Andrew Payne's "Dianoia, Dialectic, and Giving an Account of Hypotheses in *Republic* 6 and 7

Comments by Sophia Stone

In the beginning of his paper, Andrew points out that "the use of dianoia in mathematical sciences is a prerequisite for the use of dialectic, but mastery of dialectic goes beyond what dianoia can accomplish," (Payne, P. 1). He quotes a passage from the *Republic* where the 'song of dialectic' is 'imitated by the power of sight. Right away we begin with an analogy using incommensurables: measuring something audible with our eyes. This is supposed to help us understand how dialectic works, without the means of the senses, to "find the being itself of each thing" and not giving up "until he grasps the good itself with understanding itself." If dialectic is supposed to trump dianoia, then why, at the end of the paper, Archytas has a working account of consonances from experiencing sound, and Socrates doesn't have an account? This is not so much a flaw in Andrew's paper as it is a sign that knowing how to use dialectic so that we achieve our intended aim isn't as easy as it sounds.

First I'll briefly summarize what I take Andrew's account of giving an account using dialectic is, and then I'll state some worries, not with his account but with the examples he uses. Specifically, I mean the observations he makes about Plato's *Euthphro* for why the account of holiness fails and his discussion of the odd and even. These are minor worries. What interests me in Andrew's paper is that even though Socrates prefers the dialectic over using dianoia for establishing an account, Socrates himself is unable to do that for piety in the *Euthyphro* and for consonant numbers in the *Republic.* If Socrates is unable to give a satisfactory account for these, then how would he be able to do it for the Just and the Beautiful and the Good?

Andrew explains that "Dialecticians know things in terms of their being or essence, including even the Form of the Good, and this knowledge rests in part on the ability to give an account of what one knows," (Payne, P. 2). He points out that dialectic can, and dianoia cannot, give an account of the things each cognitive power studies. Dialectic "operates in part by giving an account of these hypotheses," (Ibid.). Andrew contrasts his interpretation with that of another he calls the Inferential Grounding interpretation, which we could call I.G. for short. I.G. is where one takes unproved assumptions and derives from them more basic principles, and analyzing them until they no longer need to be analyzed. Andrew says that the obvious candidate for such a principle would be the "non-hypothetical principle, the Form of the Good." (Ibid) Hugh Benson develops a 'sophisticated' I.G. where the dialectician is distinguished from the mathematician, where the dialectician completes the process of analyzing the hypotheses, the mathematician takes "as known, as an *archē* as not needing confirmation, what is fact unknown…still in need of confirmation," (Payne on Benson).

Andrew points out that "to give an account" has a wide range of activities, and cautions us that we should be wary of "any one-size-fits-all specification of giving an account," (p. 4). Yet, generally, we can see that the first step of giving an account is to note that the hypotheses include definitions, and that part of giving an account is to give an account of the definitions. Andrew explains that:

> The full achievement of dialectic is to give an account of the being of each thing, including the Form of the Good, and to defend that account in elenctic discussion, in the way that Socrates expects his interlocutors to defend their answers to a what-is-F question (534b8-c5). So to give an account of hypotheses is something that involves the ability to explicate and defend a definition. (Payne, p. 5)

This is where Andrew's account differs from the I.G. account and where he gives his strongest criticism of the contrasting account. It is not merely about finding more basic principles, or on the more sophisticated account, finding higher principles, from which to derive the truth of a hypothesis from. For Andrew, "what is crucial is showing whether and how the definition expresses the essence of the definiendum," (Payne, p. 6). To illustrate his point, he turns to the Platonic dialogue *Euthyphro.* He first argues against Benson's I.G. account, showing how it isn't sufficient to tell us why the definition of piety fails, and then he observes how an examination of the definition of even triangles fails to give an account of what even is.

Andrew says that Benson's I.G. account doesn't tell us why the hypothesis "piety is what all the gods love" is rejected. If Socrates had used Benson's account, it would be rejected because it couldn't be demonstrated to have derived from other more basic principles. (Payne, p. 6) Payne says that it is rejected because it conflicts with other beliefs held by Socrates and Euthyphro. Andrew is right that even if the hypothesis in question cohered well with our beliefs and even if its truth could be grounded in other, more basic principles, it would not suffice to show that it is a good definition. But I disagree with Andrew for why the hypothesis was rejected in the first place. It was rejected because the hypothesis only gives an affect or quality of piety (11b), it is an incomplete account and akin to the account rejected at 8e that the same things are loved and hated by the gods. And this rejection is the result of the dialectic.

So what we have here is an opportunity to show how the dialectic works. When we can reject accounts that are incomplete, we are closer to achieving the account that we seek. In dialectic, we have proof for a positive hypothesis by showing that its negative ends in a contradiction. (*Parmenides* c-d) The example from the *Euthyphro* illustrates that the process isn't finished. We know what definitions do not work for piety and we have yet to come across one that does. This is why Socrates, at the end of the dialogue, presses on. He knows that their work isn't finished.

[Examine Greek *Euthyphro* 12d8-10]

εἰ μὲν οὖν σύ με ἠρώτας τι τῶν νυνδή, οἷον ποῖον μέρος ἐστὶν ἀριθμοῦ τὸ ἄρτιον καὶ τίς ὢν @1 τυγχάνει οὗτος ὁ ἀριθμός, εἶπον ἂν ὅτι ὃς ἂν μὴ σκαληνὸς ᾖ ἀλλ' ἰσοσκελής· ἢ οὐ δοκεῖ σοι;

Grube's translation:

> Now if you asked me something of what we mentioned just now, such as what part of number is the even, and what number that is, I would say it is the number that is (not *skalēnos* but *isokelēs*) divisible into two equal, not unequal parts. Or do you not think so?

Andrew corrects the translation given by Grube: "the evens are the part of number which is isosceles and not scalene," (12d8-10). But then Andrew finds problems with this definition, "if I were asked to give an account of the definition 'Even numbers are those numbers which are isosceles and not scalene,' I would be hard-pressed to accomplish the task." (Payne, p. 7)Yes! An account for that definition would require the kind of examination that Socrates gave to Euthyphro. Let's look at the proposed set of prior hypotheses from Andrew:

1. What isosceles numbers are
2. What isosceles triangles are
3. Triangles are a plane figure with three connecting points whose interior angles together equal 180 degrees (basic hypothesis of triangles)

Andrew says we can't get to a closer definition of even numbers from these. But this doesn't show that the hypotheses are false or that they should be thrown away. This shows that, like the conversation between Euthyphro and Socrates, the process is incomplete.

First, we need to start with the definition of number, *arithmos.* An *arithmos* is a limited multitude. Once we agree that this is our starting point, we then can query the kinds of things that are numbers. To the Greeks, there were pebble *arithmoi* from the Pythagoreans, and when these points were in a line, these *arithmoi* were called 'line numbers'. When these points were further arranged in a plane, where the points were connecting, these *arithmoi* were called plane numbers, and when more points were added on additional planes, these *arithmoi* were the solid numbers. But we can see the commonality to all of these numbers, that they are multitudes. This confirms the original definition.

The next thing is to query how the multitudes can be divided, and further queries about how the parts relate to the whole and how the parts relate to the other parts. Part of these inquiries, especially the one we are interested in with respect to plane numbers, is commensurability and incommensurability. Which definitions can carry over to different *arithmoi* and which cannot? Naturally equality and inequality will be important considerations.

Let's first start off with the two triangles, one is an isosceles, the other is scalene. What are their properties? What is the smallest *monas* or unit by which we can measure their multitude? We can't consider the point, for there both triangles have the same amount of definite points, 'three', but an indefinite amount of points contained in the lines. They both have the same amount of lines and the same amount of angles. This establishes the fact that they are both triangles. So the next query is to look at the length of the lines and compare them. We will see that the isosceles triangle has two equal lines and two equal angles, whereas the scalene triangle has no equal lines and no equal angles. We've reached then an intermediate conclusion: the isosceles triangle can be divided into two equal angles and two equal lines whereas the scalene triangle cannot. However, we cannot stop the inquiry here because there is still an unequal line and an unequal angle not accounted for, and, since these are 'left over' if we were to end our inquiry here, we would have to conclude that the isosceles triangle is equal with respect to two parts of the whole, but unequal with respect to one part of the whole. We have reached a conclusion from an incomplete dialectical inquiry. If it ends in a contradiction, we know our work isn't complete. We have yet to reach an account that tells us exactly why the *arithmos* of an isosceles triangle is said to be even. That account of the even for the isosceles triangle must work for the account of the even in other kinds of numbers in order for it to get at the essence of what it means to be 'even'. So the reason why an isosceles triangle is even can't be because the triangle has two equal lines and two equal angles. It must be because the triangle can be divided into two equal parts. [*note that this is how Grube translated the Greek*] If you start a division of the isosceles from the angle that is not equal to the others, and imagine a straight line drawn from that angle to the line that is not equal to the others, what will result is an exact division of the triangle into two equal parts. This is the essence of what the even is in every even number: that which can be divided into two equal parts. I don't know if that would be a satisfying definition of even numbers, but it does offer an account of what even is and why an isosceles triangle would be called an even *arithmos.*

At the end of his paper, Andrew observes that Archytas has a working account of consonant sounds in harmonics and that this account is unsatisfactory to Socrates because, "the range of consonances, items of musical interest, and beauty" cannot be determined by experience. Yet interestingly Socrates himself fails to provide an account of consonance at the level of numbers. We wonder what such an account would look like?

We actually have an example of the dialectic successfully applied to consonance in audible and inaudible sounds, from Zeno. We find this account from Simplicius's commentary on Aristotle's *Physics*:

> 'Tell me, Protagoras," he said, "Does a grain of millet when it falls make a sound, or a ten-thousandth part of a grain" When he said they would not, (Zeno) said, "Does a bushel of millet make a sound when it falls, or not?" When he said it would make a sound, Zeno said, "Isn't there a ratio between a bushel of millet and a signle grain, and even of a ten-thousandth part of a single grain?" When he said there was, Zeno said, "Well then, will the ratios of the sounds to one another not be the same? As the things making the sounds, so will be the sounds, and given that this is so, if the bushel of grain makes a sound, so the single grain and the ten-thousandth part of a grain will also make a sound." (DK29A29; Simplicius in *Arist. Phys.* 1108.18 (on 250a19), cited in Pritchard 1995: 143)

We don't have a definition of consonant sounds here, but we can extract here the principle that if there is a certain ratio that governs the whole, then there must be a ratio that applies to the part. For Archytas, on his view, Zeno's account is false, because only audible sound can be counted. For Zeno, and presumably for Socrates in the Republic, what must be counted are those features that are stable and unchanging, like the equally divisible in equal multitudes, or ratios that are consonant with the wholes of *arithmoi* and their parts.

The problem we are left with is, if we are barred from experience to figure out what the Just, the Beautiful and the Good is, then from which hypothesis should we use to begin with in order to give their account?

References

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