

(4) PLATO

Here I summarize the main points in the work of Plato that are in some way relevant to our discussion of the evolution of the ideas of modern physics. Plato of course ranged very widely over many other topics, and his ideas about physical reality have to be seen in this wider context- for this reason I also discuss questions about, eg., justice, that were essential to the development of the theory of Forms. Almost all the writings of Plato have come down to us from later translations by Islamic writers- the originals have been lost, apart from the *Timaeus*.

(i) PLATO- LIFE and WORK

LIFE of PLATO

The dates of Plato's life are usually based upon Eratosthenes' calculations- according to these, he was born in 428-7 B.C. and died at the age of eighty or eighty-one at 348-7 B.C. Plato came from one of the wealthiest and most politically active families in Athens. One of Plato's uncles (Charmides) was a member of the notorious "Thirty Tyrants," who overthrew the Athenian democracy in 404 B.C. Charmides' own uncle, Critias, was the leader of the Thirty. However, his stepfather Pyrilampes was apparently a close associate of Pericles, when the latter was the leader of the democratic faction.

Plato's real name was apparently Aristocles, after his grandfather. "Plato" seems to have started as a nickname (for platos, or "broad"). He came under the influence of Socrates while a young man, and was obviously very deeply influenced by him and by his 'Socratic method' of inquiry. This method was based on what was called an 'eristic' exercise, apparently introduced to Athens by Protagoras- this was a kind of a debate in which the aim was to demolish the opponent's position by exposing logical or other flaws in the arguments. Doubtless used a form of training for lawyers and politicians, it was transformed by Socrates and others into a means of inquiry into the general nature of concepts. Very little is reliably known about Socrates. He apparently lived from c. 470-399 BC, during the Athenian golden age of Pericles, and then during the Peloponnesian War with Sparta. In 399 BC he was found guilty of both corrupting the young, and believing in false Gods. The former charge referred to his use of dialectic inquiry, and Socrates had many young followers apart from Plato. He was sentenced to death, and took his own life by poison while in the company of his colleagues and friends.

After the death of Socrates, Plato left Athens for Megara, and then went on to travel to Cyrene, Italy, Sicily, and even perhaps Egypt (Strabo claims that he was shown where Plato lived in Heliopolis in Egypt). While in Syracuse, in 387 BC (at the age of about 40 yrs), he became the instructor to Dion, brother-in-law of the tyrant Dionysius I. At some later time, Dionysius became annoyed with Plato, and tried to sell him into slavery. Having escaped this fate, Plato returned to Athens and founded a school, known as the Academy, whose name came from its location roughly 1.5 km outside Athens- a grove of trees left by Academus/Hecademus to the Athenian citizens for gymnastics. This location turned out to be ideal for Plato's purpose, which was to found a school of philosophy and turn his teachings into practise. It was surrounded with a wall made by Hipparchus, and contained statues, temples, and sepulchres of illustrious men, and it was planted with olive and plane trees. The olive trees, the story goes, were reared from cuttings from the sacred olive in the Erechtheum. Within this enclosure Plato had inherited a small garden, in which he opened his school.

Except for two more voyages to Sicily, the Academy was Plato's base and residence for the rest of his long life. These 2 trips are rather noteworthy. The first came after the death of Dionysius I died and his son, Dionysius II, took over. His uncle/brother-in-law Dion persuaded the young ruler to invite Plato, with the purpose of teaching him become a philosopher-king of the kind described in Plato's 'Republic'. This trip, like the last, ended in failure- within a few months the younger Dionysius had Dion sent into exile and put Plato became under house arrest as a "personal house guest". Plato eventually succeeded in returning to Athens in 365 B.C., where the uncle Dion was already installed in the Academy. Four yrs later Dionysius summoned Plato back to Syracuse, but Plato refused the invitation- in response Dionysius sent a ship, with Archdemus, one of Plato's Pythagorean friends, to fetch him. Once again, however, Dionysius imprisoned Plato in Syracuse, who was only able to escape with help from his Tarentine friends.

At this point the uncle Dion left the Academy, gathered an army and invaded his own homeland, displacing his nephew from the throne. Soon after he was assassinated and Sicily was reduced to chaos. Plato took no further part in such adventures, and apparently lived out the last thirteen years of his life quietly at the Academy, teaching, writing, and overseeing the activities.

The Academy: The long-term effects of the Academy on the history of the West can hardly be over-estimated. It

created a pattern of enquiry, elaborated and institutionalised by future teachers, which has survived to the present day, and which has exercised an incalculable influence on Western history (as well as the development of the Islamic world). Initially the term referred to the 'Academic sect', and it was some time before the term 'Academy' acquired its present meaning. The name Academia was frequently used in philosophical writings, especially in Cicero, as indicative of the Academic sect. Many of Plato's pupils appear at one point or another in the later of Plato's dialogues. Certainly the best known was Aristotle, who himself trained the young Alexander of Macedon (later Alexander the Great), and whose categorisation of the fields of knowledge and enquiry is still reflected in modern university faculties and departments.

Incredibly, the Academy lasted for nearly a thousand years, and had a long and interesting history. In its later stages (called by Cicero the 'New Academy') it was largely sceptical in its teachings, denying the possibility of absolute truth. Thus Carneades argued that absolute truth must be founded on reason, conception, or sensation; but as reason depends on conception and this, he argued, depends in turn on sensation, and our sensations are by no means sure (we cannot say whether they really correspond to the objects that produce them), then all knowledge is always uncertain. Hence, all that we can attain to is a high degree of probability. While these ideas correspond much more with the modern point of view, they would probably have been rejected by Plato.

PLATO'S DIALOGUES

In the dialogues, Plato introduces and makes the connection between a wide variety of fundamental philosophical questions. Nowadays we tend to classify these questions into different philosophical categories- amongst these are Epistemology (the theory of Knowledge), Perception, Language, Philosophy of Mind, Mathematics and mathematical form, Ethics, Art, and Political Philosophy (with sub-categories dealing with Immortality, change and necessity, etc); the categorisation starting with Aristotle. It is interesting to notice what kind of questions do *not* appear in this list- most notable are questions concerned with history or the natural sciences. It is also important to realise that a quite different structure of understanding could have emerged in another context (and indeed does emerge in, eg., the philosophical frameworks of India and China). Moreover, Plato did *not* make any categorisation- he was not a systematic philosopher, trying to set up a rigid framework, and he preferred to emphasize the questions themselves, and the form in which one dealt with them, the dialectic form embodies in his dialogues.

The use of the dialogue form is almost unique in philosophy and elsewhere- the most notable exception being Galileo, some 2000 yrs later. Their use was obviously quite deliberate- it encourages a style of thought and inquiry. It also leaves the answers to questions wide open- it becomes clear from the whole that none of the questions have been answered, and that this is indeed fundamental to the whole view that emerges. In this respect the whole approach runs counter to the dogmatic approach of religion, and makes it quite different from the dominant philosophical traditions that emerged elsewhere in the world. In many places in the dialogues Plato encourages a healthy irreverence towards authority, and even towards himself and his own ideas (as articulated in the dialogues by Socrates). For example in the *Phaedrus*, Socrates argues that the words or text used in an argument are very superficial, that what matters is the meaning of the argument, and the 'discourse in the soul of the listener or participant'. The writing serve as mere reminders of the real meaning, and the dialectic is far more important. Here we are reminded not of the importance of the dialectic form, but also exhorted to ignore the details of what Socrates actually says in favour of the deeper themes being discussed. Plato had a deep distrust of mere wordplay, but nevertheless a fascination for language- for more examples of this see the *Euthydemus* and the *Cratylus*.

We do not know exactly when the dialogues were written, but using methods of 'stylometry', and by looking at the way the arguments in different dialogues depend on each other, one can see roughly in what order they were written. Traditionally they are divided as follows:

(i) **Early dialogues:** These were apparently written after the death of Socrates but before the first trip of Plato to Sicily (ie., between 399-387 BC). These include the *Apology*, *Charmides*, *Crito*, *Euthydemus*, *Euthyphro*, *Gorgias*, *Hippias Major*, *Hippias Minor*, *Ion*, *Laches*, *Lysis*, *Protagoras*. One can view these as perfecting the 'methodology' of inquiry and thought, and bringing into focus many of the important questions. There is also a set of 'transitional' dialogues, apparently written at the end of this period (ie., around 387-380 BC); these are the *Cratylus*, *Menexenus*, *Meno*.

One of the most important questions which these dialogues try to come to grips with concerns the idea of 'Virtue'. An example is provided by the *Protagoras*. Protagoras was a sophist- he made money by giving advice, a pursuit to which Socrates and Plato were opposed. Nevertheless they had high esteem for Protagoras himself. In this dialogue and elsewhere Socrates makes it clear that he rejects long speeches and rhetorical methods as a means of getting to the truth (Sophists were often hired to plead cases), and relies instead on dialogue and dialectical methods (although this does not stop him making a speech himself). The question that is put is- is virtue known intrinsically, or must it

be taught (indeed, can it be taught)? This leads to a deeper question, discussed in the *Meno*, which is- if it is known already, it needn't be looked for; but if it is not known, then it cannot be found, since one does not know where to look, or how to recognise it once encountered. The analogy here is with some object which we can, for the sake of argument, call a 'heffalump'; if we do not know what this is we will never be able to find out, and would recognise it even if we did see it. More generally, Socrates wants to know what it is the *Nature of Virtue*. Again, it seems that either we already know, or we never can.

Note that Socrates and Plato were also interested in a practical question here- how can virtue be transmitted from a virtuous father to his sons (mothers and daughters don't seem to enter into the picture), or from a teacher to his pupils? Plato may also have had in mind here the example of Alcibiades (450-404 BC), which appears in the later *Symposium*. Alcibiades was not only for a long time a pupil and even a lover of Socrates, but also had fought with him, and apparently saved his life in one battle. He was reputed to be both very handsome and talented. In 421 BC he entered politics, and had a long career in both Athenian politics and as a general- during which time he not only fought for the Athenians against Sparta in the Peloponnesian Wars, but also vice-versa. Many never forgave him for this betrayal, including Plato, even though Alcibiades later (410 BC) returned to the Athenian camp and fought successful battles against the Spartans and Persians. He was eventually assassinated by the Persians. Plato felt that he was too narcissistic and vain to benefit from the teaching of Socrates, and that virtue could not in this case be taught.

The answer provided by Socrates to the question at issue was interesting from many points of view. In the first place, one must distinguish between *knowledge* and *belief*. One can believe something to be true, and even be correct in this belief, but this is not knowledge unless one can justify the belief by arguments or by some chain of reasoning. The second and rather odd idea of Socrates was that the reason that we do *know* some things is that we are in fact immortal souls- so that things we know are things we have always known, and that this knowledge is *innate*. This argument seems from a modern point of view to be rather ridiculous (how for example does it take account of our knowledge of things that have only recently come into existence?), but it is clear that what Plato was really interested in was what would now be called *a priori* knowledge, ie., knowledge independent of experience. This is evident from the example he gives in the *Meno*, where one of Meno's slave boys is called over, and from whom an understanding of true results about triangles and squares is elicited, even though he previously knew nothing of geometry. Plato's idea was that these results are true independently of any experience of geometrical objects. In the 'theory of Forms' (below) the more general idea becomes clear. In any case, the basic point here, insofar as it refers to the idea of virtue, is that 'Virtue' is an idea on a par with geometrical ideas- and understood by immortal souls.

In the *Gorgias* we find the link being made to similar questions about the notion of justice- it is clear that an understanding of justice and virtue are closely related, since one expects justice to recognise virtue. Actually the discussion here is very weak- Callicles argues rather successfully against Socrates that the ideas of virtue and justice held by Socrates are those of a gutless philosopher afraid to take power and pleasure with both hands, and that philosophers are useless and incapable of defending themselves, or swaying the people. In the earliest of Plato's dialogues we learn how true this was, as we watch Socrates pleading his own case to the Athenian courts (although in the *Phaedo* Socrates's true faith in the immortality of his own soul is on display, as he ends his own life).

(ii) Middle Period dialogues: These are the most important of the dialogues- the *Phaedrus*, *Symposium*, and *Republic*. It is thought they were written roughly in the period 380-360 BC, during some of his most turbulent years. The main theme of the *Phaedrus* and *Symposium* is the understanding of love, beauty, and goodness, in their most ideal forms. This was quite central in the whole platonic philosophy, and must sometimes be understood somewhat differently from the modern context. Physical beauty figures large (and we recall the great importance attached to aesthetic considerations by the Greeks) but Plato was in fact very suspicious of Art and Literature, regarding them as superficial in the same way as writing is a superficial echo of thought. A proper understanding of beauty and love involves for him an understanding of virtue and goodness. There are amusing diversions in these 2 dialogues- another caustic caricature of Alcibiades, and another attack on the superficiality of the written word.

The middle period dialogues rely far less on the dialectic method than the early dialogues- Plato is now concerned to give a more connected exposition of theory. This attempt at building an intellectual system may have been spurred on by the legitimate criticism that the Socratic dialectic was very good for finding flaws in ideas but not much use for constructive thought. The *Republic* is the most important of all the dialogues (and, along with the later *Laws*, the longest), and in it the interlocutors Glaucon and Adeimantus rarely act as more than sounding boards. Although it also begins with an attempt to clarify further the meaning of ideas of justice and virtue (and notably, to explain how a just man can always end up happier than an unscrupulous man) the main purpose of the *Republic* is to expound a political philosophy- ie., to extend the concepts of justice, virtue, etc., from individuals to cities and states. Very briefly- this led Plato to contend that the best people to govern the ideal state would be those who have a full understanding of justice, etc., attained through philosophical reflection and dialectic. Amongst other things

this means that these 'guardians' would have seen beyond the world of everyday appearance to the world of ideas or 'Forms'. In this way Plato arrived at his Utopia of a state ruled by 'philosopher kings', who are themselves ruled or guided by the most fundamental or perfect Form, the 'good', which in its turn embodies or entails or brings about 'justice', a Form which is a kind of perfection at the human scale. The extended discussion of forms is illustrated by the famous 'Cave analogy' (see below).

(iii) Late Dialogues There is a set of dialogues often called transitional, between the middle period and the late period- these are the *Parmenides* and *Theaetetus* (sometimes the *Phaedrus* is also put in with these). They were apparently written about 360-355 B.C. Then, in the last period of his life come the Late dialogues, viz., the *Sophist*, *Statesman*, *Philebus*, *Timaeus*, *Critias*, and *Laws*. There is again a change of style- one sees now more the older philosopher in the process of reassessing earlier views in a more detailed way- in a way which was very likely catalysed by the experience of teaching students, and trying to synthesize his views. There is also considerably more interest in the real world, ranging from affairs of state (in the very long discussion of the *Laws*, in which for once Socrates does not appear), to the natural world of astronomy, biology, etc (in, eg., the *Timaeus*). By this time it is clear that in the Academy, the subjects that were being taught and discussed ranged far beyond philosophy of the Socratic kind, to include many of the central subjects of interest in modern times- mathematics, astronomy, zoology, and medical science, as well as politics (but not history!), insofar as they existed at that time.

From our point of view the 2 most interesting late dialogues are the *Parmenides*, for its criticisms of the earlier ideas about Forms, and the *Timaeus*, for its vision of the physical universe and its creation. The latter is fascinating, both as a cosmology and for the themes in it that were later taken up by Christianity (and the *Laws* is also fertile ground for later religious ideas and ideals). The *Parmenides* is most interesting in that it shows that Plato had seen many of the objections that could be leveled at the original theory of Forms, and here expresses them- without any definite conclusion. We now turn to a more detailed look at the theory of Forms

(ii) The PLATONIC THEORY of FORMS

The gist of the theory of Forms can be expressed fairly succinctly, but this is not the most important thing about it. As in the discussion of any philosophical idea, what is really important is to understand the *arguments* which lead to the conclusions one is trying to establish (or otherwise). Since these arguments will usually have weak points (depending on how things are defined, what is assumed from the outset, etc.), it is also a question of seeing these, and then seeing how one might deal with them to make the arguments more secure. Only then can one try to arrive at a more general picture.

I will not here express the arguments as Plato did them but in a more modern and very abbreviated form. Some basic ingredients in the arguments can be itemised as follows:

(i) *Definitions & initial suppositions*: We are in the main here concerned with general propositions, like 'beauty is truth'. These are propositions about more or less general terms like 'truth', or more particular terms denoting objects in the real world like 'George Bush'. Now any proposition involving such terms also requires that we have a *definition* of them. Thus discussion of these propositions, an essential part of philosophy, requires the definition of general terms.

(ii) *'One over Many'*: One can enumerate objects of a more or less abstract nature- for example, a flower, a circle, a prime number. Now each of these can be found exemplified in many instances. Thus one can find many flowers all over the place, and many at least imperfect circles. There is an infinity of prime numbers (starting with 1,2 3, 5, 7, 11, 13, etc). However there is apparently only one thing which each one of them *is*, ie., of which each is a particular example. Let us denote these single entities by 'Flower', 'Circle', and 'Prime number'.

(iii) *Change and Immutability*: When one talks about change it is hard to avoid the conclusion that change necessarily also implies immutable objects. For to say that A is changing, means it must be changing from one thing to another- from α to β . But then α and β are necessarily unchanging, immutable concepts or objects.

(iv) *Limiting Processes*: The Greeks well understood that many definitions of terms involve explicitly or implicitly some kind of limiting process. Thus, eg., a geometrical object like a line or a circle can only exist approximately in the real world- no line is exactly straight or circular. To define a straight line then involves imagining a limiting process of real lines that more and more closely approximate the ideal straight line. Plato imagined often the same kind of limiting approach to eg., ideal or perfect honesty, courage, virtue, etc.

The idea of forms can then be best illustrated with a geometrical or mathematical object, like a circle. It is clear that despite the fact that no ideal or perfect circles exist in the real world, nevertheless one can say lots of meaningful

things about such an ideal circle. It has an area $A = \pi r^2$, where r is the radius. Its circumference is $C = 2\pi r$, and all points on it are an equal distance from the centre; and so on. But then, argues Plato, in some sense this circle exists- but not in the real material world. There is something which all circles in the real world have in common, but none of them have it in a complete or perfect way- there are no 'perfect' circles in the real world. He therefore posits another 'higher' world, more abstract, in which the 'Form' of a circle exists- we can call it 'Circle'. In this transcendent realm, the Forms are immutable, and attain a degree of perfection inaccessible in the real world.

It is almost inevitable that a hierarchy of Forms emerges from this. In the same sense that the Form 'Circle' has properties that only the perfect circle fully possesses (all real world circles only having them approximately), one can also see that there will be some Forms that will be of a higher order than others, in that they are more general. Thus, a circle is a geometric planar object- one of many. One can multiply such examples in a trivial way. Consider, eg., the Form 'Animal'; at least in one way of understanding Plato's 'One over Many' argument, the Forms of individual animals like 'Cow' or 'Bear' must be subsidiary to this Form. More generally, one can continue arguing in this way to the conclusion that there must be one Form which is above all the others. For if each cat is related to the form 'Cat' by virtue of being a particular instance of, or an approximation to it- and likewise all 'Cats' are a subsidiary form of 'Animal', then there must be a highest form of which all lower forms are instances. This is the gist of the argument that leads Plato to the idea of a supreme Form, which he calls the 'Good'. this sort of idea, transmitted down to later times via neo-Platonists like Plotinus, played a very important role in shaping the doctrines of Christianity and Islam. However it cannot be overemphasized that Plato himself did not see the Good as being a religious entity, and that the key for him was to arrive at the idea of forms purely by philosophical argument. We can remark at this point that in the *Timaeus*, Plato saw the Creator of the Universe not as an all embracing form, but rather as a 'demiurge' (from the Greek *demiourgos*, meaning a craftsman), ie., a being which was able to mold the real world from existing ever-present, and immutable forms. Thus the Creator was not to be identified with the "Good", and was in fact subsidiary to it.

With this chain of argument Plato synthesized the ideas of Pythagoras, Parmenides, and Heraclitus, with due attention to the other pre-Socratics, in a theory of his own. The dialectic influence of Parmenides and Zeno is evident, and the final result is a genuine philosophical argument- even if still conducted in the standard Greek style, of dialogue. The arguments may not be very convincing to you. To help in their understanding, Plato gave an allegorical image, the famous 'Cave Allegory' (see Supplementary Notes), which is very useful in seeing exactly what he meant. It is a remarkable example of philosophical argument, and it gives a taste of the extraordinarily rich tapestry of thought to be found when one reads the various dialogues of Plato.

One can of course object to many parts of Plato's arguments for the theory of Forms- this will be discussed in the supplementary note. Here I finish by simply noting one of Plato's own objections to his theory, as put by Parmenides in the *Parmenides*. We have seen that real flowers stand in relation to the form 'Flower' by being instances of or approximations to it. But then one can ask- what is that property or properties which flowers require, to a greater or lesser degree, to be related to Flower? Whatever these may be, Flower also shares them- and thus can be classed along with all flowers into a larger class of objects which all share characteristics which can be embraced by another form- which we can call 'Flower2'. This argument is sometimes called the '3rd Man argument' (when referring to Men and not flowers). It obviously leads to an infinite regress. One can think of many other problems with this theory- to be discussed in class.