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Introduction

Philosophy consists of attitudes toward life or ways of life and inquiries in such regard, and they come in a great variety, of course. Philosophical tradition displays a regular bias in favor of the life of contemplation and equanimity. There was an effort to displace these values with a new tradition – nineteenth-century Romanticism – that emulated the heroes and despots of old and likewise glorified the life of achievements, especially great ones, military and political. The rise of brutal regimes that pride themselves on such achievements has somewhat attenuated the popularity of this enduring and sadistic tradition but, alas, not to the point of extinction.

Philosophical inquiries traditionally center on a small set of questions that presumably signify the choice of an attitude toward life or a way of life. Socrates, the father of Western philosophy, asserted his philosophy of life in his famous slogan: "the unexamined life is not worth living." His way of life was devoted to preaching this idea by challenging people to examine their own life: he moved throughout the day from one place where people gathered to another, challenging the opinions of anyone who would accept his challenge.

Here are examples of questions that raise discussions that tradition considers philosophical. What are things made of? What kinds of things are there in the world? Is the soul immortal? How can we avoid errors when we seek explanations (of physical or mental events)? What are the right principles of the right moral conduct? What is the best political regime? Such questions sally forth in quest for the very best, even though we know that the very best is unattainable because we are not divine. But the quest for the idea of the best is the quest for criteria; to find what we would deem the best is to find a

criterion for judging some action or thing as the best – or even some action or thing as better than some other action or thing, which is very useful.

Like all intellectual activities, philosophy is, in part, the search for good ideas – that is, for ideas, theories, and general truths that have intellectual value. Philosophy thus shares this search with religion (or theology), mathematics, and science in an effort to explain the world around us and adjust as best as possible. In this respect, philosophical, mathematical, and scientific research are partners in a venture, moving along in different regions of the territory that they share – whether in cooperation, in a division of labor, or at times in serious competition, whatever the case may be. People engaged in any kind of research show no interest in a detailed catalogue of discrete points of information that would fill a telephone directory, no matter how practical and useful. Useful things may be most uninteresting; the more accurate they are, the more useful, but even the most accurate are at times merely useful. Rather, researchers seek theories – that is, general statements (statements that begin with the word *all*) that explain known phenomena and results, however puzzling and fascinating. These observations are themselves general or particular, and their explanations then belong to the generalizing and the historical sciences, respectively. Of course, some people invest much effort in collections of all sorts, from butterflies to stamps. Many people admit that these collections can be fascinating, and researchers may find them useful, but they are scarcely scientific unless they are accompanied by theoretical considerations. Thus, the difficult and interesting question imposes itself on butterfly collectors: What is a butterfly?

Opinions keep changing. Agendas keep changing, too, but less rapidly. This is true of both philosophical and scientific inquiries; however, notoriously philosophical agendas are much slower to change. Some people suggest that they never change, so they refer to the agenda of philosophy as a hardy perennial. They exaggerate. We can easily detect change even regarding the philosophical question about our intellectual agenda: What is it and what should it be? In the Middle Ages, theology was at the top of the philosophical agenda and then exited almost entirely in the seventeenth century. To the end of the

eighteenth century, what was then called natural philosophy and what we now consider science (e.g., physics, biology) was considered an integral part of philosophy. Later, some of the research was gradually recognized as independent studies. Physics and chemistry came into their own first; biology and mathematics followed suit. In the twentieth century, science became identical to empirical science,[1] with physics as its paradigm; thus, modernist philosophers expelled mathematics from the field of science (and perhaps kicked upstairs to the field of logic): questions concerning science ceased to affect it. "To the extent that the statements of mathematics represent reality," said Einstein in a memorable dictum, "they are not certain, and to the extent that they are certain, they do not represent reality." These changes were completed by the middle of the nineteenth century. The question was soon raised: Why? And this question still engages many philosophers today, filling the philosophical literature. Medicine gained scientific recognition only in the early twentieth century, impacted more by Louis Pasteur's discovery than anything else. Mental illness entered science through the back door, as medicine. Psychology proper (especially studies of perception, learning, and child development) was left behind and became a major part of the impoverished field of philosophy. Some still view it this way, considering what they call "philosophical psychology" or the "philosophy of the mind" to be a major philosophical preoccupation. Psychology itself already has a part that is generally viewed as scientific, particularly perception theory – or at least some parts of it. The rest of psychology, including psychopathology and learning theory, is still in the process of becoming a science or gaining scientific recognition. Some psychologists claim that in the psychological research they carry out, they follow procedures known as scientific and that this elevates their research to the status of a science; therefore, their field should be recognized as such. Many psychological discussions still appear in the philosophical literature, including the discussion of the question: Does psychology deserve the status of

[1] This is not quite accurate: in German-speaking countries, the concept of "dogmatic sciences" is still common; it denotes theology, legal studies, and such. This comes up in many cross-linguistic debates, irritatingly in attempts to clear confusions and confusingly in attempts to gloss over disagreements about what makes science empirical.

a science and, if so, which of its theories belong to science proper and why? Some psychological research is obviously not scientific, or not yet.

In this sense, perhaps philosophy is the research into questions that have not (yet) developed into sciences. And perhaps it is the hothouse of domains of interests and research destined to go out into the world and gain scientific status. This was the idea that the great philosopher Bertrand Russell advocated early in the twentieth century (in his rightly celebrated introductory *The Problems of Philosophy*). He did not say, however, what examination a field or a theory should pass in order to graduate as a science proper, so we do not know if, in his view, philosophy itself might one day pass the same test. He did want this: he said his life ambition was to contribute to the process of philosophy becoming scientific. He pointed out that one condition for a theory to be scientific is accessibility – at the very least, a theory must be on public display and clear before it can be declared scientific. Russell raised the level of clarity of philosophy to such a height that those whom he influenced speak and write much more clearly than was the rule before his time. We hope that, at least in this respect, he has influenced us as well, that he has taught us how to be a little clearer than we would otherwise be. It is not easy to express oneself clearly, least of all in philosophy.

Russell wanted both science and philosophy to be as free as possible of obscure language and mystical ideas. He appreciated every case of a science being liberated from the yoke of philosophy; this is a liberation movement of sorts. Apart from obscure language and mysticism, what is this yoke from which science should free itself? We discuss this question later in this book. For the time being, however, let us make do with the mention of just one important idea about the difference between science and philosophy, one that has gained common recognition. Philosophical discussions may raise doubts about any statement, no matter how obvious it seems. Scientific discussions are more limited: they take much for granted. For example, all discussions about any theory of chemistry leave no room for doubt about the existence of matter or water; one who is doubtful should move to the seminars of the philosophy department. This, to repeat, is common wisdom. Being philosophers, we permit ourselves to

doubt that it is true. Is it? If yes, why? If not, why is it so popular despite its being erroneous? We return to these questions in due course as well.

The Practical Side of Philosophy

All this may lead to the conclusion that, unlike science, philosophy is devoted to discussions of questions that have no practical significance, discussions that bear no useful fruit. Not so: although much of the effort to do away with skepticism is useless (as well as uninteresting), many of the interesting questions discussed within philosophy are practical and many of the interesting questions discussed within science are not.

We find nothing dishonorable in discussions that have no practical value, especially when they are interesting and more so when they challenge our prejudices. Moreover, even if one does not value impractical questions, one has to admit that some of the most impractical discussions turned out in time to be of great practical value, so that even the preference for the practical has to make room for the impractical. ("What is the use of a child?" Benjamin Franklin asked rhetorically in this context.) Moreover, we do not quite know what we consider practical; this depends on our values, and the discussion of values traditionally lies at the very heart of philosophy.

For example, the Copernican Revolution was of great practical value because it improved astronomical predictions, which determine future calendars; as long as most people are religious, the calendar is of tremendous practical importance. Indeed, although the Church of Rome officially questioned the theoretical status of Copernicus' theory, it admitted its practical value and even had missionaries teach Chinese astronomers how to use it. The distinction between use and assent was so tremendous that the terminology of the Catholic Church at the time distinguished clearly between practical and philosophical valuation, where the philosophical assent to a theory was the assertion that it is true. Yet, it was the impractical side of Copernican astronomy that mattered, said Galileo, thereby risking his life. It was the root of the scientific revolution that, as it happened, triggered the industrial revolution.

The great philosophical question of the time was: Is it better to follow tradition or to trust one's own judgment? This question is not as easy as it sounds because we know that individual funds of knowledge are much poorer than the traditional knowledge – the latter is the product of efforts made over generations in the society in which the individual lives. No single individual possesses so much knowledge, and even combining all the knowledge of any group of friends or colleagues is no substitute for traditional knowledge. To avail oneself of a significant portion of public knowledge, one has to integrate into society and abide by its rules. We do not know what this amounts to, but clearly it is significant.

Many conservative thinkers find themselves, against their will, leading revolutions of all sorts: intellectual, scientific, moral, and even political. Copernicus and Galileo are examples as are the many people who followed them and agreed that tradition is no substitute for individual freedom of thought, that it is impossible to demand people to follow tradition when they see its defects no matter how valuable it may be. This attitude about tradition, the moderate skepticism about it, is one that is very common in the West, but it received articulation only after World War II. This very articulation is the achievement of recent philosophy – of Karl Popper, to be precise. It is the outcome of a most abstract research project and is of great practical value as individual freedom.

So much for the praise of impractical thinking. Again, we deem impractical thinking essential for cultural existence and, therefore, of the highest practical value for the extra worth that culture brings to our lives. Nevertheless, one way or another, this book centers on philosophical questions known to have valuable practical implications – simply because this is a sadly neglected aspect of philosophy that creates much harmful misconception. Also, we admit that we like to be helpful.

Some of the practical implications of philosophy derive from philosophical theories. An obvious and well-known example is Marxism, which is a philosophical theory that made great change in the world of political and economic practice. Unfortunately, some of these changes were for the worse; fortunately, not all of them were. Nevertheless, this is a different matter: after we agree as to what philosophy is and that it has practical implications, we may continue the discussion and find

out under what conditions which practical implications of which theories are good, which are bad. So we should first take note of how Marxism – like many other theories – has practical implications, and then ask which of these are good and which are bad and why. Some may say that this is irrelevant because Marxism is not a philosophy but rather a science. This idea was common among followers of Marx during his lifetime and even later, but it is no longer popular. If one is tempted to cut things short, saying that philosophy has no good practical implications, we can likewise cut short the discussion and mention that some of the greatest and most influential ideas began as philosophical theories, including the ideas of the unity of humanity, equality before the law (*isonomy*), and democracy.

However, here we claim more: practical implications of philosophical discussions are not limited to only politics or morality; they appear in many other fields, including science, technology, and even aesthetics. We return often to this very point, and we wish to dwell on the good implications rather than the bad because they are more interesting and more challenging: bad results are easier to achieve and less interesting than good results.

The History of Epistemology

In a sense, philosophical discussions take place in every culture because almost everywhere people discuss the following and similar questions, which traditionally count as philosophical: How is life maintained? How did it start? What happens after death? What is the good life? What is the good society? How is error to be avoided?

The last question, how can we avoid error, is the toughest of them all. Here, with one exception, all traditions offer the same answer: *follow me closely*. The exception is a Greek tradition and all of its derivatives (including the modern scientific tradition). It broke away from the generally received answer, thus opening the door to what Socrates called philosophy, and more so to what we now call philosophy. (The difference is that Socrates decided to ignore the sciences that were popular in his day – mathematics, astronomy, physics, biology, and many other studies – and centered exclusively on the wish to lead a worthwhile life and to spread the idea that this activity is the most laudable.)

Usually, our culture is identified today as rooted in both ancient Israel and ancient Greece. The Greeks dealt with the following two questions that other cultures rarely discussed except under Greek cultural influences:

1. What are the explanations for what regularly happens in the world? and
2. How can theories be proved?

When discussing the first question, Greek philosophers eventually developed the theory that the physical world consists of four basic elements: earth, water, air, and fire. This theory is not unique to the Hellenic world; indeed, the Chinese also included wood. Either way, this theory is false, as every schoolchild should know. But it is a powerful theory nevertheless; to see its power, consider vegetation. Trees are the products of earth and water; watering the earth is necessary for growing plants; plants wither and then turn back into a type of soil or burn and turn into fire, air, and earth. This was just one theory; many others were present in ancient Greece. Discussions of the questions that these theories came to answer were more common among the Greeks than among other peoples. More than a thousand years after the decline of ancient culture, its heritage gave rise to the diverse modern sciences that have propagated in other cultures with few or no traditional Greek roots. It remains unclear why it is that, of all peoples, only ancient Greece nurtured those who actively sought such explanations.

Historians of culture have recently called the early modern period of Western history "the Renaissance," meaning the rebirth of ancient culture, meaning the wish of thinkers and artists of that period to revive ancient culture. Their chief drive was the wish to revive antiquity on the supposition that the ancient world was superior. The Renaissance thinkers considered great only ancient art and writings on matters religious, philosophical, scientific, and – perhaps most important – political. The revival of the splendor of the ancient Roman Empire was Machiavelli's only motive and the reason for his tremendous popularity that overcame the smear campaign against him – perhaps the worst smear campaign in history.

This craving for ancient glory was not specific to the Renaissance though. The thinkers of the Middle Ages felt the superiority of antiquity even more profoundly, yet they did not expect to do much about

it except wait for it with strong yearnings. The Renaissance thinkers had more self-confidence and more readiness to act, so their most important leaders were artists – architects, sculptors, and painters. Their poets and writers were much less influential.

The greater Renaissance thinkers soon discovered that the most important contribution of Greek culture to the world is the idea of intellectual and moral independence: think and do what you think right, not necessarily what your parents and teachers taught you. Exercising independence, they went beyond ancient Greek culture; when the Renaissance was over, it gave way to the Age of Reason. (Historians usually consider the Renaissance to be the period between 1400 and 1600 and the Enlightenment Movement or the Age of Reason to be the period between 1600 and 1800.) In the Age of Reason, science flourished. The philosophical question that engaged thinkers most then was the last of the questions listed at the beginning of this section: How is error to be avoided?

In one sense, this is the question to which every culture devoted much effort. Every culture we know is intent on self-preservation and, it seems obvious, this is only possible if not too many members deviate from the traditional culture. It seems equally obvious that this is possible only if deviation is viewed as error and error is avoided with much investment of energy – in education, preaching, and policing. (In the Middle Ages and more so in the Renaissance, preaching was more effective than policing, and politicians took it very seriously, unlike today, when so many of us consider preaching an empty ritual.) The ancient Greeks were different: they did not think that following one's own tradition is so obviously right. Many of their great thinkers preferred innovation to tradition. (Democritus, the great inventor of atomism, said that to discover a law of nature is better than to be the emperor of Persia.) Then the question arose: Who is a teacher worthy of attention? For clearly, when people disagree, some of them must be in error. Is disagreement necessary, then? Or is it possible to avoid error when presenting interesting ideas?

The field in which this question is discussed is *epistemology*. The word *epistēmē* was translated into Latin as *scientia* and into English as *knowledge* (also, the chiefly Scottish *ken*, as in "beyond my ken," which is akin to the German *kennen*, "to know"). Since Plato and Aristotle, quite a few thinkers – from the time of ancient Greece to the time of Einstein and beyond – viewed science as the set of ideas that is absolutely free of

all error. This was the standard view. Is error avoidance at all possible? This question is still under discussion to this day. It is one of the main questions that we discuss in this book.

Whether science in the sense of error-free knowledge exists is still in dispute. This sense is often confused with the sense in which science exists, and it is the business of the science faculty of most modern universities. The confusion amounts to the claim that what the faculties teach is error-free, a claim that has undergone a splendid empirical refutation known as the crisis in physics around 1900. Before the end of the nineteenth century, the view became ever more popular that science is error-free, that scientific knowledge is knowledge proper. This had powerful political implications. Both science and modern industry are peculiar to the West. The conclusion was that the success of industry is due to the success of science so that social and political progress is inevitable. Industrial success made imperialism possible, and the set of ideas that went well with it brought about its philosophical justification: the aim of imperialism was to civilize the whole globe. (The leading imperialist pundit of the time was the writer Rudyard Kipling; he called it "the white man's burden.") But this set of ideas was shattered with the evolution in physics in the early twentieth century. Many physicists then tried to return to religious tradition, as Russell sadly observed. In response, he and other rationalist philosophers said that even if science is not utterly free of error, its ideas are the best because they are the most probable. It is one thing, however, to believe that a certain move in a game leads to good results more often than bad results and another to believe that a certain use of medication leads more often to the gym than to the graveyard (residence in the graveyard lasts too long for the possibility of repeating the procedure afterwards). This leads to interesting consequences, such as the moral dilemma involved in the use of immunization, which rescues millions and kills only a few. Should this return us to imperialism under similar justification? If not, why not? We return to this later in a subsequent chapter.

Error Avoidance and the Foundations of Knowledge

How, then, can one avoid errors? The first and default answer is, follow tradition. It is the oldest and, thus, older than all philosophy. The