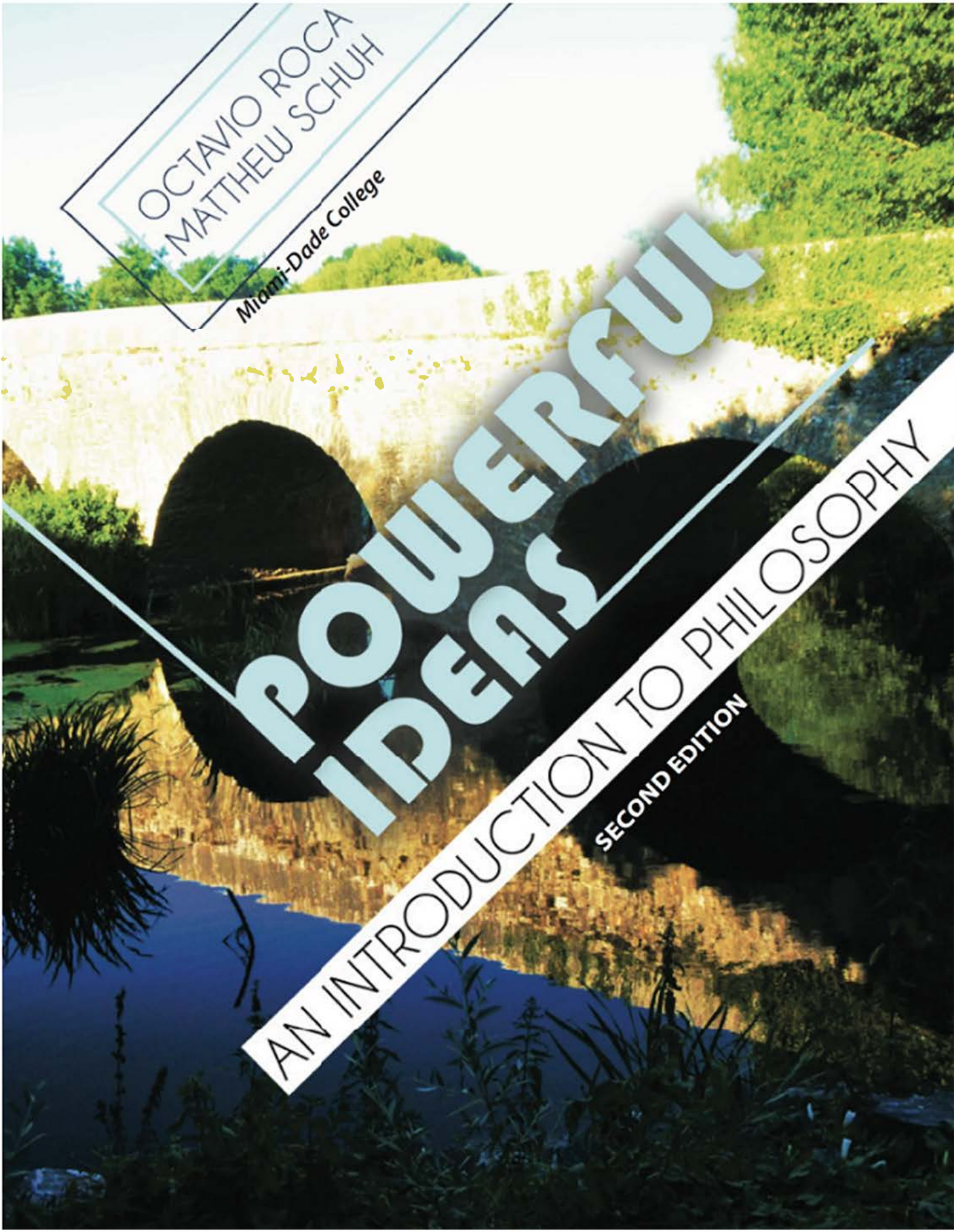
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POWERFUL IDEAS
AN INTRODUCTION TO PHILOSOPHY
SECOND EDITION

Upon completing this chapter, students should be able to meet the following Learning Outcomes:

- **1.1** Articulate the benefits that a student may gain by studying philosophy.
- **1.2** Explain the Socratic Method of teaching.
- **1.3** Explain how critical thinking can be used to analyze a philosophical issue.
- **1.4** Compare and contrast induction, abduction, and deduction.
- **1.5** Evaluate philosophical arguments.
- **1.6** Synthesize or create a philosophical argument.

Importance of Philosophical Study

The word **philosophy** as many of the most interesting words in the English language do comes from Greek. The word is often translated as "the love of wisdom." This statement although true presupposes a distinction that Aristotle made in his study of knowledge—between "knowing how" to do something and "understanding how" the something you are doing actually takes place. For Aristotle, true knowledge was the deeper understanding of processes.

For example, a chemistry student may know how to mix certain chemicals to create a new one: mix two parts of X to one part of Y and get Z . . ., but the student with wisdom understands why the result unfolds. This unfolding is the most interesting part of the journey. That journey is alarmingly difficult these days, with the liberal arts and humanities under constant attack and learning too often defined as learning to take tests and learning how to get a job. And yet a liberal education, particularly the study of philosophy, may help in a project that is and should be at least as desirable: how to be happy, how to have a meaningful life, and how to know the truth. Truth may be objective and universal, but finding the truth can be as ambiguous as it is difficult. That is not a bad thing.

> ***"The philosopher is marked by the distinguishing trait that he possesses inseparably the taste for evidence and the feeling for ambiguity. When he limits himself to accepting ambiguity, it is called equivocation. But among the great it becomes a theme; it contributes to establishing certitudes rather than menacing them. Therefore it is necessary to distinguish good and bad ambiguity. It is useless to deny that philosophy limps. It dwells in history and in life, but it wishes to dwell at their center, at the point where they come into being with the birth of meaning"***
>
> **—Maurice Merleau-Ponty, *In Praise of Philosophy***

We tell our students that it is our hope that by the end of the course in introduction to philosophy they will know ***less*** than when they entered. This is not because we do not want them to learn about the various important ideas and thinkers that have grappled with deep philosophical questions, but rather it is because by the end of the course we want them to be in a position to examine their own beliefs and realize that most of what they are certain is true, is not. Our hope is that they develop the ability to think, reason, and evaluate ideas during the course. The study of philosophy involves critical thinking, which will be discussed below.

> ***"There is innate in the human heart a metaphysical hunger to know and understand what lies beyond the mysterious veil of nature . . . Philosophy is one of life's noblest pursuits; although its wisdom is the reward of few"***
>
> **—Theos Bernard, 1947, Hindu Philosophy.**

Structure of the Textbook

This book is structured around various themes and ideas in philosophy. There is some overlap between chapters and many important philosophers will show in more than one place. Although the book is centered around important themes or

questions, due respect is given to history and to the philosophers who have made contributions to the topics discussed, regardless of their historical era.

The Socratic Method

Another aspect of the book is its reliance upon the **Socratic Method**. Socrates was famous for asking broad questions in hopes of finding precise answers—he famously failed in this endeavor on more than one occasion—oftentimes pointing out to his interlocutors that they did not know the answers either. The Socratic Method is one of the oldest and powerful methods of teaching. The method develops critical thinking and involves giving students questions but not answers. It involves inquiry, analysis, evaluation, and synthesis of thoughts and ideas. Engaging in this process of questioning and probing can put our thoughts in order. Asking questions such as what is real? how we acquire knowledge? or how can we make value judgments? Our aim here is to help bring these questions into sharper focus and provide a foundation for the answers we are looking for.

Powerful Thinkers: Socrates

Socrates (469–399 BCE) asked probing questions of the intellectual elite in Athens. A stonecutter (or mason) by day, when he was not working, he was engaged in philosophical discourse with his students—or with just about anyone who would engage with him in the streets of ancient Athens. All sources agree that Socrates was exceedingly ugly, had an unorthodox (lowly) manner of dress, and often wandered around barefoot and seeming confused.

Socrates' students once made an offering to the Oracle at Delphi, the most holy temple not far from Athens dedicated to the god Apollo. They asked the Oracle who the wisest man in the world was. She declared that Socrates was the wisest of men. When he heard this, he said he was wise because he admitted his ignorance! Socrates taught orally and did not put his doctrines into writing. He did not write books. His student, Plato (439–347 BCE), wrote dialogues that reflect his views. The Socrates we know is a literary creation of Plato. He is the most famous philosopher who never wrote anything. The dialogues written by Plato are accounts of debates that Socrates had with other philosophers or sophists—a group of philosophers who taught rhetoric and denied the existence of a permanent truth. Unlike the sophists, who were paid for teaching wealthy aristocrats the skills of oration and persuasive argument, Socrates charged no fees and taught students, including women, from all walks of life. In

one dialog, Plato's *Meno*, Socrates is shown in conversation with a slave boy that the slave in question and his owner were equal in terms of capacity to learn.

Unfortunately, in 399 BCE, Socrates' luck ran out and he was put on trial on trumped-up charges. It was the democratic government of Athens, not the oligarchy that preceded it, that put Socrates to death. This fact did not escape the notice of Plato, Socrates' young friend and pupil, who would harbor a distrust of democracy for the rest of his life—Plato's *Republic* embodies that mistrust, and his suggestion that perhaps idiots shouldn't be allowed to vote is just one of the many political principles that Plato suggests.

Socrates was accused of impiety, that is, of being unreligious, and of corrupting the youth of Athens. This was a time of uncertainty in the first democracy, following a humiliating military defeat by Sparta in the Peloponnesian War. Socrates, who was neither wealthy nor liked very much by the wealthy, was an easy target. A jury of 500 found Socrates guilty of his crimes, and he was sentenced to death. It is believed that he could have escaped into exile, but that would have meant violating Athenian laws that he had respected and followed his whole life. "It is better to suffer evil than to do evil," he said after his trial.

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Areas of Philosophy

There are various areas of philosophy that are discussed within the textbook. **Critical thinking** is infused throughout the textbook. It deals with the evaluation of philosophical arguments. Such arguments normally consist of a number of premises and a conclusion. The premises provide reasons in support of the conclusion or position taken by the argument.

> ***"Thus, all Philosophy is like a tree, of which Metaphysics is the root, Physics the trunk, and all the other sciences the branches that grow out of this trunk, which are reduced to three principals, namely, Medicine, Mechanics, and Ethics. By the science of Morals, I understand the highest and most perfect which, presupposing an entire knowledge of the other sciences, is the last degree of wisdom"***
>
> **—René Descartes, personal correspondence**

Metaphysics deals with the nature of existence, asking the question "What is real?" Metaphysics is a very broad field, and metaphysicians attempt to answer questions about *how the world is*. Ontology is a related subfield, partially within metaphysics, that answers questions of *what things exist in the world*. An ontology posits which entities exist in the world. So, while a particular metaphysics may include an implicit ontology (which means, *how* your theory describes the world may imply specific *things* in the world), they are not necessarily the same field of study.

Epistemology is closely tied to metaphysics and ontology, no longer asking what is real but asking "How do you know?" It deals with the nature and foundations of knowledge. Epistemologists employ various methods such as rationalism (knowledge based on logical analysis of ideas and terms) or empiricism (knowledge based on observation and experience) to formulate arguments to justify or support belief and knowledge claims.

Aesthetics deals with contemplating and making judgments about beauty. Our enjoyment, appreciation, and judgment of art—together with the question of what defines art to begin with—are the key elements to consider in aesthetics. The word itself is derived from the Greek Αισθητική, *aisthetikos*, meaning "coming from the senses." More than any other branch of axiology, that is, of the philosophy of making value judgments, aesthetics has sensuality built into it as much as it has seductive, ineffable quality in its critical analysis. Still, though some philosophers disagree, it is not just a matter of taste.

Ethics studies questions about right and wrong. Ethical theories provide a framework for answering those questions and for evaluating human actions. There are various views on what constitutes good and bad, as well as what have value. Ethics can be broadly broken down into deontological theories, which evaluate morality on the basis of actions, and teleological theories, which evaluate morality on the

POWERFUL IDEAS: DIVISIONS OF PHILOSOPHY

- Logic
- Metaphysics: Nature of Existence
- Epistemology: Theory of Knowledge
- Philosophy of Religion
- Eastern Philosophy
- Aesthetics
- Ethics: Study of Right and Wrong
- Political Philosophy

basis of the consequences. Other major ethical theories focus on virtues, sentiments, or even intuitions.

Political philosophy deals with questions pertaining to the foundations, nature, and purpose of government. It is closely related to the philosophy of law, which focuses on the foundation and nature of laws and legal systems. Social structures can be analyzed philosophically from both an economic perspective and a political one.

And finally, a particular field within metaphysics, **philosophy of religion,** is considered from both an Eastern and a Western perspective. From a Western perspective, the topics include proofs of the existence of a three omni (omni-benevolent, omniscience, and omnipotent) God, the rationality of religious belief, and the problem of evil. A number of Eastern religions and philosophical systems are discussed as well. These include Hinduism, Buddhism, Taoism, and Confucianism. Topics in Eastern philosophy also include reincarnation, karma, and the connection between Taoist principles and traditional Feng Shui.

Although we focus on the main branches of philosophy within this introductory book on the topic, there are various other areas of philosophy. In fact, there can be a philosophical analysis of just about any topic in academia. For example, there are courses in philosophy of Education, Law, Science, Physics, Biology, Mathematics, Psychology, and Bioethics, just to name a few.

Ultimately, these topics are deep and have profound questions, and many of them will have bearing upon your life now or in the future. Each and every one of us is born into a political society. Further, we each make ethical decision every day. We may not always consider the meaning of life, but when things get tough or bad things happen, we often do reflect on these issues.

POWERFUL ANALYSIS: WHY ARE YOU HERE?

We often ask our students on the first day or during the first week, why are you here? For the most part, we know the answer: a philosophy class fulfills a general education requirement. But that is not the question I am asking. I am asking, why are you in college? What is your goal? Are you here because your parents said "go to school or get a job!" or are you here because "you have a job but want a career?" Socrates said, "The unexamined life is not worth living"; take some time to consider yours now and where you want it to be 5 years from now.

Logic and Critical Thinking

Logic is the study of rational thought. Logic is highly systematized and there are various logics that are almost mathematical in nature. In logic, there are various formal and informal fallacies. Formal fallacies denote a flaw in the structure of an argument. These are discussed in detail in logic courses. Informal fallacies are a flaw in reasoning that we make when we construct an argument. For example, when we make assumptions that are not supported by the evidence (or premise), then we are committing some version of an informal fallacy. So generally, the term "fallacy" is used to denote an unacceptable way of thinking or reasoning.

Critical thinking, on the other hand, is less systematized and somewhat more abstract. Critical thinking is the engagement of the thinker in rational deliberation, investigation of facts and reasons, and the evaluation of arguments. In this book, these ideas appear in the form of essays, readings, and philosophical arguments. As students of philosophy, one must be willing to employ rationality. Students must be able to justify their views in a coherent way. The skills that are developed by engaging in philosophical thought and analysis are essential for any college student or citizen in a democratic society.

Deduction

Deduction is the process of reasoning from one or more statements known as **premises** to reach a logically certain **conclusion**. Premises are statements made in support of a conclusion of an argument. The conclusion is the main position defended in an argument that is supported by the premises. Taken together, the premises and conclusion create an **argument**.

In deduction or deductive logic, an argument (which is what the premise and conclusion are called, collectively) must employ a **valid** (or correct formal) structure. A valid structure ensures that if the premises are true, then the conclusion must be true. There are various recognized valid structures, everything from the syllogism created by Aristotle to modus tollens.

POWERFUL IDEAS: DEDUCTIVE ARGUMENT STRUCTURE- MODUS TOLLENS

Modus tollens, which is Latin and means "the way that denies by denying," has a deductive structure as follows:

P→Q

~Q

Therefore, ~P

In the above argument, P and Q are variables that can stand for any term, and ~P and ~Q are the negations. The → means "if and only if." For example, P could stand for the statement "pigs can fly," Q could stand for the statement, "it is raining." ~P would then mean, "pigs cannot fly" and ~Q would state, "it is not raining."

So, the argument would look as follows with the variables replaced by the statements:

1) If pigs can fly, then it is raining.

2) It is not raining.

3) Therefore, pigs cannot fly.

As noted above, the argument about pigs flying has a valid structure, yet the conclusion is only true if the premises are true. Yet, the argument is lacking an important feature, it is not **sound.** A sound argument is one where the premises have some true relation between them. There is no correlation between the rain and pigs flying. The above argument, although it has a valid structure, is unsound and therefore false. If an argument is both valid and sound, then the conclusion must be true.

An example of an argument that is both valid and sound is as follows:

If your father is Prince William, then you are either Charlotte or George. Your father is in fact Prince William, therefore you are either Charlotte or George. These statements are all true (until Prince William and Duchess Kate have more children).

POWERFUL ANALYSIS: VALID AND SOUND

By employing some basic logically valid forms, determine if the arguments are both valid and sound.

1) If the traffic light turns red, I should stop. The traffic light has turned red, therefore I should stop.
2) If Florida is south of New York, then everyone is happy. Florida is south of New York, therefore everyone is happy.
3) If she is crying, she must be sad. She is crying, therefore she must be sad.
4) All dogs go to heaven when they die. Lassie is a dog that has died, therefore she went to heaven.
5) All people live on Earth. Sam is a person, therefore he lives on earth.

Induction

Although deduction is a powerful method of reasoning, it is not the one we normally employ on a daily basis. Rather for the most part, we draw our beliefs from a form of logic known as induction. Induction is a type of reasoning where the premises provide strong evidence for (not absolute proof of) the truth of the conclusion. For example, when we flip a light switch, we assume the lights will turn on. We believe this because of our past experience and observations of the world. Although it would be wonderful if the lights always turn on, we all know there are times they do not. So, the conclusion of an induction is not 100% certain.

Powerful Thinkers: David Hume (1711–1776)

David Hume (1711–1776) was a staunch opponent of inductive reasoning. He argued that most of our beliefs (and any that rely upon induction) are simply custom or habit. He was known as the Great Infidel in his lifetime, but today, he is widely considered the key figure in the Scottish Enlightenment and the greatest philosopher in the English language.

David Hume believed that we assume too much, not only about ourselves but also about the world around us. He believed, in fact, that we have no proof of any causal necessity in the order of events. There is no reason why the future will follow from the present, or at least we cannot prove the connection since all we perceive are the events

themselves. We know only as much as we can gather from experience. The very concept of cause and effect is a projection of our understanding, not a fact. The laws of science are generalizations from inductive reasoning. And inductive reasoning, Hume believed, simply cannot lead us to the truth.

He considered emotions to be significant, both in aesthetics and in ethics, given that there was no evidence for either aesthetic or moral facts. Our taste determines what we mean by good or bad art, just as our approval or disapproval is all we can mean by right or wrong.

His skepticism went still farther. We never experience our own self directly, only the continuing chain of experiences in our lives. All knowledge in fact is based on sense impressions and on experiences. It follows that we don't even have any factual knowledge of the self since any conception of identity must be based on impressions. "It must be some impression that gives rise to every real idea," he wrote in his *Treatise on Human Nature* when he was only 24. The self is not any one impression, but that to which our several impressions are supposed to have a reference. Therefore, as far as our idea of the self, Hume believed "there is no such idea."

He was born and died in Edinburgh, Scotland. An empiricist of considerable influence on future philosophy, Hume anticipated the science of psychology by more than a century in his precocious *Treatise*. But describing emotions accurately, while pointing out the impossibility of using reason as a guide to aesthetics or ethics, is not the same thing as prescribing a course of action. It may very well be true that "morals excite passions, and produce or prevent actions," Hume wrote, adding that "reason itself is utterly impotent in this particular."

As Hume developed his ideas, he also was led to discovering the faulty logic of what is today called an "intelligent design" argument for the existence of God. Hume was an atheist, a skeptic, and a confirmed bachelor to boot—none of which endeared to the church. Like his intimate friend and fellow philosopher Adam Smith, Hume longed for a teaching position in the University of Edinburgh. He did not get his wish; an influential clergy made sure that he never would teach. In fact, Hume narrowly escaped being tried for heresy. Smith did land a position late in life in his own alma mater, the University of Glasgow.

Hume died of cancer in 1776, shortly after completing his autobiography. The younger Adam Smith died in Edinburgh in 1790. Adam

Smith is buried in the Canongate churchyard in Edinburgh's Royal Mile, not far from a monument honoring David Hume, itself not far from the venerable university that would not have either of them.

Abduction

The concept of abduction was first introduced by Charles Sanders Peirce. He meant it to mean a type of non-deductive inference that was different than induction. Abduction is also known as "Inference to the Best Explanation." Abduction is the process of reasoning that is a type of non-deductive inference where based on the evidence at hand we draw an inference to the best explanation. It is believed to be commonly employed by people on a regular basis. Peirce thought that it was the only way to generate new ideas in the realm of science. He also thought that we make observations and developed new ideas based on what we see. For example, if we know there was a football game today, but we did not see the score, but we see a picture of all of the fans belonging to one of the teams sad and crying, it is safe for us to conclude that the team has lost and the other team has won.

> ***"Abduction consists in studying facts and devising a theory to explain them. Its only justification is that, if we are ever to understand things at all, it must be in that way"***
>
> **—C. S. Peirce, 1932, Collected Papers**

Putting It All Together: Evaluating Philosophical Readings and Arguments

When evaluating a reading in philosophy, it is essential to clearly articulate your view. You must not assume that your audience knows what you are thinking, but you should clearly state each premise and the reasoning behind it. You will note that many of the readings by philosophers in this textbook break this first rule. There are times when the ideas of philosophers seem tangential or even incomprehensible. This should not be discouraging—you will grow in your understanding and comprehension of the readings as you read more philosophy. The readings selected for this book have been shortened in many cases, and attempts have been made by the authors of this book to focus on some of the main points of the various philosophers represented in the book. As a student, when you read philosophy, you should focus on those essential points. If you were asked to summarize a reading, you could think of it as a book report where you find the main ideas and explain what those ideas are by citing the evidence from the text.

"We never come to thoughts. They come to us"

—Martin Heidegger

POWERFUL IDEAS: ANALYZING A PHILOSOPHICAL ARGUMENT

Let's consider an example of a philosophical argument from the philosopher René Descartes. Descartes argues that he can doubt his body but not his mind. He goes on to argue that since his body can be doubted, but his mind cannot, they must be different things. These statements are structured in a systematic way, but they could be. His main point is that the body has a property or quality that the mind does not; since they have different qualities, they must be different things.

To clarify Descartes' argument, consider the following: if you're a member of a tribe cut off from the modern world and have never seen a smartphone, but one day you see a smartphone next to a book—regardless of what you thought of the two objects, logic would dictate that they could not be the same type of object because they have different qualities. Books are made of paper, and smartphones are made of metal and plastic. Books have pages, smartphones have apps. These differences lead to the conclusion that they are not the same object. None of this is profound, but in Descartes' case, he is attempting to argue that the mind and body are different. His views will be examined later, but the crux of the argument in his view is that one can be doubted and the other cannot.

Ultimately, however, the argument fails because Descartes' doubt is not an actual property of his body. Descartes' internal psychological state or perception of reality has no bearing upon his body. In other words, your perception of an object does not change its qualities. A better argument for Descartes' views on the mind and body will be considered in another chapter.

In short, philosophy is a study in the analysis of ideas. We analyze ideas each and every day. We do so at work and at home. We deal with complex issues and problems and try to develop solutions. The study of philosophy will enhance your ability to analyze the trials and tribulations of life.

What, Then, Does Philosophy Do, Exactly?

Philosophy aims at the kind of knowledge which gives unity to the body of the sciences, and the kind which results from a critical examination of the grounds of our convictions, prejudices, and beliefs. But it cannot be maintained that philosophy has had any very great measure of success in its attempts to provide definite answers to its questions. If you ask a mathematician, a historian, or any other man of learning, what definite body of truths has been ascertained by his science, his answer will last as long as you are willing to listen. But if you put the same question to a philosopher, he will have to confess that his study has not achieved positive results such as have been achieved by other sciences. It is true that this is partly accounted for by the fact that, as soon as definite knowledge concerning any subject becomes possible, this subject ceases to be called philosophy. The whole study of the heavens, which now belongs to astronomy, was once included in philosophy; Newton's great work was called "the mathematical principles of natural philosophy." The study of the human mind, which was a part of philosophy, has now been separated from philosophy and has become the science of psychology. Those questions which are already capable of definite answers are placed in the sciences, while those only to which, at present, no definite answer can be given, remain to form the residue which is called philosophy. Bertrand Russell, *The Problems of Philosophy.*

POWERFUL ANALYSIS

Can you see ways that the study of philosophy might benefit you in other facets of your life?

READINGS

HEIDEGGER: *What Calls for Thinking?*

What is it we do when we think, and is it something we can learn? Martin Heidegger (1889–1976) in this excerpt from his book *What Is Called Thinking?* suggests that in order to be capable of thinking, we need to learn it. And we learn to think by paying attention to what there is to think about.

We come to know what it means to think when we ourselves are thinking. If our attempt is to be successful, we must be ready to learn thinking.

As soon as we allow ourselves to become involved in such learning we have admitted that we are not yet capable of thinking.

Yet man is called the being who can think, and rightly so. Man is the rational animal. Reason, *ratio*, evolves in thinking. Being the rational animal, man must be capable of thinking if he really wants to. Still, it may be that man wants to think, but can't. Ultimately he wants too much when he wants to think, and so can do too little. Man can think in the sense that he possesses the possibility to do so. This possibility alone, however, is no guarantee to us that we are capable of thinking. For we are capable of doing only what we are inclined to do. And again, we truly incline toward something only when it in turn inclines toward us, toward our essential being, by appealing to our essential being as what holds us there. To hold genuinely means to heed protectively, for example, by letting a herd graze at pasture. What keeps us in our essential being holds us only so long, however, as we for our part keep holding on to what holds us. And we keep holding on to it by not letting it out of our memory. Memory is the gathering of thought. To what? To what holds us, in that we give it thought precisely because it remains what must be thought about. What is thought is the gift given in thinking back, given because we incline toward it. Only when we are so inclined toward what in itself is to be thought about, only then are we capable of thinking.

In order to be capable of thinking, we need to learn it. What is learning? Man learns when he disposes everything he does so that it answers to whatever addresses him as essential. We learn to think by giving heed to what there is to think about.

For example, what is essential in a friend is what we call "friendliness." In the same sense we now call what in itself is to be thought about "the

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thought-provoking." Everything thought-provoking *gives* us to think. But it always gives that gift just so far as the thought-provoking matter already *is* intrinsically what must be thought about. From now on, we will call "most thought-provoking" what remains to be thought about always, because it is so at the beginning and before all else. What is most thought-provoking? How does it show itself in our thought-provoking time?

Most thought-provoking is that we are still not thinking—not even yet, although the state of the world is becoming constantly more thought-provoking. True, this course of events seems to demand rather that man should act without delay, instead of making speeches at conferences and international conventions and never getting beyond proposing ideas on what ought to be, and how it ought to be done. What is lacking, then, is action, not thought.

It is no evidence of any readiness to think that people show an interest in philosophy. There is, of course, serious preoccupation everywhere with philosophy and its questions. The learned world is expending commendable efforts in the investigation of the history of philosophy. These are useful and worthy tasks, and only the best talents are good enough for them, especially when they present to us models of great thinking. But even if we have devoted many years to the intensive study of the treatises and writings of the great thinkers, that fact is still no guarantee that we ourselves are thinking, or even are ready to learn thinking. On the contrary—preoccupation with philosophy more than anything else may give us the stubborn illusion that we are thinking just because we are incessantly "philosophizing."

Even so, it remains strange, and seems presumptuous, to assert that what is most thought-provoking in our thought-provoking time is that we are still not thinking. Accordingly, we must prove the assertion. Even more advisable is first to explain it. For it could be that the demand for a proof collapses as soon as enough light is shed on what the assertion says. It runs:

Most thought-provoking in our thought-provoking time is that we are still not thinking.

It has been suggested earlier how the term "thought-provoking" is to be understood. Thought-provoking is what gives us to think. Let us look at it closely, and from the start allow each word its proper weight. Some things are food for thought in themselves, intrinsically, so to speak, innately. And some things make an appeal to us to give them thought, to turn toward them in thought: to think them.

What is thought-provoking, what gives us to think, is then not anything that we determine, not anything that only we are instituting, only we are proposing. According to our assertion, what of itself gives us most to think about, what is most thought-provoking, is this—that we are still not thinking.

This now means: We have still not come face to face with, have not yet come under the sway of, what intrinsically desires to be thought about in an essential sense. Presumably the reason is that we human beings do not yet

sufficiently reach out and turn toward what desires to be thought. If so, the fact that we are still not thinking would merely be a slowness, a delay in thinking or at most a neglect on man's part. Such human tardiness could then be remedied in human ways by the appropriate measures. Human neglect would give us food for thought—but only in passing. The fact that we are still not thinking would be thought-provoking, of course, but being a momentary and curable condition of modern man, it could never be called the one most thought-provoking matter. Yet that is what we call it, and we suggest thereby the following: that we are still not thinking is by no means only because man does not yet turn sufficiently toward that which, by origin and innately, wants to be thought about since in its essence it remains what must be thought about. Rather, that we are still not thinking stems from the fact that what is to be thought about turns away from man, has turned away long ago.

We will want to know at once when that event took place. Even before that, we will ask still more urgently how we could possibly know of any such event. And finally, the problems which here lie in wait come rushing at us when we add still further: that which really gives us food for thought did not turn away from man at some time or other which can be fixed in history—no, what really must be thought keeps itself turned away from man since the beginning.

On the other hand, in our era man has always thought in some way; in fact, man has thought the profoundest thoughts, and entrusted them to memory. By thinking in that way he did and does remain related to what must be thought. And yet man is not capable of really thinking as long as that which must be thought about withdraws.

If we, as we are here and now, will not be taken in by empty talk, we must retort that everything said so far is an unbroken chain of hollow assertions, and state besides that what has been presented here has nothing to do with scientific knowledge.

We can learn thinking only if we radically unlearn what thinking has been traditionally. To do that, we must at the same time come to know it.

We said: man still does not think, and this because what must be thought about turns away from him; by no means only because man does not sufficiently reach out and turn to what is to be thought.

What must be thought about turns away from man. It withdraws from him. But how can we have the least knowledge of something that withdraws from the beginning, how can we even give it a name? Whatever withdraws, refuses arrival. But—withdrawing is not nothing. Withdrawal is an event. In fact, what withdraws may even concern and claim man more essentially than anything present that strikes and touches him. Being struck by actuality is what we like to regard as constitutive of the actuality of the actual. However, in being struck by what is actual, man may be debarred

precisely from what concerns and touches him—touches him in the surely mysterious way of escaping him by its withdrawal. The event of withdrawal could be what is most present in all our present, and so infinitely exceed the actuality of everything actual.

What withdraws from us draws us along by its very withdrawal, whether or not we become aware of it immediately, or at all. Once we are drawn into the withdrawal, we are, somewhat like migratory birds, but in an entirely different way, caught in the pull of what draws, attracts us by its withdrawal. And once we, being so attracted, are drawing toward what draws us, our essential being already bears the stamp of that "pull." As we are drawing toward what withdraws, we ourselves point toward it. We are who we are by pointing in that direction—not like an incidental adjunct but as follows: this "being in the pull of" is in itself an essential and therefore constant pointing toward what withdraws. To say "being in the pull of" is to say "pointing toward what withdraws."

To the extent that man *is* in this pull, he *points* toward what withdraws. *As* he is pointing that way, man *is* the pointer. Man here is not first of all man, and then also occasionally someone who points. No: drawn into what withdraws, pulled toward it and thus pointing into the withdrawal, man first *is* man. His essential being lies in being such a pointer. Something which in itself, by its essential being, is pointing, we call a sign. As he draws toward what withdraws, man is a sign. But since this sign points toward what draws *away*, it points not so much at *what* draws away as into the withdrawal. The sign remains without interpretation.

In universities especially the danger is still very great that we misunderstand what we hear of thinking, particularly if the immediate subject of the discussion is scientific. Is there any place compelling us more forcibly to rack our brains than the research and training institutions pursuing scientific work? Now everyone admits unreservedly that the arts and the sciences are totally different from each other, though in official oratory they are still mentioned jointly. But if a distinction is made between thinking and the sciences, and the two are contrasted, that is immediately considered a disparagement of science. There is the fear even that thinking might open hostilities against the sciences, and becloud the seriousness and spoil the joy of scientific work.

But even if those fears were justified, which is emphatically not the case, it would still be both tactless and tasteless to take a stand against science upon the very rostrum that serves scientific education. Tact alone ought to prevent all polemics here. But there is another consideration as well. Any kind of polemics fails from the outset to assume the attitude of thinking. The role of thinking is not that of an opponent. Thinking is thinking only when it pursues whatever speaks *for* a matter. Everything said here defensively is always intended exclusively to protect the matter. When we speak

of the sciences as we pursue our way, we shall be speaking not against but for them, for clarity concerning their essential nature. This alone implies our conviction that the sciences are in themselves positively essential. However, their essence is frankly of a different sort from what our universities today still fondly imagine it to be. In any case, we still seem afraid of facing the exciting fact that today's sciences belong in the realm of the essence of modern technology, and nowhere else. Note that I am saying "in the realm of the *essence* of technology," and not simply "in technology." A fog still surrounds the essence of modern science. That fog, however, is not produced by individual investigators and scholars in the sciences. It is not produced by man at all. It arises from the region of what is most thought-provoking—that we are still not thinking; none of us, including me who speaks to you, me first of all.

This is why we are here attempting to learn thinking. We are all on the way together, and are not reproving each other. To learn means to make everything we do answer to whatever addresses us as essential. Depending on the kind of essentials, depending on the realm from which they address us, the answer and with it the kind of learning differs.

A cabinetmaker's apprentice, someone who is learning to build cabinets and the like, will serve as an example. His learning is not mere practice, to gain facility in the use of tools. Nor does he merely gather knowledge about the customary forms of the things he is to build. If he is to become a true cabinetmaker, he makes himself answer and respond above all to the different kinds of wood and to the shapes slumbering within wood—to wood as it enters into man's dwelling with all the hidden riches of its nature. In fact, this relatedness to wood is what maintains the whole craft. Without that relatedness, the craft will never be anything but empty busywork, any occupation with it will be determined exclusively by business concerns. Every handicraft, all human dealings, are constantly in that danger. The writing of poetry is no more exempt from it than is thinking.

Whether or not a cabinetmaker's apprentice, while he is learning, will come to respond to wood and wooden things depends obviously on the presence of some teacher who can teach the apprentice such matters.

True. Teaching is even more difficult than learning. We know that; but we rarely think about it. And why is teaching more difficult than learning? Not because the teacher must have a larger store of information, and have it always ready. Teaching is more difficult than learning because what teaching calls for is this: to let learn. The real teacher, in fact, lets nothing else be learned than—learning. His conduct, therefore, often produces the impression that we really learn nothing from him, if by "learning" we now automatically understand merely the procurement of useful information. The teacher is ahead of his apprentices in this alone, that he has still far more to learn than they—he has to learn to let them learn. The teacher must be capable of

being more teachable than the apprentices. The teacher is far less sure of his material than those who learn are of theirs. If the relation between the teacher and the learners is genuine, therefore, there is never a place in it for the authority of the know-it-all or the authoritative sway of the official. It still is an exalted matter, then, to become a teacher—which is something else entirely than becoming a famous professor. That nobody wants any longer to become a teacher today, when all things are downgraded and graded from below (for instance, from business), is presumably because the matter is exalted, because of its altitude. And presumably this disinclination is linked to that most thought-provoking matter which gives us to think. We must keep our eyes fixed firmly on the true relation between teacher and taught—if indeed learning is to arise in the course of these lectures.

We are trying to learn thinking. Perhaps thinking, too, is just something like building a cabinet.

(. . .)*What is called thinking?* The question sounds definite. It seems unequivocal. But even a slight reflection shows it to have more than one meaning. No sooner do we ask the question than we begin to vacillate. Indeed, the ambiguity of the question foils every attempt to push toward the answer without some further preparation.

We must, then, clarify the ambiguity. The ambiguousness of the question "What is called thinking?" conceals several possible ways of dealing with it. Looking ahead, we may stress *four* ways in which the question can be posed.

"What is called thinking?" says for one thing, and in the first place: what is it we call "thought" and "thinking," what do these words signify? What is it to which we give the name "thinking"?

"What is called thinking?" says also, in the second place: how does traditional doctrine conceive and define what we have named thinking? What is it that for two and a half thousand years has been regarded as the basic characteristic of thinking? Why does the traditional doctrine of thinking bear the curious title "logic"?

"What is called thinking?" says further, in the third place: what are the prerequisites we need so that we may be able to think with essential rightness? What is called for on our part in order that we may each time achieve good thinking?

"What is called thinking?" says finally, in the fourth place: what is it that calls us, as it were, commands us to think? What is it that calls us into thinking?

These are four ways in which we can ask the question and bring it closer to an answer by corresponding analyses. These four ways of asking the question are not just superficially strung together. They are all interrelated. What is disturbing about the question therefore lies less in the multiplicity of its possible meanings than in the single meaning toward which all four ways are pointing. We must consider whether only one of the four ways is

the right one, while the others prove to be incidental and untenable; or whether all four of them are equally necessary because they are unified and of a piece. But how are they unified, and by what unity? Is oneness added to the multiplicity of the four ways as a fifth piece, like a roof to four walls? Or does one of the four ways of asking the question take precedence? Does this precedence establish a hierarchy within the group of questions? Does the hierarchy exhibit a structure by which the four ways are coordinated and yet subordinated to the one that is decisive?

The four ways we have mentioned, in which the question "What is called thinking?" may be asked, do not stand side by side, separate and unrelated. They belong together by virtue of a union that is enjoined by one of the four ways. However, we must go slow, one step at a time, if we are to become aware how this is so. We must therefore begin our attempt with a statement which will at first remain a mere assertion. It runs:

The meaning of the question which we noted in the fourth place tells us how the question would want to be asked first in the decisive way: "What calls for thinking?" Properly understood, the question asks what it is that commands us to enter into thought, that calls on us to think. The turn of phrase, "What calls for thinking on our part?," could of course intend no more than "What does the term 'thinking' signify to us?" But the question as it is really asked, "What calls for thinking on our part?," means something else. . . . It means: What is it that directs us into thought and gives us directions for thinking?

Accordingly, does the question ask what it is that gives us the impetus to think on each occasion and with regard to a particular matter? No. The directions that come from what directs us into thought are much more than merely the given impetus to do some thinking.

That which directs us to think gives us directions in such a way that we first become capable of thinking, and thus *are* as thinkers, only by virtue of its directive. It is true, of course, that the question "What calls for thinking?," in the sense of "What calls on us to think?," is foreign to the common understanding. But we are all the less entitled simply to overlook the fact that the question "What is called thinking?" presents itself at first quite innocently. It sounds as if, and we unknowingly take it as if, the question merely asked for more precise information about what is supposedly meant when we speak of such a thing as thinking. Thinking here appears as a theme with which one might deal as with any other. Thus thinking becomes the object of an investigation. The investigation considers a process that occurs in man. Man takes a special part in the process, in that he performs the thinking. Yet this fact, that man is naturally the performer of thinking, need not further concern the investigation of thinking. The fact goes without saying. Being irrelevant, it may be left out of our reflection on thinking. Indeed, it must be left out. For the laws of thought are after all valid independently of the man who performs the individual acts of thinking.

But if the question "What calls for thinking?" is asking what it is that first of all directs us to think, then we are asking for something that concerns ourselves because it calls upon us, upon our very being. It is we ourselves to whom the question "What is called thinking—what calls for thinking?" is addressed directly. We ourselves are in the text and texture of the question. The question "What calls on us to think?" has already drawn us into the issue in question. We ourselves are, in the strict sense of the word, put in question by the question. The question "What calls on us to think?" strikes us directly, like a lightning bolt. Asked in this way, the question "What calls for thinking?" does more than merely struggle with an object, in the manner of a scientific problem. . . .

(. . .) The place of language properly inhabited, and of its habitual words, is usurped by common terms. The common speech becomes the current speech. We meet it on all sides, and since it is common to all, we now accept it as the only standard. Anything that departs from this commonness, in order to inhabit the formerly habitual proper speaking of language, is at once considered a violation of the standard. It is branded as a frivolous whim. All this is in fact quite in order, as soon as we regard the common as the only legitimate standard, and become generally incapable of fathoming the commonness of the common. This floundering in a commonness which we have placed under the protection of so-called natural common sense is not accidental, nor are we free to deprecate it. This floundering in commonness is part of the high and dangerous game and gamble in which, by the essence of language, we are the stakes.

Is it playing with words when we attempt to give heed to this play of language and to hear what language really says when it speaks? If we succeed in hearing that, then it may happen—provided we proceed carefully—that we get more truly to the matter that is expressed in any telling and asking. (. . .)

When we name a thing, we furnish it with a name. But what about this furnishing? After all, the name is not just draped over the thing. On the other hand, no one will deny that the name is coordinated with the thing as an object. If we conceive the situation in this way, we turn the name, too, into an object. We represent the relation between name and thing as the coordination of two objects. The coordination in turn is by way of an object, which we can see and conceive and deal with and describe according to its various possibilities. The relation between what is named and its name can always be conceived as a coordination. The only question is whether this correctly conceived coordination will ever allow us, will allow us at all, to give heed to what constitutes the peculiar character of the name.

To name something—that is to call it by name. More fundamentally, to name is to call something into its word. What is so called is then at the call of the word. What is called appears as what is present, and in its presence it is secured, commanded, called into the calling word. So called by name, called

into a presence, it in turn calls. It is named, has the name. By naming, we call on what is present to arrive. Arrive where? That remains to be thought about. In any case, all naming and all being named is the familiar "to call" only because naming itself consists by nature in the real calling, in the call to come, in a commending and a command.

What is called thinking? At the outset we mentioned four ways to ask the question. We said that the way listed in the fourth place is the first, first in the sense of being highest in rank since it sets the standard. When we understand the question "What is called thinking?" in the sense that it is a question about what calls upon us to think, we then have understood the word "to call" in its proper significance. That is to say also: we now ask the question as it properly wants to be asked. Presumably we shall now almost automatically get to the three remaining ways to ask the question. It will therefore be advisable to explicate the proper question a little more clearly. It runs: "What is it that calls on us to think?" What makes a call upon us that we should think and, by thinking, be who we are?

That which calls us to think in this way presumably can do so only insofar as the calling itself, on its own, needs thought. What calls us to think, and thus commands, that is, brings our essential being into the keeping of thought, needs thinking because what calls us wants itself to be thought about according to its essence. What calls on us to think demands for itself that it be tended, cared for, husbanded in its own essential being, by thought. What calls on us to think gives us food for thought.

What gives us food for thought we call thought-provoking. But what is thought-provoking not just occasionally, and not just in some given limited respect, but rather gives food for thought inherently and hence from the start and always—is that which is thought-provoking perse. This is what we call most thought-provoking. And what it gives us to think about, the gift it gives to us, is nothing less than itself—itself which calls on us to enter thought.

The question "What calls for thinking?" asks for what wants to be thought about in the pre-eminent sense: it does not just give us something to think about, nor only itself, but it first gives thought and thinking to us, it entrusts thought to us as our essential destiny, and thus first joins and appropriates us to thought.

CHARLES SAUNDERS PEIRCE: *How to Make Our Ideas Clear*

Charles Saunders Peirce argues in his essay *How to Make Our Ideas Clear* (1878) about the importance of clarity in our thoughts. He notes how lack of clarity can cause great problems and lead to difficulties. He makes notes of various methods, including Descartes' philosophy.

Whoever has looked into a modern treatise on logic of the common sort, will doubtless remember the two distinctions between *clear* and *obscure* conceptions, and between *distinct* and *confused* conceptions. . . . A clear idea is defined as one which is so apprehended that it will be recognized wherever it is met with, and so that no other will be mistaken for it. If it fails of this clearness, it is said to be obscure.

This is rather a neat bit of philosophical terminology; yet, since it is clearness that they were defining, I wish the logicians had made their definition a little more plain. Never to fail to recognize an idea, and under no circumstances to mistake another for it, let it come in how recondite a form it may, would indeed imply such prodigious force and clearness of intellect as is seldom met with in this world.

On the other hand, merely to have such an acquaintance with the idea as to have become familiar with it, and to have lost all hesitancy in recognizing it in ordinary cases, hardly seems to deserve the name of clearness of apprehension, since after all it only amounts to a subjective feeling of mastery which may be entirely mistaken. I take it, however, that when the logicians speak of "clearness," they mean nothing more than such a familiarity with an idea, since they regard the quality as but a small merit, which needs to be supplemented by another, which they call *distinctness*.

A distinct idea is defined as one which contains nothing which is not clear. This is technical language; by the *contents* of an idea logicians understand whatever is contained in its definition. So that an idea is *distinctly* apprehended, according to them, when we can give a precise definition of it, in abstract terms. . . .

. . . When Descartes set about the reconstruction of philosophy, his first step was to (theoretically) permit skepticism and to discard the practice of the schoolmen of looking to authority as the ultimate source of truth. That done, he sought a more natural fountain of true principles, and thought he found it in the human mind; thus passing, in the most direct way, from the method of authority to that of apriority, as described in my first paper. Self-consciousness was to furnish us with our fundamental truths, and to decide what was agreeable to reason. But since, evidently, not all ideas are true, he was led to note, as the first condition of infallibility, that they must be clear. The distinction between an idea *seeming* clear and really being so, never occurred to him. . . .

...Descartes labored under the difficulty that we may seem to ourselves to have clear apprehensions of ideas which in truth are very hazy, no better remedy occurred to him than to require an abstract definition of every important term. Accordingly, in adopting the distinction of *clear* and *distinct* notions, he described the latter quality as the clear apprehension of everything contained in the definition; and the books have ever since copied his words. There is no danger that his chimerical scheme will ever again be over-valued. Nothing new can ever be learned by analyzing definitions. Nevertheless, our existing beliefs can be set in order by this process, and order is an essential element of intellectual economy, as of every other. It may be acknowledged, therefore, that the books are right in making familiarity with a notion the first step toward clearness of apprehension, and the defining of it the second. But in omitting all mention of any higher perspicuity of thought, they simply mirror a philosophy which was exploded a hundred years ago....

The very first lesson that we have a right to demand that logic shall teach us is, how to make our ideas clear; and a most important one it is, depreciated only by minds who stand in need of it.... It is terrible to see how a single unclear idea, a single formula without meaning, lurking in a young man's head, will sometimes act like an obstruction of inert matter in an artery, hindering the nutrition of the brain, and condemning its victim to pine away in the fullness of his intellectual vigor and in the midst of intellectual plenty.

Many a man has cherished for years as his hobby some vague shadow of an idea, too meaningless to be positively false; he has, nevertheless, passionately loved it, has made it his companion by day and by night, and has given to it his strength and his life, leaving all other occupations for its sake, and in short has lived with it and for it, until it has become, as it were, flesh of his flesh and bone of his bone; and then he has woken up some bright morning to find it gone, clean vanished away like the beautiful Melusina of the fable, and the essence of his life gone with it....

The principles set forth in the first part of this essay lead, at once, to a method of reaching a clearness of thought of higher grade than the "distinctness" of the logicians. It was there noticed that the action of thought is excited by the irritation of doubt, and ceases when belief is attained; so that the production of belief is the sole function of thought. All these words, however, are too strong for my purpose. It is as if I had described the phenomena as they appear under a mental microscope.

Doubt and Belief, as the words are commonly employed, relate to religious or other grave discussions. But here I use them to designate the starting of any question, no matter how small or how great, and the resolution of it. If, for instance, in a horse-car, I pull out my purse and find a five-cent nickel and five coppers, I decide, while my hand is going to the purse, in which way

I will pay my fare. To call such a question Doubt, and my decision Belief, is certainly to use words very disproportionate to the occasion.

To speak of such a doubt as causing an irritation which needs to be appeased, suggests a temper which is uncomfortable to the verge of insanity. Yet, looking at the matter minutely, it must be admitted that, if there is the least hesitation as to whether I shall pay the five coppers or the nickel (as there will be sure to be, unless I act from some previously contracted habit in the matter), though irritation is too strong a word, yet I am excited to such small mental activity as may be necessary to deciding how I shall act. Most frequently doubts arise from some indecision, however momentary, in our action. Sometimes it is not so. I have, for example, to wait in a railway-station, and to pass the time I read the advertisements on the walls. I compare the advantages of different trains and different routes which I never expect to take, merely fancying myself to be in a state of hesitancy, because I am bored with having nothing to trouble me. Feigned hesitancy, whether feigned for mere amusement or with a lofty purpose, plays a great part in the production of scientific inquiry. However the doubt may originate, it stimulates the mind to an activity which may be slight or energetic, calm or turbulent. Images pass rapidly through consciousness, one incessantly melting into another, until at last, when all is over—it may be in a fraction of a second, in an hour, or after long years—we find ourselves decided as to how we should act under such circumstances as those which occasioned our hesitation. In other words, we have attained belief. . . .

. . . The essence of belief is the establishment of a habit; and different beliefs are distinguished by the different modes of action to which they give rise. If beliefs do not differ in this respect, if they appease the same doubt by producing the same rule of action, then no mere differences in the manner of consciousness of them can make them different beliefs, any more than playing a tune in different keys is playing different tunes. Imaginary distinctions are often drawn between beliefs which differ only in their mode of expression. . . . Instead of perceiving that the obscurity is purely subjective, we fancy that we contemplate a quality of the object which is essentially mysterious; and if our conception be afterward presented to us in a clear form we do not recognize it as the same, owing to the absence of the feeling of unintelligibility. So long as this deception lasts, it obviously puts an impassable barrier in the way of perspicuous thinking; so that it equally interests the opponents of rational thought to perpetuate it, and its adherents to guard against it. . .

Another such deception is to mistake a mere difference in the grammatical construction of two words for a distinction between the ideas they express. In this pedantic age, when the general mob of writers attended so much more to words than to things, this error is common enough. When I

just said that thought is an *action,* and that it consists in a *relation,* although a person performs an action but not a relation, which can only be the result of an action, yet there was no inconsistency in what I said, but only a grammatical vagueness.

From all these sophisms we shall be perfectly safe so long as we reflect that the whole function of thought is to produce habits of action; and that whatever there is connected with a thought, but irrelevant to its purpose, is an accretion to it, but no part of it. If there be a unity among our sensations which has no reference to how we shall act on a given occasion, as when we listen to a piece of music, why we do not call that thinking.

To develop its meaning, we have, therefore, simply to determine what habits it produces, for what a thing means is simply what habits it involves. Now, the identity of a habit depends on how it might lead us to act, not merely under such circumstances as are likely to arise, but under such as might possibly occur, no matter how improbable they may be. What the habit is depends on *when* and *how* it causes us to act. As for the *when,* every stimulus to action is derived from perception; as for the *how,* every purpose of action is to produce some sensible result. Thus, we come down to what is tangible and conceivably practical, as the root of every real distinction of thought, no matter how subtle it may be; and there is no distinction of meaning so fine as to consist in anything but a possible difference of practice....

Let us now approach the subject of logic, and consider a conception which particularly concerns it, that of *reality.* Taking clearness in the sense of familiarity, no idea could be clearer than this. Every child uses it with perfect confidence, never dreaming that he does not understand it. As for clearness in its second grade, however, it would probably puzzle most men, even among those of a reflective turn of mind, to give an abstract definition of the real.

Yet such a definition may perhaps be reached by considering the points of difference between reality and its opposite, fiction. A figment is a product of somebody's imagination; it has such characters as his thought impresses upon it. That those characters are independent of how you or I think is an external reality. There are, however, phenomena within our own minds, dependent upon our thought, which are at the same time real in the sense that we really think them. But though their characters depend on how we think, they do not depend on what we think those characters to be. Thus, a dream has a real existence as a mental phenomenon, if somebody has really dreamt it; that he dreamt so and so, does not depend on what anybody thinks was dreamt, but is completely independent of all opinion on the subject. On the other hand, considering, not the fact of dreaming, but the thing dreamt, it retains its peculiarities by virtue of no other fact than that it was

dreamt to possess them. Thus we may define the real as that whose characters are independent of what anybody may think them to be. . . .

. . . . [R]eality is independent, not necessarily of thought in general, but only of what you or I or any finite number of men may think about it; and that, on the other hand, though the object of the final opinion depends on what that opinion is, yet what that opinion is does not depend on what you or I or any man thinks. Our perversity and that of others may indefinitely postpone the settlement of opinion; it might even conceivably cause an arbitrary proposition to be universally accepted as long as the human race should last. Yet even that would not change the nature of the belief, which alone could be the result of investigation carried sufficiently far; and if, after the extinction of our race, another should arise with faculties and disposition for investigation, that true opinion must be the one which they would ultimately come to. "Truth crushed to earth shall rise again," and the opinion which would finally result from investigation does not depend on how anybody may actually think. But the reality of that which is real does depend on the real fact that investigation is destined to lead, at last, if continued long enough, to a belief in it. . . .

. . . We have, hitherto, not crossed the threshold of scientific logic. It is certainly important to know how to make our ideas clear, but they may be ever so clear without being true. How to make them so, we have next to study. How to give birth to those vital and procreative ideas which multiply into a thousand forms and diffuse themselves everywhere, advancing civilization and making the dignity of man, is an art not yet reduced to rules, but of the secret of which the history of science affords some hints.

KEY TERMS

Abduction is the process of reasoning that is a type of nondeductive inference where based on the evidence at hand we draw an inference to the best explanation.

Argument is a set of statements made in support of a position along with the conclusion.

Conclusion is the main position defended in an argument, which is supported by the premises.

Critical thinking is the engagement of the thinker in rational deliberation, investigation of facts and reasons, and evaluation of arguments.

Deduction is the process of reasoning from one or more statements known as premises to reach a logically certain conclusion.

Epistemology is a branch of philosophy that deals with the nature and foundations of knowledge.

Ethics is a branch of philosophy that studies questions about right and wrong. Ethical theories provide a framework for answering those questions and for evaluating human actions.

Fallacy is used to denote an unacceptable way of thinking or reasoning.

Induction is the process of reasoning where the premises provide strong evidence for (not absolute proof of) the truth of the conclusion.

Logic is a branch of philosophy that deals with rational thought and the art and science of reasoning.

Metaphysics is a branch of philosophy that deals with the nature of existence. It is a very broad field, and metaphysicians attempt to answer questions about *how the world is*.

Philosophy of religion is a branch of philosophy that deals with questions related to religion and the nature of god. It may also deal with questions of the afterlife, soul, and existence before or after death.

Political philosophy is a branch of philosophy that deals with questions pertaining to the foundations, nature, and purpose of government.

Premises are statements made in support of a conclusion of an argument.

Socratic Method is one of the oldest and powerful methods of teaching. The method develops critical thinking. The method involves giving students questions but not answers. It involves inquiry, analysis, evaluation, and synthesis of thoughts and ideas.

Valid is a term applied to a deductive argument. An argument is valid if it employs a correct logical structure, which will yield a true conclusion from true premises.

Sound is a term applied to a deductive argument. An argument is sound if it employs true premises.

QUESTIONS FOR DISCUSSION AND REVIEW

1. Explain some of the benefits a student may gain by studying philosophy.
2. Explain the Socratic Method of Teaching. Is this a useful way for students to learn?
3. Explain how critical thinking can be used to analyze a philosophical issue.
4. Compare and contrast induction, abduction, and deduction.
5. Explain some of different areas of philosophy which will be discussed in this course.

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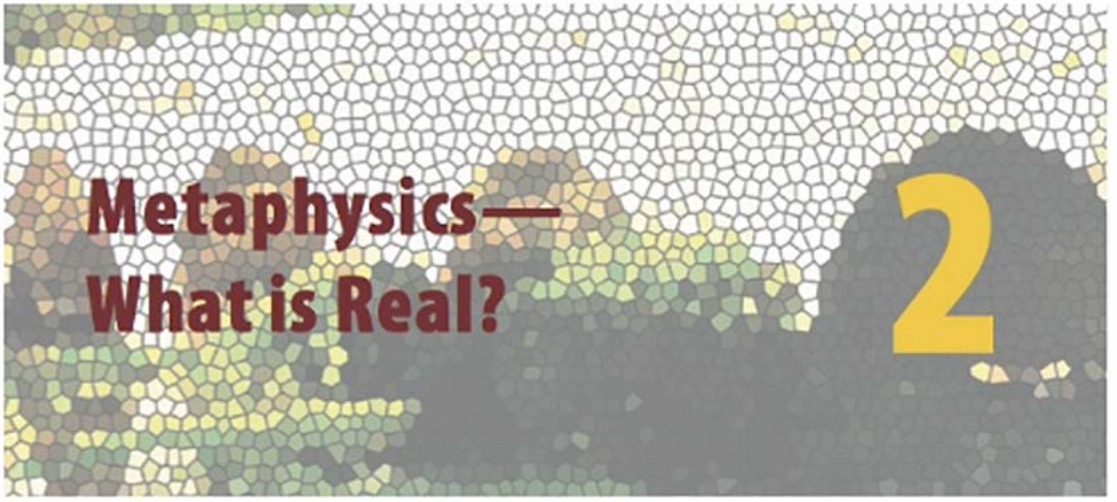


Upon completing this chapter, students should be able to complete the following Learning Outcomes:

- **2.1** Articulate the different views as to the nature of reality, including those of the Atomists, as well as those of Plato and Aristotle.
- **2.2** Compare and contrast the various views on substance such as materialism, dualism, and idealism.
- **2.3** Evaluate views as to the nature of universals and particulars.
- **2.4** Critically summarize the differences between Plato and Aristotle on the relation of form to matter.

What Do We Mean By Reality?

Humans have been asking the questions such as "what is real?" "what is the nature of being?" and "what is the primary substance?" since time immemorial. **Metaphysics**, sometimes referred to as ontology, since the twentieth century, is the branch of philosophy that addresses these issues about the nature of reality.

Ancient civilizations, such as the Greeks and the Chinese, focused on what they believed to be the basic elements or building blocks of matter, such as air, fire, water, and earth. These elements, like the ones we know today, are considered to be material elements. Most scientists today consider the question resolved and will

simply point to the current periodic table of chemical elements as a solution to the question of what is everything made out of. For others, on the other hand, there has to be more to life than that. How we know these things is the next obvious question, one explored in the next chapter.

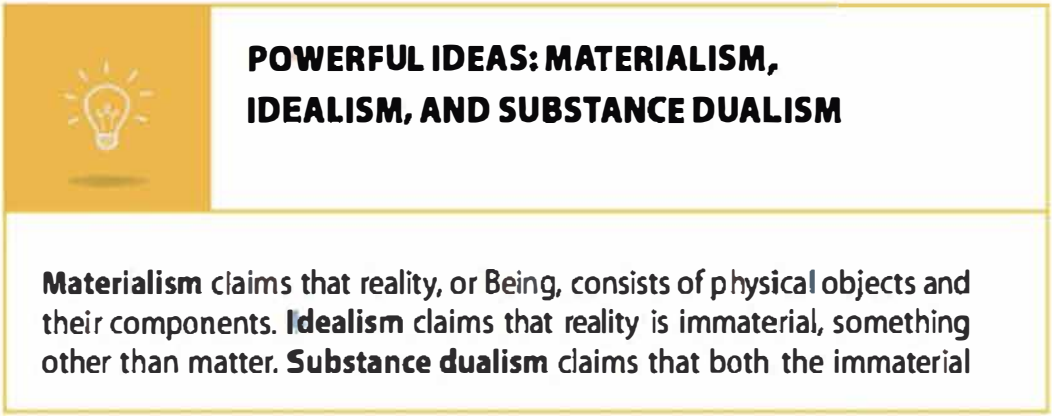
The Nature of Being

Is "Being" a thing in itself or merely a property of things? Is it permanent and eternal or changing? Is it one or many? What is it, really? These are basic metaphysical questions that, even if you don't often realize it, are very much with us today. For example, many of you reading this perhaps hope to go to heaven. What is it that will go? Not your body, presumably, or your clothes, your voice, or your smile; we can verify what happens to a body after death, and it's not pretty. So what is it that goes to heaven? If you answer your soul, what does that mean? Is that the real you? In what sense is it you? Or is this it? In other words, maybe there is nothing more after you die. Both possibilities are part of the quest for meaning in metaphysics.

Although the elements mentioned by our ancestors are real, deeper metaphysical questions regarding the nature of substance or being persist. Metaphysics, the critical questioning of what is real and what we are doing here, remain as a big concern in philosophy today. The pre-Socratics in Ancient Greece offered clever theories, all of them asking the right questions in new ways. Most of them believed that reality might not be what we experience in our everyday lives but rather something else, something more basic. In other words, given that the world we know is changing, transient, and imperfect, there must be something permanent you can count on.

Philosophy and Science in the Ancient World

Philosophy and science were not originally separate. They were in fact born together in the beginning of the sixth-century BCE—not coincidentally, also the birth of democracy—and they both involved a transition from a purely theistic toward a natural way of thinking about the world. If you could imagine yourself in college in the sixth-century BCE—a stretch, given that the first college, Plato' Academy was founded around 387 BCE—you would be a philosophy major since that was basically the only major available: math, logic, science, physics, politics, ethics, and every other subject was within the corpus of philosophy.



POWERFUL IDEAS: MATERIALISM, IDEALISM, AND SUBSTANCE DUALISM

Materialism claims that reality, or Being, consists of physical objects and their components. **Idealism** claims that reality is immaterial, something other than matter. **Substance dualism** claims that both the immaterial

and the material objects exist. From the Ancient Greeks through today, this dualism remains a challenging problem. Even if the elements are the basic building blocks of objects, idealist still maintain that they are ultimately immaterial. Substance dualists argue that the objects we encounter in everyday experience are material, but that there also exist immaterial objects such as thoughts, feelings, and ideas that are contained in our minds, which are immaterial as well.

Universals and Particulars

There are various other problems inherent to metaphysics. Another fundamental question is the relationship between ideas and objects. This is sometimes termed the problem of **Universals.** The term "universal" is another name for ideas or general concepts or terms that can be applied to various particular objects. "**Particular**" is another name for objects or individual things that we encounter in the world.

Universals or general terms are words or concepts such as blue, red, book, or car. These words and millions more words apply not only to one individual or particular object. Plato, for example, argues that reality consists of the **Forms** and that the Forms exist in a separate realm. This view is known as **extreme or Platonic realism**. For him, ideas are real. They have independent existence, apart from our thoughts. They have transcendental existence apart from the particulars that participate in them. The Form, according to Plato, is the essence of a thing, and, on his view, the particulars are said to imitate or copy them in an imperfect way.

For example, a blue book and blue car both share in the Form "blue" Plato, himself, was not very concerned with mundane or basic Forms such as books, tables, or chairs. But he was more concerned with what he called higher Forms such as justice, beauty, and love. These Forms are abstract in nature and more difficult for us to recognize. Plato claimed that all physical objects copy the original, unchanging Form or Forms. Physical objects are imperfect copies of the Forms. Like Heraclitus (another pre-Socratic philosopher who famously said we can never step into the same river twice), he held that this reality is constantly changing and shifting. What is true today may be false tomorrow in this world. In order to find an eternal truth, we must look to the realm of the Forms, where truth is constant and eternal.

Aristotle argued for a view known as **exaggerated realism**. This holds that universals exist in the particulars as part of what makes them similar. In other words, the form blue is in the object, not a separate reality as Plato claimed. On this view, the particulars have the universal within them. Ideas exist in the physical objects (and our minds), not in a separate reality. The particulars are a mixture or composite of form (idea) and matter.

Another view on this topic is known as **conceptualism**. This view holds that ideas are real, but they are dependent upon a mind or thought. The function of a

universal term is to denote a special relationship between particular objects. Universals or forms are object concepts that we create in our minds by examining particulars.

A final view known as **extreme nominalism** claims that universals do not exist. On this view, ideas (universals or forms) are not real objects. They do not have real existence. Only particulars or individual objects exist. A general term (universal) is a word that does not refer to anything. This view is a result of what the nominalist feels is a logical problem in discussing universals.

Although this may seem to be much to do about nothing, on closer analysis the issue is not as simple as it may seem. Consider the following mathematical formula: $C^2 = A^2 + B^2$. This formula is known as the Pythagorean Theorem. It is named after the famous ancient Greek philosopher and mathematician Pythagoras, who was part of a secret math cult. Although Pythagoras is given credit for the formula, it was used by various ancient cultures such as the Egyptians, Mesopotamians, and Chinese. Was this theorem (a universal truth of mathematics) created or discovered? If you say it was created by mankind, then it seems to be relative to us, and if you say it is discovered, then where was it before mankind found it? Plato's answer to the questions of universals is that such a theorem is eternally true and it always existed in the realm of the Forms.

Powerful Thinkers: The Atomists

Democritus (ca. 460–370 BCE) and Epicurus (341–270 BCE) had reality figured out Over two thousand years ago, Democritus, a visionary philosopher and mathematician born in Thrace. He developed the atomic theory of the universe while looking for the meaning of reality. Much like his fellow pre-Socratics, he worked out ideas first developed by his teacher Leucippus and detailed that reality must consist of small, invisible components that come together in different combinations. He called them atoms. The implications of this insight were and are huge.

The mind is made of atoms, just like the book you are holding. This materialist position, as it came to be known, understandably was not as influential as the ideas of Plato or Aristotle. We have lost most of his writings and, it is believed, that his philosophy was not as thoroughly or systematically elaborated as those of Plato and Aristotle. Also, a materialist view of the universe makes belief in god or any other supernatural being at the very least tough to justify: gods, or later the Abrahamic God, cannot be material.

Still, there was something new here.

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After Aristotle, **Epicurus** (341–270 BCE) was a materialist philosopher who followed the lead of Democritus and developed an ethics from that materialist metaphysics. Epicurus also believed reality was composed of atoms, and he worked out a sophisticated moral philosophy that values happiness as the ultimate goal in life: happiness is achievable by not fearing death and by enjoying life's small pleasures and by finding guidance in the pursuit of wisdom. He called this freedom from worry as *ataraxia*. According to Epicurus, This was the way to be happy.

Neglected at first, and certainly banned after the conversion of the Roman Empire to Christianity, Democritus and Epicurus exerted an unexpected influence in future philosophy. The belief that everything was made of atoms in motion anticipated **Thomas Hobbes** (1588–1679) and his own revolutionary claim that all there can be is atoms in motion. The nature of that motion, the Epicurean theory that atoms swerved from their parallel path, anticipated modern physics' explanation of the formation of different elements and their combinations including **Albert Einstein's** (1879–1975) Theory of Relativity.

The Roman poet and philosopher Lucretius (99–55 BCE), in his ravishing epic *De rerum natura (On the Nature of Things)*, gave us the most complete picture of Epicurean metaphysics, with a materialist explanation of everything in our lives.

The Epicurean insights into human psychology, as well as Lucretius' detailed exposition in his poem, found disfavor and censorship in the coming millennium. This materialism was rediscovered first briefly in the Renaissance by Niccolò di Bernardo dei Machiavelli (1469–1527) and others, and much later by **Karl Marx** (1818–1883), who found inspiration in Epicurus' view of reality being composed of atoms that moved freely for no good reason, taking that swerve of the atoms as a paradigm for human freedom. In 1841, the budding German philosopher wrote his doctoral dissertation *On The Difference Between the Democritean and Epicurean Philosophy of Nature*, thus placing Atomism at the foundations of Marxism.

Back to Those Questioning Pre-Socratics

The story of philosophy begins, in the city of Miletus, in what today is modern day Turkey, where the first three Western philosophers were born and lived: **Thales** (620–540 BCE) is often called the first philosopher because his pithy, enigmatic statement "All is water" cannot be taken literally but must be taken seriously. He was the first to suggest that there is some basic substance at the heart of reality, not the reality we experience but something else—in his case, water.

Together with fellow pre-Socratics **Anaximenes** (585–528 BCE) and **Anaximander** (610–546 BCE), Thales sought to discover the primary substance of reality. Others followed, all of them offering different, variously challenging ideas about reality. Anaximenes claimed that the primary substance is air. He believed that all objects are composed of air. He claimed that different densities of air explain the different types of object we encounter in our daily lives. The air we breathe is very light, whereas the air in a rock is very dense. Air, of course, is central for human life. Anaximander stated that the Primary Substance is in fact boundless, or infinite. He doubted whether any fundamental or primary substance would exist in an observable *pure* form. In a sense he was correct, as we today know that we don't observe a primary substance anywhere in the world.

The truth about reality must be in numbers, which never lie, thought **Pythagoras** (ca. 570–480 BCE), best known today for his famous theorem. That the square of the hypotenuse of a right-angled triangle is always equal to the sum of the square of the two other sides is always true. It is verifiable, impossible to falsify, much like the statement "2 + 2 = 4." To get to the nature of Being, understand numbers.

> ***"You can never step into the same river twice"***
>
> **—Heraclitus**

Or perhaps reality is something else entirely, perhaps it is far from permanent and is rather always changing. **Heraclitus** (ca. 540–480 BCE) thought precisely

that, putting it poetically by saying "life is like a river, and you can never step into the same river twice." Is that true? If so, then truth is impossible, since whatever you find or whatever you say will change and change again. The only metaphysical truth is change itself.

In contrast, the visionary **Parmenides** (ca. 510–440 BCE) thought that reality was permanent, that it could not be changing that it had to be "One" and could not be many. Being does not, cannot change. Reality in fact is the One. That One is the true object of knowledge since it is impossible to know that which is not. Both Parmenides and Pythagoras had a major influence on the most powerful thinkers to come.

Socrates and His Kin

Anaximander's idea of a boundless universe lent an optimistic tone to the possibility of knowledge, but then everything changed with **Socrates** (ca. 610–546 BCE), the most famous philosopher who never wrote anything. "The only thing I know is that I know nothing," Socrates said. And we know he said that because his most famous pupil said so. Though a real historical figure, the Socrates we know today is a literary creation of **Plato** (427–347 BCE). When we say that Socrates said "The unexamined life is not worth living," we mean it in the same sense that Hamlet said "To be or not to be, that is the question." Hamlet said it, but it was William Shakespeare who wrote it.

Plato knew and loved Socrates, studied with him, and he was disillusioned with democracy after his beloved Socrates was condemned to death in trumped-up charges of heresy and corrupting youth. Plato's pupil Aristotle (324–322 BCE), together with his teacher, set philosophy on an adventure that would last millennia.

> ***"The only thing I know is that I know nothing"***
>
> **—Socrates**

Plato and Aristotle on Reality

There is a beautiful, monumental fresco in the Vatican that goes a long way to explain what is at stake in the matter of Plato and Aristotle. Pope Julius II commissioned Raphael to paint it in 1509. What the great genius created is *School of Athens*, a vast and inclusive portrait of everyone who was known to matter intellectually in the ancient world, giving us a glimpse into how Renaissance civilization understood the profound philosophical debates that raged until the Dark Ages brought all debate to a close. They, and Raphael, got it right. A whole heritage of knowledge and wisdom are illustrated here.

Ted Spiegel/Corbis Historical/Getty Images

At the center of the fresco—the central vanishing point of the picture—are the figures of two bearded men in colorful togas. They are, as Raphael saw it, the ones who matter most. The older Plato is on the left, holding his arms upward pointing at the heavens. His student Aristotle is on the right, younger and better looking, with other men in the picture looking his way. Aristotle holds out his left arm, palms down, as if saying "Right here." Both are holding anachronistically bound books in their hands, Plato his *Timaeus* and Aristotle his *Nicomachean Ethics*. Many other famous philosophers are in the fresco, improbably from different centuries, including Socrates but also everyone from Anaximander to Zeno, with Epicurus, Heraclitus, Anaximander, Pythagoras, Euclid, Averroes, and even Alexander the Great—himself a pupil of Aristotle—thrown in for good measure. But it is the two at the center that counted the most then, and they still do.

Reality is Somewhere Else

For **Plato** (427–347 BCE), reality is eternal and perfect, but it is elsewhere, not here; appearances can deceive us, and reality is elusive. Plato's reality was in what he called the world of **Forms**, universals that are perfect and inform the meaning of our lives—we are all reflections, copies of reality. Our life is like that of someone living in a cave knowing only shadows, never seeing the sun or the real world outside, Plato suggests in the *Myth of the Cave* that is a key section of his *Republic*. The nature of truth and the possibilities of knowledge are illustrated by a tale of prisoners in a cave where all they can see is the shadows made by figures moving in front of an unseen fire behind them. What the prisoners think is real in fact is not, rather it is merely shadows. The prisoners must, if they can, turn around, leave the cave, know the world outside and maybe then come close to reality. We are all prisoners in the shadows, Plato suggests, and we must move toward the light of wisdom and truth—toward the Forms.

The sun outside the cave will inform our experiences, let our eyes do what they can do, according to Plato. But our eyes will never see anything true unless and until we get out of the cave. Even then, clarity might be elusive.

POWERFUL ANALYSIS

Plato does not trust appearances, since everything in this world is just a copy or an imitation of the Forms, or reality.

Aristotle trusts appearances, since there is no form without matter and no matter without form. Appearances actually can help you find the truth.

Who's right?

We might eventually come close to the truth about reality, but we might not. Very likely, the most we can do is come as close as possible in the knowledge that we will never reach it. There might be more than one way of knowing—and this Platonic insight returned unexpectedly in the twentieth century with the mathematician and philosopher **Kurt Gödel** (1906–1978). If you want certainty, however, you are not going to have it in this world.

Plato would be the leading influence in the philosophy of **St. Augustine** (354–430 BCE), who made reason the servant of faith and in the process transformed Platonism into Christian theology—quite a feat, considering that the Greek philosophers were pagans who believed in different gods, and that heretics were routinely burned at the stake. From Plato, St. Augustine got the notion that there are two realms of reality, the intelligible realm where God and the truth dwell, and the sensible world we experience in our lives. That perhaps we are not built in such a way that we can ever understand God's realm, but that being close to the light is better than remaining in the dark, was a Platonic insight of reality that remains influential to this day.

Reality Is Right Here

Plato's brilliant student **Aristotle** (324–322 BCE), on the other hand, also believed reality must be the forms, perfect and eternal; but he thought that at least in part that reality was right here. There is no form without matter, and no matter without form according to Aristotle. Given that we have no access to the perfection of the forms, we can use the matter that is part of our experience to get to their meaning. In other words, reason, which makes us better than animals according to Aristotle, can take us closer to reality if we simply ask the right questions. These questions were what Aristotle called the **Four Causes**: "What is it? What is it made of? "How was it made or who made it?" and most important "What is it for?"

POWERFUL ANALYSIS: WHAT IS REAL?

Is this real, here and now? Is reality just a product of our mind interpreting electrical impulses relayed to it by our senses? Is Plato right that we may be living in the shadows, at best in the realm of bad opinion and certainly far from real knowledge?

Those questions, and the fact that we can use our reason to find the answers, became the blueprint for **St. Thomas Aquinas** (1225–1274), a much later philosopher and theologian, who tried to follow Aristotle and based both his theology and his ethics on a Christian interpretation of Aristotle that departed sharply from St. Augustine's Platonic views.

Aristotle's four causes are the basis of today's scientific method. We may not agree with Aristotle's metaphysics, that is, with his certainty that there must be Forms, or that there must be a universal, eternal truth beyond the particulars of our experience. But we still ask the same questions Aristotle asked, whether looking down on a Petri dish in chemistry class or wondering about what is the right way to live. Plato and his pupil Aristotle both agreed that truth was the only meaning of reality, and that truth must be unchanging, eternal, and perfect. It must be something you can count on in the midst of the change all around you. But their two ways of approaching the search for truth developed into two very different trends in Western thought: whether or not to trust appearances. Bertrand Russell, in his idiosyncratic and highly entertaining *History of Western Philosophy*, quipped that "Aristotle is Plato diluted by common sense."

POWERFUL ANALYSIS

What do you mean by reality? Is reality a matter of, well, just matter? Or is there more to it? What is real to you?

READINGS

Plato: *The Myth of the Cave*

The Myth of the Cave, a justly famous section of Plato's larger political dialog *The Republic*, the nature of truth and the possibilities of knowledge are illustrated by a tale of prisoners in a cave who can see only shadows and have no knowledge of the reality outside. We are all prisoners in the shadows, Plato suggests, and we must move toward the light of wisdom and truth. Plato is speaking with Glaucon in this excerpt.

Behold! human beings living in a cave, which has a mouth open towards the light Here they have been since childhood, and have their legs and necks chained so that they cannot move, and can only see before them, being prevented by the chains from turning round their heads. Above and behind them a fire is blazing at a distance, and between the fire and the prisoners there is a raised way; and you will see, if you look, a low wall, like the screen puppet-masters have in front of them, over which they show the puppets.

I see.

And do you see, I said, men passing along the wall carrying all sorts of vessels, and statues and figures of animals, which appear over the wall? Some of them are talking, others silent.

You have shown me a strange image, and they are strange prisoners.

Like ourselves, I replied; and they see only their own shadows, or the shadows of one another, which the fire throws on the opposite wall of the cave?

True, he said; how could they see anything but the shadows if they were never allowed to move their heads?

And of the objects which are being carried in like manner they would only see the shadows?

Yes, he said. And if they were able to converse with one another, would they not suppose that they were naming what was actually before them?

Very true.

And suppose further that the prison had an echo which came from the other side, would they not be sure to fancy when one of the passers-by spoke that the voice which they heard came from the passing shadow?

No question, he replied.

To them, I said, the truth would be literally nothing but the shadows of the images.

That is certain.

And now look again, and see what will naturally follow if' the prisoners are released and disabused of their error. At first, when any of them is

liberated and compelled suddenly to stand up and turn his neck round and walk and look towards the light, he will suffer sharp pains; the glare will hurt, and he will be unable to see the realities that in his former state had been mere shadows; and then conceive someone saying to him, that what he saw before was an illusion, but that now, when he is approaching nearer to being and his eye is turned towards more real existence, he has a clearer vision—what will be his reply? And you may further imagine that his instructor is pointing to the objects as they pass and requiring him to name them—will he not be confused? Will he not imagine that the shadows which he formerly saw are truer than the objects which are now shown to him?

Far truer.

And if he is compelled to look straight at the light, will he not have a pain in his eyes which will make him turn away to take and take in the objects of vision which he can see, and which he will conceive to be in reality clearer than the things which are now being shown to him?

True.

And suppose that he is reluctantly dragged up a steep ascent, and held fast until he's forced into the presence of the sun, is he not likely to be pained and irritated? When he approaches the light his eyes will be dazzled, and he will not be able to see anything at all of what are now called realities.

Not all in a moment, he said.

He will require to grow accustomed to the sight of the upper world. And first he will see the shadows best, next the reflections of men and other objects in the water, and then the objects themselves; then he will gaze upon the light of the moon and the stars and the spangled heaven; and he will see the sky and the stars by night better than the sun or the light of the sun by day?

Certainly.

Last of he will be able to see the sun, and not mere reflections of him in the water, but he will see him in his own proper place, and not in another; and he will contemplate him as he is.

Certainly.

He will then proceed to argue that this is he who gives the season and the years, and is the guardian of all that is in the visible world, and in a certain way the cause of all things which he and his fellows have been accustomed to behold?

Clearly, he said, he would first see the sun and then reason about him.

And when he remembered his old habitation, and the wisdom of the den and his fellow-prisoners, do you not suppose that he would felicitate himself on the change, and pity them?

Certainly, he would.

Yes, he said, I think that he would rather suffer anything than entertain these false notions and live in this miserable manner.

"To them, the truth would be literally nothing but the shadows of the images."

—Plato

Imagine once more, I said, such a one coming suddenly out of the sun to be placed again in his old situation; would he not be certain to have his eyes full of darkness?

No question, he said.

This entire allegory, I said, you may now append, dear Glaucon, to the previous argument; the prison-house is the world of sight, the light of the fire is the sun, and you will not misapprehend me if you interpret the journey upwards to be the ascent of the soul into the intellectual world according to my poor belief, which, at your desire, I have expressed whether rightly or wrongly God knows. But, whether true or false, my opinion is that in the world of knowledge the idea of good appears last of all, and is seen only with an effort; and, when seen, is also inferred to be the universal author of all things beautiful and right, parent of light and of the lord of light in this visible world, and the immediate source of reason and truth in the intellectual; and that this is the power upon which he who would act rationally, either in public or private life must have his eye fixed.

I agree, he said, as far as I am able to understand you.

Moreover, I said, you must not wonder that those who attain to this beatific vision are unwilling to descend to human affairs; for their souls are ever hastening into the upper world where they desire to dwell; which desire of theirs is very natural, if our allegory may be trusted.

Yes, very natural.

And is there anything surprising in one who passes from divine contemplations to the evil state of man, misbehaving himself in a ridiculous manner; if, while his eyes are blinking and before he has become accustomed to the surrounding darkness, he is compelled to fight in courts of law, or in other places, about the images or the shadows of images of justice, and is endeavoring to meet the conceptions of those who have never yet seen absolute justice?

Anything but surprising, he replied.

Anyone who has common sense will remember that the bewilderments of the eyes are of two kinds, and arise from two causes, either from coming out of the light or from going into the light, which is true of the mind's eye, quite as much as of the bodily eye; and he who remembers this when he sees any one whose vision is perplexed and weak, will not be too ready to laugh; he will first ask whether that soul of man has come out of the brighter

light, and is unable to see because unaccustomed to the dark, or having turned from darkness to the day is dazzled by excess of light. And he will count the one happy in his condition and state of being, and he will pity the other; or, if he have a mind to laugh at the soul which comes from below into the light, there will be more reason in this than in the laugh which greets him who returns from above out of the light into the den.

That, he said, is a very just distinction.

But then, if I am right, certain professors of education must be wrong when they say that they can put a knowledge into the soul which was not there before, like sight into blind eyes. They undoubtedly say this, he replied.

Whereas, our argument shows that the power and capacity of learning exists in the soul already; and that just as the eye was unable to turn from darkness to light without the whole body, so too the instrument of knowledge can only by the movement of the whole soul be turned from the world of becoming into that of being, and learn by degrees to endure the sight of being, and of the brightest and best of being, or in other words, of the good.

ARISTOTLE: *The Four Causes*

According to Aristotle, we have something animals and plants don't have: reason. We can use reason to get close to knowledge of reality, by asking about the four causes of everything in our experience: "What is it? "What is it made of? "How was it made or who made it?" and most important "What is it for?" While Plato thought truth was elsewhere, in the world of Forms, Aristotle thought that Forms were in fact within the matter, and since we have access to matter in our experience, we can ask questions and reason will reveal the truth to us.

"Beginning" means (1) that part of a thing from which one would start first, e.g a line or a road has a beginning in either of the contrary directions. (2) That from which each thing would best be originated, e.g. even in learning we must sometimes begin not from the first point and the beginning of the subject, but from the point from which we should learn most easily. (4) That from which, as an immanent part, a thing first comes to be, e,g, as the keel of a ship and the foundation of a house, while in animals some suppose the heart, others the brain, others some other part, to be of this nature. (4) That from which, not as an immanent part, a thing first comes to be, and from which the movement or the change naturally first begins, as a child comes from its father and its mother, and a fight from abusive language. (5) That at whose will that which is moved is moved and that which changes, for example, oligarchies, monarchies, and tyrannies, are called *arhchai*. So are the arts, and of these especially the architectonic arts. (6) That from which a thing can first be known,-this also is called the beginning of the thing, e.g. the hypotheses are the beginnings of demonstrations. Causes are spoken of in an equal number of senses; for all causes are beginnings.

It is common, then, to all beginnings to be the first point from which a thing either is or comes to be or is known; but of these some are immanent in the thing and others are outside. Hence the nature of a thing is a beginning, and so is the element of a thing, and thought and will, and essence, and the final cause-for the good and the beautiful are the beginning both of the knowledge and of the movement of many things.

"Cause" means (1) that from which, as immanent material, a thing comes into being, for example, the bronze is the cause of the statue and the silver of the saucer, and so are the classes which include these. (2) The form or pattern, that is, the definition of the essence, and the classes which include this—for example, the ratio 2:1 and number in general are causes of the octave-- and the parts included in the definition. (3) That from which the change or the resting from change first begins; such as the advisor is a cause of the action, and the father a cause of the child, and in general the maker a

cause of the thing made and the change-producing of the changing. (4) The end, that for the sake of which a thing is. For example, health is the cause of walking. For "Why does one walk?" we say; "so that one may be healthy." In speaking thus we think we have given the cause. The same is true of all the means that intervene before the end, when something else has put the process in motion, as e.g. thinning or purging or drugs or instruments intervene before health is reached; for all these are for the sake of the end, though they differ from one another in that some are instruments and others are actions.

These, then, are practically all the senses in which causes are spoken of, and as they are spoken of in several senses it follows both that there are several causes of the same thing, and in no accidental sense: both the art of sculpture and the bronze are causes of the statue not in respect of anything else but as a statue. Things can be causes of one another (for example, exercise of good condition, and the latter of exercise; not, however, in the same way, but the one as end and the other as source of movement).Again, the same thing is the cause of contraries; for that which when present causes a particular thing, we sometimes charge, when absent, with the contrary.We impute the shipwreck to the absence of the steersman, whose presence was the cause of safety; and both the presence and the privation-are causes as sources of movement.

All the causes now mentioned fall under four senses which are the most obvious. For the letters are the cause of syllables, and the material is the cause of manufactured things, and fire and earth and all such things are the causes of bodies, and the parts are causes of the whole, and the hypotheses are causes of the conclusion, in the sense that they are that out of which these respectively are made; but of these some are cause as the substratum (e.g. the parts), others as the essence (the whole, the synthesis, and the form). The semen, the physician, the adviser, and in general the agent, are all sources of change or of rest. The remainder are causes as the end and the good of the other things; for that for the sake of which other things are tends to be the best and the end of the other things; let us take it as making no difference whether we call it good or apparent good.

These, then, are the causes, and this is the number of their kinds, but the varieties of causes are many in number, though when summarized these also are comparatively few. Causes are spoken of in many senses, and even of those which are of the same kind some are causes in a prior and others in a posterior sense, for example both "the doctor" physician' and "the professional man" are causes of health, and both "the ratio 2:1" and 'number' are causes of the octave, and the classes that include any particular cause are always causes of the particular effect. Again, there are accidental causes and the classes which include these; e.g. while in one sense "the sculptor" causes

the statue, in another sense "Polyclitus" causes it, because the sculptor happens to be Polyclitus; and the classes that include the accidental cause are also causes, for example man or "animal" is the cause of the statue, because Polyclitus is a man, and man is an animal. Again, both accidental and proper causes may be spoken of in combination. We may say not "Polyclitus" nor "the sculptor" but "Polyclitus the sculptor." Yet all these are but six in number, while each is spoken of in two ways; for (A) they are causes either as the individual, or as the genus, or as the accidental, or as the genus that includes the accidental, and these either as combined, or as taken simply; and (B) all may be taken as acting or as having a capacity. But they differ inasmuch as the acting causes, i.e. the individuals, exist, or do not exist, simultaneously with the things of which they are causes, e.g. this particular man who is healing, with this particular man who is recovering health, and this particular builder with this particular thing that is being built; but the potential causes are not always in this case; for the house does not perish at the same time as the builder.

WILLARD VAN ORMAN QUINE: *On What There Is*

Reality is what there is, and in this essay W. V. O. Quine (1908–2000) distinguishes reality from the conceptual schemes we use to define it. Only science, Quine believes, can reveal the truth about reality.

A curious thing about the ontological problem is its simplicity. It can be put in three Anglo-Saxon monosyllables: 'What is there?' It can be answered, moreover, in a word—'Everything'—and everyone will accept this answer as true. However, this is merely to say that there is what there is. There remains room for disagreement over cases; and so the issue has stayed alive down the centuries.

Suppose now that two philosophers, McX and I, differ over ontology. Suppose McX maintains there is something which I maintain there is not. McX can, quite consistently with his own point of view, describe our difference of opinion by saying that I refuse to recognize certain entities. I should protest, of course, that he is wrong in his formulation of our disagreement, for I maintain that there are no entities, of the kind which he alleges, for me to recognize; but my finding him wrong in his formulation of our disagreement is unimportant, for I am committed to considering him wrong in his ontology anyway.

When *I* try to formulate our difference of opinion, on the other hand, I seem to be in a predicament. I cannot admit that there are some things which McX countenances and I do not, for in admitting that there are such things I should be contradicting my own rejection of them.

It would appear, if this reasoning were sound, that in any ontological dispute the proponent of the negative side suffers the disadvantage of not being able to admit that his opponent disagrees with him.

This is the old Platonic riddle of nonbeing. Nonbeing must in some sense be, otherwise what is it that there is not? This tangled doctrine might be nicknamed *Plato's beard*; historically it has proved tough, frequently dulling the edge of Occam's razor.

It is some such line of thought that leads philosophers like McX to impute being where they might otherwise be quite content to recognize that there is nothing. Thus, take Pegasus. If Pegasus *were* not, McX argues, we should not be talking about anything when we use the word; therefore it would be nonsense to say even that Pegasus is not. Thinking to show thus that the denial of Pegasus cannot be coherently maintained, he concludes that Pegasus is.

McX cannot, indeed, quite persuade himself that any region of space-time, near or remote, contains a flying horse of flesh and blood. Pressed for further details on Pegasus, then, he says that Pegasus is an idea in men's minds. Here, however, a confusion begins to be apparent. We may for the sake of argument concede that there is an entity, and even a unique entity (though this is rather implausible), which is the mental Pegasus-idea; but this mental entity is not what people are talking about when they deny Pegasus.

McX never confuses the Parthenon with the Parthenon-idea. The Parthenon is physical; the Parthenon-idea is mental (according anyway to McX's version of ideas, and I have no better to offer). The Parthenon is visible; the Parthenon-idea is invisible. We cannot easily imagine two things more unlike, and less liable to confusion, than the Parthenon and the Parthenon-idea. But when we shift from the Parthenon to Pegasus, the confusion sets in—for no other reason than that McX would sooner be deceived by the crudest and most flagrant counterfeit than grant the nonbeing of Pegasus.

The notion that Pegasus must be, because it would otherwise be nonsense to say even that Pegasus is not, has been seen to lead McX into an elementary confusion. Subtler minds, taking the same precept as their starting point, come out with theories of Pegasus which are less patently misguided than McX's, and correspondingly more difficult to eradicate. One of these subtler minds is named, let us say, Wyman. Pegasus, Wyman maintains, has his being as an unactualized possible. When we say of Pegasus that there is no such thing, we are saying, more precisely, that Pegasus does not have the special attribute of actuality. Saying that Pegasus is not actual is on a par, logically, with saying that the Parthenon is not red; in either case we are saying something about an entity whose being is unquestioned.

. . . Possibility, along with the other modalities of necessity and impossibility and contingency, raises problems upon which I do not mean to imply that we should turn our backs. But we can at least limit modalities to whole statements. We may impose the adverb 'possibly' upon a statement as a whole, and we may well worry about the semantical analysis of such usage; but little real advance in such analysis is to be hoped for in expanding our universe to include so-called *possible entities*. I suspect that the main motive for this expansion is simply the old notion that Pegasus, for example, must be because otherwise it would be nonsense to say even that he is not.

I have spoken disparagingly of Plato's beard, and hinted that it is tangled. I have dwelt at length on the inconveniences of putting up with it. It is time to think about taking steps.

Russell, in his theory of so-called singular descriptions, showed clearly how we might meaningfully use seeming names without supposing that there be the entities allegedly named. The names to which Russell's theory

directly applies are complex descriptive names such as 'the author of *Waverley*', 'the present King of France', 'the round square cupola on Berkeley College'. Russell analyzes such phrases systematically as fragments of the whole sentences in which they occur. The sentence "The author of *Waverley* was a poet', for example, is explained as a whole as meaning 'Someone (better: something) wrote *Waverley* and was a poet, and nothing else wrote *Waverley*'. (The point of this added clause is to affirm the uniqueness which is implicit in the word 'the', in '*the* author of *Waverley*'.) The sentence 'The round square cupola on Berkeley College is pink' is explained as 'Something is round and square and is a cupola on Berkeley College and is pink, and nothing else is round and square and a cupola on Berkeley College'.

The virtue of this analysis is that the seeming name, a descriptive phrase, is paraphrased *in context* as a so-called incomplete symbol. No unified expression is offered as an analysis of the descriptive phrase, but the statement as a whole which was the context of that phrase still gets its full quota of meaning—whether true or false.

The unanalyzed statement 'The author of *Waverley* was a poet' contains a part, 'the author of *Waverley*', which is wrongly supposed by McX and Wyman to demand objective reference in order to be meaningful at all. But in Russell's translation, 'Something wrote *Waverley* and was a poet and nothing else wrote *Waverley*', the burden of objective reference which had been put upon the descriptive phrase is now taken over by words of the kind that logicians call bound variables, variables of quantification, namely, words like 'something', 'nothing', 'everything'. These words, far from purporting to be names specifically of the author of *Waverley*, do not purport to be names at all; they refer to entities generally, with a kind of studied ambiguity peculiar to themselves. These quantificational words or bound variables are, of course a basic part of language, and their meaningfulness, at least in context, is not to be challenged. But their meaningfulness in no way presupposes there being either the author of *Waverley* or the round square cupola on Berkeley College or any other specifically preassigned objects.

Where descriptions are concerned, there is no longer any difficulty in affirming or denying being. 'There *is* the author of *Waverley*' is explained by Russell as meaning 'Someone (or, more strictly, something) wrote *Waverley* and nothing else wrote *Waverley*'. 'The author of *Waverley* is not' is explained, correspondingly, as the alternation 'Either each thing failed to write *Waverley* or two or more things wrote *Waverley*'. This alternation is false, but meaningful; and it contains no expression purporting to name the author of *Waverley*. The statement 'The round square cupola on Berkeley College is not' is analyzed in similar fashion. So the old notion that statements of nonbeing defeat themselves goes by the board. When a statement of being or nonbeing is analyzed by Russell's theory of descriptions, it ceases to contain any expression which even purports to name the alleged entity whose

being is in question, so that the meaningfulness of the statement no longer can be thought to presuppose that there be such an entity.

Now what of 'Pegasus'? This being a word rather than a descriptive phrase, Russell's argument does not immediately apply to it. However, it can easily be made to apply. We have only to rephrase 'Pegasus' as a description, in any way that seems adequately to single out our idea; say, 'the winged horse that was captured by Bellerophon'. Substituting such a phrase for 'Pegasus', we can then proceed to analyze the statement 'Pegasus is', or 'Pegasus is not', precisely on the analogy of Russell's analysis of 'The author of *Waverley* is' and 'The author of *Waverley* is not'.

In order thus to subsume a one-word name or alleged name such as 'Pegasus' under Russell's theory of description, we must, of course, be able first to translate the word into a description. But this is no real restriction. If the notion of Pegasus had been so obscure or so basic a one that no pat translation into a descriptive phrase had offered itself along familiar lines, we could still have availed ourselves of the following artificial and trivial-seeming device: we could have appealed to the *ex hypothesi* unanalyzable, irreducible attribute of *being Pegasus*, adopting, for its expression, the verb 'is-Pegasus', or 'pegasizes'. The noun 'Pegasus' itself could then be treated as derivative, and identified after all with a description: 'the thing that is-Pegasus', 'the thing that pegasizes'.

If the importing of such a predicate as 'pegasizes' seems to commit us to recognizing that there is a corresponding attribute, pegasizing, in Plato's heaven or in the minds of men, well and good. Neither we nor Wyman nor McX have been contending, thus far, about the being or nonbeing of universals, but rather about that of Pegasus. If in terms of pegasizing we can interpret the noun 'Pegasus' as a description subject to Russell's theory of descriptions, then we have disposed of the old notion that Pegasus cannot be said not to be without presupposing that in some sense Pegasus is.

Our argument is now quite general. McX and Wyman supposed that we could not meaningfully affirm a statement of the form 'So-and-so is not', with a simple or descriptive singular noun in place of 'so-and-so', unless so-and-so is. This supposition is now seen to be quite generally groundless, since the singular noun in question can always be expanded into a singular description, trivially or otherwise, and then analyzed out à la Russell.

We commit ourselves to an ontology containing numbers when we say there are prime numbers larger than a million; we commit ourselves to an ontology containing centaurs when we say there are centaurs; and we commit ourselves to an ontology containing Pegasus when we say Pegasus is. But we do not commit ourselves to an ontology containing Pegasus or the author of *Waverley* or the round square cupola on Berkeley College when we say that Pegasus or the author of *Waverley* or the cupola in question is *not*. We need no longer labor under the delusion that the meaningfulness of

a statement containing a singular term presupposes an entity named by the term. A singular term need not name to be significant.

An inkling of this might have dawned on Wyman and McX even without benefit of Russell if they had only noticed—as so few of us do—that there is a gulf between *meaning* and *naming* even in the case of a singular term which is genuinely a name of an object. The following example from Frege [3] will serve. The phrase 'Evening Star' names a certain large physical object of spherical form, which is hurtling through space some scores of millions of miles from here. The phrase 'Morning Star' names the same thing, as was probably first established by some observant Babylonian. But the two phrases cannot be regarded as having the same meaning; otherwise that Babylonian could have dispensed with his observations and contented himself with reflecting on the meanings of his words. The meanings, then, being different from one another, must be other than the named object, which is one and the same in both cases.

Confusion of meaning with naming not only made McX think he could not meaningfully repudiate Pegasus; a continuing confusion of meaning with naming no doubt helped engender his absurd notion that Pegasus is an idea, a mental entity. The structure of his confusion is as follows. He confused the alleged *named object* Pegasus with the *meaning* of the word 'Pegasus', therefore concluding that Pegasus must be in order that the word have meaning. But what sorts of things are meanings? This is a moot point; however, one might quite plausibly explain meanings as ideas in the mind, supposing we can make clear sense in turn of the idea of ideas in the mind. Therefore Pegasus, initially confused with a meaning, ends up as an idea in the mind. It is the more remarkable that Wyman, subject to the same initial motivation as McX, should have avoided this particular blunder and wound up with unactualized possibles instead.

Now let us turn to the ontological problem of universals: the question whether there are such entities as attributes, relations, classes, numbers, functions. McX, characteristically enough, thinks there are. Speaking of attributes, he says: "There are red houses, red roses, red sunsets; this much is prephilosophical common sense in which we must all agree. These houses, roses, and sunsets, then, have something in common; and this which they have in common is all I mean by the attribute of redness." For McX, thus, there being attributes is even more obvious and trivial than the obvious and trivial fact of there being red houses, roses, and sunsets. This, I think, is characteristic of metaphysics, or at least of that part of metaphysics called ontology: one who regards a statement on this subject as true at all must regard it as trivially true. One's ontology is basic to the conceptual scheme by which he interprets all experiences, even the most commonplace ones. Judged within some particular conceptual scheme—and how else is judgment possible?— an ontological statement goes without saying, standing in

need of no separate justification at all. Ontological statements follow immediately from all manner of casual statements of commonplace fact, just as—from the point of view, anyway, of McX's conceptual scheme— 'There is an attribute' follows from 'There are red houses, red roses, red sunsets'.

. . . The useful ways in which people ordinarily talk or seem to talk about meanings boil down to two: the *having* of meanings, which is significance, and *sameness* of meaning, or synonymy. What is called *giving* the meaning of an utterance is simply the uttering of a synonym, couched, ordinarily, in clearer language than the original. If we are allergic to meanings as such, we can speak directly of utterances as significant or insignificant, and as synonymous or heteronymous one with another. The problem of explaining these adjectives 'significant' and 'synonymous' with some degree of clarity and rigor—preferably, as I see it, in terms of behavior—is as difficult as it is important. But the explanatory value of special and irreducible intermediary entities called meanings is surely illusory.

Up to now I have argued that we can use singular terms significantly in sentences without presupposing that there are the entities which those terms purport to name. I have argued further that we can use general terms, for example, predicates, without conceding them to be names of abstract entities. I have argued further that we can view utterances as significant, and as synonymous or heteronymous with one another, without countenancing a realm of entities called meanings. At this point McX begins; to wonder whether there is any limit at all to our ontological immunity. Does *nothing* we may say commit us to the assumption of universals or other entities which we may find unwelcome?

I have already suggested a negative answer to this question, in speaking of bound variables, or variables of quantification, in connection with Russell's theory of descriptions. We can very easily involve ourselves in ontological commitments by saying, for example, that *there is something* (bound variable) which red houses and sunsets have in common; or that *there is something* which is a prime number larger than a million. But, this is, essentially, the *only* way we can involve ourselves in ontological commitments: by our use of bound variables. The use of alleged names is no criterion, for we can repudiate their namehood at the drop of a hat unless the assumption of a corresponding entity can be spotted in the things we affirm in terms of bound variables. Names are, in fact, altogether immaterial to the ontological issue, for I have shown, in connection with 'Pegasus' and 'pegasize', that names can be converted to descriptions, and Russell has shown that descriptions can be eliminated.

Whatever we say with the help of names can be said in a language which shuns names altogether. To be assumed as an entity is, purely and simply, to be reckoned as the value of a variable. In terms of the categories of traditional grammar, this amounts roughly to saying that to be is to be in the

range of reference of a pronoun. Pronouns are the basic media of reference; nouns might better have been named propronouns. The variables of quantification, 'something', 'nothing', 'everything', range over our whole ontology, whatever it may be; and we are convicted of a particular ontological presupposition if, and only if, the alleged presuppositum has to be reckoned among the entities over which our variables range in order to render one of our affirmations true.

We may say, for example, that some dogs are white and not thereby commit ourselves to recognizing either doghood or whiteness as entities. 'Some dogs are white' says that some things that are dogs are white; and, in order that this statement be true, the things over which the bound variable 'something' ranges must include some white dogs, but need not include doghood or whiteness. On the other hand, when we say that some zoological species are cross-fertile we are committing ourselves to recognizing as entities the several species themselves, abstract though they are. We remain so committed at least until we devise some way of so paraphrasing the statement as to show that the seeming reference to species on the part of our bound variable was an avoidable manner of speaking.

Classical mathematics, as the example of primes larger than a million clearly illustrates, is up to its neck in commitments to an ontology of abstract entities. Thus it is that the great mediaeval controversy over universals has flared up anew in the modern philosophy of mathematics. The issue is clearer now than of old, because we now have a more explicit standard whereby to decide what ontology a given theory or form of discourse is committed to: a theory is committed to those and only those entities to which the bound variables of the theory must be capable of referring in order that the affirmations made in the theory be true.

Because this standard of ontological presupposition did not emerge clearly in the philosophical tradition, the modern philosophical mathematicians have not on the whole recognized that they were debating the same old problem of universals in a newly clarified form. But the fundamental cleavages among modern points of view on foundations of mathematics do come down pretty explicitly to disagreements as to the range of entities to which the bound variables should be permitted to refer.

The three main mediaeval points of view regarding universals are designated by historians as *realism, conceptualism*, and *nominalism*. Essentially these same three doctrines reappear in twentieth-century surveys of the philosophy of mathematics under the new names *logicism, intuitionism*, and *formalism*.

Realism, as the word is used in connection with the mediaeval controversy over universals, is the Platonic doctrine that universals or abstract entities have being independently of the mind; the mind may discover them but cannot create them. *Logicism*, represented by Frege, Russell,

Whitehead, Church, and Carnap, condones the use of bound variables to refer to abstract entities known and unknown, specifiable and unspecifiable, indiscriminately.

Conceptualism holds that there are universals but they are mind-made. *Intuitionism*, espoused in modern times in one form or another by Poincaré, Brouwer, Weyl, and others, countenances the use of bound variables to refer to abstract entities only when those entities are capable of being cooked up individually from ingredients specified in advance. As Fraenkel has put it, logicism holds that classes are discovered while intuitionism holds that they are invented—a fair statement indeed of the old opposition between realism and conceptualism. This opposition is no mere quibble; it makes an essential difference in the amount of classical mathematics to which one is willing to subscribe. Logicists, or realists, are able on their assumptions to get Cantor's ascending orders of infinity; intuitionists are compelled to stop with the lowest order of infinity, and, as an indirect consequence, to abandon even some of the classical laws of real numbers. The modern controversy between logicism and intuitionism arose, in fact, from disagreements over infinity.

Formalism, associated with the name of Hilbert, echoes intuitionism in deploring the logicist's unbridled recourse to universals. But formalism also finds intuitionism unsatisfactory. This could happen for either of two opposite reasons. The formalist might, like the logicist, object to the crippling of classical mathematics; or he might, like the *nominalists* of old, object to admitting abstract entities at all, even in the restrained sense of mind-made entities. The upshot is the same: the formalist keeps classical mathematics as a play of insignificant notations. This play of notations can still be of utility—whatever utility it has already shown itself to have as a crutch for physicists and technologists. But utility need not imply significance, in any literal linguistic sense. Nor need the marked success of mathematicians in spinning out theorems, and in finding objective bases for agreement with one another's results, imply significance. For an adequate basis for agreement among mathematicians can be found simply in the rules which govern the manipulation of the notations—these syntactical rules being, unlike the notations themselves, quite significant and intelligible.

I have argued that the sort of ontology we adopt can be consequential—notably in connection with mathematics, although this is only an example. Now how are we to adjudicate among rival ontologies? Certainly the answer is not provided by the semantical formula "To be is to be the value of a variable"; this formula serves rather, conversely, in testing the conformity of a given remark or doctrine to a prior ontological standard. We look to bound variables in connection with ontology not in order to know what there is, but in order to know what a given remark or doctrine, ours or someone else's, *says* there is; and this much is quite properly a problem involving language. But what there is is another question.

In debating over what there is, there are still reasons for operating on a semantical plane. One reason is to escape from the predicament noted at the beginning of this essay: the predicament of my not being able to admit that there are things which McX countenances and I do not. So long as I adhere to my ontology, as opposed to McX's, I cannot allow my bound variables to refer to entities which belong to McX's ontology and not to mine. I can, however, consistently describe our disagreement by characterizing the statements which McX affirms. Provided merely that my ontology countenances linguistic forms, or at least concrete inscriptions and utterances, I can talk about McX's sentences.

Another reason for withdrawing to a semantical plane is to find common ground on which to argue. Disagreement, in ontology involves basic disagreement in conceptual schemes; yet McX and I, despite these basic disagreements, find that our conceptual schemes converge sufficiently in their intermediate and upper ramifications to enable us to communicate successfully on such topics as politics, weather, and, in particular, language. In so far as our basic controversy over ontology can be translated upward into a semantical controversy about words and what to do with them, the collapse of the controversy into question-begging may be delayed.

It is no wonder, then, that ontological controversy should tend into controversy over language. But we must not jump to the conclusion that what there is depends on words. Translatability of a question into semantical terms is no indication that the question is linguistic. To see Naples is to bear a name which, when prefixed to the words 'sees Naples', yields a true sentence; still there is nothing linguistic about seeing Naples.

Our acceptance of an ontology is, I think, similar in principle to our acceptance of a scientific theory, say a system of physics: we adopt, at least insofar as we are reasonable, the simplest conceptual scheme into which the disordered fragments of raw experience can be fitted and arranged. Our ontology is determined once we have fixed upon the over-all conceptual scheme which is to accommodate science in the broadest sense; and the considerations which determine a reasonable construction of any part of that conceptual scheme, for example, the biological or the physical part, are not different in kind from the considerations which determine a reasonable construction of the whole. To whatever extent the adoption of any system of scientific theory may be said to be a matter of language, the same—but no more— may be said of the adoption of an ontology.

But simplicity, as a guiding principle in constructing conceptual schemes, is not a clear and unambiguous idea; and it is quite capable of presenting a double or multiple standard. Imagine, for example, that we have devised the most economical set of concepts adequate to the play-by-play reporting of immediate experience. The entities under this scheme—the values of bound variables—are, let us suppose, individual subjective events of

sensation or reflection. We should still find, no doubt, that a physicalistic conceptual scheme, purporting to talk about external objects, offers great advantages in simplifying our over-all reports. By bringing together scattered sense events and treating them as perceptions of one object, we reduce the complexity of our stream of experience to a manageable conceptual simplicity. The rule of simplicity is indeed our guiding maxim in assigning sense data to objects: we associate an earlier and a later round sensum with the same so-called penny, or with two different so-called pennies, in obedience to the demands of maximum simplicity in our total world-picture.

Here we have two competing conceptual schemes, a phenomenalistic one and a physicalistic one. Which should prevail? Each has its advantages; each has its special simplicity in its own way. Each, I suggest, deserves to be developed. Each may be said, indeed, to be the more fundamental, though in different senses: the one is epistemologically, the other physically, fundamental.

The physical conceptual scheme simplifies our account of experience because of the way myriad scattered sense events come to be associated with single so-called objects; still there is no likelihood that each sentence about physical objects can actually be translated, however deviously and complexly, into the phenomenalistic language. Physical objects are postulated entities which round out, and simplify our account of the flux of experience, just as the introduction of irrational numbers simplifies laws of arithmetic. From the point of view of the conceptual scheme of the elementary arithmetic of rational numbers alone, the broader arithmetic of rational and irrational numbers would have the status of a convenient myth, simpler than the literal truth (namely, the arithmetic of rationals) and yet, containing that literal truth as a scattered part. Similarly, from a phenomenalistic point, of view, the conceptual scheme of physical objects is a convenient myth, simpler than the literal truth and yet containing that literal truth as a scattered part.

Now what of classes or attributes of physical objects, in turn? A platonistic ontology of this sort is, from the point of view of a strictly physicalistic conceptual scheme, as much a myth as that physicalistic conceptual scheme itself is for phenomenalism. This higher myth is a good and useful one, in turn, in so far as it simplifies our account of physics. Since mathematics is an integral part of this higher myth, the utility of this myth for physical science is evident enough. In speaking of it nevertheless as a myth, I echo that philosophy of mathematics to which I alluded earlier under the name of formalism. But an attitude of formalism may with equal justice be adopted toward the physical conceptual scheme, in turn, by the pure aesthete or phenomenalist.

The analogy between the myth of mathematics and the myth of physics is, in some additional and perhaps fortuitous ways, strikingly close.

Consider, for example, the crisis which was precipitated in the foundations of mathematics, at the turn of the century, by the discovery of Russell's paradox and other antinomies of set theory. These contradictions had to be obviated by unintuitive, *ad hoc* devices; our mathematical myth-making became deliberate and evident to all. But what of physics? An antinomy arose between the undular and the corpuscular accounts of light; and if this was not as out-and-out a contradiction as Russell's paradox, I suspect that the reason is that physics is not as out-and-out as mathematics. Again, the second great modern crisis in the foundations of mathematics—precipitated in 1931 by Gödel's proof [2] that there are bound to be undecidable statements in arithmetic—has its companion piece in physics in Heisenberg's indeterminacy principle.

In earlier pages I undertook to show that some common arguments in favor of certain ontologies are fallacious. Further, I advanced an explicit standard whereby to decide what the ontological commitments of a theory are. But the question what ontology actually to adopt still stands open, and the obvious counsel is tolerance and an experimental spirit. Let us by all means see how much of the physicalistic conceptual scheme can be reduced to a phenomenalistic one; still, physics also naturally demands pursuing, irreducible *in toto* though it be. Let us see how, or to what degree, natural science may be rendered independent of platonistic mathematics; but let us also pursue mathematics and delve into its platonistic foundations.

From among the various conceptual schemes best suited to these various pursuits, one—the phenomenalistic—claims epistemological priority. Viewed from within the phenomenalistic conceptual scheme, the ontologies of physical objects and mathematical objects are myths. The quality of myth, however, is relative; relative, in this case, to the epistemological point of view. This point of view is one among various, corresponding to one among our various interests and purposes.

KEY TERMS

Conceptualism holds that ideas are real, but they are dependent upon a mind or thought. The function of a universal term is to denote a special relationship between particular objects. Universals or forms are object concepts that we create in our minds by examining particulars.

Exaggerated Realism holds that universals exist in the particulars as part of what makes them similar. Ideas exist in the physical objects (and our minds), not in a separate reality. The particulars are a mixture or composite of form (idea) and matter.

Extreme Nominalism claims that universals or forms do not exist. On this view, ideas (universals or forms) are not real objects. They do not have real existence.

Extreme or Platonic Realism is the view that the Forms (or universals) exist in a separate realm and that objects in this reality copy the immaterial Forms.

Form is the word used by Plato (always with a big or capital F) to describe the immaterial essence of objects that he claims exists in a separate reality. Objects in this realm copy the Forms.

form is the word used by Aristotle (always with a small or lower case letter f) to describe the essence of objects that he claims exists within material things.

Idealism claims that reality is immaterial, something other than matter.

Materialism claims that reality, or Being, consists of physical objects and their components.

Metaphysics is the branch of philosophy that addresses these issues about the nature of reality.

Particular is another name for objects or individual things that we encounter in the world.

Substance dualism claims that both the immaterial and the material objects exist.

Universal is another name for ideas or general concepts or terms that can be applied to various particular objects.

QUESTIONS FOR DISCUSSION AND REVIEW

1. Compare and contrast various views on substance such as materialism, dualism and idealism.
2. Evaluate the 4 views as to the nature of universals and particulars.
3. Explain and evaluate the views of Anaximander regarding the nature of substance.
4. Explain and evaluate the views of Pythagoras regarding the nature of substance.
5. Explain Aristotle's 4 causes.
6. How do Plato and Aristotle differ on the question of the possibility of knowledge?

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Upon completing this chapter, students should be able to meet the following Learning Outcomes:

3.1 Articulate the various methods of epistemology.

3.2 Explain the difference between a priori and a posteriori knowledge.

3.3 Explain and evaluate various theories of knowledge.

3.4 Compare and contrast pragmatic theories of truth with the correspondence theory of truth.

Methods of Epistemology

Although we feel we know a great many things, the reality is that most of what we "know" we do not know at all. **Epistemology** is the study of theories of knowledge. Epistemic theories attempt to explain the various ways we can arrive at knowledge. Primarily, there are two methods—**rationalism** and **empiricism**. Rationalism is a method of acquiring knowledge by means of logic and reason. Empiricism is a method of acquiring knowledge by means of observation, inquiry, and experience. Rationalism claims that knowledge is arrived at by means of our minds. We do not necessarily need experience to have knowledge. Rationalist claim that there exist analytic or a priori knowledge is real. **A priori knowledge** is knowledge that is arrived at without experience and is necessary and certain (must be true).

POWERFUL IDEAS: A PRIORI AND A POSTERIORI KNOWLEDGE

A posteriori knowledge is knowledge that is acquired after some experience. For example, I know that the book will fall down after I release it, by experience. I know that the sun sets in the west, by experience. These are examples of a posteriori knowledge. They are sometime called examples of synthetic knowledge.

A priori knowledge is knowledge that is arrived at without experience and is necessary and certain. The statement: "a cat is a feline" is an example of a necessary, a priori statement. If you understand the concepts of feline and cat, then you understand that a cat is necessarily a feline. Most definitions are examples of a priori knowledge. They don't say what exist in the world, just what could exist. They are sometimes called examples of analytic knowledge.

Defining Knowledge

There are various ways to define knowledge. One of the most prominent theories is known as the **JTB** (Justified True Belief) theory of knowledge. In an attempt to define knowledge, the JTB theory claims that the following three conditions should be met: justification, truth, and belief.

According to JTB theory, a justified true belief is a definition of knowledge. In other words, K = JTB, where Knowledge = Justified + True + Belief. It is argued that all three conditions must be satisfied in order for one to possess knowledge. This theory seems to have some merit, but on closer examination, it is difficult to determine if all three conditions are met. The belief condition is the easiest as people believe a myriad of things (some of which that make sense and have a rational basis and many that do not make sense or seem to have rational support). The justification condition is more difficult, but it can be met if we can provide sound reasons for our beliefs. The quintessential problem is the truth condition. What constitutes truth? Various definitions of truth will be considered later.

Theories of Knowledge

There are various theories of how we can arrive at knowledge. The classic view was put forth by René Descartes (1596–1650) and is known as **Foundationalism**. Other theories include Coherentism and the reliability theory of knowledge.

POWERFUL ANALYSIS: WHAT IS REAL?

What is real? Is seeing, tasting, or touching something real? If that is the case, then "what is real" is simply an electrical impulse interpreted by our brain. Do you agree?

Foundationalism

Foundationalism is an epistemic theory that argues our knowledge claims must be based on basic true beliefs and that these basic believes provide a foundation for all knowledge. René Descartes is one of the most well-known proponents of Foundationalism and the father of modern philosophy. He argues that a rational method is required to have knowledge.

In 1641, he wrote the *Meditations or First Philosophy* in which he articulates his views on knowledge. In this work, he argues that we must find an absolutely certain (beyond doubt) true to serve as a foundational belief. The belief or beliefs that are found to be indubitable serve as a foundation for all of our other knowledge.

He wants to determine which, if any beliefs, he has that are certain. To accomplish this task, he employs a skeptical method often termed the method of doubt. He hopes that by employing this method of doubt, he will be able to examine his beliefs with great scrutiny and cast out the ones that has fault and that he will be to find at least one foundational belief.

He asks himself "Do I have any indubitable beliefs?" To answer this question, he placed his beliefs into three categories: (1) beliefs about the world, (2) beliefs about mathematics, and (3) beliefs about himself. He finds fault with beliefs in each category.

He claims that there are skeptical possibilities that call into question each category. He says that beliefs about the world are called into question by errors produced by our senses such as optical illusions. He claims that beliefs about ourselves can be called into question as we might be dreaming. And finally, beliefs about math and science are called into question by the possibility of an evil demon that is deceiving us.

In truth, optical illusions and the fact that we might be dreaming are not very powerful arguments against either knowing ourselves or the world around us, but the third skeptical hypothesis is more problematic. As Descartes says in the *Meditations*, let us imagine that "some malicious demon of the utmost power and cunning has employed all his energies in order to deceive me. I shall think that the sky, the air, the earth, colors, shapes, sounds and all external things are merely the delusions of dreams which he has devised to ensnare my judgment."

In other words, every perception, every sensation, and every feeling may very well be a lie created and perpetuated by some malicious force. To consider a contemporary cinematic example of this type of skepticism think of the film the *Matrix* (1999), which depicts just the type of skeptical situation as Descartes is describing in his book. In the film, people think they are living in the real world when in fact they are plugged into computers and living in an artificial virtual reality known as the matrix.

With the possibility of an evil demon in control, Descartes is left with very little to believe in, but as he ponders his situation, he comes to the conclusion that there is one thing, one believes that he still knows: ***Cogito ergo sum*** (in Latin) or literally in English: I think therefore I am. So, on Descartes view, even if the world around you is a lie created by an evil demon or an evil computer, the fact that you are able to perceive and think means that you exist in some shape or form. This does not mean your body, life, or world are real, but rather that you have some form of existence. Descartes then uses his foundational belief to construct an elaborate to prove that the rest of reality is real and true.

POWERFUL IDEAS: DESCARTES PROOF FOR EVERYTHING?

1) I will doubt everything.
2) As I doubt, I find I cannot doubt that I am thinking.
3) I think therefore I am.
4) I have a clear and distinct conception of God.
5) In order for a lesser being to have an idea of a greater being, that idea must originate with the greater being
6) Therefore, God exist.
7) God exist and is Good therefore he would not let the evil demon deceive us about the world.
8) Therefore, the world exists as we perceive it so long as we have a clear and distinct conception of it.

This argument has been scrutinized for nearly 400 years. In the time since the argument was presented, a number of logical flaws have been found in Descartes reasoning. The central problem with the argument is known as the "Cartesian Circle," and it is this he claims in premise 2 to know that God exist because he has a clear and distinct conception of him. Yet, it is God's existence in premise 4 and the fact that he makes clear and distinct perception true in premise 6 that allow you to trust in such perceptions. In other words, he presupposes a concept that he uses to prove that God exists.

To put it another way, Descartes argues that clear and distinct perceptions provide the foundation or basis for the truth of our beliefs and that is so because God, who is not a deceiver, would not allow Descartes to be mistaken about that which he clearly and distinctly perceives. Yet, this notion of clear and distinct perceptions and their truth requires God's existence, which he has yet to establish. As such Descartes cannot know that his

proof of God's existence is true or does not contain an error unless he assumes that his clear and distinct perception of the steps of his reasoning is correct. Thus, the criterion of clear and distinct perception depends on the assumption that God exists, which in turn depends on the criterion of clear and distinct perception.

"The Matrix Hypothesis threatens to undercut almost everything I know. It seems to be a skeptical hypothesis: a hypothesis that I cannot rule out, and one that would falsify most of my beliefs if it were true. Where there is a skeptical hypothesis, it looks like none of these beliefs count as genuine knowledge. Of course the beliefs might be true -I might be lucky, and not be envatted -but I can't rule out the possibility that they are false. So a skeptical hypothesis leads to skepticism about these beliefs: I believe these things, but I do not know them"

—David Chalmers, (2003), The Matrix as Metaphysics.

POWERFUL ANALYSIS: COULD GOD HAVE A REASON TO DECEIVE HUMANITY?

For a moment assume that Descartes' argument works in proving God's existence, does the ultimate conclusion follow as stated in premise 6? Can Descartes be certain that God would not allow an evil demon or computer to systematically deceive humanity? Maybe God has a reason, or needs to teach humanity a lesson.

Coherentism

Coherentism is an alternative theory of justification to Foundationalism and Reliabilism. Unlike Foundationalism, Coherentism denies the notion that there are basic foundational beliefs and instead argue that many of our beliefs are justified by other believes. To think of it metaphorically instead of a pillar of knowledge with a foundational belief at the base, there is a web of believes that in turn justify each other. According to Coherentism, whole systems of beliefs are justified by their coherence. This view also states that all of our beliefs must be compatible with one another. For example, if I believe X, Y, and Z, but if X contradicts Y and Z, then I cannot reasonably hold all three beliefs. One concern with the theory is that all of your beliefs could be compatible with one another and still all false. There could exists a coherent set of beliefs that all fit together but are ultimately false.

Reliability Theory of Knowledge

The **reliability theory of knowledge** (also known as reliabilism) states that knowledge should be acquired by means of a reliable process. According to reliabilism, a belief is justified based on the method by which it was acquired. On this view (as we know from everyday experience), there are good and bad ways to go about forming beliefs. Beliefs based on reliable belief-forming mechanisms are likely to be true; in other words, believe that we acquire, which are based on methods that have been reliable in the past, are beliefs we can have in and belief are true. Examples of reliable processes are our perceptions--sight, hearing, sound, taste, and touch as well as logical methods such as deduction, induction, and abduction. Unreliable processes might be things such as extra-sensory perception (ESP) and random guesses. In the end, this theory states that we "know" those beliefs that we obtain from reliable methods.

Powerful Thinkers: Kurt Gödel

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A mathematician who had an enormous influence on philosophy as well as on science, Kurt Gödel (1906–1978) was born an Austro-Hungarian in Brno, in what is now the Czech Republic; and he died as an American in Princeton, NJ. His journey was extraordinary, calling into question the rules of logic and rocking the foundations of mathematics in the twentieth century as well as signaling an unexpected return to Platonic views on the possibility of knowledge.

Human mind is superior to any machine and can work out truths that no artificial intelligence ever will reach is one of the many results of Gödel's work and particularly of his famous Incompleteness

Theorem—actually two related theorems—which showed that there are certain truths within any closed mathematical system that cannot be proved within that system. Gödel published his revolutionary essay "On Formally Undecidable Propositions of *Principia Mathematica* and Related Systems" in 1931, challenging what at the time were accepted tenets of mathematics and logic. It turns out that certainty has its limits.

There is, in fact, profound uncertainty about the universe, about reality. A difficult feat of logic that, once understood, boasts breathtaking simplicity, Gödel's Theorem shows that if a system is internally consistent—that is, without any contradictions—then it cannot be complete; and further that the consistency of axioms cannot be proved within that system. In other words, there always will be at least one truth that cannot be proved but is nevertheless true. There may be other ways of knowing truth beyond what had been previously accepted as mathematical evidence is what has been identified as a return to Plato, who believed that truth was elusive and we could at best get close to it. Gödel's Theorem also precludes the possibility that a machine, whether the rudimentary computers that were being developed when he came up with his discovery, or the so-called artificial intelligence foreseen by Alan Turing (1912–1954), cannot be up to the tasks that only the human mind might be able to perform. The most a computer can do is imitate the human mind—that is Turing's Imitation Game that helped win World War II. But there always be something true that even a computer with unlimited capabilities cannot prove.

Pragmatic Theories of Truth

Pragmatic theories of truth claim that, in a sense, truth is relative. Truth may be in a sense relative to: the individual, science, or society. William James (1842–1910) argued that truth could be defined as what was useful to believe by the individual. As radical as this might sound James defends this notion of truth in cases where the truth or falsity of a belief are primarily unproven or open to possibility. He thinks that religious beliefs or beliefs about our free will are things that can be true for some people and false for others. He also thinks we do not require evidence when engaging in the process of hypothesis venturing, which, in his view, creates beliefs whose evidence becomes available only after they are believed. James also claims that self-fulfilling beliefs (beliefs that by existing make themselves true) are true for the individual. Such a notion of truth means that if you believe in God, then

it is true and I do not believe in God, then it is false. How a belief can be both true and false at the same time seems to fly in the face of convention and common sense. The correspondence theory of truth seems to make this case. It is will be discussed below.

A less radical notion of truth was developed by Charles Sanders Peirce (1839–1914) and endorsed by John Dewey (1859–1952). In his view, truth is whatever science determines to be true at the end of scientific inquiry. Truth is relative to the progress of science. In the past, given that different societies had different levels of scientific knowledge, truth was, in a sense relative to societies. At present, science is practiced in the same way everywhere in the developed world, there is only one science (unless we consider tribal peoples in remote regions of the world, that do not share our scientific concepts).

> ***"The opinion which is fated to be ultimately agreed to by all who investigate is what we mean by the truth, and the object represented in this opinion is the real."***
>
> **—C. S. Peirce**

According to Peirce, at this moment, since we are not at the end of scientific investigation and inquiry, we only have some truths or an approximate version of truth. One day humanity will figure everything out, and at that moment, we will have knowledge.

John Dewey agreed with Peirce regarding the nature of truth and the importance of inquiry and investigation. Dewey in his book, *The Theory of Inquiry* (1938), gave the following definition of inquiry: inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole. In the same work, Dewey, in the index has placed one footnote regarding the notion of truth, for which he cites the quote of Peirce given above and says "The best definition of *truth* from the logical standpoint which is known to me is that by Peirce": "The opinion which is fated to be ultimately agreed to by all who investigate is what we mean by the truth, and the object represented in this opinion is the real."

Correspondence Theory of Truth

The **correspondence theory of truth** basically says a belief is true if and only if, it corresponds with something that exists in the world. Alfred Tarski (1901–1983) developed a theory of truth for formalized languages, which can be seen as a statement of the correspondence theory of truth, although there is debate amongst philosophers if this is actually now the case. The classical interpretation of Tarski is that his work can be read as supporting the correspondence theory of truth. According to the theory, my belief that a table is in the room is true, if and only if there actually is a table in the room. As Tarski famously said, the statement "Snow is white" is true if

and only if snow is white. He is not saying there is white snow, but if there is somewhere in the universe white snow, then the statement is true.

The interconnection of belief, justification, evidence, truth, and knowledge is very complex. Many philosophers have abandoned Descartes project of looking for certainly and have accepted either a pragmatic or a deflationary theory of knowledge. If knowledge requires certainty, then perhaps we should concede that many of our beliefs are not certain. If we need certainty in order to have knowledge, then we perhaps we cannot have much knowledge at all.

POWERFUL ANALYSIS: TRUTH AND CERTAINTY

Does knowledge require certainty? Can you claim to know something that ultimately turns out to be false?

READINGS

DAVID HUME: *Concerning Human Understanding*

In this reading, David Hume, the "great Skeptic" calls into question the human capacity to understand reality. Hume denies the rationality of induction and causality. As a result of this, he denies most science. (Since it is based on induction and causality.) Most "knowledge" is just custom or habit that is not actually justified by reason.

PART I

20. All the objects of human reason or enquiry may naturally be divided into two kinds, to wit, "Relations of Ideas", and "Matters of Fact". Of the first kind are the sciences of Geometry, Algebra, and Arithmetic; and in short, every affirmation which is either intuitively or demonstratively certain. "That the square of the hypotenuse is equal to the square of the two sides", is a proposition which expresses a relation between these figures. "That three times five is equal to the half of thirty", expresses a relation between these numbers. Propositions of this kind are discoverable by the mere operation of thought, without dependence on what is anywhere existent in the universe. Though there never were a circle or triangle in nature, the truths demonstrated by Euclid would forever retain their certainty and evidence.

21. Matters of fact, which are the second objects of human reason, are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing. The contrary of every matter of fact is still possible; because it can never imply a contradiction, and is conceived by the mind with the same facility and distinctness, as if ever so conformable to reality. "That the sun will not rise tomorrow" is no less intelligible a proposition, and implies no more contradiction than the affirmation, "that it will rise". We should in vain, therefore, attempt to demonstrate its falsehood. Were it demonstratively false, it would imply a contradiction, and could never be distinctly conceived by the mind.

It may, therefore, be a subject worthy of curiosity, to enquire what is the nature of that evidence which assures us of any real existence and matter of fact, beyond the present testimony of our senses, or the records of our memory. This part of philosophy, it is observable, has been little cultivated, either by the ancients or moderns; and therefore our doubts and errors, in the prosecution of so important an enquiry, may be the more excusable; while we march through such difficult paths without any guide or direction. They may even prove useful, by exciting

curiosity, and destroying that implicit faith and security, which is the bane of all reasoning and free enquiry. The discovery of defects in the

common philosophy, if any such there be, will not, I presume, be a discouragement, but rather an incitement, as is usual, to attempt something more full and satisfactory than has yet been proposed to the public.

22. All reasoning concerning matter of fact seem to be founded on the relation of "Cause and Effect". By means of that relation alone we can go beyond the evidence of our memory and senses. If you were to ask a man, why he believes any matter of fact, which is absent; for instance, that his friend is in the country, or in France; he would give you a reason; and this reason would be some other fact; as a letter received from him, or the knowledge of his former resolutions and promises. A man finding a watch or any other machine in a desert island, would conclude that there had once been men in that island. All our reasoning concerning fact are of the same nature. And here it is constantly supposed that there is a connection between the present fact and that which is inferred from it. Were there nothing to bind them together, the inference would be entirely precarious. The hearing of an articulate voice and rational discourse in the dark assures us of the presence of some person: Why? because these are the effects of the human make and fabric, and closely connected with it. If we anatomize all the other reasoning of this nature, we shall find that they are founded on the relation of cause and effect, and that this relation is either near or remote, direct or collateral. Heat and light are collateral effects of fire, and the one effect may justly be inferred from the other.

23. If we would satisfy ourselves, therefore, concerning the nature of that evidence, which assures us of matters of fact, we must enquire how we arrive at the knowledge of cause and effect.

I shall venture to affirm, as a general proposition, which admits of no exception, that the knowledge of this relation is not, in any instance, attained by reasoning "a priori"; but arises entirely from experience, when we find that any particular objects are constantly conjoined with each other. Let an object be presented to a man of ever so strong natural reason and abilities; if that object be entirely new to him, he will not be able, by the most accurate examination of its sensible qualities, to discover any of its causes or effects. Adam, though his rational faculties be supposed, at the very first, entirely perfect, could not have inferred from the fluidity and transparency of water that it would suffocate him, or from the light and warmth of fire that it would consume him. No object ever discovers, by the qualities which appear to the senses, either the causes which produced it, or the effects which will arise from it; nor can our reason, unassisted by experience, ever draw any inference concerning real existence and matter of fact.

24. This proposition, "that causes and effects are discoverable, not by reason but by experience", will readily be admitted with regard to such

objects, as we remember to have once been altogether unknown to us; since we must be conscious of the utter inability, which we then lay under, of foretelling what would arise from them. Present two smooth pieces of marble to a man who has no tincture of natural philosophy; he will never discover that they will adhere together in such a manner as to require great force to separate them in a direct line, while they make so small a resistance to a lateral pressure. Such events, as bear little analogy to the common course of nature, are also readily confessed to be known only by experience; nor does any man imagine that the explosion of gunpowder, or the attraction of a loadstone, could ever be discovered by arguments "a priori". In like manner, when an effect is supposed to depend upon an intricate machinery or secret structure of parts, we make no difficulty in attributing all our knowledge of it to experience. Who will assert that he can give the ultimate reason, why milk or bread is proper nourishment for a man, not for a lion or a tiger?

But the same truth may not appear, at first sight, to have the same evidence with regard to events, which have become familiar to us from our first appearance in the world, which bear a close analogy to the whole course of nature, and which are supposed to depend on the simple qualities of objects, without any secret structure of parts. We are apt to imagine that we could discover these effects by the mere operation of our reason, without experience. We fancy, that were we brought on a sudden into this world, we could at first have inferred that one Billiard-ball would communicate motion to another upon impulse; and that we needed not to have waited for the event, in order to pronounce with certainty concerning it. Such is the influence of custom, that, where it is strongest, it not only covers our natural ignorance, but even conceals itself, and seems not to take place, merely because it is found in the highest degree.

25. But to convince us that all the laws of nature, and all the operations of bodies without exception, are known only by experience, the following reflections may, perhaps, suffice. Were any object presented to us, and were we required to pronounce concerning the effect, which will result from it, without consulting past observation; after what manner, I beseech you, must the mind proceed in this operation? It must invent or imagine some event, which it ascribes to the object as its effect; and it is plain that this invention must be entirely arbitrary. The mind can never possibly find the effect in the supposed cause, by the most accurate scrutiny and examination. For the effect is totally different from the cause, and consequently can never be discovered in it. Motion in the second Billiard-ball is a quite distinct event from motion in the first; nor is there anything in the one to suggest the smallest hint of the other. A stone or piece of metal raised into the air, and left without any support, immediately falls: but to consider the

matter "a priori", is there anything we discover in this situation which can beget the idea of a downward, rather than an upward, or any other motion, in the stone or metal? And as the first imagination or invention of a particular effect, in all natural operations, is arbitrary, where we consult not experience; so must we also esteem the supposed tie or connection between the cause and effect, which binds them together, and renders it impossible that any other effect could result from the operation of that cause. When I see, for instance, a Billiard-ball moving in a straight line towards another; even suppose motion in the second ball should by accident be suggested to me, as the result of their contact or impulse; may I not conceive, that a hundred different events might as well follow from that cause? May not both these balls remain at absolute rest? May not the first ball return in a straight line, or leap off from the second in any line or direction? All these suppositions are consistent and conceivable. Why then should we give the preference to one, which is no more consistent or conceivable than the rest? All our reasoning "a priori" will never be able to show us any foundation for this preference.

In a word, then, every effect is a distinct event from its cause. It could not, therefore, be discovered in the cause, and the first invention or conception of it, "a priori", must be entirely arbitrary. And even after it is suggested, the conjunction of it with the cause must appear equally arbitrary; since there are always many other effects, which, to reason, must seem fully as consistent and natural. In vain, therefore, should we pretend to determine any single event, or infer any cause or effect, without the assistance of observation and experience.

26. Hence we may discover the reason why no philosopher, who is rational and modest, has ever pretended to assign the ultimate cause of any natural operation, or to show distinctly the action of that power, which produces any single effect in the universe. It is confessed, that the utmost effort of human reason is to reduce the principles, productive of natural phenomena, to a greater simplicity, and to resolve the many particular effects into a few general causes, by means of reasoning from analogy, experience, and observation. But as to the causes of these general causes, we should in vain attempt their discovery; nor shall we ever be able to satisfy ourselves, by any particular explication of them. These ultimate springs and principles are totally shut up from human curiosity and enquiry. Elasticity, gravity, cohesion of parts, communication of motion by impulse; these are probably the ultimate causes and principles which we shall ever discover in nature; and we may esteem ourselves sufficiently happy, if, by accurate enquiry and reasoning, we can trace up the particular phenomena to, or near to, these general principles. The most perfect philosophy of the natural kind only staves off our ignorance a little longer: as perhaps the most

perfect philosophy of the moral or metaphysical kind serves only to discover larger portions of it. Thus the observation of human blindness and weakness is the result of all philosophy, and meets us at every turn, in spite of our endeavors to elude or avoid it.

27. Nor is geometry, when taken into the assistance of natural philosophy, ever able to remedy this defect, or lead us into the knowledge of ultimate causes, by all that accuracy of reasoning for which it is so justly celebrated. Every part of mixed mathematics proceeds upon the supposition that certain laws are established by nature in her operations; and abstract reasoning are employed, either to assist experience in the discovery of these laws, or to determine their influence in particular instances, where it depends upon any precise degree of distance and quantity. Thus, it is a law of motion, discovered by experience, that the moment or force of anybody in motion is in the compound ratio or proportion of its solid contents and its velocity; and consequently, that a small force may remove the greatest obstacle or raise the greatest weight, if, by any contrivance or machinery, we can increase the velocity of that force, so as to make it an overmatch for its antagonist. Geometry assists us in the application of this law, by giving us the just dimensions of all the parts and figures which can enter into any species of machine; but still the discovery of the law itself is owing merely to experience, and all the abstract reasoning in the world could never lead us one step towards the knowledge of it. When we reason "a priori", and consider merely any object or cause, as it appears to the mind, independent of all observation, it never could suggest to us the notion of any distinct object, such as its effect; much less, show us the inseparable and inviolable connection between them. A man must be very sagacious who could discover by reasoning that crystal is the effect of heat, and ice of cold, without being previously acquainted with the operation of these qualities.

PART II

28. But we have not yet attained any tolerable satisfaction with regard to the question first proposed. Each solution still gives rise to a new question as difficult as the foregoing, and leads us on to farther enquiries. When it is asked, "What is the nature of all our reasoning concerning matter of fact?" the proper answer seems to be, that they are founded on the relation of cause and effect. When again it is asked, "What is the foundation of all our reasoning and conclusions concerning that relation?" it may be replied in one word, Experience. But if we still carry on our sifting humor, and ask, "What is the foundation of all conclusions from experience?" this implies a new question, which maybe of more difficult solution and explication. Philosophers that give themselves airs of superior wisdom and sufficiency,

have a hard task when they encounter persons of inquisitive dispositions, who push them from every corner to which they retreat, and who are sure at last to bring them to some dangerous dilemma. The best expedient to prevent this confusion, is to be modest in our pretensions; and even to discover the difficulty ourselves before it is objected to us. By this means, we may make a kind of merit of our very ignorance.

I shall content myself, in this section, with an easy task, and shall pretend only to give a negative answer to the question here proposed. I say then, that, even after we have experience of the operations of cause and effect, our conclusions from that experience are "not" founded on reasoning, or any process of the understanding. This answer we must endeavor both to explain and to defend.

29. It must certainly be allowed, that nature has kept us at a great distance from all her secrets, and has afforded us only the knowledge of a few superficial qualities of objects; while she conceals from us those powers and principles on which the influence of those objects entirely depends. Our senses inform us of the color, weight, and consistence of bread; but neither sense nor reason can ever inform us of those qualities which fit it for the nourishment and support of a human body. Sight or feeling conveys an idea of the actual motion of bodies; but as to that wonderful force or power, which would carry on a moving body for ever in a continued change of place, and which bodies never lose but by communicating it to others; of this we cannot form the most distant conception. But notwithstanding this ignorance of natural powers and principles, we always presume, when we see like sensible qualities, that they have like secret powers, and expect that effects, similar to those which we have experienced, will follow from them. If a body of like color and consistence with that bread, which we have formerly eat, be presented to us, we make no scruple of repeating the experiment, and foresee, with certainty, like nourishment and support. Now this is a process of the mind or thought, of which I would willingly know the foundation. It is allowed on all hands that there is no known connection between the sensible qualities and the secret powers; and consequently, that the mind is not led to form such a conclusion concerning their constant and regular conjunction, by anything which it knows of their nature. As to past "Experience", it can be allowed to give "direct" and "certain" information of those precise objects only, and that precise period of time, which fell under its cognizance: but why this experience should be extended to future times, and to other objects, which for aught we know, may be only in appearance similar; this is the main question on which I would insist. The bread, which I formerly eat, nourished me; that is, a body of such sensible qualities was, at that time, endued with such secret powers: but does it follow, that other read must also nourish me at another time, and that like sensible qualities must always be attended with like secret powers?

The consequence seems nowise necessary. At least, it must be acknowledged that there is here a consequence drawn by the mind; that there is a certain step taken; a process of thought, and an inference, which wants to be explained. These two propositions are far from being the same, "I have found that such an object has always been attended with such an Effect", and "I foresee, that other objects, which are, in appearance, similar, will be attended with similar effects". I shall allow, if you please, that the one proposition may justly be inferred from the other: I know, in fact, that it always is inferred. But if you insist that the inference is made by a chain of reasoning, I desire you to produce that reasoning. The connection between these propositions is not intuitive. There is required a medium, which may enable the mind to draw such an inference, if indeed it be drawn by reasoning and argument. What that medium is, I must confess, passes my comprehension; and it is incumbent on those to produce it, who asserts that it really exists, and is the origin of all our conclusions concerning matter of fact.

30. This negative argument must certainly, in process of time, become altogether convincing, if many penetrating and able philosophers shall turn their enquiries this way and no one be ever able to discover any connecting proposition or intermediate step, which supports the understanding in this conclusion. But as the question is yet new, every reader may not trust so far to his own penetration, as to conclude, because an argument escapes his enquiry, that therefore it does not really exist. For this reason it may be requisite to venture upon a more difficult task; and enumerating all the branches of human knowledge, endeavor to show that none of them can afford such an argument.

All reasoning may be divided into two kinds, namely, demonstrative reasoning, or that concerning relations of ideas, and moral reasoning, or that concerning matter of fact and existence. That there are no demonstrative arguments in the case seems evident; since it implies no contradiction that the course of nature may change, and that an object, seemingly like those which we have experienced, may be attended with different or contrary effects. May I not clearly and distinctly conceive that a body, falling from the clouds, and which, in all other respects, resembles snow, has yet the taste of salt or feeling of fire? Is there any more intelligible proposition than to affirm, that all the trees will flourish in December and January, and decay in May and June? Now whatever is intelligible, and can be distinctly conceived, implies no contradiction, and can never be proved false by any demonstrative argument or abstract reasoning "à priori".

If we be, therefore, engaged by arguments to put trust in past experience, and make it the standard of our future judgment, these arguments must be probable only, or such as regard matter of fact and real existence, according to the division above mentioned. But that there is no argument of

this kind, must appear, if our explication of that species of reasoning be admitted as solid and satisfactory. We have said that all arguments concerning existence are founded on the relation of cause and effect; that our knowledge of that relation is derived entirely from experience; and that all our experimental conclusions proceed upon the supposition that the future will be conformable to the past. To endeavor, therefore, the proof of this last supposition by probable arguments, or arguments regarding existence, must be evidently going in a circle, and taking that for granted, which is the very point in question.

31. In reality, all arguments from experience are founded on the similarity which we discover among natural objects, and by which we are induced to expect effects similar to those which we have found to follow from such objects. And though none but a fool or madman will ever pretend to dispute the authority of experience, or to reject that great guide of human life, it may surely be allowed a philosopher to have so much curiosity at least as to examine the principle of human nature, which gives this mighty authority to experience, and makes us draw advantage from that similarity which nature has placed among different objects. From causes which appear "similar" we expect similar effects.

This is the sum of all our experimental conclusions. Now it seems evident that, if this conclusion were formed by reason, it would be as perfect at first, and upon one instance, as after ever so long a course of experience. But the case is far otherwise. Nothing so like as eggs; yet no one, on account of this appearing similarity, expects the same taste and relish in all of them. It is only after a long course of uniform experiments in any kind, that we attain a firm reliance and security with regard to a particular event. Now where is that process of reasoning which, from one instance, draws a conclusion, so different from that which it infers from a hundred instances that are no ways different from that single one? This question I propose as much for the sake of information, as with an intention of raising difficulties. I cannot find, I cannot imagine any such reasoning. But I keep my mind still open to instruction, if any one will vouchsafe to bestow it on me.

32. Should it be said that, from a number of uniform experiments, we "infer" a connection between the sensible qualities and the secret powers; this, I must confess, seems the same difficulty, couched in different terms. The question still recurs, on what process of argument this "inference" is founded? Where is the medium, the interposing ideas, which join propositions so very wide of each other? It is confessed that the color, consistence, and other sensible qualities of bread appear not, of themselves, to have any connection with the secret powers of nourishment and support. For otherwise we could infer these secret powers from the first appearance of these sensible qualities, without the aid of experience; contrary to the sentiment

of all philosophers, and contrary to plain matter of fact. Here, then, is our natural state of ignorance with regard to the powers and influence of all objects. How is this remedied by experience? It only shows us a number of uniform effects, resulting from certain objects, and teaches us that those particular objects, at that particular time, were endowed with such powers and forces. When a new object, endowed with similar sensible qualities, is produced, we expect similar powers and forces, and look for a like effect. From a body of like color and consistence with bread we expect like nourishment and support. But this surely is a step or progress of the mind, which wants to be explained. When a man says, "I have found, in all past instances, such sensible qualities conjoined with such secret powers" And when he says, "Similar sensible qualities will always be conjoined with similar secret powers", he is not guilty of a tautology, nor are these propositions in any respect the same. You say that the one proposition is an inference from the other. But you must confess that the inference is not intuitive; neither is it demonstrative: Of what nature is it, then? To say it is experimental, is begging the question. For all inferences from experience suppose, as their foundation, that the future will resemble the past, and that similar powers will be conjoined with similar sensible qualities. If there be any suspicion that the course of nature may change, and that the past may be no rule for the future, all experience becomes useless, and can give rise to no inference or conclusion. It is impossible, therefore, that any arguments from experience can prove this resemblance of the past to the future; since all these arguments are founded on the supposition of that resemblance. Let the course of things be allowed hitherto ever so regular; that alone, without some new argument or inference, proves not that, for the future, it will continue so. In vain do you pretend to have learned the nature of bodies from your past experience. Their secret nature, and consequently all their effects and influence, may change, without any change in their sensible qualities.

This happens sometimes, and with regard to some objects: Why may it not happen always, and with regard to all objects? What logic, what process of argument secures you against this supposition? My practice, you say, refutes my doubts. But you mistake the purport of my question. As an agent, I am quite satisfied in the point; but as a philosopher, who has some share of curiosity, I will not say skepticism, I want to learn the foundation of this inference. No reading, no enquiry has yet been able to remove my difficulty, or give me satisfaction in a matter of such importance. Can I do better than propose the difficulty to the public, even though, perhaps, I have small hopes of obtaining a solution? We shall at least, by this means, be sensible of our ignorance, if we do not augment our knowledge.

33. I must confess that a man is guilty of unpardonable arrogance who concludes, because an argument has escaped his own investigation, that

therefore it does not really exist. I must also confess that, though all the learned, for several ages, should have employed themselves in fruitless search upon any subject, it may still, perhaps, be rash to conclude positively that the subject must, therefore, pass all human comprehension. Even though we examine all the sources of our knowledge, and conclude them unfit for such a subject, there may still remain a suspicion, that the enumeration is not complete, or the examination not accurate. But with regard to the present subject, there are some considerations which seem to remove all this accusation of arrogance or suspicion of mistake.

It is certain that the most ignorant and stupid peasants—nay infants, nay even brute beasts—improve by experience, and learn the qualities of natural objects, by observing the effects which result from them. When a child has felt the sensation of pain from touching the flame of a candle, he will be careful not to put his hand near any candle; but will expect a similar effect from a cause which is similar in its sensible qualities and appearance. If you assert, therefore, that the understanding of the child is led into this conclusion by any process of argument or ratiocination, I may, rightly, require you to produce that argument; nor have you any pretence to refuse so equitable a demand. You cannot say that the argument is abstruse, and may possibly escape your enquiry; since you confess that it is obvious to the capacity of a mere infant. If you hesitate, therefore, a moment, or if, after reflection, you produce any intricate or profound argument, you, in a manner, give up the question, and confess that it is not reasoning which engages us to suppose the past resembling the future, and to expect similar effects from causes which are, to appearance, similar. This is the proposition which I intended to enforce in the present section. If I be right, I pretend not to have made any mighty discovery. And if I be wrong, I must acknowledge myself to be indeed a very backward scholar; since I cannot now discover an argument which, it seems, was perfectly familiar to me long before I was out of my cradle.

KEY TERMS

A posteriori knowledge is knowledge that is acquired after some experience.

A priori knowledge is knowledge that is arrived at without experience and is necessary and certain (must be true).

Coherentism is a epistemic theory that denies the notion that there are basic foundational belief and instead argue that many of our beliefs are justified by other believes.

Correspondence theory of truth states that a belief is true if and only if it corresponds with something that exists in the world.

Empiricism is a method of acquiring knowledge by means of observation, inquiry, and experience.

Epistemology is the study of theories of knowledge. Epistemic theories attempt to explain the various ways we can arrive at knowledge.

Foundationalism is an epistemic theory that argues our knowledge claims must be based on basic true beliefs and that these basic believes provide a foundation for all knowledge.

JTB theory defines knowledge as requiring three necessary conditions: justification, truth, and belief.

Pragmatic theories of truth claim that, in a sense, truth is relative. Truth may be in a sense relative to: the individual, science, or society.

Rationalism is a method of acquiring knowledge by means of logic and reason.

Reliability theory of knowledge (also known as reliabilism) states that knowledge should be acquired by means of a reliable process. According to reliabilism, a belief is justified based on the method by which it was acquired.

QUESTIONS FOR DISCUSSION AND REVIEW

1. Compare and contrast rationalism and empiricism.
2. Explain the difference between A priori and A posteriori knowledge.
3. Compare and contrast Foundationalism and Coherentism
4. Compare and contrast pragmatic theories of truth with the correspondence theory of truth.
5. What are some of the implications of Gödel's Theorem?

SUGGESTED READINGS

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