Reasoning with Mathematicians:

What Theaetetus tells us about Forms in Plato's *Theaetetus*

Introduction

A main puzzle with Plato's *Theaetetus* is that, although it is the only dialogue that Plato expressly devotes to the topic of knowledge, it fails to discuss the *Theory of Forms*. Yet one would think, in view of other dialogues by Plato, that an obvious Platonic answer to the question of knowledge would be in terms of some sort of contact with Forms. So why are the Forms missing and why is a definition of knowledge in terms of them not broached? A standard scholarly answer is that the *Theaetetus* represents a late stage in Plato's philosophical development when, under the pressure of such problems as are raised in the *Parmenides*, he was giving up his earlier Theory of Forms and was looking for alternative approaches to the solution of philosophical problems. The *Theaetetus* is thus transitional between so called middle dialogues like the *Phaedo* and *Republic* and late dialogues like the *Sophist* and *Statesman*.[1]

Despite the popularity of this answer I reject it, and for three main reasons. The first is that it requires us to accept the developmental hypothesis about Plato's philosophy along with the chronological division of the dialogues into early, middle, and late. But, despite the consensus of scholars, we actually have no good reason to accept this division or indeed any division like it. For we have no good evidence about what order the dialogues were written in or what age Plato was when he wrote any one of them.

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[1] See Gokhan Adalier, "The Case of Theaetetus," *Phronesis* 45 (2001): 1-37, who gives full references to and nicely critiques this scholarly answer. I am sympathetic to Adalier's critique, but I reject his endorsement of the developmental hypothesis about the Platonic dialogues, which his critique anyway does not need. In other respects my approach to the dialogue is compatible with his.

Accordingly we have no good evidence about whether Plato's thought as found in the surviving dialogues developed or, if it did, in which direction.[2] Of course we may, if we choose, accept the developmental hypothesis for exploring interpretations of Plato, and many scholars have done so to advantage.[3] But, given the lack of evidence, we also have reason to reject it and to try other and non-developmental approaches instead.

The second reason is that the developmental hypothesis, whatever the evidence in its favor, forces us to ignore, or at least to play down, the relation of the *Theaetetus* to other dialogues. In its opening conversation Eucleides says that the dialogue Socrates had with Theaetetus took place shortly before Socrates' death (142c6). At the end of the dialogue itself Socrates says he has to depart because of a matter at court concerning a charge Meletus has brought against him, but he promises to meet to continue the dialogue the next day (210d1-4). We have to suppose, therefore, that the *Euthyphro* follows next (which relates the conversation Socrates has outside the court house), and that it in turn is followed by the *Sophist* and the *Statesman* (which are the continuation on the following day of the conversation started in the *Theaetetus*). Shortly thereafter must come the *Apology*, then the *Crito*, and finally the *Phaedo*, which record the trial, final conversations, and death of Socrates. Note, therefore, that in terms of the Theory of Forms the *Euthyphro* is one of those aporetic dialogues, supposedly stemming from Plato's early period, that is pointing to one such Form (the Form of Piety), and that the *Phaedo* presents an exposition of the Theory in what is considered to be its classic form in Plato's middle period. So, whether or not the *Euthyphro* belongs historically to Plato's early period, the *Phaedo* to his middle period, and the *Theaetetus* to his late period, all

[2] Jacob Howland, "Re-Reading Plato: the Problem of Platonic Chronology," *Phoenix* 45 (1991): 189-214.
[3] I would cite, in particular, the philosophically subtle interpretations of I.M. Crombie in his two volume *An Examination of Plato's Doctrines* (Routledge and Kegan Paul, London, 1962, 1963).

three belong dramatically to the same and last period of Socrates' life. Accordingly we can hardly suppose that Plato himself intended the *Theaetetus* to be read as a transition away from the Theory of Forms, for he seemingly went to much effort to make it the first in a series of dialogues the second of which points to that Theory and the last of which has Socrates, and on his death bed too, giving a classic exposition and endorsement of it.

The third reason is the actual text of the *Theaetetus* itself. For it is my contention that an examination of the dialogue, in particular of its dramatic elements, shows that the reason for the absence of Forms has little if anything to do with Plato's development and everything to do with the character and profession of Theaetetus and his teacher Theodorus. To an exposition of this point I now turn.

Theaetetus the Math Student

There is much that we learn about Theaetetus from the first pages of the dialogue but for my immediate purposes I will jump to where Socrates starts talking with him (144d8-145b5). Theodorus has just remarked to Socrates that Theaetetus, while an excellent student in mathematics, is not noted for the beauty of his physical features but in fact looks rather like Socrates. Picking up on this remark, Socrates asks Theaetetus whether, if Theodorus told them that two lyres were similarly tuned, they would believe him at once or only after they had found out if he was an expert in music. When Theaetetus says the latter, Socrates, using the same pattern of argument, asks whether they ought not to find out if Theodorus is an expert in drawing before believing what he says about their facial likeness. Theaetetus agrees but a little less certainly, and agrees again, though with some self-deprecation this time, that Theodorus is not an expert in drawing ("truly" becomes

"so it seems to me" which becomes "no, not as far as I know at any rate", 144e7, 145a2, 145a4). Clearly detecting the boy's growing embarrassment at having to admit something negative about his teacher, Socrates switches and asks if Theodorus is a geometer. Theaetetus, suddenly relieved, responds with a resounding "no doubt about that, Socrates" (145a6), only to be caught by Socrates asking if Theodorus is also without doubt a master of astronomy, arithmetic, music, or in short of everything that belongs to education. Theaetetus responds with a hesitant "he seems so to me at any rate" (145a9), and Socrates, now switching back to Theaetetus' earlier admission that Theodorus is not an expert in drawing, catches him again by saying that they should, therefore, not pay any attention to Theodorus when he says they are alike in body. Theaetetus, now embarrassed, responds with a lame "perhaps not" (145a13).

So far, then, Socrates has given Theaetetus two examples (drawing and music) that display the same pattern of reasoning: if someone says something, first ask if he is an expert in what he is talking about, and only then accept what he says. Theaetetus has clearly had no difficulty following this pattern of reasoning because his hesitancy and embarrassment arise precisely out of his seeing where the reasoning is going. Equally clearly, though, Socrates has become more than a little suspicious, not about Theaetetus' ability to follow an argument, but about his ability to admit the conclusion of an argument when that conclusion reflects unfavorably on his teacher. His suspicions, and ours, are confirmed by his next question. For he now asks Theaetetus what they should do if Theodorus were talking about the soul instead of the body and were praising one of them with respect to virtue and wisdom. This is clearly the beginning of the same pattern of argument as we have just had in the case of drawing and music. But Socrates switches

completely and asks, not whether, in this case, we should not first find out if Theodorus knows about the soul, but instead whether the one who heard the praise should not be eager to examine the one praised and the one praised not eager to display himself (145b1-4). This question comes as a total surprise,[4] and the surprise is not lessened if we make the assumption (which Socrates refused to let Theaetetus make in the case of music or drawing) that Theodorus is an expert in virtue and wisdom. For the pattern of argument that Socrates is using has as its conclusion that, if we make that assumption, we should believe what Theodorus says about Theaetetus' virtue and wisdom. But Socrates is giving as conclusion that we should, instead, put what Theodorus says to the test by putting Theaetetus to the test. Theaetetus, moreover, immediately and resoundingly fails the test. For if Theaetetus were wise, he would have spotted the switch in Socrates' argument and have drawn attention to it; and if he were virtuous, or had the virtue of courage at any rate, he would not have been deterred from doing so by fear of offending his teacher.

It would seem, then, that Socrates has discovered that Theaetetus is not someone with whom he can expect to have much of a valuable discussion. Accordingly, when he broaches the question of knowledge a few lines later, he turns away from Theaetetus and poses his question to the whole company, as if looking for someone better to speak to, and in particular to Theodorus whom, as the teacher of Theaetetus and the proximate cause of the latter's embarrassment, Socrates now directly addresses. Theodorus, however, deflects the question and forces Theaetetus back on Socrates (145e8-146b7). Socrates elects to stay and question Theaetetus further—the lad is after all not entirely devoid of argumentative ability and may turn out, upon further trial, to be held back more

[4] A fact which Ronald Polansky notes but fails to exploit, *Philosophy and Knowledge: A Commentary on Plato's Theaetetus* (Associated University Presses: London, 1992): 43.

by deference to his teacher than by lack of talent. At all events, in the ensuing conversation about what knowledge is, Theaetetus starts by giving the usual interlocutor's response of a list of instances rather than a definition, but then, when pushed by Socrates, sufficiently grasps the point of the question to be able to give an example of definition in the case of mathematics and one, moreover, that he and his fellow students had worked out on their own and not learnt from Theodorus (147c7-148b2). Encouraged by this display of intelligence,[5] Socrates presses Theaetetus to do the same with knowledge and, in response to Theaetetus' perplexity, embarks on the long and famous description of himself as a midwife of others' ideas. Theaetetus then delivers himself of his definition of knowledge as perception (149a1-151e3).

Now unfortunately, because of Eucleides' decision to record the dialogue without any of the editorial remarks that Socrates included when he related it to him (143b8-c5),[6] we do not know what Socrates' immediate reaction to Theaetetus' definition was. He professes praise, to be sure (151e4), but I more than half suspect that that is ironic. Certainly, if I had been Socrates, I would at this point have been tempted to walk off in some disgust. For in view of what Socrates has just said about midwifery and what Theaetetus has just said about definition in mathematics, the suggestion that knowledge is

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[5] Note that this display of intelligence concerns mathematics only and not philosophy. Of course, skill in mathematics can be a step in the direction of acquiring skill in philosophy, but there is no necessity here. Theaetetus may well deserve praise for his mathematical skill but not—or not yet anyway—for his philosophical skill. I would also add that Theaetetus' performance, whether in the *Theaetetus* or the *Sophist*, provides no reason to change this judgment. The later remarks about him, at any rate, by both Socrates and the Eleatic Stranger are best described as cases of 'damning with faint praise' (*Theaetetus* 210c2-4, *Sophist* 217d1-218a3, *Statesman* 257c4-258a6). But to expand on this contention now would take me too far afield.

[6] Scholars sometimes suppose that Eucleides is made to say this because Plato is indicating a certain tiredness with writing dialogues full of "he said" and "I said" and wants to write dialogues in direct speech instead. But this supposition assumes the developmental hypothesis about the Platonic dialogues mentioned at the beginning. Since I abandon this hypothesis, I also abandon any such supposition. True, the dialogue makes Eucleides omit the "he said" and "I said" to avoid the bother of putting them in (143b8-c5), but this tells us something about Eucleides, not about Plato. Perhaps Eucleides suppresses Socrates' editorial comments to hide (out of concern for mathematicians?) how philosophically lacking Socrates considered Theaetetus, and by implication his teacher Theodorus, really to be.

perception is absurd.[7] Perception is immediate and requires no or little effort, so if knowledge is like that how could there be need to work things out or need for Socratic midwifery to help us to do so? The definitions of things would be as evident to us as are colors and sounds. Theaetetus clearly has no awareness of the complexity of his own mathematical thinking let alone of any other thinking. His capacity for philosophical speculation is either lacking or has been left wholly unexercised by Theodorus. Can Socrates stimulate it? Maybe he stays in the hope that he can. Certainly he now plunges into remarks about being and change and seeming and truth that, in the richness of their expression as well as content, ought to stimulate Theaetetus to philosophy if anything can.

Before pursuing this point further, however, it is worth noting that the definition of knowledge as perception, while absurd in the context of the conversation, is just the sort of definition that a young, or philosophically unexercised, mathematician would be likely to give. For in their proofs, in particular their geometric proofs, mathematicians use visual diagrams to show how the proof works (and that is how Theodorus taught Theaetetus and his fellows). It would be natural, therefore, for someone following the proof to think that the way he learnt the proof, or the way he came to know, was through perceiving the diagrams. Hence, since this is the experience of knowing that he is most aware of, a mathematician, when pushed to give a definition of knowledge in the way Theaetetus is by Socrates, would most likely pick on perception as the answer. Now this, to be sure, does not make the definition any less absurd, but it does show up some of the philosophical limitations of mathematics or the conceptual errors to which it can make one prone.[8] In fact, the conversation that Socrates now proceeds to have with Theaetetus

[7] A point noted by Peter Geach, *Logic Matters* (University of California Press: Berkeley, 1972): 31-44.
[8] See the comments of Polansky, *op. cit*., 42.

and Theodorus in the rest of the dialogue is an exploration of these limitations of mathematics. It is an exploration of how hard, or even impossible, it is to get a mathematician, a pure mathematician or one who is devoted to this study alone (as Theaetetus is, and Theodorus as well, 164e7-165a2), to become truly philosophical, and in particular of how hard or impossible it is to get him to rise to an understanding of Forms. For it is striking, as one follows Socrates through the several stages of the dialogue, just how many times he uses Form-language and just how many hints he drops about the need to posit Forms to explain, not just mathematics, but anything at all, including the thesis (associated with Protagoras and Heraclitus) that all is flux (183a9-b5).

Socrates, in fact, uses Form-language as early as his first conversation with Theaetetus when he asks him if the wise are wise by Wisdom (145d11)—a remark that passes completely over Theaetetus' head. But Form-language comes thick and fast when Socrates starts describing and criticizing the Protagorean and Heraclitean flux-doctrine. "Whiteness", for instance, jostles alongside "white" (156e5); the "itself by itself" phrase, which is typical for Forms, follows quickly after (156a8); the "whatever is it?" question posed of universals and the disregard for particulars soon pop up to distinguish the philosopher from the non-philosopher (174b1-6, 175b4-7, c2-8, 176e3-177a2; cf. also 146e9-10); the very word "Form" starts appearing everywhere (178a6, 181c2, c9, d5; also 184d3); and "whiteness" returns, accompanied this time by "hotness" and "what sort of-ness" and the "itself by itself" again (182a8, b1, b3-4; also 188d9-10, 189b2).[9] There is, to cap it all, even a place where Socrates gives his own definition of knowledge (176c4-5). The significance of this escapes Theodorus and Theaetetus, and Socrates

[9] The presence of form language in this part of the dialogue has been noted by several scholars, as Polansky, *op. cit*., 53-54; Myles Burnyeat, *The Theaetetus of Plato* (Hackett: Indianapolis, 1990): 37-39; Francis Cornford, *Plato's Theory of Knowledge* (London, 1935): 89.

himself leaves the definition unelaborated in the context, though its connection to the Form-doctrine seems inescapable.[10]

The Message of the Dialogue

What then is really going on in the *Theaetetus* if, while Forms are never thematized for the definition of knowledge, they are yet everywhere present? My suggestion is that the dialogue's message, or at any rate a part of its message (for the dialogue is doubtless too rich to have only one message), is the impediment posed by mathematics to philosophical understanding if one's study of mathematics is purely mathematical and nothing else. To be more precise, the dialogue is an illustration of what happens when one tries to move people up the *Divided Line* who are not able or not ready to move up it. The Divided Line, of course, represents the stages of human awareness of reality as it ascends from sensible images and particulars to universals and Forms (*Republic* 509d6ff.). In the *Theaetetus* Socrates almost goes overboard in describing the endless flux of sensibles and particulars and of how incapable they are of being objects of knowledge. He almost goes overboard, that is, in setting out the first premise of his classic argument—an argument that appears in dialogue after dialogue—for the necessity of Forms. Particulars are always coming and going and both are and are not, or they are always rolling about between being and not-being (*Republic* 479d3-5), whereas knowledge, if it exists at all, can only have being and fixity for its object. So either there are such fixed beings, the Forms, or the whole possibility of knowing and speaking disappears (*Republic* 477a2-4; *Parmenides* 135b5-

[10] The definition is given in terms of a grasp of the god, or of the justice of the god which, in view of the context and especially in view of the *Euthyphro* which immediately follows the *Theaetetus*, cannot be any of the gods of traditional Greek religion or myth. It can only be some new god—the sort of god for believing in which Socrates is accused and condemned in the *Apology*. It can only be some god of Forms, or the Forms themselves. Polansky, *op. cit*., 142.

c4). Perception is not and cannot be knowledge because its objects, the particulars, do not stay in place long enough to be known or even to be named (*Theaetetus* 182e3-183b5).

Now mathematicians, curiously enough, are in a good position to know this, because their objects—numbers and figures—are clearly fixed. The mathematical square is always square and never round; the number five is always five and never four. But mathematicians know this half-consciously, as it were, for what they immediately focus on in their thinking is the particulars and visible diagrams that they use in their proofs. They are aware, of course, that it is not these particulars and diagrams that their proofs are about (they know, for instance, that in adding seven apples to five apples to get twelve apples, the apples as such are irrelevant to the addition). But they do not, at least qua mathematicians, thematize this fact. They simply assume it or take it for granted. They do not ask themselves the question what, over and above the diagrams and particulars, the objects of mathematics really are or what sort of being they have. It is only the philosopher, or only the one who ascends up to the next stage of the Divided Line, who does this (*Republic* 510c1-511d5). Theaetetus is, in fact, a classic example of such a mathematician. Try as Socrates might (and he tries very hard at times, e.g. *Theaetetus* 195e8-196b3), he cannot get Theaetetus to make the crucial move and ask what the mathematical things really are. The proof of this is that in none of the three definitions of knowledge that he proffers does Theaetetus shift his attention from the *faculty* of knowledge to the *objects* of knowledge. All his definitions are of knowledge as a faculty (perception, true opinion, true opinion with an account). Socrates, by contrast, in responding to these definitions, shifts on each occasion to the objects of the faculty proposed (151e1ff., 187b4ff., 201c8ff.; and cf. *Republic* 477c6-d5). He even mockingly

resorts to ridiculous images, as when he compares objects of knowledge to birds in an aviary (197c1ff., 200b7-c1; the word 'ridiculous' or '*geloios'* is used at 200b7). But Theaetetus never takes the hint. Never does he cry out, "But, Socrates, objects of knowledge cannot be birds or anything like birds. They must be something else." And never, accordingly, can Socrates ask, or ask seriously, the all-decisive question—which would lead straight to the Theory of Forms—what the objects of knowledge must really be. Theaetetus' stubborn mathematicism keeps getting in the way.

Conclusion

Such, then, is what seems to me to be a chief message of the *Theaetetus*, and the reason for the absence there of a definition of knowledge in terms of Forms. Mathematicians are not philosophers and mathematics is not the model for philosophy. Mathematicians may, to be sure, become philosophers, and mathematics may be a stepping stone to philosophy, but only if—and it is a big 'if' in some cases—mathematicians can be got to transcend the limits of mathematics. Theodorus never did this, or if he was tempted once, the trials of philosophy were too much for him and he beat a hasty retreat back to mathematics (164e7-5a2, 170e1-3). Theaetetus has not transcended mathematics either, but one would think, after his work-out here with Socrates and later in the *Sophist*, that he was much closer to doing so than before. Did he eventually succeed? We are not told. We are told by Eucleides, though, that Socrates did predict that Theaetetus was bound to become noteworthy if he ever grew up (142d1-3). The growing up Socrates had in mind might simply be physically coming of age. But it might also be the growing up that Theaetetus could only do, at whatever age he reached, if he first got out from under Theodorus.

Since all we otherwise know of Theaetetus is certain achievements in mathematics, and since his death may well have happened as little as eight years after Socrates' execution (when Theodorus may still have been around as his teacher),[11] we can well doubt, despite the praise bestowed on him by Terpsion and Eucleides, whether he ever did manage to do that.

For here is a final speculation. Note, first, that Theaetetus is mortally ill, not from his battle wounds, but from his dysentery (142b1-5). Note, second, that despite, or rather because of, his denials Theodorus has some sexual attraction for Theaetetus (143e6-144b7). So are we permitted, and does Plato intend us, to put the two thoughts together and wonder whether Theaetetus' susceptibility to dysentery is not unrelated to his engaging in sexual activity with his math teacher (and others?), or to his being "under" his teacher in more ways than one? **[12]** Love of young men is, of course, a good thing in Socrates' eyes and doubtless too in Plato's. But only if it is an occasion for philosophy. Not otherwise.

[11] Debra Nails, *The People of Plato* (Hackett: Indianapolis, 2002), s.v. Theaetetus, Theodorus.
[12] For the connection between sex and dysentery, check, among other things, a medical dictionary for the variety of it called *amebiasis*. Cf. also Arnie Kantrowitz, *Under the Rainbow: Growing up Gay* (St. Martin's Press, New York, 1977 & 1996), ch.10 p.174.