4. Classical Epistemology

Plato said that knowledge was “justified true belief”. That seems like a reasonable definition. Let's look a little closer. The first thing you might notice is that it is a personal matter. What is “justified” from my point of view may not be from yours. Because there is a subjective element in its definition, we may argue about what does or doesn't count as “knowledge”.

The second thing you might notice is that a belief can be true but not knowledge if it is not “justified”. If I bet on a horse because I guess it will win, and it does, I can say that I “believed” it would win but I didn't “know” it. A good guess can get you a truth, but it doesn't count as knowledge unless you have a good reason for believing it.

Finally, and most importantly, knowledge has to be “true”. Epistemology, the study of knowledge, is all about the truth. It is not about finding things to believe. As children we are given plenty of things to believe. As we grow up we learn to doubt, and much of Western Philosophy is the search to recover that lost certainty of childhood. The story begins with the first reasonable doubt.

Paradox and the limits of reason

Zeno of Elea, perhaps around 470 b.c.e., told a story. He said that Achilles, known to be the fastest man in Greece, was going to race a tortoise. Being generous, Achilles gives the tortoise a head start. It sets off further along the course. The tortoise moves, slowly but constantly. Achilles must catch up.

To catch up Achilles must first reach the point that the tortoise started from. When he reaches there however, the tortoise has moved on. So now Achilles must reach the point the tortoise has moved on to, but when he does the tortoise has moved on again. Because each of these phases takes time, and the number of phases is infinite, the whole process must go on forever. In other words, Achilles can never catch the tortoise!

Zeno is doing what we would now call a “thought experiment”, and is using pure reason. The conclusion he reaches is “counter-intuitive”. Most people would be prepared to believe their intuition and say that it is also “counter-factual”, that is to say, in real life Achilles would catch the tortoise. When pure reason produces a conclusion that is the opposite to real life it is called a “paradox”, and the conclusion is called “absurd”.

Zeno was probably a follower of Parmenides, who argued that motion didn't really exist. Parmenides said that no thing can become nothing and no thing can come from nothing, and there is no state of true nothingness. Think about this for a while and you can appreciate how everything must be (in some sense) one thing. This is called “monism”. In Parmenides' version, nothing can move or change.

Nevertheless, things certainly seem to be moving and changing. This must be something to do with how our minds work. So Parmenides set about trying to work out the rules of thinking. To sum up his philosophy, the world looks the way it does because of our nature, while reason can see beyond the limits of our nature and shows us the oneness of reality.

If Zeno was using paradoxes to show that motion didn't exist, it might have backfired. The stories are reported to us by later writers, who were critics. They made various arguments against the idea of motionless “monism”. For example, they would say that Zeno mistakenly assumes that space can be divided up into infinitely small pieces. In fact, it is made of indivisible pieces (atoms, or quanta). Although passing through a piece of space takes time, there aren't an infinite number of them between Achilles and the tortoise, so it only takes him a finite amount of time to catch up.

Recently, I heard Marcus du Sautoy, who is a Professor for the Public Understanding of Science at Oxford University, making a different argument. He said that modern mathematicians, since the invention of calculus in the 17th century, have solved the paradox. To explain how, Du Sautoy asked us to imagine a cake, which you divide up, first into a half, then a quarter, then an eighth, and so on. You will notice that you can never have anything but one cake. Mathematics deals with the question by taking an infinite division to be equal to one.

It is interesting that people should think of this paradox as a problem or a question, that is to say, something we can "solve" or "answer" using reason. What the paradox really shows is that we can't rely on reason. We need it, but without the test of experience it is not reliable. Reason tells us that Achilles would not catch the tortoise. Of course, we can find different ways of thinking to account for the facts, as Du Sautoy tells us that mathematicians have done, but why would we bother if we didn't *already* believe that Achilles *would* catch the tortoise?

Zeno was keen on paradoxes. Here's another one he is said to have told. Imagine an arrow that has been fired at a target. At any instant in the arrows journey, it occupies a point in space. At whatever moment we choose it must be at a single point in space. Therefore it has to occupy an infinite number of positions. How can it ever reach the target? This is called the paradox of motion.

Aristotle, who retold this story, refuted it saying that "a duration is not made of nows". To put it another way, a line is not made of points. Marcus De Sautoy backs this up, explaining that in the 17th century, this paradox was also solved by calculus. Very briefly, every moment has another moment that precedes it, creating a finite time and space between them. This gives you a way of calculating the arrow's speed. If it has speed it must be in motion. This way of dealing with it is sometimes called the "at..at.." method.

Aristotle and the mathematicians used reason to break the paradox. This is admirable. We need to find new ways to make sense of these things. Aristotle's "intuition" that a line is not made of points is one you may or may not share. We have good reason to think that its a more useful intuition than the alternative, which is that a line *is* made of points. Usefulness however, is not truth. These are contending intuitions and we can hold one, the other, or accept that they are equally valid.

The point is that Aristotle and the mathematicians are reasoning after the fact. I have seen flying arrows and they *do* hit their targets. I haven't seen Achilles catch a tortoise (this could never happen because Achilles does not really exist!), but I have a powerful intuition that he would. Whether Zeno intended it or not, his paradoxes don't show that reason reveals a motionless reality denied to our senses. They show that experience beats reason, and that if reason *can* be wrong why should we ever believe it?

Sophistry and relativism

At more or less the same time that Zeno was in Elea, a man called Protagoras was teaching in Athens. What influence either had over the other is impossible to say for sure. All their ideas survive only in fragments and in the reports of later writers. One way or another Protagoras came to doubt the power of reason. In fact, he came to believe that there is no way to judge between opinions, and there is no way to ever find the truth. There is only a continuous struggle to assert your opinion (your personal truth) over other people's.

He is believed to have written a book simply called "Truth" and another called "The Throws" (the title refers to wrestling). The latter contained his most famous saying "man is the measure of all things". In these books, Protagoras claims to show that there is no way to judge between different opinions, just as wrestlers aren't judged but win if they throw their opponent. All of those clever

teachers who claim to be able to train you to see reality are really just transmitting their personal opinions. In a sense it is only individual people who decide what is or isn't true.

This idea is today called “relativism”. It means that ideas can only be judged relative to other ideas. There is no absolute truth by which we can say that anything is true or false, good or bad, right or wrong. When it comes to political debates, Protagoras would seek a compromise, given that there was no absolute truth to appeal to. He did allow that there were “vicious” and “virtuous” ideas. He saw his aim as to promote virtue, which seeks a balance between opinions.

There are some suggestions that Protagoras may have been connected to powerful people, and taught the arts of governance and rhetoric. Plato reported that he taught about how to run a household and what today might be called “life skills”. He also promoted “virtue”, which reminds me of moralism in the Confucian style, aimed at making a good and harmonious social order. If so, it would not surprise me if his students were mostly potential Judges and Governors.

I think he might have exemplified a trend. The 5th century b.c.e. was the high point of “Athenian democracy”, when the city dominated the region and salaried (some say) half of its 20-40,000 free citizens (about 10-20% of the total population). Any of them could, in theory, rise to high office, hence there was value in hiring teachers who could teach you the skills of personal advancement. I imagine there was something like the “self-help” industry we have today, with people were making a living by selling the secrets of success.

All of this annoyed some people. Teaching for the sole purpose of personal advancement had its critics. The teachers were called “Sophists”, derived from the word for knowledge and thanks to these critics, the word “sophistry” has entered the English language to mean convincing but false reasoning.

Critical reasoning

These days, a man like Socrates wouldn't be called a philosopher. He had no qualifications, no academic post and no peer reviewed publications to his name. He would be regarded as a street entertainer at best, or maybe just a crazy vagrant. His method was to walk around the busy centre of Athens, the “Agora”, asking people questions, like a Vox Pop journalist, only a bit more interrogative. No doubt when he saw a Judge, or a man of Politics, he would go for them, which probably helped him acquire a following of admiring youth.

He was seen as a teacher, so was called a “sophist”, but he would certainly have rejected this label. Firstly, he did not charge money. He was not part of that life-coaching profession that taught the secrets of success. You can see in Socrates' thought a direct rejection of the sophist method, which aimed at cultivating confidence and the art of appearing knowledgable. Secondly, Socrates would have rejected the label of “sophist” because he did not claim to be knowledgable. In fact, he claimed to know nothing at all.

One of Socrates' young followers is said to have visited the Oracle at Delphi. This was a sacred place to the Greeks, where the voice of a God could be heard giving infallibly true (but cryptic) answers to your questions. The young follower was presumably trying to choose a teacher from the large number who had appeared in Athens at this time. He asked the Oracle who was the wisest man in Athens, and the Oracle replied “Socrates”.

Socrates himself found this story a little confusing. He had always claimed to know nothing. How could he be the wisest man in Athens? Some reports say that he visited the Oracle himself in pursuit of the answer. Eventually, it came to him. Unlike the sophists, Socrates knew that he knew nothing.

At the time, it was popular to write books. Socrates however, believed that writing books is the opposite of conversation, or “dialectic”, which is the best way to do philosophy. On top of that, writing books is transmitting your wisdom, yet Socrates denied that he had wisdom. He was always developing his mind, and believed that it was never complete enough to write anything down.

His favourite method was to search for meaning. He would ask people what they meant by the words they would typically use. For example, Athenian citizens were expected to participate in huge, noisy trials of people accused of crimes. Socrates might ask them if they believed in justice, and when they replied that they did, he would ask “what do you mean by Justice?”. This method is sometimes called “Socratic” or “critical” reasoning.

The effect was typically to show that people don't have clear ideas of important concepts, like justice, truth, beauty, honour, etc.. This is the key to Socrates' paradoxical wisdom. The questioner is aware of his uncertainty, while the poor victim of the interrogation has his ignorance exposed and authority undermined. As you can imagine, Socrates made some people very unhappy. His young followers however, were no doubt impressed by the way he punctured the arrogance of their elders.

Essentialism

Socrates, when he was very old, was eventually accused, tried and executed by his enemies. One of the charges against him was “corrupting the youth”, and one of those youth went on to write a series of dialogues in which Socrates is a key character. The writer became known by his nickname, Plato, and went on to create a school of his own. He wrote on so many questions that some have seen his work as defining philosophy itself. The 20th century philosopher Alfred North Whitehead famously described all Western Philosophy as merely footnotes to Plato.

One way that Plato was influential was by saying that the mark of a great mind was the ability to concentrate wisdom into short, memorable phrases. In my view, this is true, but we are talking about the mind of an artist, not a philosopher. The ancient Greeks' love of what they called “maxims” or “aphorisms” (and their assumption that these characterised wisdom) has helped to create one regrettable feature of modern Western Philosophy, its preoccupation with decipherment.

Nevertheless, where Plato took Socrates' method of reasoning is easy to grasp and directly relevant to epistemology (which I take, via Plato's definition, to be the search for truth). By undermining the arrogance of Athenian authorities and discrediting the Sophists, Socrates swept away the false wisdom of the past so that it can be rebuilt on stronger foundations. The key to his method was the search for the meanings of words. In definitions we find the “essence” of things, their pure and certain truth.

Plato went as far as to suggest that these essential forms are real, more real, in a sense, than physical things. Why he thought this is best understood with an example. Think of an idea, let's use the one we mentioned earlier, Justice. Is it something you can see, touch, hear, smell, etc.? Plato would say that it is something you simply know. It doesn't require physical evidence. We simply have innate contact with the essence of Justice.

You can see how the idea of Justice seems to remain constant whether or not there is any of it in the world. You can also see how we can struggle to understand Justice even though it is something that we all feel we already know. One way to make sense of this is to imagine that we are born with the idea of Justice, but in the course of our physical lives we lose a clear sense of it. Philosophy is the process of relearning what we have lost.

Now, Justice is one thing, a real physical object you can touch is another. Does the same rule apply? Imagine you see an animal and identify it as a horse. Now ask yourself, how could you do that

unless you had the idea of a horse before you saw it? When occasionally you see something that is similar enough to be denoted by the word, you call it a “horse”. In fact, no horse you will ever see will exactly match your idea. Physical things are variable and imperfect, and only ever approximate the unchanging, perfect forms, that are called “essences”.

Plato imagined that life in this physical world is like living in a cave. All of the things we see, hear, smell, taste and touch are like shadows dancing on the cave walls. The man inside the cave can guess that there is a world outside, but the shadows it casts give only the faintest clue of what that world is. Our senses give only a faint clue to the reality, or essences, of things, which philosophy discovers. Doing philosophy, for Plato, is stepping out of the cave.

Practically, it is all about examining meanings, just as Socrates had done. First you take an idea, like the one identified by words like “Justice” or “Horse”. Then you ask what this idea consists of, that is to say, the ideas from which it is made. Then you examine those ideas, and so on. Eventually, you will discover (or in a sense re-discover) its essence, by which we mean whatever makes it what it is and distinguishes it from everything else.

When you have discovered the essence of something you have shown (at least to yourself, and hence can be sure) that you “know” it. According to Plato, you have something that is superior to the fleeting, imperfect sensations of the physical world. You have certainty through contact with the hidden reality accessible only to philosophy.

Logic

If you find all this talk of hidden realities a little hard to swallow, you are not alone. At least one of Plato's students disliked the way it takes philosophy into mysticism. There is another, more acceptable way that we can think of essences. Consider our horse again. It is a large, long-faced, long-legged, fine-furred, grazing mammal. When all of these qualities occur together we call the thing in front of us a “horse”. These are all physical qualities that belong to that thing.

Aristotle, who spent seventeen years studying at Plato's school, offered an alternative way to think of an essence. It is not an idea that exists before or independently of the physical thing it relates to, but the quality (or bundle of qualities) that a physical thing has that make it what it is.

The method of critical reasoning therefore, finds essences simply by identifying the qualities that define something. For a relatively easy example, take the horse. If you say “it is a grazing mammal”, I might reply “What makes it different to a sheep?”. You might answer “it is bigger”, and so on. Step by step we will discover its essence.

“Justice”, might be a little more tricky. If you say “it is when someone is punished for a crime”, I might reply “So if I cut off someone's head for stealing a biscuit, is that Justice?”. You might answer “No, the punishment must be proportionate to the crime”, and so on. Finding the essence of Justice may be more tricky than finding the essence of a horse, but the procedure is basically the same. In the case of Justice, trying to express its essence is, in practice, finding the words that describe all the situations in which we would feel that justice is being done.

Aristotle not only demystified the pursuit of essences, but went further. He was aware of earlier Greek philosophers like Parmenides, who were interested in how we think. In fact, Parmenides believed that the world was one unchanging, motionless thing into which our minds impute space, time and causation, that is to say, our minds add these things to the world to produce experience. Thinking about how, Parmenides described the rules of mental operations. Aristotle simply took these rules and used them to describe how new knowledge can be created.

For example, if I say that a horse is a mammal, and I know that mammals produce milk for their young, I can produce the new piece of knowledge “horses produce milk for their young”. There are other ways to deduce new knowledge. For example, if I know that no horses can fly and that the animal in front of me is a horse, I can deduce that the animal in front of me can't fly. These are the two basic rules of logic that Aristotle described. He added several more.

Over many generations, philosophers since Aristotle have been attracted to, and added to, the rules of logic. These rules are attractive because they give us a sense of certainty. Notice how in the example above, I know that the animal in front of me can't fly. I don't need to test it. I know that this fact is true because it is derived from other facts I know to be true.

Whether you think of logic as describing what happens in the human mind, as Parmenides did, or if you think of it as describing things in the outside world, it doesn't affect its power to produce knowledge. It is simply a question of the validity of the rules, and the truth of the statements we put into them. If the statements are true and the rules are valid, the product is true.

In modern times, the application of formal descriptions of logic played a major part in the development of computing. It is easy to see why. If consistent rules produce truths mechanically, then in theory, they can be done by a machine. Computers take statements in the form of binary code (strings of 0s and 1s) and subject them to rules (sometimes called “logic gates”) turning them into different statements. When these mechanical gates were miniaturised such that strings of 0s and 1s could be represented by jumping molecules, machines that could do millions of operations simultaneously became possible. This gave rise to the computing power explosion of the late 20th century.

Scepticism

For many people, using critical reasoning to discover essences and using logic to create new knowledge is enough. You can learn a lot about the world this way. Aristotle himself wrote several large books about everything from the physics of planetary motion to poetry. If knowledge is justified true belief, then Aristotle's copious writings contain an awful lot of knowledge, with reason and logic providing strong justifications.

The only sticking pointed is the word “true”. The big question remains: how do I know things for sure? When it comes to certainty, reason and logic have their limits. Consider for example, how Aristotle reasoned that all male animals have more teeth than females of the same species (this is not true). Generations of people are said to have believed this because it was rationally deduced, apparently, from his theory of bodily humours.

Logic seems to create one truth from another, building structures of knowledge in which all the parts depend on the others. One small error of observation and logic can lead to grand edifices of knowledge standing on weak foundations. Let's not forget the paradoxes with which we began this essay. If reason can produce absurd conclusions, how can we ever have faith in it?

Aristotle broke away from Plato's school (which by the way, was called the Academy). Others would break away later, setting up their own schools, such as the Stoics from example, who argued that there are some things that are just obviously and incontestably true.

The Academy however stayed firm, asserting that reason and logic can produce many things, but not certainty. Because we can doubt all knowledge and find counter arguments for every argument, and because both our reason and our senses are fallible, every assertion of “truth” is in some sense opinion. This rejection of the possibility of certainty has become known as “scepticism” and it became mainstream in the late classical period.

From reason to revelation

Some people even began to argue that our inability to find certainty is not such a bad thing. The modesty of Socrates was true wisdom, giving him the tranquillity of mind to resist attacks and even to face death with equanimity. Likewise, scepticism can be good both for the mind and society. Freeing us from dogmatism, we can judge ideas by their usefulness and change them as new evidence and new needs arise. This idea inspired a school of thought known as Pyrrhonism.

This kind of thinking arises when the idea of mental tranquillity becomes more important than the need for truth. Although it arises from philosophy and the pursuit of truth, it is nevertheless a counsel of despair. That is to say, it effectively admits defeat and turns toward satisfaction by other means. It is not really philosophy, but its opposite.

Plato's Academy resisted Pyrrhonism, but gradually drifted toward the cultivation of useful states of mind, something akin to the modern obsession with “life skills”. It seems that by the end of the classical period, Philosophy had reverted to the sophistry from which it was born.

Can we really have tranquillity of the mind without certainty? Some people say that it is better to be happy than right, but this is to ignore the fact that reality matters to us. Personally, I have tried thinking about believing things because they are useful, and I really can't. I do not believe I am alone in thinking that being right, that is to say, having some sense of what is true and what is not true, is a crucial part of happiness.

What happened next in Western philosophy is, I think, evidence that certainty is important. While the various schools of scepticism died off, they were replaced by institutions of thinking that put a new kind of absolute certainty first. Illustrative of this change is the work of a man called Augustine of Hippo, who lived around the end of the 4th century c.e., and beginning of the 5th.

As a sceptic, Augustine argued that we must question all our knowledge in pursuit of truth and certainty. Sceptics argued that when we see something we can't be sure that it is real, but Augustine noted that we can at least be certain that we see it. Other sceptics might respond that certainty of our senses is meaningless because we can't know it relates to anything beyond us. Augustine seems to have felt that such certainty is necessary and flows like our faith in our sensations into faith in general. Augustine turned from scepticism to Christianity, and is now called a Saint.

The conversion of St Augustine seems to me an excellent parallel for the progress, and in a sense death (or abeyance), of philosophy. Early ancient thought gave us paradoxes that demonstrated the limits of reason. In the pursuit of truth, we applied critical reasoning to ideas, producing the natural philosophy and logic of Aristotle. Yet, the need for certainty pushed philosophy on to universal doubt and scepticism, that only faith could rectify. Out of ancient philosophy came the Christian dogma of the middle ages.

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