 'greater', one immediately and necessarily knows that a whole is greater than any of its parts, irrespective of one's particular experiences in life and without deriving this knowledge from other propositions. That is to say that this knowledge is *self-evident* (*badīhī*). Because the intellect can apprehend self-evident knowledge without resorting to experience or reasoning, anyone possessing intellect can arrive at this knowledge.[28] This process, the intellect's apprehension of the self-evident, is traditionally termed the *immediacy of the intellect* (*badāhat al-ʿaql*). As this term indicates, the only faculty directly involved in such judgments is the intellect, and it forms these judgments without the medium of any additional knowledge. There are two slightly different processes for assents of this class: (1) assent through mere conception and (2) assent through virtually mere conception.

1. Mere Conception: Self-Evident Propositions

Our example proposition above, 'A whole is greater than any of its parts', is an example of a *self-evident proposition* (pl. *awwaliyyāt*), a proposition that the intellect apprehends by the mere conception of its terms. For such propositions, when one properly understands the subject term, the predicate term, and the judgmental link between them, one immediately assents. Another example is 'A thing cannot both exist and not exist'. The mere conception of the terms in this proposition suffices

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[28] To be clear, when we deny that such knowledge is derived *through* or *by* experience, we are not necessarily denying that some amount of experience may be needed before a person can have such knowledge, especially as a prerequisite to actually conceiving of the terms in such propositions. For example, no one can deny that experience is vital in a child's mental development. Traditionally, Islamic philosophy distinguishes between an intellect that is still in a stage of *potential*, as in the "intellect" of a baby, and an intellect that is developed and *actual*, as in the intellect of a healthy and sane adult. An adequate amount of experience (and nutrition and growth) is necessary for this development. When we say that the intellect can apprehend some kinds of knowledge by itself without the aid of experience and reasoning, we are still assuming that the intellect has gone through this development. What we mean is just that some kinds of knowledge do not *intrinsically* require experience or reasoning. It would be a great mistake, for example, to claim that the proposition 'A whole is greater than any of its parts' is known empirically, i.e., *through* experience. Such a proposition is known by the unaided intellect.

for the intellect to conclude that it is true. There is no need to draw an inference from other propositions, nor is any other knowledge required beyond knowledge of the concepts themselves.

Let us now apply our rubric to this process of assent, assent by mere conception, and its corresponding type of proposition, the self-evident proposition. We begin with the conditions for warranted belief. Because the intellectual assent to self-evident propositions requires no inference, the conditions for warranted belief in these propositions are rather simple: the terms must be properly understood and one's intellect must be sound and sufficiently mature (we wouldn't expect an infant to believe even the most evident propositions).

Self-evident propositions are inherently certain (*yaqīnī*) and warrant confident belief. This is because a judgment can never change if it is based on the very meaning of the terms. That being said, self-evident propositions may not always *seem* absolutely certain in terms of the subjective consideration of different people. How strong the proposition seems depends on the level of clarity its terms have in the mind of the knower. If the concepts are clear to the utmost degree, the self-evident proposition will seem certain to the utmost degree. This explains why propositions like 'A thing cannot both exist and not exist' are so unquestionably certain: they are self-evident propositions whose terms ('thing' and 'exist') are so clear that one can't even come up with definitions for them that are clearer than the terms themselves. However, if the concepts are complex and difficult to wrap one's head around, then a self-evident proposition may be held without the same feeling of certainty, like the proposition 'A person's father's only brother's wife's only brother-in-law is that person's father'. You can work this out eventually, and you'll realize that the statement is necessarily true. Although the subject of the proposition is too complex for the proposition to be immediately obvious in the same way as the previous examples, the proposition is still certain in itself because its subject and predicate, when their meaning is worked out, don't allow any other judgment.

Proceeding with our rubric, we turn to the property of availability. The belief in self-evident propositions is *actually public*, which means that every mentally sound adult can reasonably be expected to share such a belief since his intellect must assent to it. This is because every mentally sound adult possesses the only prerequisite to such knowledge—a sound intellect.

2. Virtually Mere Conception: Naturally Evident Propositions

A *naturally evident proposition* (pl. *fiṭriyyāt* or *qaḍāyā qiyāsātuhā maʿahā*) is also a proposition that the intellect apprehends whenever it conceives the terms, though unlike self-evident propositions assent does not occur *merely* because of that conception. The process for the assent is slightly different: the intellect perceives that the predicate is entailed by the subject not by itself but through a third term which the human intellect by its very nature regards as so closely related to subject and predicate that it make an *implicit inference*—a subconscious, involuntary inference of a conclusion

from premises—on the basis of the entailment. An example of a naturally evident proposition is 'Four is an even number'. 'Even number' is entailed by 'four' through the third term 'divisible by two'. The human intellect by its own nature regards this relation between these terms to be sufficiently close that it is almost as though the proposition were true merely through conception of the terms. In truth, however, the conception of the terms prompts the intellect to instinctively draw the following implicit inference: 'Four is divisible by two; everything divisible by two is an even number; therefore, four is an even number'. This step in the process sets it apart from the process of assent through mere conception, which as we saw above doesn't include inference.[29]

Turning to our rubric of questions, then, warrant for belief in naturally evident propositions depends on an additional condition beyond the conditions that apply to self-evident propositions: not only must the terms be clear and the intellect sound, but the concepts must also be regarded as close to each other by the natural operation of the intellect. In the example above, 'four' and 'even' are naturally regarded as very close to their third term, namely 'divisible by two', and this makes for an unshakably certain immediate assent. But not every entailment through a third term is close enough for an immediate assent. For example, assume that the proposition 'Every snowman is made in a cold place' is true. The third term here is 'made in a place that doesn't melt snow'. But the connection between 'snowman' and 'made in a place that doesn't melt snow' is perhaps not as immediate and natural to the intellect as the connection between 'four' and 'divisible by two'. As such, this would be an example of a reflective proposition, not a naturally evident one. To form an assent, you would have to think about the connection between the terms, arrive at the third term 'made in a place that doesn't melt snow', and then rationally infer the proposition 'Every snowman is made in a cold place'.

As with self-evident propositions, naturally evident propositions are always certain. If the proposition meets the conditions for warranted belief, then it warrants complete confidence. Also as with self-evident propositions, belief in naturally evident propositions is public. Everyone has access to the faculty by which such assents are made, namely the intellect, and nothing besides the intellect is required to conceive the terms and draw the implicit inference through the third term.

◣ Assent Through Experience

We now come to a more complex class of immediate assent, the class of immediate assents formed through a process that draws on experience. Think about your knowledge that the sky is blue.

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[29] As a reminder, recall that *inference* is only a part of and not the same thing as *reflective reasoning*: reflective reasoning is a conscious and deliberate act that begins with reflection and culminates in inference. So, although they do involve inference, naturally evident propositions are still immediate, like self-evident propositions, because they do not involve reflective reasoning.

Without your senses and left only to your unaided intellect, this knowledge would have been beyond your reach. No matter how hard one thinks about the concepts 'sky' and 'blue', one can never ascertain whether the sky actually is or is not blue without the help of sensory experience. That is to say that the proposition 'The sky is blue' expresses an assent through experience.

We're using the term *experience* here in the sense of empirical experience, or knowledge based directly on sensory perception and observation. We add the qualification "directly" to exclude the kind of experience-based knowledge that begins with experience but then requires inference through reflective reasoning, like the knowledge that the planet Jupiter is composed of hydrogen and helium, which is based on scientific reasoning rather than direct perception. The category of experience ranges from knowledge based on an individual sensation (like 'This flower is bright violet') to knowledge based on the cumulative experience that results from multiple sensations (like 'Paracetamol relieves headaches'). Under each of these two categories are two classes; this adds up to a total of four processes of immediate assent through experience, which we discuss in turn below.

■ **(3–4)** *SINGLE EXPERIENCE*

All empirical knowledge is based on the perception of the senses in one way or another, and this always begins with individual, particular sensations, or *single experience*. The general mechanism of this process is that one acquires sensory knowledge through an instance of perception by means of a sensory faculty, and then the intellect arrives at propositional knowledge on the basis of that sensory knowledge. There are two types of single experience: (1) external sensation and (2) internal sensation. Let us examine these below.
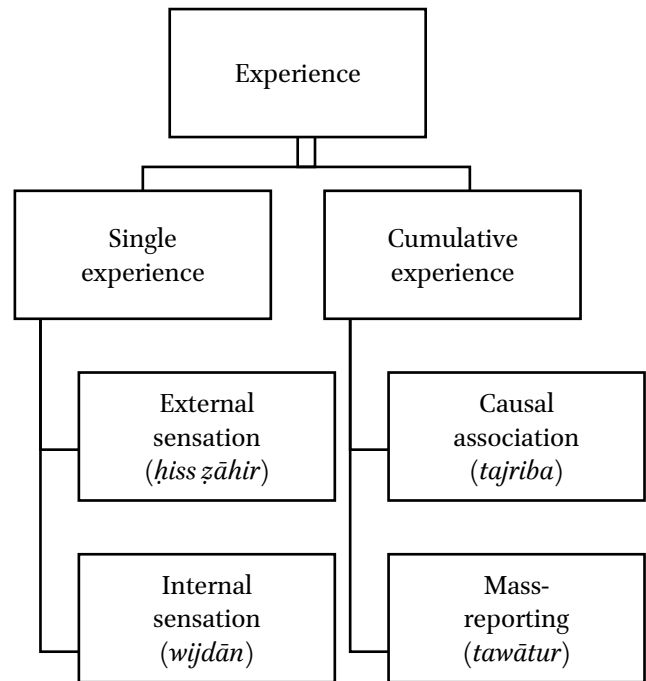
3. External Sensation: Observational Propositions

Assent through external sensation results in *observational propositions* (*mushāhadāt*). Recall that *external sensation* refers to perception through any of the five external senses: sight, hearing, touch, smell, and taste. After your sense organ collects sense input through interaction with your physical environment, like when your eyes or skin are exposed to the sun or when your mouth bites down on a

fresh apple, you've had what we could describe as "raw" or "unprocessed" pre-conceptual knowledge, which we discussed in Chapter 3. Your intellect processes this knowledge and produces concepts and propositions on the basis of what you've experienced. For example, if the sun is shining brightly on a cloudless summer day, that experiencing of the sun shining will be formulated as the proposition that the sun is shining hot and bright, and if the apple is sour, that experiencing of the sour flavor will be formulated as the proposition that the apple is sour. If not for your intellect, you would have nothing but a collection of experiences—images, feelings, tastes—strung together without logical order: the experience of the sun burning on your skin, the experience of brightness dazzling your eyes, the experience of sourness tingling on your tongue. Your intellect gives order to this collection of experiences by treating the apple as subject and sour as predicate in one proposition. This is the natural function of the intellect, to perceive the order of things in reality and to reflect that logically in the human mind. With single sensations, this intellectual process occurs without even an implicit inference—with just the perception of the external objects.

Since no inference is involved, the question of warrant for observational propositions is simple. Belief in these propositions is warranted when in addition to the usual conditions (possessing sound intellect and understanding the terms), the conditions for valid sensory knowledge are also met. Your sense faculties, from the organs like the eyes and ears to the neurological systems connecting these organs to the brain, must be sound and healthy. The environmental conditions must be right; obstructions like dim lighting, deafening noise, or an overwhelming stench will obviously hinder your ability to see, hear, or smell something correctly. Moreover, you must be reasonably sure there are no other influencing factors at hand, like optical illusions or deliberate deception or manipulation by others. Given that all of these conditions are satisfied, the intellect assents to the proposition, thereby warranting belief.

These might sound like many conditions, but the fact is that they are almost always all met in daily life, assuming one doesn't have permanent impairments. Without paying conscious attention, you form thousands of individual sensory judgments every day: 'This glass cup is round', 'This water is cold', 'The cup just made a sound when I put it down on the table', 'The oven is making a beeping sound', 'The cake smells heavenly', etc.

One additional condition comes into play in cases when recalling a past event, namely, soundness of memory. Memory, as classified in Chapter 3, is an internal cognitive sense that operates by the function of the brain, storing sensations for later recall.[30] This function is not flawless; memories

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[30] Because memory is an internal sense, we could classify all knowledge of remembered events as assent through internal sensation. However, we think it is more helpful to classify the assent according to the original sensory object: if the object was originally external, like an apple or cake, then the knowledge of that memory counts as external sensory knowledge, and if the object was originally internal, like hunger before eating the

generally deteriorate with time, and they can even be influenced by later experiences. You must reasonably believe your memory is serving you well when you judge that the cake from your twentieth, tenth, or fifth birthday was delicious.

These are also the conditions that determine the warranted level of confidence of your belief. When all the conditions are met, observational propositions are absolutely certain. But give it ten or twenty years and your memory might begin to falter just a little bit, bringing the proposition just below (or, depending on circumstances and the particular proposition, perhaps well below) the level of certainty. Or adjust the lighting, e.g., by trying to do your bird-sighting in the dark of night, and you may not be certain whether you saw a crow or a blackbird.

Beliefs based on assent through external sensation are potentially public; other people can be reasonably expected to share the beliefs only if they have actually had the relevant sensations. For example, the proposition 'This apple tastes sour' is in principle public because it only presupposes intellect and the sense of taste, which are both common, and the specific experience of tasting the apple, which is potentially accessible to anyone. However, it is unlikely that very many people will actually have the chance to taste one and the same apple! Thus, although they are public, beliefs about observational propositions vary in the actual scope of their warrant. The Niagara Falls are a lasting, accessible natural wonder; millions of people are able to have sensory knowledge of them every year. The apple you had yesterday, by contrast, was available to far fewer people's sense faculties and is now permanently inaccessible to future generations.

4. Internal Sensation: Introspective Propositions

Assent through internal sensation results in *introspective propositions* (*wijdāniyyāt*). Such sensation occurs not through the five senses of sight, hearing, etc. but rather through one's internal consciousness. Consider the bodily feelings of hunger and fatigue and the emotions of joy and anger. These are no less objects of perception than are the external things you see and hear; it is only that you experience and perceive them with different faculties. These faculties provide "unprocessed" pre-conceptual knowledge in the same way that the external senses do, which is then formulated into propositions by the intellect. For example, your experience of delight as your close friend wins an estimable award is reflected logically in the proposition 'I am delighted'. As with assents about external objects, such assents occur with no inference at all—with just your perception of an internal state.

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apple or pleasure when eating the cake, then the knowledge of that memory counts as internal sensory knowledge.

Belief in introspective propositions is warranted, then, in the same way as belief in observational propositions. With possible exceptions when one is in an altered mental state, one is always warranted in forming beliefs about one's internal perception and one always makes these judgments with certainty. You cannot be wrong or uncertain about whether you are afraid or agitated or happy. Descartes famously expressed this certitude about internal perception when he reasoned, "I think; therefore, I am." Even given his skeptical philosophical method,[31] he couldn't conceive of doubting the fact that he was thinking.

Introspective propositions are the first class of propositions we have encountered in which one's beliefs are not public but rather *private*. There is no way for another person to arrive at an assent through internal sensation that *you* are hungry just as there is no way for you to arrive at an assent through internal sensation that he is hungry. Although each of us possesses the same internal faculties, these faculties perceive only the inner states of their respective possessor. Insofar as it is formed through internal perception, the proposition 'I am hungry' never occasions a public belief. Now, it is true that your friend may know you are hungry by rational deduction from the fact that you haven't eaten all day, by believing you when you tell him you are hungry, or by hearing your stomach rumble. However, as you'll notice, all of these are completely different processes for the formation of the assent than the process of internal sensation, so they would not belong in this class.

■ (5–6) *CUMULATIVE EXPERIENCE*

Many of the immediate assents we base on experience reflect not an individual perception but rather the experience that we've gained through a number—often a very great number—of individual sensory perceptions, or our *cumulative experience*. In these cases, the process of assent is necessarily more complex. In addition to the perceptions, we depend on our cognitive faculties to preserve memories and to recognize patterns and connect similarities, and we depend also on the intellect to perform implicit inferences. There are two types of cumulative experience: (1) causal association and (2) mass-reporting.

5. Causal Association: Experiential Propositions

Assent through causal association results in *experiential propositions* (*mujarrabāt*). This process of assent begins with sensing two phenomena together on a number of occasions and forming individual assents accordingly. For example, you observe the qualities of a beef steak changing on the grill, and

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[31] Descartes went wrong in a number of ways, including that he assumed he had to prove his own existence. In truth, one always perceives oneself and one's own existence even more strongly than one perceives one's mental act of thinking. Descartes also went wrong in assuming he had to prove external propositions. These are all types of immediate propositions that he mistook for reflective propositions.

you form the pair of propositions: 'The meat was exposed to sustained heat' and 'The qualities of the meat changed'. You notice that these events occurred at the same time and in the same place. Later, a similar conjunction of events occurs when you observe thin cuts of chicken breast broil in the oven and you form the same pair of propositions, noticing the conjunction once again. By the function of your cognitive faculties, this conjunction eventually leads to a mental association between two kinds of events. With time, this association strengthens as you repeatedly witness the same process occur with different types of meat and different types of heat; what remains constant in every case is that meat was exposed to sustained heat and then its qualities changed. These similar experiences having been grouped together in your mind, your intellect judges on the basis of these repeated observational judgments that there is a *causal connection*[32] between meat being exposed to sustained heat and changing in its qualities, such that whenever the first occurs, the second will occur as well.

Now, perhaps for the sake of this example you haven't studied chemistry or you just don't remember from your science courses exactly what chemical reaction is going on; you don't quite know *how* heat causes a change in the meat. This doesn't affect the judgment. Whether or not you know *why* or *how* the cause leads to the effect, your intellect is able to draw the conclusion, without the act of reflective reasoning on your part, that there is *some* causal connection involved in the process of cooking meat. This is an implicit inference with the following form:

Implicit inference in assent through causal association	
Premise 1	There is, in various circumstances, a constant pairing of the event that meat is exposed to sustained heat and the event that the qualities of the meat change.
Premise 2	Whenever there is a constant pairing of events in various circumstances, there is some causal connection between the two.
Conclusion	There is some causal connection between the event that meat is exposed to sustained heat and the event that the qualities of the meat change.

Note that Premise 2 is always the same in the implicit inference of any experiential proposition; only Premise 1 and the conclusion change from case to case.

The process of assent through causal association is immediate because such an inference needs no voluntary reasoning; the conclusion is drawn from the premises by the intellect naturally and without actively considering them. Children are capable of this cognitive activity early in their development, and necessarily so, because recognizing causality is crucial to how we human beings make sense of the world. Imagine a world where the human mind lacked any immediate recognition

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[32] When we refer to causality, we don't mean necessary or inherent causality. Theologically, the causality we ordinarily attribute to things is the result of the regular course of Allah's creation of effects. The real effective cause of every effect is Allah's creative act.

of causality. In such an imaginary world, you'd have to rationally deduce the presence of causality in every single causal process, from the process of food satiating your hunger to the process of pool water splashing when slapped by your hand! This would be painfully tedious and would make human beings very slow learners. The fact is that we recognize the causality in such situations without having to reflect and reason in order to discover it.

The warrant for belief and confidence in experiential propositions depends on the regularity and consistency of the conjunction of events and on making observations in a sufficient variety of circumstances (for the same reason you must control the variables in a scientific experiment, except that scientific experiments are conducted for reflective propositions).[33] If you observe two or three times that it began to rain when you entered the pool, your intellect will not judge that entering the pool causes rain. The conditions haven't been met for a judgment of causality: more than likely you either haven't entered the pool enough times or haven't tried to swim under a clear sky. But the more that you experience a pairing between the event of solid objects impacting the surface of a body of water and the event of a splash on the water's surface, the stronger the judgment will become that causality is at play. It's possible for such judgments to produce assents that are absolutely certain, though in many cases they're merely probable assents that warrant a very high level of confidence.[34] This is something you can evaluate for yourself. When you consider your knowledge that water quenches thirst, you'll find in yourself firm conviction that this is so. Compare the strength of this knowledge in your mind to your knowledge of other causal relationships, especially about things you've recently learned about and haven't observed very many times.

Because they depend on the cumulative experience of observing a conjunction firsthand on various occasions, experiential propositions warrant beliefs that are only potentially public. That is, such beliefs are public with the condition of experiencing firsthand a constant conjunction between the kinds of events in question. This means that you can't expect someone who's only heard about pain medicine but never actually taken it to know—by an immediate process of assent—that Paracetamol relieves headaches. Nor is there rational warrant for someone who has only had the

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[33] Although the traditional term for the constant pairing of events in experiential assents is *tajriba* (literally "testing"), this can be a misleading term. When you *test* for a result, you're undertaking a process of *reflective reasoning* (*naẓar*), because you're actively and methodically seeking a result, usually on the basis of a hypothesis. Scientific methods of inquiry and experimentation are applications of reflective reasoning.

[34] According to one position, such assents are in fact never absolutely certain. This is because of their inductive aspect: it's always possible to have a new experience where things occur differently on account of some change in a variable you hadn't considered before. Perhaps the best view is that causal association only gives you certainty on fundamental aspects of human experience, like water quenching thirst, and it gives you various degrees of probability with respect to most other causal connections.

experience once to share the same immediate knowledge as you, who have had the experience ample times. Thus, if you were to prove a conclusion to other people on the basis of an experiential premise, you'd have to verify beforehand that they've actually met the conditions for that immediate assent themselves. Otherwise, you'd have no common premise, and they could object to your proof.

6. Mass-Reporting: Mass-Reported Propositions

Assent through mass-reporting results in *mass-reported propositions* (*mutawātirāt*).[35] This is a process of forming an assent based on the cumulative weight of the reports of many other people. A *report* here is not just anything that another person tells you; it's specifically the narration of an *observational proposition*. Recall that an observational proposition expresses a judgment about an individual sense experience. Thus, 'Democracy is the best form of government' is not a report, because it does not relate a sensory observation; 'Fire burns lint' is not a report, because it does not relate an individual experience; and 'The qualities of meat change under sustained heat' is not a report, for the same reason. A proper example of a report is 'Philadelphia exists', since this can be ascertained by the individual experience of going to Philadelphia and seeing it. A couple other examples are 'It rained here yesterday' and 'His friend is in the hospital'. One of the most consequential and familiar reports to Muslims is 'A man named Muhammad claimed to be a messenger and backed this claim with the Quran'.[36]

Assent through mass-reporting falls under the category of cumulative experience because it is based on the cumulative experience of hearing many individual reports about the same sensory phenomenon. Hearing a report is itself a sensory experience because it necessarily involves the sensory experience of communication: you hear with your ears what people tell you. After this sense experience, your intellect converts the report into an individual observational proposition, as in 'My family told me that it rained briefly while I was asleep'. Now, even if you can't see traces of the rain outside, assuming you trust your family members, this entails the proposition 'It rained while I was

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[35] In the context of Quran and hadith studies, discussions of *mass-reporting* (*tawātur*) highlight an aspect that we don't focus on here, which is that mass-reporting technically must occur through an unbroken chain of transmission that begins from the original historical source. The transmission must consistently be ubiquitous at all links in the chain. The reason we don't focus on this requirement here is that most ordinary mass-reported propositions—like propositions about the existence of other countries—are reports about present-day events rather than historical narrations, so there isn't a need for chains of transmission. The remarkable phenomenon of mass-reported *historical* narration is particular to the Islamic tradition and speaks to its deliberately rigorous preservation of its scriptural sources.

[36] By contrast, the proposition 'Muhammad is truly a messenger of Allah' is a reflective proposition. It's left to us to infer through reflective reasoning, based on our immediate knowledge that the Blessed Prophet made a claim to messengerhood and backed this claim with the Quran, that his claim was actually true.

asleep'. However—and this is the important part—a conclusion from one person or a few people is not immediate, because it is not reported with overwhelming ubiquity. Such a conclusion must be inferred through reflective reasoning; in this example, you must add the premise 'If my family tells me something like this happened, then it did happen' and draw the conclusion yourself.

But suppose that after the testimony of your family, you go outside and your neighbor greets you and says, "That nice little sprinkle of rain just now gives me hope for a good season." Suppose you proceed by taking your daily stroll and somehow four other unrelated people at different places and times end up telling you the same thing, that it rained briefly just an hour ago. By now you *know* that it rained while you were asleep. Whenever an observational proposition is reported by enough people that it would be irrational to suspect them of all being wrong—whether by willful conspiracy or by mistake—and those reports are made directly to you through your own senses, then you gain conclusive certainty that the reported proposition is true.

This occurs without reflective reasoning, as you can see illustrated in your own experience by the fact that you have probably never actively reasoned toward your knowledge that Philadelphia exists or that Antarctica is extremely cold. Mass-reported propositions like these are acquired through implicit inference. The implicit inference is of the form illustrated in the table below.

Implicit inference in assent through mass-reporting	
Premise 1	This report was reported by so many people that it would be absurd to believe that they are all wrong.
Premise 2	Any report reported by so many people that it would be absurd to believe that they are all wrong is true.
Conclusion	This report is true.

Premise 1 and the conclusion vary according to the report in question, but Premise 2 is always the same in any case of mass-reporting. The intellect draws such inferences without deliberate thought, and they form much of the foundation of what we know about the world. Without this category of assent, all of our sense-based knowledge would have to be acquired either firsthand or by methodical, reflective verification of the reports of others. But the fact is that much of the sense-based knowledge we receive secondhand, through the reports of others, is knowledge that is so overwhelmingly widespread that the intellect doesn't even need to rationally verify it through reflective reasoning. This mass-reported knowledge is immediate.

Warranted belief and confidence in mass-reported propositions depends on the number of reports and on the variance of the circumstances of the people reporting. Imagine that you walk into a big hall with a hundred people who are all staring at you, and the moment you enter they all announce to you in unison that just a moment ago there was a winged elephant flying around the hall.

Given that they are all in the same place at the same time doing the same thing, and given the nature of the report, there's a very big chance that those people conspired to prank you. Their report would not qualify as a mass-reported proposition, and you wouldn't be warranted in believing that there really was a flying elephant. Contrast this example with the example of the report about rain from various people around the neighborhood. In the latter, the reports came from sources who were in circumstances different enough that you would never stop to doubt their genuineness. Such reports produce certainty. Whenever these conditions are not completely met, whether by a deficiency in the number of reports or in the variety of circumstances, the conclusion is no longer certain and no longer immediate; it becomes a reflective and probable assent whose precise level of warranted confidence must be inferred by reasoning.

As with experiential propositions, mass-reported propositions are potentially public, the condition being that of experiencing a sufficient number and variety of reports for oneself. This means that a given proposition may be mass-reported for one person but not for another. The first person has fulfilled the conditions that engender assent through mass-reporting, and his belief in the report warrants complete confidence; the second person either doesn't assent at all or assents through a different process, like that of reflective reasoning.

◣ Assent Through Insight

Our classification of the processes of immediate assent wouldn't be complete without the final process, assent through insight. This refers to assent that arises directly by means of a special non-sensory experience, or insight. This insight may be of a spontaneous, intellectual kind or a spiritual kind.

7. Spontaneous Intellectual Insight: Intuitively Inferred Propositions

Spontaneous intellectual insight is the process by which the intellect forms an assent through one or a series of implicit inferences in a sudden flash of intuitive inference. *Intuitive inference* (*ḥads*) means an instantaneous transition of the intellect toward premises and their conclusions, as opposed to the sequential process of inference in reflective reasoning. Thus, not just any intuition counts as intellectual insight; although we often use the word "intuition" to refer to gut feelings and impulses, these are something else entirely. In the sense of the word we're employing here, an intuition is more like an "Aha!" or "Eureka!" moment that leads to real intellectual knowledge. We call propositions that express such knowledge *intuitively inferred propositions* (*ḥadsiyyāt*).

Spontaneous intellectual insight may be based on sensory, observational premises or it may be based on non-sensory premises. For example, a scientific theory may arise by spontaneous intellectual insight as the culmination of a number of sensory observations. To illustrate this, imagine that you

never learned that the light of the moon reflects the light of the sun. Over many nights throughout the month and the year, you observe the moon in its various phases from a crescent to a full moon. These are individual observations, and they lead you to conclude upon reflection that, generally, the lunar phase corresponds to the respective positions of the moon and the sun. With this correspondence in mind, you suddenly realize in a flash that the moon must be reflecting the light of the sun. This was never something you tried to figure out, and you never constructed an argument to back that conclusion. Yet, now that you think of it, you are absolutely certain that your intuited theory is the only plausible explanation of your previous observations. In your moment of realization, you had formed a true proposition through intuitive inference.

The process of intuitive realization need not be based on observation. Any case in which the intellect makes an instantaneous inference in a moment of sudden realization without active deliberation over the premises is a case of intuitive inference. If a person makes such inferences often, this is a sign that the person is gifted in intelligence. When such a person arrives at intuited conclusions, there are many situations in which he'll try to work backward to figure out the premises, since the premises were not explicitly present as propositions in his consciousness when he made the intuitive inference. This, in fact, is a common experience; most people make intuitive inferences to some degree, whether or not those inferences are frequent and whether or not they grant certainty. You'll often find that it can be a difficult task to articulate the premises of your inference when you explain your realization to another person, and it can even be frustrating when that person hasn't made the intuitive realization himself.

Such moments of intuition are crucial and indispensable for discovery and innovation. However, it remains crucial in the context of a particular science to be able to "reverse-engineer" the intuited inferences and articulate them as proper logical arguments (in whatever the appropriate, conventional form of logical argument is for that science or field). This is because beliefs formed through spontaneous intellectual insight are private rather than public, since in general most people are not readily able to reproduce the intuitive realizations that warrant these beliefs. Only by treating the intuited proposition as an object of reflective assent and actually articulating the premises does it become possible to teach this knowledge to others in the field and to prove that the conclusion is in line with the epistemic methods of the science in question.

Because moments of intuitive realization are spontaneous and they don't proceed step-by-step, it's easy for one's intuition to lead to conclusions that are merely probable. Certainty requires what is traditionally termed a *strong intuition* (*ḥads qawī*), which in turn depends on the capacity and strength of one's intellect. A person gifted with a powerful intellect, and, according to some, a

powerful spiritual capacity, is much more likely than other people to have the kinds of experiences that could be termed strong intuitions.[37]

8. Spiritual Insight

Our final class of immediate assent is that of assent through spiritual insight. To illustrate this process, it might be helpful to draw a practical analogy with the process of assent by external sensation. In the latter, your sensory faculties are exposed to some physical object, and your intellect captures the experience by formulating it as a proposition like 'The apple tastes sour'. To proceed with the analogy, then, one's spiritual faculties may be exposed to some spiritual object or meaning, whether by the direct act of Allah or through the acts of His angels, and one's intellect may capture the experience by formulating it as a proposition. But because human language has been adapted to communicate things about the ordinary sensory things we all encounter in ordinary life, language is often ill-suited to express such knowledge. Nevertheless, in many cases throughout history, saintly people gifted special knowledge have for various reasons done their best to articulate and describe such experiences in language, which has often led them to resort to metaphor and imagery.

Belief in the propositions one forms through genuine spiritual insight, or unveiling (*kashf*), is warranted for those who genuinely have such experiences, and such propositions are never at odds with the true and sound knowledge one gains through the other processes of assent. There is a complementary relationship between all the sources of knowledge. Just as spiritual realities don't vitiate religious law, knowledge of the inward dimensions of reality doesn't vitiate knowledge of the outward dimensions. That being said, although spiritual insight is a legitimate source of knowledge, there isn't a technical Arabic term for logical propositions expressing knowledge of this kind, which reflects the fact that such knowledge has no role in the epistemic methods of most sciences. The sciences, for the most part, are a public body of knowledge; they involve knowledge that can be obtained through common sources and taught and studied as such. Spiritual knowledge, on the other hand, is private. This is even more the case for spiritual knowledge than for introspective knowledge. To compare the two, although internal sensations like hunger and fear are also accessible only to the person experiencing them, they are at least common to everyone in the sense that everyone experiences hunger and fear. But mystical experiences are more exclusive; not everyone undergoes the kind of spiritual purification that would normally precede such insights, and not even everyone who does undergo spiritual purification is gifted all forms of mystical knowledge in this life.

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[37] There is some disagreement on whether intuitively inferred propositions are immediate or whether they are simply a special class of reflective propositions.

Chapter 5

REASONING & CRITICAL THINKING

◣ Reasoning in the sciences

◣ Critical thinking

◣ Thinking critically about the empirical and the revealed

In the previous chapter we analyzed the epistemology of assents with the aim of learning how to critically assess any proposition to determine whether the proposition, whether reflective or immediate, warrants belief or confidence. But, as you might find, the classification we offered in the previous chapter, complex as it may have been, isn't inherently sufficient for assessing every proposition you might encounter. This is particularly the case with reflective propositions, of which any assessment depends on the particular argument used. In reality, you can't make a satisfactory assessment of an argument without appropriate knowledge of the subject matter. If a marine biologist were to offer you an argument for why manatees are closely related to elephants, you'd probably just have to trust his facts and nod in agreement—unless you had also studied the field yourself. While epistemology provides the outline by which to assess propositions and arguments, epistemology is ultimately only a supplement to knowledge of the actual subject at hand. In fact, it takes a very comprehensive and specialized level of knowledge and expertise in a particular field to be able to construct your own reflective arguments from premises that go all the way back to immediate premises.

This doesn't mean that epistemology is fruitless for everyone except specialists and experts. What it does mean, however, is that the way you're able to assess a proposition depends on your level of knowledge about the subject. In the ideal case, you are a *specialist* on the subject and can thus give it a thorough analysis and assessment. In the worst case, you are *completely ignorant* about the subject and must therefore suspend judgment entirely until you learn more. Practically speaking, in most cases of interest you'll most likely be an *educated nonspecialist* who is somewhere between these two extremes. In such a case, your most important goal from the perspective of epistemology is to think critically about the proposition in terms of what you do know about the subject matter in order to reach the most appropriate and reasonable conclusion for your level of knowledge. Thus, in this chapter, we offer guidelines for reasoning about various important areas of knowledge as a

nonspecialist. First, however, we will briefly introduce the ideal case, the case of the specialist, in order to illustrate what it would mean to completely analyze and assess a reflective proposition.

◥ Reasoning in the Sciences

The ideal case in epistemology is the case of a specialist who has comprehensive knowledge of his field. Such a person is able to approach the reflective propositions of his field through the framework of the *sciences*.[38] A science is defined as a collection of reflective propositions unified by a subject of inquiry as investigated from a specific perspective.

As this definition reveals, there is a significant difference between this technical notion of a science and the common contemporary notion of an academic discipline or field of study. Academic disciplines are generally defined and classified in line with university departments and academic journals and societies. Since departments, journals, and societies are social institutions associated with specific social interests and supporting specific kinds of careers in education, publishing, etc., academic disciplines are naturally defined by these factors, which are supplementary to knowledge itself. By contrast, a *science* is defined by the knowledge itself, the actual propositions and assents pertaining to a given subject matter.

As stated in the definition above, a science is a collection of reflective propositions. As such, one could say that its "parts" are technically its individual propositions. Nevertheless, in a helpful abstract sense, a science can be divided into three elements: (1) the subject into which the science inquires, (2) the principles on which the science builds, and (3) the actual propositions of which the science consists.

1. The *subject of inquiry* (*mawḍūʿ*) is the thing whose properties are investigated in the science.[39] For example, we can say that the subject of inquiry in the science of biology is living things, and we can say that biology investigates the properties appropriate to living things, like reproduction and cell division. In some cases, the subject of inquiry involves a qualification. For example, we can say that the subject of inquiry in medicine is the human body *as qualified* by health and sickness. This qualification is reflected in the kinds of properties investigated in the science—medicine, for example, isn't concerned with the human body's athletic capabilities but is concerned with properties like hypertension and diabetes.

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[38] When we say "*a* science" we're using the term in its original sense, where it's not restricted to modern natural science.

[39] This is a simplification.

2. The *principles* (*mabādi'*)[40] of a science are all the concepts and propositions upon which knowledge of the actual propositions of the science depends. This includes the conceptual definitions of the subject of inquiry and its properties (like the definition of hypertension), and it includes all those propositions that serve as premises in proofs for the propositions of the science. Such propositions function as axioms in the science; they themselves aren't proven in the science, either because they are immediate or because they are reflective propositions proven in another science from other axioms in turn.

3. The *theses* (*masā'il*) of a science are the reflective propositions that are proven in the science, and they are what actually makes up the science. The subject term in every thesis is either the science's subject of inquiry or a part, particular, or property of the subject of inquiry.

The subject of any thesis can relate to the subject of inquiry of its science in one of three ways: it can be identical to the subject of inquiry, a subcategory (*naw'*) of the subject of inquiry, or an essential property[41] (*'araḍ dhātī*) of the subject of inquiry. For example, if the subject of inquiry in a science like anthropology is 'human beings', then the subject of that science's theses will either be 'human beings', a subcategory like 'Texans', or an essential property like 'scriptwriters'.

The order of the subject and predicate in a proposition should reflect the focus of the inquiry. Consider the propositions 'Prophet Ibrāhīm (upon him be peace) built the Ka'ba' and 'The Ka'ba was built by Prophet Ibrāhīm (upon him be peace)'. The difference between these two propositions is in the subject. In the first, the subject is 'Prophet Ibrāhīm'. This would be an appropriate ordering of terms for a thesis inquiring into, say, the lives of the prophets. In the second, the subject is 'The Ka'ba'. This would be an appropriate ordering of terms for a thesis inquiring into the sacred sites of the hajj pilgrimage. Thus, each proposition would be fit as a thesis for an inquiry with a slightly different focus.

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[40] These should not be confused with the starting points (also termed *mabādi'*) of the science. It's a tradition in Islamic scholarship to begin the study of a science by learning some or all of the following ten starting points: the definition (*ḥadd*), subject of inquiry (*mawḍū'*), aim of study (*thamara*), virtue (*faḍl*), relation to other sciences (*nisba*), founder (*wāḍi'*), name (*ism*), sources (*istimdād*), and ruling of study according to sacred law (*ḥukm al-shāri'*). Knowing especially the definition, subject of inquiry, and aim of a science is indispensable to any serious student; it wouldn't make sense to study something without knowing what you're studying and why. When considering a science from the perspective of epistemology, it's also especially important to know its sources, or the prior knowledge that the science uses to arrive at its propositions.

[41] An essential property is a property predicated of a thing because of what it is essentially. For example, only because it is part of the essence of humans to be rational are they able to do things like authoring books and writing scripts, since these tasks require that one understand words, characters, plot, dialogue, etc., which presupposes the ability to think abstractly. Thus, we would consider 'authorship' and 'scriptwriting' essential properties of human beings.

Now, in the ideal case, a specialist and expert in a particular area of knowledge should be able to do the following:

- Identify the science (or sciences) in which he is a specialist.
- Identify and define the subject of inquiry in that science, with the appropriate perspective of inquiry if applicable.
- Provide all the principles—both definitions and axioms—upon which any given thesis, that is, any given reflective proposition proven in the science, depends.

This is a lot to ask, but it's the only way to arrive at a complete assessment of the reflective proposition, because, as we saw in Chapter 4 the intellectual assessment of a reflective proposition depends on *all* the premises in its chain of inference. If one isn't able to identify all the premises, one won't be able to completely assess the proposition.

The truth is that most people who consider themselves to belong to a particular academic field probably won't have the level of mastery required to do the things listed above—especially with respect to the third point. And even an expert who has completely mastered one science will likely not have the same level of mastery over very many other sciences. So where does that leave us? Does this mean that all this theory about premises and reflective reasoning is idealistic and impractical in the overwhelming majority of cases? Well, for one thing, it should inspire a sense of intellectual humility and highlight the fact that mastery and certain reflective knowledge is a very high bar from the lens of epistemology. But, practically speaking, the need to apply epistemology remains, even for nonspecialists. Even when we aren't able to provide a complete analysis and assessment of a reflective proposition, we should still be able to think about it critically and arrive at a reasonable, if limited, assessment and belief. Below, we discuss the idea of critical thinking, and then we suggest a few limited guidelines for the assessment of some representative kinds of reflective propositions as a critically thinking nonspecialist.

◣ Critical Thinking

We've all heard that one should be a "critical thinker," where this is opposed to blind or uncritical conformity, the unthinking adoption of practices and beliefs from other people. Here we're distinguishing critical thinking from independent reasoning of the kind just discussed, which requires that a person have mastery over a science such that he doesn't depend on the knowledge of anyone else for his knowledge of the theses, the reflective propositions inquired into, in a science. Critical thinking doesn't require this level of mastery, nor would it make sense for it to do so.

In reality, a significant amount of our knowledge is based on confidence in the knowledge acquired by a comparatively select few people who are experts in their respective sciences. For

example, although we count many laws of nature in the natural sciences as things "we know" collectively as a species, most of us haven't ourselves made the necessary observations and inferences to prove something like Boyle's Law (that the pressure of a gas is inversely proportional to its volume at a given temperature), yet we accept these things as true when we are told about them. We might reason, for instance, that *if* it's in a textbook, then there's been scientific consensus on the matter, and it would be pointless to doubt that consensus. In a similar way, most of us haven't done the experimental research to determine anything for ourselves about the physical makeup of colors. But when we read in an encyclopedia that the color blue corresponds to a wavelength of approximately 450 nanometers, we count this as knowledge.

This kind of secondhand knowledge on which we rely so much *is* indeed knowledge when taken strictly from qualified experts. But it's not the same as the knowledge that is obtained by the experts themselves. It might be helpful to think about this difference as a difference in the process of reflective reasoning. For example, in arriving at the proposition 'The color blue has a wavelength of about 450 nanometers', a specialist might reason as follows:

The reasoning of a specialist	
Premise 1	If instrument-aided observation displays features X, Y, and Z, then the color blue has a wavelength of about 450 nanometers.
Premise 2	Instrument-aided observation displays features X, Y, and Z.
Conclusion	The color blue has a wavelength of about 450 nanometers.

A nonspecialist might then reason as follows:

The reasoning of a nonspecialist	
Premise 1	If the experts agree that because of X, Y, and Z, the color blue has a wavelength of about 450 nanometers, then the color blue has a wavelength of about 450 nanometers
Premise 2	The experts agree that because of X, Y, and Z, the color blue has a wavelength of about 450 nanometers.
Conclusion	The color blue has a wavelength of about 450 nanometers.

The nonspecialist might be informed about the reasons why the specialists hold a conclusion to be true (the X, Y, and Z in the example above), but this still doesn't give him the same degree of knowledge. Aside from the fact that he hasn't observed X, Y, and Z for himself, chances are that he doesn't know the field well enough to have considered good alternative explanations or to see exactly how the evidence leads to the conclusion. All of this is to say that his knowledge is weaker than and derivative of the knowledge of specialists using the principles and methods of their respective sciences.

Unfortunately, human beings are fallible, and this extends to specialists and experts. An aspect of this fallibility is the potential for bias, intellectual presumptions, and dogmatism. Although it's the ideal that every expert be thorough and build conclusions from premises that he's verified himself, this is still only an ideal. It's common for dominant beliefs in a field to be guided by misguided attitudes that are later corrected (or sometimes discarded in favor of other misguided attitudes), like the dominant European biases that have produced flagrantly unfavorable accounts of Islamic history and continue to have their influence on successive generations of historians in spite of many points of revision and correction over the decades. Because of this, a nonspecialist can't expect his own intellectual responsibility to be completely fulfilled by specialists. Blind trust is not intellectually responsible. It's the intellectual responsibility of the nonspecialist to do some critical thinking.

◣ Thinking Critically About the Empirical and the Revealed

One method by which a nonspecialist can begin to think critically about reflective propositions is to consider the overall domains of reasoning that they inhabit. If we broaden our focus away from the framework of the sciences and consider what it means to do reasoned inquiry in a more general and loose sense, we can point to some overarching areas of reasoning displayed in various sciences and fields of inquiry. We can point to those kinds of inquiry that rely on sensory knowledge and those that rely on philosophical, abstract thought; or we can point to the striking differences between the kind of reasoning that a mathematician does and the kind of reasoning that a political theorist does. Although we could draw up useful classifications in various different ways under the heading *domains of reasoning*, we have chosen to specially highlight and compare two domains for illustrative value given the special focus of this essay outlined in the introduction. That is, we will approach the issue of critical thinking with reference to the two domains sometimes referred to as the domains of "reason and revelation" or, alternatively and more recently, "science and religion."

Although "science" and "religion" have grown apart in the contemporary world for historical reasons, it's important to remember that they share in the fact that they aim to provide knowledge of the same reality. A prevalent (originally European) prejudice is that science and reason must be completely silent about propositions established by religion and vice versa. According to this assumption, there is a total *incommensurability* between these two domains; they lack any common standard of knowledge that one can consult to compare their propositions. Based on everything we've discussed by this point, you should be able to tell that this mistaken attitude is a symptom of an incoherent epistemology. If all important propositions can be united in one classification of assents, as done in Chapter 4, and if all propositions can be validated by the same channel of knowledge, the intellect, then it doesn't make sense to arbitrarily partition religious propositions and scientific propositions. What does make sense, instead, is to compare how science, or empirical reasoning in

general, and religion, or revelational reasoning in general, each make use of immediate assents and reflective reasoning to arrive at propositions, and then consider the knowledge that results from a *combination* of the two domains and their patterns of reasoning.

This kind of critical thinking becomes especially important when we encounter epistemological conflict—the existence of competing, incompatible claims—between these two domains. To grapple with such problematic cases fairly and honestly requires that we understand how each kind of reasoning works and what its limits are. More often than not, the conflict is a result of the fact that the practitioners of one or both domains have overstepped the *legitimate scope* of their domain by smuggling in unjustified assumptions, premises that are neither immediate nor possibly within the scope of the science to prove and justify. For nonexperts, critical thinking entails at least the ability to detect unjustified assumptions in an argument. Thus, we will now discuss empirical and revealed reasoning, paying particular attention to the following:

- The kinds of immediate premises on which all reasoning in the domain (empirical or revealed) is based.
- The kinds of assumptions that can and cannot be made in the domain.

Let us begin with the category of empirical reasoning, or reasoning about the empirical world.

1. Reasoning About the Empirical World

Today, the field of inquiry that attracts by far the most intellectual and institutional investment in terms of sheer scale is that of inquiry into the empirical world—this world that we all observe and experience. This applies most of all to research in the natural sciences, but it is also true of those fields that explore other aspects of the empirical world, like the human beings and societies that inhabit it,[42] and the history of past peoples and civilizations. Like any other kind of inquiry, this research must necessarily make use of reflective reasoning to arrive at conclusions that can't be directly observed or known through any of the other processes of immediate assent. Now, given the shared subject matter among all kinds of research into the empirical world, this reflective reasoning always takes on certain characteristic patterns, which we will group together under the term *reasoning about the empirical world*.

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[42] Although secular research treats human beings strictly as empirical things, it is important to remember that human being are more than just objects of this world according to the Islamic worldview. In fact, when we restrict our knowledge of humanity to conclusions derived through patterns of reasoning about the empirical world, this is a severe mistake with enormously distorting consequences for how our society perceives what it means to be human.

Reasoning about the empirical world refers to the use of reflective reasoning to establish conclusions about the empirical world on the basis of sensory observation, whether those conclusions pertain to the properties of things in the universe or to natural or human events. Like all reflective reasoning, reasoning about the empirical world—if it is to produce real knowledge—must necessarily *begin* with immediate propositions, which must serve as the first premises in the chain of inference that leads to the conclusion. But not just any first premises will suffice in this category; reasoning about the empirical world must begin either with *observational propositions* that were affirmed through external sensation or with the immediate propositions of causal experience or mass-reporting (which in turn depend on observational judgments as we saw in Chapter 4). For example, a reflective conclusion about the formation of stalactites and stalagmites in caves requires immediate premises gained through the actual observation of stalactites and stalagmites.

From the immediate first premises, empirical reasoning proceeds by inference to conclude the truth of unobserved facts. For example, no geologist has actually sat to observe limestone be dissolved and deposited in a pillar over hundreds and thousands of years. Yet such unobserved occurrences are established as fact by processes of reflective reasoning that work from experimentation and the observation of similar processes on a smaller scale.

How exactly does the specialist, whether a geologist, scientist, or otherwise, make this move from premises to conclusions? Just as the general characteristics of the inference vary from discipline to discipline, its particulars vary from case to case. However, we can highlight three prominent areas within empirical research about which we can make some generalizations: the natural sciences, the social sciences, and history.

1. Reasoning in the *natural sciences* generally employs a pattern of reasoning that has become known as the *scientific method*, which proceeds by observation, hypothesis, and experimentation. A simple outline is as follows: upon initial or repeated observation of some phenomenon, one uses one's existing knowledge and experience of the world to form a hypothesis to explain that phenomenon and then tests that hypothesis with repeated experiments that would disprove the theory if it were incorrect. By inductive reasoning, those hypotheses that consistently withstand experimentation are accepted as successful theories that explain the natural world to the best of our knowledge. Depending on the level of consistency, the knowledge we acquire through the scientific method may be certain or probable.[43]

2. Reasoning in the *social sciences* generally attempts to imitate reasoning in the natural sciences, but it can only do so in a significantly compromised way. Because of the complexity of the subject

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[43] An absolutely an unchanging empirical regularity (*ʿāda muṭṭarida*) provides a basis for certain knowledge, while a prevailing empirical regularity (*ʿāda ghāliba*) provides a basis for probable knowledge.

matter—human beings and their societies and cultures—it's very difficult to achieve certainty through research in the social sciences. Nevertheless, reasoning in the social sciences must always begin with the observation of people and their behaviors, whether by direct sensory perception (like watching a selected group of people over a period of time) or by interaction and communication (like conducting surveys). Inherently, it always remains difficult to overcome uncertainty in the interpretation of observational results. Even the particular wording of a survey can drastically influence an outcome, which makes it difficult to determine for sure what exactly was meant by all the different participants who filled in the survey. Specialists typically try to gather enough observational data to enable the application of statistical models that allow them to generalize the results to a population and make various predictions. But this step is also full of uncertainty because of the various contexts and influences that affect various parts of a population and might cause variances from the observed or surveyed group. Accordingly, the conclusions of the social sciences are almost always probabilistic.

3. Reasoning about *history* begins with observation as well, that is, the observation of sources of knowledge about the past, whether formal documents and records, historical writings of preceding historians, transmitted oral reports and testimony, or various kinds of archeological findings.[44] Reasoning about history involves least two basic tasks: using sources to infer *historical facts* like the occurrence of events at specific times and places with specific people, and then using this body of facts to understand how past events were *causally related* to each other—what event led to what and why. Both tasks are faced with fundamental challenges. The deduction of facts from sources requires the historian not only to accurately interpret them, but also to assess their accuracy, credibility, and completeness. Records often reveal several different voices reporting the same event in different ways. While the rare case of a mass-reported event does yield historical certainty (like our certainty in the occurrence of the Second World War), it's often the case that only a handful of competing accounts, or, worse, only a single account informs the best of our historical knowledge. This means that propositions of "historical fact" are usually probabilistic. The second task, the interpretation of causality, is epistemologically even weaker than the first, the establishment of historical fact, because it's based on the first.

In all three areas—natural science, social science, and history—observational judgments are the foundational knowledge upon which speculative theories—whether scientific theories, social theories, or historical narratives—are based. No empirical theory is worth anything, epistemologically

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[44] Although history as studied today is a secular field, it's important to remember that we also have knowledge of some historical occurrences through revelation. In this sense, history belongs in both the empirical and revelational domains of reasoning.

speaking, without the soundness of the sensory observations that serve as its basis. Thus, when critically considering any claim in the empirical domain, your first concern should always be to discover what observational propositions were used to inform the claim. This is information that any honest scientist or other kind of specialist in the empirical domain should always be ready to provide, and a failure to do so should be a clear warning signal to the epistemologist to suspect the claim.

When considering the observational premises that might be given support a claim, it's also important to be careful in evaluating whether the premises are indeed immediate observational premises, or whether they are reflective premises masked as immediate premises. For example, if a researcher conducts a survey on food preferences and finds that 74% of respondents like fish, he should recognize that the proposition '74% of respondents like fish' is *not* immediate. Note that the preference for fish isn't something that can be observed with the external senses! The researcher can only observe that 74% of respondents *answered* that they prefer fish; if he wishes to form a conclusion that they do indeed actually prefer fish, then he is using his observation of their survey answers as evidence by which to infer a reflective conclusion. He must *assume* that their responses reflect the truth and then use this assumption as a premise, and only then can he reach a conclusion about their actual preferences.

This illustrates the single most fundamental and essential limitation of reasoning in the empirical domain: it is limited by what can actually be observed. When something cannot be observed, like food preferences, it becomes necessary to introduce non-empirical, unobservable assumptions in order to allow the empirical sciences to make conclusions about it. The less certain the assumption, the less certain the conclusion. Of course, some assumptions are very reasonable. In the example above, given that the researcher conducted his survey well, his assumption about the survey respondents is likely a very reasonable one. (Who could possibly be mistaken or willfully deceptive about something like food preferences?)

Other assumptions are more questionable. For example, a commonly accepted principle in the study of history is that "supernatural" interventions can never be accepted as causal explanations for historical events. From the perspective of history, this is strictly an assumption. It is neither an immediate proposition nor something that can be proven through historical methods. Historians will argue that this assumption is crucial because it prevents sloppy research and forces historians to search for empirical evidence, which, unlike the supernatural, can actually be subjected to investigation, observation, and critique. Now, we can grant that this assumption is useful as a methodological assumption to promote the discovery of all the empirical historical evidence that can be found. That is, a historian shouldn't stop looking for empirical explanations for historical events just because it's possible that a supernatural influence caused the events instead. However, from an epistemological perspective, if a historian were to assert that there are indeed no supernatural

influences on history, one can see that this would be an unsupported and therefore epistemically worthless claim.

In the Islamic ordering of knowledge and inquiry, the question of the possibility of supernatural influences on the universe is not investigated in the empirical sciences but rather in metaphysics and rational theology. This is because a coherent epistemology must recognize the limits of the empirical sciences, which cannot possibly reach proven conclusions on questions outside the observable world. In the contemporary secular academy, however, it's common to find empirical inquiry conflated with non-empirical questions. For example, although the legitimate epistemological scope of the social sciences is demarcated by the empirical observation of human societies, inquiry in the social sciences is very often tied with philosophical assumptions that transgress this scope under the heading "social theory," straying into metaphysics with consequential ideas like constructivism and anti-realism.

2. Reasoning About Revealed Truth

Much of the knowledge central to the Islamic worldview can't be discerned from mere observation of the world around us. These are principles derived from revelation, like knowledge in the existence of an everlasting afterlife and knowledge of the way of believing, practicing, and living that leads to a favorable outcome in that life. This knowledge isn't immediate; it's the result of inquiry and reflective reasoning. You can confirm this for yourself by referring to the classification of immediate assents in Chapter 4 and trying to fit the proposition 'Paying zakat is obligatory' into any of the classes there. In truth, such propositions must be established through a pattern of reflective reasoning that we'll term *reasoning about revealed truth*.

Reasoning about revealed truth means endeavoring to determine the truth of any proposition by referring to revelation as a means of knowledge. Of course, it's only possible to consult revelation on matters that revelation has actually spoken about; revelation isn't a means of knowledge you can consult in engineering a bridge or determining the genetic composition of a newly discovered animal species. Now, if we take a topic that is actually addressed in revelation, like the duty of paying zakat, the idea of referring to revelation for knowledge might sound simple enough. The truth, however, is that from an epistemological perspective this actually involves a number of rational steps.

What we call *revelation* in the Islamic worldview is the entire body of knowledge revealed by Allah to the Prophet Muhammad (may peace and blessings be upon him) and conveyed to his prophetic community. For many practicing Muslims, it could hardly occur to look any further than a command or prohibition in the Quran or Sunna to resolve a question like the duty of paying zakat. But while the answers are indeed to be found in revelation—that is, the Quran and Sunna—it is important to understand how we *infer* knowledge from revelation, and this starts with understanding why the Quran and Sunna are valid sources of knowledge to begin with. To illustrate, the proposition 'Every

statement in the Quran is true' is a true proposition, but it is not self-evident; it is a reflective proposition that must be proven by argument. Nor can one appeal to the Quran itself to infer this proposition, for that would be circular reasoning.

Ultimately, in order for us as members of this prophetic community to make use of revelation as a means of knowledge, we must verify a number of premises from which we can infer, first, the validity of revelation as a source of knowledge, and, second, the actual propositions that we can derive from revelation. These premises include the following:

- Allah exists, has knowledge, and can reveal knowledge to a human being.
- Allah revealed knowledge to the Prophet Muhammad.
- The Prophet Muhammad accurately conveyed that knowledge via the Quran and Sunna.
- The Quran and Sunna have been accurately transmitted to us across generations.
- We have accurately understood and interpreted the Quran and Sunna.

All of these are reflective propositions that the specialists of our tradition of religious scholarship have supported with arguments. In the science of rational theology (*kalām*), the existence, knowledge, and creative power of Allah are proven from the universe's need for such a creator, and the facts of prophecy and revelation are proven from the fact that we can attest to mass-reported prophetic miracles that must necessarily have been brought into effect by Allah. This establishes the possibility that there could be revealed knowledge in principle. Then, the Quran and Sunna are established as true revelation and therefore as actual sources of knowledge in the source sciences (*ʿulūm al-uṣūl*), which study the Quran and Sunna to ensure their accurate transmission and their accurate interpretation.

Reasoning about revealed truth thus presupposes a long chain of inference. In the process, it makes use of a number of immediate propositions. For example, the science of rational theology uses everyday observational judgments about the properties of things in the universe to establish the existence of change, it uses the self-evident proposition that the existence of a contingent thing requires a cause to establish the existence of a Necessary Being, and it uses mass-transmitted propositions to establish that the Prophet Muhammad made a claim to prophecy (may Allah bless him and grant him peace). As with empirical reasoning, you should be familiar with these immediate propositions that are employed in revelational reasoning. Unlike empirical reasoning, however, these immediate premises don't vary from case to case such that you always would need to ask what the relevant immediate premises are. They are always the same first premises because they are used to establish the legitimacy of revelation in the first place.

What does vary from case to case in revelational reasoning is the particular part of revelation that is used to establish a reflective proposition. Islamic scholarship thus entails that one is able to identify

what the source passages are for any revelation-based proposition. Just as reasoning in the empirical domain must be based on actual observation, reasoning in the revelational domain must be based on an actual source in the Quran and Sunna. From the appropriate textual sources, scholars apply the principles of textual interpretation to arrive at knowledge of particular propositions.

The process of reasoning from revealed sources to particular propositions has two integral components that determine the intellect's assessment:

- Transmission, i.e., verifying whether the source can authentically be attributed to the prophetic revelation.
- Interpretation, i.e., verifying what the source means.

On each of the two questions, it may be possible to achieve either absolute certainty or probability. For example, through mass-reporting, all of the text of the Quran is absolutely certain in terms of its transmission (*wurūd*). However, Quranic verses are not all equally clear in their meaning (*dalāla*). And while some hadith reports are ubiquitously reported, most are graded by the hadith scholars on a scale of strength that ranges from very high probability to low probability of authenticity in transmission, and, again, not all hadith reports have absolutely unambiguous meaning.

It is important to note that revelation is not a handbook of logical propositions. The Quran contains statements, questions, and exclamations, and the Sunna refers not only to the reported speech but also the actions—even the communicative silences and inactions—of the Prophet. Scholars of the principles of jurisprudence (*uṣūl al-fiqh*) must reason about the interpretation of revelation by the application of interpretive principles, primarily drawing on the linguistic sciences. Revelation cannot be made to say things that it does not say at the whims of wild interpretation or modern revisionary or reformist intents. Only a careful application of interpretive principles that have been accepted by the scholarly consensus of the prophetic community can produce reflective propositions from revelation. This brings us to the fundamental and essential limitation of reasoning in the revelational domain: it is limited by what is present in revelation. When it becomes necessary to determine what revelation does not explicitly say but does entail, scholars reason on the basis of that which *is* explicitly stated. But, as we stated before, revelation can't be made to pronounce on everything, because it simply does not do so. Indeed, if it could, then all other forms of human inquiry would be redundant.

Can the Empirical and Revealed Conflict?

This juxtaposition of empirical reasoning and revelation reasoning might by now have brought to mind a question: What if our best empirical reasoning indicates one reflective proposition, and our best revelational reasoning indicates the contradictory opposite reflective proposition? Does one kind of reasoning outweigh the other by default? Do we accept or reject both?

Here there are two things we can say with certainty. First, there can never be a conflict in the truth, or what is actually the case; two contradictory opposites can never both be true. Second, there is no universal way of immediately resolving such conflicts, because everything depends on the strength of the evidence of the reasoning on both sides for the respective reflective propositions. No kind of reasoning "outweighs" another just by default. An argument based on revelation could be poorly argued just as an argument based on empirical observation could be poorly argued.

The crucial point here is that we must distinguish between the human reasoning that is done on both sides—those engaged in empirical research and those engaged in religious scholarship—and the truth that both are trying to uncover. There will never and can never be a conflict in the truth, or what is actually the case. There can be and have been cases of conflict between how some human beings understand the empirical world and how other human beings understand revelation. In fact, it's only to be expected that such conflict exists, since much of knowledge is probabilistic and humans are fallible beings. Not only so, but there are endless conflicting views within the empirical domain itself, and there are many conflicting views within the revelational domain! Every year, a new hypothesis and a new scientific theory ousts the last. In the same way, any student of the traditional Islamic sciences will be very familiar with the concepts of tolerable difference of opinion (*ikhtilāf*). Rational disagreement is part of the intellectual life of human civilization, and this fact certainly does not undermine the quest for knowledge.

Ultimately, assuming that all else is sound, a conflict between empirical and revealed reasoning is simply a conflict of the strength of the evidence. It is a matter of determining which is more probably true: the empirical theory used to understand the observational facts or the interpretation used to understand the revelational facts. Now, if we were to assume regarding a particular point of conflict that the best available observation-based conclusion is regarded by the field's experts as tentative and weak while the best available revelation-based conclusion is regarded by religious scholars as certain because it is based on mass-transmitted texts with absolutely clear meaning, then the most reasonable response would be to accept the revelation-based conclusion. We would acknowledge that it *would have been* reasonable to accept the observation-based conclusion had we been limited to empirical reasoning alone, but that since we are not, we do not. Conversely, if the best available observation-based conclusion is tested again and again and regarded as a very strong empirical theory, while a conflicting revelation-based conclusion exists that is regarded as tentative and weak—either because of a weakness in the transmission of the source or an ambiguity in the meaning that makes interpretation difficult—the most reasonable response would be to accept the observation-based conclusion. Once again, we would acknowledge that it *would have been* reasonable to accept the revelation-based conclusion had we been limited to revelation, but that since we are not, we do not.

There are, of course, cases in which it's genuinely difficult to comparatively weigh the evidence, and this is fine. Students of epistemology should be comfortable with the idea of genuine difficulty in the pursuit of knowledge. What one should frown on, however, is the problematic attitude of prejudice toward or against one kind of reasoning. This is the attitude of disregarding and invalidating the arguments of another domain of reasoning without completely understanding them. When an empirical scientist's prejudice leads him to judge all religion as intellectually backwards, he'll believe that even the weakest and most conjectural scientific theory automatically prevails if it is the best explanation of the observed facts, regardless of what revelation may or may not have said. The scientist is entitled to regard his theory as the best available *empirical* explanation of the facts, but he is not entitled to regard it as the best available explanation of the facts, because he has not considered the fact of revelation. Conversely, a religious scholar prejudiced against secular science would be unjustified in preferring a very weak interpretation of revelation over a very strong empirical theory, with the attitude that revelational reasoning always wins. If there is anything that "always wins" in epistemology, it is *sound reason* in general, and reason is only sound when it includes the *all* the evidence, the combined evidence of the empirical sciences, the religious sciences, the philosophical sciences—in short, knowledge as a whole.

Chapter 6

METHOD & APPLICATION

ORDER OF OPERATIONS
Step 1: Formulate
Step 2: Locate
Step 3: Analyze
Step 4: Expand
Step 5: Assess
CASE STUDIES
Case 1: 'Adam was born naturally'

The role of this final chapter of the essay is demonstrate how to put the theory of epistemology to practice. We've discussed how the intellect assesses propositions, and we've covered quite a bit of ground in the way of classifications and theoretical discussions to introduce the elements involved in the task of analyzing propositions. Bringing these topics together, we now sketch an ordered method, an "order of operations," for carrying out a critical assessment of propositions from start to finish. Afterward, we present illustrative case studies to model the application of this method to meaningful real-world propositions.

It's important to remember that when you analyze a proposition, you are seeking knowledge. Do not expect the process to be as easy as marking off a checklist. You must be prepared to think carefully and creatively; like a detective, you must ask the right questions to get the right answers. It's also worth reiterating that epistemological training and critical thinking are important skills, but they can only complement actual knowledge of the subject matter; they don't compensate for it. Don't expect to be able to resolve all or even most epistemological questions without research and the consultation of scholars and experts in the actual subject of inquiry.

ORDER OF OPERATIONS

There are two contexts in which you might find yourself thinking critically about a proposition. You might be conducting an original inquiry of your own initiative and trying to determine the truth of a proposition for yourself using the knowledge available to you. In such a case, you likely already have

knowledge about the subject matter or are even a specialist in the relevant science. Alternatively and more typically, you might be considering a claim made by another person. In such a case, you might not have as much knowledge on the subject as the person who made the claim, but you are exercising your ability to think critically and not to blindly accept—or, worse, to blindly reject—the claim.

Step 1: Formulate

The first step in critically assessing a proposition is to actually have a proposition. An inquiry often begins as an open-ended question, like "What color are the feathers of the male cardinal?" This is not a proposition that we can critically assess, for at least two reasons. First, it is still an open-ended research inquiry and not a definite actual assertion or claim. There are multiple possible answers that could be given: 'red', 'yellow', 'blue', etc. The role of such a research question would be to serve as the start of a hypothesis and inquiry in the relevant area—in this case, the study of birds. However, in our context we are concerned with evaluating the results of inquiries, not their beginnings. Thus, our proposition must have an already defined predicate. Second, the question above is a grammatical question rather than a grammatical statement. Propositions must be grammatical statements with affirmative or negative judgments. Thus, a valid proposition we could consider would be 'Male cardinals have red feathers'.

Once the grammatical form of the proposition is correct, it helps to identify the logical terms— the subject and predicate or the antecedent and consequent as well as the judgmental link—and ensure that they are clearly understood and defined. In the proposition above, the subject is 'male cardinals', the predicate is 'thing that has red feathers', and the judgmental link is one of affirmation. At times, our proposition may have a grammatical subject that is not the logical subject that we need for a proposition. For example, try to identify the subject in the sentence 'It is wrong to behave like that'. Grammatically, the subject is the dummy pronoun "it." Logically, however we aren't interested in talking about "it," whatever "it" is; we are interested in the qualities of the behavior in question. The most helpful way to formulate the proposition would therefore be 'That behavior is wrong', with the subject 'that behavior'. To consider another example, we would rephrase the sentence 'It is the case that an electric charge is either positive or negative' to the more useful propositional form 'An electric charge is either positive or negative'.

To take another example, imagine you are told, 'Dogs are prohibited in Islam'. In this sentence, the grammatical subject is 'dogs'. The statement seems a bit strange. One might wonder, "How could dogs be prohibited? Didn't Allah the Exalted create them?" The source of the confusion is that the subject of the grammatical sentence is not appropriate to the predicate in a way that suits a properly formulated proposition. In what respect might a creature like a dog be prohibited? In truth, the concepts 'prohibited' and 'permitted' don't apply to objects (like dogs) but rather to actions (like

eating, owning, walking). If we were to formulate a meaningful proposition about prohibition with respect to dogs, the subject of the proposition should not refer to dogs themselves but instead to actions that pertain to dogs—specifically, human actions since it is humans that are morally and legally responsible for their actions. Our proposition might thus be 'Owning dogs is prohibited according to Islamic law', 'Abusing dogs is prohibited according to Islamic law', etc.

In formulating the proposition, you should avoid figurative language because this creates ambiguity. Consider the proposition 'The menace of the savanna springs its trap only after the day has drawn in its misty breath'. This language can hardly be deciphered until the proposition is reworded with clear terms: 'Hyenas do not hunt in the morning fog'. It is true that highly abstract concepts can be difficult to express without a resort to figurative language. For example, while the proposition 'Time flows more slowly for an observer in relative motion with respect to an observed event' could be rephrased with the word 'elapses' to replace the figurative usage of the word 'flows' in explaining the difficult concept of time dilation, the use of 'flows' doesn't really negatively impact the clarity of the statement.

In addition to being careful with figurative usage, pay careful attention to any ambiguity that might result from different usages of the same term. To take an example from Chapter 3 of this essay of a proposition that may have been subject to ambiguity, the proposition 'The perceiver of knowledge is the self (*nafs*)' may have been unclear since the term 'self' as *nafs* is used in different ways in the contexts of metaphysics, spiritual purification, and epistemology. To clarify this ambiguity, we clarified in a footnote that we weren't using the term in a specific metaphysical or spiritual sense but rather in the epistemological sense of the knowing self or the seat of consciousness.

Be on the lookout for loaded terms as well. One case where this is especially important is in making claims about the views of others. To take an example from Islamic intellectual history, it would have been common to state that 'The philosophers who followed Ibn Sīnā denied that the universe was created'. Assessing this claim about these philosophers' view requires that you determine what exactly is meant by the term 'created'. While such philosophers did believe that the universe is dependent on Allah for its existence, they denied the position of our Sunni theologians, which is that its existence had a beginning in time. The proposition attributing the above view to the philosophers following Ibn Sīnā would thus be true if one intended 'created' in the sense of 'made to *begin* to exist' but false if one intended it in the sense of 'made to exist'. In the interest of clarity, it would probably be better to use more precise language (unless of course one's goal is not epistemology but rather polemical rhetoric).

Step 2: Locate

After formulating the proposition, the second step is to locate it within a science and domain of inquiry. Depending on the proposition and the scope of your particular inquiry and assessment, this step may have one or two aspects. The first aspect, which is essential, is to locate the proposition within the science or domain *within which the person making the claim locates it*. For example, if someone argues on ethical grounds that one shouldn't have one's wisdom teeth removed unless they pose a direct and present health risk, then that person's proposition belongs to ethics rather than to dentistry.

As discussed in Chapter 5, the subject of a proposition will always correspond to the subject of inquiry in one or more sciences: in each, it will either be identical to the subject of inquiry, a subtype of it, or an essential property of it. Assuming a general awareness of the subjects of different sciences, you should be able to narrow the options enough that you can settle the question by considering the predicate and perspective of inquiry (as discussed in Chapter 5). In our example, the subject would be 'the removal of wisdom teeth', a subtype of human action, which is the subject of inquiry in ethics. Now, in deciding to locate the proposition within ethics as opposed to dentistry—which is obviously also quite relevant since it studies those human actions that are specifically related to dental health, of which this is an instance—the perspective of inquiry is key. From context, we know that the person making the claim intends the word "shouldn't" from a moral and ethical perspective, rather than the perspective of professional dental standards.

To take another example from above, you can tell at a glance that the proposition 'Owning dogs is prohibited according to Islamic law' also belongs to a science that inquires into human actions. While there are numerous such sciences—dentistry studies certain specific human actions from a dental perspective, ethics studies human actions from a philosophical perspective, secular law studies human actions from a legal perspective—the proposition clarifies that the pertinent perspective here is that of Islamic law. We can thus safely locate the proposition within the science of Islamic law. In cases where the perspective is not clear, like when you hear another person making what sounds like an unqualified claim about dogs, you must use your best inference and reasoning from context to determine the relevant perspective. For another example, consider that you read the following claim in a journal on veterinary medicine: 'The health of Mallard ducks is not negatively affected by anesthesia during surgical procedures'. Here the subject is 'the health of mallard ducks' which alone directs us to several sciences, including zoology, ecology, and veterinary medicine. However, it is clear from the predicate and the context that the proposition is about veterinary medicine.

If it is difficult to find a science in which to place the proposition, it's possible that you're thinking too narrowly; consider what relevant larger categories the subject could belong to and what science investigates those categories. If you find that your proposition is falling into three or even more

categories, it's likely that you're thinking too broadly; try to fine-tune the perspective, and decide precisely in what respect you're interested in the subject. Think of the perspective of inquiry as a gatekeeper. Whether expressed in the proposition or not, it functions to prevent sciences besides the sciences that are appropriate to the inquiry from speaking about the subject from their respective foreign angles and approaches.

When a proposition has been soundly formulated, it must belong to at least one science, that is, the science within which the person making the claim conceives it. However, in some cases, other sciences may bear on the proposition as well, and you may be interested in critically assessing the proposition with the combined input of these sciences taken together. In these cases, the second aspect of this step is to locate the proposition within those sciences. Keep in mind, however, that while such a comparative approach may be very useful in some cases, it is sometimes more helpful to keep your inquiry focused by restricting the number of sciences involved or dividing your inquiry into several related but distinct inquiries.

If you do incorporate this second aspect into your order of operations, locating your proposition within other sciences besides the first, remember to include only sciences that approach the proposition from the same perspective. Dentistry, as we saw above, studies human actions not from a general philosophical perspective but rather from a specific medical perspective; thus, it wouldn't be correct to locate the example proposition we considered earlier within both ethics and dentistry. But consider that a specialist in lexicography and a specialist in semantics disagree about the proposition 'No two words in the English language have exactly the same meaning'. Lexicography studies the compilation and writing of lexicons, or dictionaries, while semantics studies the relationship between language and meaning; although each science has a different focus and research orientation, both are able to speak directly to the same proposition as understood and interpreted in the same way. Thus if the proposition above were advanced by a lexicographer but opposed by a semanticist, you would locate it primarily within lexicography and secondarily within semantics.

It is also wise to be aware of various common overlaps in the ways that the propositions of various sciences are formulated in order not to wrongly place a proposition into one science just because it has a certain characteristic form commonly used in a that science. For example, the propositions of the empirical sciences are often quantitative, but this does not mean that propositions about quantities can only be made within the empirical sciences, as is evident in the proposition 'There are four prostrations in the dawn prayer'. The following assorted list includes a handful of common templates for propositions you will find in various unrelated sciences. The point of the list is to highlight that these are common forms shared between multiple sciences. Therefore, in order to determine the proper science, you should consider the subject, the predicate, and the perspective of inquiry, and not merely whether the proposition is:

- *Ontological* ('X exists'). Such propositions concern the existence of things and are to be found in just about every science. E.g., 'The Meganeuropsis (giant dragonfly) existed', 'Angels exist', 'Other galaxies exist', etc.

- *Historical* ('X occurred'). Such propositions concern past events and are not always subject to history as an empirical discipline. E.g., for lack of *empirical* evidence, 'The mother of Prophet Mūsā placed him in the river' is not a proposition likely to be confirmed by historians; however, it is a past event that we know because of the evidence of the Quran. Thus, historical propositions can belong to the revelational sciences and to other disciplines besides history.

- *Ethical, moral, practical, legal* ('X should be done', 'X is good', etc.). Such propositions concern actions and can belong to secular law, moral philosophy, or Islamic law, or to any applied science like agriculture, marketing, or medicine.

- *Definitional* ('X is defined as Y'). Such propositions are necessarily present in every science.

- *Interpretive* ('X means Y'). Such propositions belongs to a wide range of sciences. They feature very prominently in the revelational sciences and the interpretation of scriptural revelation. They also appear in the empirical sciences in the interpretation of data, whether it be numerical and statistical data, the verbal or written responses of survey participants, the geological record, the fossil record, etc. Interpretation is necessary in government and politics; for example, elected officials must interpret the attitudes of their constituents. It is essential in military tactics; interpreting the intention of the enemy from their actions is crucial for planning and victory. The list is endless.

- *Qualitative/quantitative* ('X possesses quality Y' / 'X is of quantity Y'). This distinction is important for various sciences.

- *Descriptive/prescriptive* ('X is Y' / 'X should be Y'). This distinction is also important for various sciences. It can be applied to language, to cultural norms, to art and music, etc. Be warned that some contemporary applications of this distinction, as in moral philosophy, can lead to confusion and even incoherence.

- *Causal/correlative* ('X causes Y' / 'X is correlated with Y'). This distinction is especially important in the application of statistics to the empirical sciences when there is uncertainty about what factor in an observed association is causally responsible for the association. However, the significance of the distinction is not restricted to the empirical science; it is pertinent, for example, in establishing the legal cause of a religious ruling, where causality (*ʿilliyya*) is distinguished from correlation (*dawarān*).

Step 3: Analyze

The third step in our order of operations is to analyze the proposition. This begins by classifying the proposition in terms of the processes of assent discussed in Chapter 4. Assuming the proposition is true, would it be known by an immediate or a reflective assent?

To determine whether the proposition is immediate, ask whether it meets the conditions discussed in Chapter 4 for any class of immediate assent. For example, the proposition 'This green apple is sour' stated by someone in sound mental and bodily condition who just tasted the apple most likely meets the conditions of assent by external sensation; it can thus safely be classified as an observational proposition.

If you verify that a proposition is immediate, you can skip ahead to Step 5 in the order of operations. If, on the other hand, your proposition does not satisfy the conditions for any class of immediate assent, whether through conception, experience, or insight, it is a reflective proposition. Ready yourself to use the full apparatus of applied epistemology!

Assuming that your proposition is reflective, your task is to analyze the reasoning that supports it. (Remember: for the purpose of this order of operations, we've assumed that such reasoning has already been done, either by you or someone else; your task now is to analyze and critique it.) This step will vary according to your situation: if you're critiquing your own proposition and reasoning, your task is to express your own reasoning, but if you're critiquing the proposition and reasoning of another person, your task is to faithfully express that person's reasoning. If you're critiquing the proposition of another person but reasoning about it yourself, you can include this in the first case. If you're critiquing the proposition of another person and they did not provide any reasoning, then if you can approximate their reasoning do so; otherwise, the proposition is unsubstantiated and you'll assess it accordingly in Step 5.

As we saw in Chapter 4, arguments involve two components: matter and form. Your task, therefore, is to regard the reflective proposition as a *conclusion* and then (1) identify the premises that led to that conclusion and (2) identify how they were arranged into an argument. A complete analysis and critique requires that you then turn to the premises and repeat the steps above. If the premises are immediate, be aware which process of immediate assent they entail (e.g., mere conception, external sensation, mass-reporting, etc.). If the premises are reflective and the reasoning for them has been provided, work backwards to ascertain their premises in turn until you are satisfied that you've faithfully represented the argument. In most cases, you won't have to work all the way back to the ultimate immediate premises, since arguments are often based on premises that are reflective but uncontroversial.

To elaborate on this point, it's important to keep in mind the difference between an ideal argument and an argument that's good enough for a particular person in a particular setting. The ideal

argument is an argument that refers to the proposition's proper science, using the principles of that science as premises in a syllogistic argument and then proving those principles from immediate premises. However, only in exceedingly rare cases will someone claim to be providing the ideal argument. As discussed in Chapter 5, we rely on knowledge taken on the authority of specialists all the time. This means we will often encounter premises like 'The specialists of the science say such and such', which are clearly not the principles of the science that these specialists themselves used. Although the inclusion of such premises doesn't invalidate our knowledge, we must take this into account when we critically assess the things that we think we know.

When formulating the argument for a proposition, refer to Step 2 and consider the primary science and domain of the proposition. If you located the proposition within secondary sciences or domains as well, it is not yet time to consider them; that will be done in Step 4. It will be helpful to remind yourself what key premises to look out for (we discussed this in Chapter 5). For example, if you determined that the proposition belongs to the natural sciences, it's crucial to know what original observations the proposition was based on and to have a general idea of the methods of experimentation used to validate the theory. If you determined that the proposition belongs to history, a key part of the argument will be the evidence used to determine the historical facts. If you determined that the proposition belongs to the revelational domain, be aware what source texts were used to ground the argument. Make sure to take note of these critical points when analyzing the argument. If they aren't provided by the person making the claim and it's possible to ask an expert who would be familiar with that person's argument—or, better yet, if it's possible to ask the person himself—then, by all means, ask!

For example, suppose you're assessing a science teacher's argument that the earth is round because ships disappear on the horizon of the sea. The proposition here is 'The earth is round', and in Step 2 you had located it within the domain of the natural sciences. Knowing that a key feature of arguments in the natural sciences is observation, you think about what the teacher said, and you identify the crucial observation 'Ships at sufficient distance disappear on the horizon of the sea'. Knowing that another key feature to look out for is experimentation, you realize that watching ships as they disappear into the sea is an experiment in itself: if they did not disappear, we would be able to tell that the earth is not round. With these considerations, you've captured the essence of the teacher's argument for his reflective proposition.

If you are uncertain how to express these considerations in an argument, you can move on to the next step. However, to make the assessment of the argument more straightforward, it would be ideal to formulate a logical argument with arranged premises and a conclusion. We could sketch the following argument for the example above:

Example reconstruction of an argument	
Premise 1	If sufficiently distant ships always disappear on the horizon, then the best explanation of this phenomenon is that the earth is round.
Premise 2	Sufficiently distant ships always disappear on the horizon.
Conclusion	The best explanation is that the earth is round.

Step 4: Expand

The fourth step in the order of operations is to expand the scope of your analysis by considering other arguments for or against the proposition formulated in Step 1. This step is optional and only applies if you located the proposition within multiple sciences or domains in Step 2. The arguments to consider in this step are thus arguments besides the one advanced by the person making the claim, and they will be founded on any secondary sciences you identified in Step 2. Your goal in this step is to replicate Step 3 for these additional arguments. This step is not applicable if your proposition is immediate.

Step 5: Assess

The fifth step in the order of operations is to pass the final assessment of your proposition given your analysis in Step 3 and, if applicable, your expanded analysis in Step 4. This means answering at least the following three questions, which should be familiar by now:

- Does the proposition warrant my belief?
- Does the proposition warrant my confidence?
- Does the proposition warrant the belief or confidence of others?

For immediate propositions, this should be simple. Referring to Chapter 4, check to which class of immediate assent the proposition belongs. Using your knowledge of the process of assent for its class of propositions, assess whether it warrants your belief, considered independently. To clarify, if your intellect would issue a tentative and probable assent to the proposition given the absence of any arguments against it, then we could say that it warrants your belief when considered independently, even if there is other evidence that would lead your intellect to revise its assessment and withhold its assent. Assuming that the conditions for the relevant process of immediate assent are met, this should be the case. Use then the classification in Chapter 4 to assess the level of confidence warranted by the proposition. Certainty is the highest assessment and overrides any other suppositions that are not at the same grade. For example, if you've heard a qualified astronomer say that the moon should

currently be crescent, and you step outside and see a full moon, your immediate observation would override your tentative belief in the astronomer's calculations.

Regardless whether or not the proposition warrants your belief, look into the availability of the proposition. If the proposition belongs to a class of assents in which belief is *actually* public, it not only warrants your belief but the belief of others. If it is *potentially* public, then consider the conditions of availability. For example, if you're considering an experiential proposition (which requires assent by causal association), ask yourself, "What observational experience would be necessary to have this knowledge?" Finally, if it is private, then the belief's availability is limited: it may be available to you but not to others or to others but not to you.

If the proposition does *not* warrant your belief either because you lack the prerequisite experience or the proposition is private and not available to you, you won't be able to assess the proposition. As a result, your belief in the proposition *as an immediate proposition* is not warranted, and nobody should expect you to believe it or act on it as such. If someone has a reflective argument for the proposition, then you should return to the order of operations and consider that argument.

If your proposition is reflective instead of immediate, then your assessment must focus on the argument or arguments for the proposition. Assuming that in Steps 3 and 4 you formulated syllogistic arguments with premises and conclusions, turn to each of the premises and check the above properties. The properties of the conclusion will always correspond to the "weakest" properties of the premises. That is, if either premise is private, the conclusion will be private; if belief in either premise is unwarranted, the same will be true of the conclusion; and if either premise is tentative or weak, the conclusion will be tentative or weak.

Assuming you are comparing multiple arguments, then at this stage you can determine whether there are discrepancies in the levels of confidence warranted by the respective arguments in Steps 3 and 4 or in their availability. If one argument is available to you but another is not, then your belief should be informed by the available argument. If both are available and belief in each would be warranted when considered apart from the other, then you must compare the strengths of the two: a certain proposition always prevails over a probable one, and a more probable argument prevails over a less probable one.

If you didn't formulate a logical argument in Step 3, then one of two things is possible. First, it is possible that there simply is no reasoning that supports the proposition. In this case, the proposition has no epistemic value; a reflective proposition without reflective reasoning is nothing but an unsubstantiated claim of the kind anyone can make. In such a case, it is literally true that there is no reason for you or anyone else to believe the claim as it stands.

Second, and more likely, it is possible that either you were not aware of the reasoning behind the claim or that the person making the claim wasn't able to clearly articulate his reasoning. In such a

case, assuming that you did your best as a responsible critical thinker to approximately capture the key elements of the reasoning in Step 3 based on your knowledge of the proposition's domain, consider those key elements and ask the following questions:

- How plausible is it that the conditions for the immediate propositions underlying this reasoning were met?
- Does the reasoning involve any assumptions that go outside the scope of the proposition's domain?
- Does the reasoning respect the legitimacy of other domains of reasoning or does it uncritically disqualify them?

You might not be able to answer these questions immediately. It is good, however, to know what questions to ask should you be willing and able to do further research into the matter. After all, the role of a well-applied understanding of epistemology is ultimately to guide you in the pursuit of knowledge.

An essential merit of this process of epistemological analysis and assessment is that it will help you identify the crux of a disagreement or a conflict of assertions, allowing you to direct yourself and others towards the appropriate areas of future study and research. For example, if you've assessed a proposition as weak or a belief as unwarranted on account of what you've identified as a weak or unsound premise, then it may well be that you disagree with the person who made the claim on the merit of that particular premise. If both of you are open-minded and fair about the pursuit of knowledge, this could lead to an investigation of the truth that just may change your assessment. In many cases, such opportunities are well worth the effort.

CASE STUDIES

This final section of the essay illustrates the order of operations with example scenarios.

Case 1: 'Adam was born naturally'

Jabir is an undergraduate student who had previously attended an Islamic school. In high school biology, he studied from a standard textbook that advanced the theory of evolution, but his Muslim science teacher taught the class that according to the Quran, Adam (upon whom be peace) was created without parents. Now, in his college biology class, he is again exposed to the theory of evolution—this time with a secular professor who doesn't make exceptions. The professor outlines the case for macroevolution and common descent. At one point he touches on the religious view that Adam was created without parents, telling the class, "There is no historical evidence for the existence of the biblical Adam, and, even if there were such evidence, science tells us that he would have been born naturally." Jabir has always been aware

that this is the dominant view in the secular academy, but now that he is faced with it personally, he takes some time after class to apply epistemology to the question of the creation of Adam.

1. *Formulate.* Jabir first does his best to formulate a proposition for consideration. The professor had brought up a whole list of issues—from the claim about the existence of Adam to the claim about the evolutionary birth of Adam. There is no doubt that both assertions reflect a common secular attitude and mindset, and this tempts Jabir to lump them together as atheistic discourse and push them both to the back of his mind because he knows atheism is wrong. But for the critically thinking epistemologist, it is always a good idea to distinguish different claims so that each can get fair treatment in its own right. For now, Jabir wants to focus on one issue: the question of evolution, specifically as it pertains to the creation of Adam. Was Adam born by a natural process, as the professor would claim (if he believed in Adam), or was he created without a natural birth, as Jabir had been taught?

   The proposition Jabir decides to consider is thus 'Adam was born naturally'. The subject here is 'Adam', the predicate is 'was born naturally', and the judgmental link is affirmative. Jabir is satisfied with the clarity of the terms: 'Adam' refers to the individual in the Quran and the Bible and 'being born naturally' means entering this world by the biological process of birth from parents.

2. *Locate.* Given the subject of the proposition, 'Adam', Jabir realizes that the proposition could fit into various sciences when approached from different angles. If the perspective of inquiry were the historicity of an individual who left traces of his life in the world, then Adam as a historical figure would be a fit subject for history. If the perspective of inquiry were the biological properties of a living organism, then Adam as a human being would be a fit subject for biology. One could also consider Adam as a social being, a father, a physical object in time and space, a hunter and gatherer, a servant of Allah the Exalted, a prophet, someone mentioned in revelation, etc.

   Jabir's inquiry concerns Adam from two apparently conflicting perspectives: Adam as a person mentioned in the Quran and Adam as a living organism with biological properties. As for the other possibilities, from history to sociology to physics, these aren't sciences that would be directly useful in determining whether Adam was born naturally. Because he is primarily assessing the proposition of his professor, who is operating within the science of biology, Jabir locates the proposition primarily within the science of biology. Because he is interested in comparing the professor's proposition with the competing view that he has been taught, he locates it secondarily within the science of Quranic interpretation (*tafsīr*). He thus recognizes that the same proposition from one and the same perspective can be considered from two distinct domains of revelational and empirical reasoning.

3. *Analyze.* It doesn't take Jabir very long to tell that the proposition 'Adam was born naturally' is reflective. It doesn't fit into any of the classes of immediate propositions, whether self-evident,

observational, experiential, mass-transmitted, etc. Jabir also knows that the professor is not depending on any special kind of insight for his judgment.

Since the proposition is reflective, Jabir does his best to formulate the argument of his professor for it:

Jabir's reconstruction of the professor's argument		
Premise 1	All organisms are the biological descendants of an original species.	Reflective
Premise 2	Adam is an organism.	Immediate (Self-evident)
Conclusion	Adam is the biological descendant of an original species (which implies a natural birth).	

Premise 2 does not require proof, but Premise 1 does. Although Jabir is no specialist in biology, he understood the main points of the professor's argument for Premise 1. While he cannot express it in syllogistic form, he is able to recognize that the professor is reasoning through the scientific method, as is characteristic within the natural sciences. Having taken good notes from class, he identifies the following key elements of the argument:

- *Observations*: direct sensory observation of the physical features of existing species and fossils; instrument-aided observation of molecular and genetic information; observation of computer-generated statistical models.
- *Confirmed falsifiable hypotheses*: that there would be transitional fossils of bird-reptile and reptile-mammal species but not of bird-mammal species; that there would be apparently functionless features (vestiges) in some species that were functional in an ancestral species but none that were not functional in any ancestral species; that the fossil record would reveal past species that are markedly different from the existing ones rather than the same species throughout the sequence of history; that the DNA sequences for corresponding proteins would be the same in related species rather than taking any of the many other possible variant sequences for the same protein, etc.

Jabir is aware that many evolutionists are openly hostile to religion and the idea of creation, and he is also aware that there is a dark history of tampering with the evidence to prove evolution true. Nonetheless, he grants that these observational confirmations of hypotheses and the lack of falsification together constitute a reasonable cumulative inductive argument for Premise 1.

4. *Expand*. At this point Jabir expands his analysis to include what he was taught about the question. He formulates the following argument, reasoning this time within the revelational domain and the science of Quran interpretation:

Jabir's reconstruction of the argument against the proposition		
Premise 1	If the Quran unambiguously states something, then it is true.	Reflective
Premise 2	The Quran unambiguously states that Adam was created without a natural birth.	Reflective
Conclusion	It is true that Adam was created without a natural birth.	

Both premises are reflective. For Premise 1, he expresses the reasoning as follows:

The reasoning for Premise 1		
Premise 1.1	If divine revelation unambiguously states something, then it is true.	Immediate (Self-evident)
Premise 1.2	The Quran is divine revelation.	Reflective
Conclusion	If the Quran unambiguously states something, then it is true.	

Jabir regards Premise 1.1 as self-evident. As for Premise 1.2, he is aware of the general line of reasoning for why the Quran is truly divine revelation (because it is miraculous, etc.) as alluded to in Chapter 5.

As for Premise 2, Jabir is not an expert of the science of Quranic interpretation, but he is aware that the scholars of the science point to the verse *Truly the likeness of Jesus in the sight of Allah is that of Adam; He created him from dust then said to him, "Be!" and he was* (Quran 3:59) as decisive, unambiguous evidence for the special creation of Adam.

5. *Assess*. Jabir is now ready to assess the proposition in light of the preceding analysis. Turning first to the professor's argument, he determines the following:

▪ The proposition is public. This is because both premises are public: Premise 2 ('Adam is an organism') is actually public because it is self-evident, and Premise 1 ('All organisms are the biological descendants of an original species') is public because it relies on the public observational premises utilized.

▪ Considered independently of any other argument (like the argument from Quranic revelation), belief in the proposition would be warranted, since the argument is formally valid and the premises would be assented to tentatively by the intellect.

▪ Again, considered independently of any other argument, the proposition is highly probable. It is not certain, because Premise 1 is not and cannot be certain; Jabir knows that the scientific method is inductive and can never grant absolute *certainty* to a universal proposition like the proposition 'All organisms are the biological descendants of an original species'.

He assesses the counter-proposition ('Adam was created without a natural birth') as follows:

- The proposition is public. This is because both premises are public: Premise 1 ('If the Quran unambiguously states something then it is true') is public because it is based on two public premises, one self-evident and one also reflective and public,[45] and Premise 2 ('The Quran unambiguously states that Adam was created without a natural birth') is public since it relies on the linguistic interpretive principles of the science of Quranic interpretation, which are available to any student of the science.
- Considered independently, belief in the proposition is warranted since the argument is valid and premises in turn warrant belief.
- The proposition is certain. This is because both of the following are true: the argument is syllogistic in form, and the premises are certain.

Jabir concludes that both arguments are available to him and each would earn the validation of the intellect when considered independently. This means the question is one of comparative strength. Because there is a *probability*-producing argument for the initially formulated proposition and a *certainty*-producing argument against it, Jabir denies the professor's proposition that Adam was born naturally.

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[45] That is, Premise 1.2 ('The Quran is divine revelation') is public because it is the conclusion of a public argument. We briefly alluded to this in Chapter 5, but the interested student should pursue the topic by studying the science of rational theology (*kalām*) and seeing this for himself.

KEY TERMS

Acceptance (*idhʿān*)

Actionability

Actually public belief

Affirmation (*ithbāt*)

Analogical argument (*tamthīl*)

Antecedent (*muqaddam*)

Assent through causal association

Assent through conception

Assent through cumulative experience

Assent through experience

Assent through insight

Assent through mass-reporting

Assent through mere conception

Assent through single experience

Assent through spiritual insight

Assent through spontaneous intellectual insight

Assent through virtually mere conception

Availability

Causal connection

Certain (*yaqīnī*)

Chain of inference

Channels of knowledge

Cognitive sensory knowledge

Concept (*ṣūra ʿaqliyya*)

Conceptual knowledge, or conception (*taṣawwur ʿaqlī*)

Confident belief

Confident denial

Conjoining syllogism (*qiyās iqtirānī*)

Consequent (*tālī*)

Contradictory opposite (*naqīḍ*)

Conventional modality

Defining concept (*muʿarrif*)

Definition (*taʿrīf*)

Doubtful (*shakkī*)

Emotional sensory knowledge

Essential property (*ʿaraḍ dhātī*)

Estimation (*wahm*)

Experiential propositions (*mujarrabāt*)

External senses (*ḥawāss ẓāhira*)

External sensory knowledge, or external sensation (*ḥiss ẓāhir*)

Extrinsic modality

Falsity (*kadhib*)

Formal component of an argument, or form (*ṣūra*)

Imagination (*takhayyul*)

Immediacy of the intellect (*badāhat al-ʿaql*)

Immediate (*ḍarūrī*)

Implicit inference

Improbable (*wahmī*)

Inductive argument (*istiqrāʾ*)

Inference

Inspired knowledge (*ilhām*)

Instrumental faculties of perception (*ālāt al-idrāk*)

Intellect (*ʿaql*)

Internal senses (*ḥawāss bāṭina*)

Internal sensory knowledge, or internal sensation (*ḥiss bāṭin*)

Interoceptive sensory knowledge

Intrinsic modality (*mādda*)

Introspective propositions (*wijdāniyyāt*)

Intuitive inference (*ḥads*)

Intuitively inferred propositions (*ḥadsiyyāt*)

Judgmental link (*nisba ḥukmiyya*)

Knowing self, or self (*nafs*)

Knowledge (*ʿilm*)

Level of confidence

Mass-reported propositions (*mutawātirāt*)

Material component of an argument, or matter (*mādda*)

Memory (*khayāl & ḥifẓ*)

Mind (*dhihn*)

Modality

Mystically unveiled knowledge (*kashf*)

Naturally evident propositions (*fiṭriyyāt* or *qaḍāyā qiyāsātuha maʿaha*)

Negation (*nafy*)

Nomic modality

Non-propositional knowledge (*taṣawwur sādhij*)

Non-syllogistic forms of inference

Observational propositions (*mushāhadāt*)

Potentially public belief

Pre-conceptual knowledge

Predicate (*maḥmūl*)

Principles of a science (*mabādiʾ al-ʿilm*)

Private belief

Probable (*ẓannī*)

Prophetic knowledge (*waḥy*)

Proposition (*qaḍiyya*)

Propositional assent, or assent (*taṣdīq*)

Propositional knowledge (*taṣdīq*)

Public belief

Reflection

Reflective (*naẓarī*)

Reflective reasoning (*naẓar*)

Relational syllogism

Report

Revelational modality

Science (*ʿilm*)

Self-evident (*badīhī*)

Self-evident propositions (*awwaliyyāt*)

Sense-integration (*taṣawwur ḥissī*)

Senses (*ḥawāss*)

Sensory knowledge (*ʿilm ḥissī*)

Signification (*dalāla*)

Simple apprehension (*taṣawwur sādhij*)

Soul (*rūḥ*)

Specialist in a science

Spiritual knowledge

Strong intuition (*ḥads qawī*)

Subject (*mawḍūʿ*)

Subject of inquiry (*mawḍūʿ al-ʿilm*)

Subjoining syllogism (*qiyās istithnāʾī*)

Syllogism (*qiyās*)

Syllogistic figure (*shakl*)

Syllogistic forms of inference

Syllogistic mood (*ḍarb*)

Tentative belief

Tentative denial

Theses of a science (*masaʾil al-ʿilm*)

True dream (*ruʾyā ṣādiqa*)

Truth (*ṣidq*)

Unthinkable (*takhyīlī*)

Validity

Warrant

Willful belief

Willful denial

Willful noncommitment

Verification and
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