



will come under the second conjunct. So – alas! – reflexive knowledge would be either impossible or of no benefit after all. To begin to make [C] acceptable, Plato would need to argue that reflexive knowledge is a single kind of knowledge, not a compound of two independent kinds of knowledge, and this knowledge is such that it is at once of one's knowledge and lack of knowledge, on the one hand, and of other things, including, in particular, the good and bad, on the other. But this is a large and difficult task, and it is perhaps not surprising that, in the *Charmides*, he does not touch on it.²⁶

The Method ἐξ ὑποθέσεως at *Meno* 86e1-87d8

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Abstract

Scholars ubiquitously refer to the method ἐξ ὑποθέσεως, introduced at *Meno* 86e1-87d8, as a method of hypothesis. In contrast, this paper argues that the method ἐξ ὑποθέσεως in *Meno* is not a hypothetical method. On the contrary, in the *Meno* passage, ὑπόθεσις means “postulate”, that is, cognitively secure proposition. Furthermore, the method ἐξ ὑποθέσεως is derived from the method of geometrical analysis. More precisely, it is derived from the use of geometrical analysis to achieve reduction, that is, reduction of a less tractable problem to a more tractable problem. As such, the method ἐξ ὑποθέσεως does not by itself serve to solve problems.

Keywords

method, hypothesis, geometrical analysis, *Meno*

I. Introduction

At *Meno* 86e1-87b2, Socrates introduces Meno to a method of reasoning, which he derives from geometry and calls ἐξ ὑποθέσεως. Socrates' illustration of the method employs a geometrical construction problem: to inscribe a given area as a triangle in a given circle. Having introduced the method, Socrates applies it to the ethical problem governing his and Meno's discussion, the teachability of excellence. The application of the method to the ethical problem proceeds in two steps of uneven length. The gist of the first, brief step is the claim that if excellence is a kind of knowledge, then it is teachable. The second, lengthier step examines whether excellence in fact is a kind of knowledge. This step itself has two parts. The gist of the first, brief part is that if knowledge is the only psychological good, then excellence is a kind of knowledge. The second, lengthier part argues that

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knowledge in fact is the only psychological good. Thus, Socrates concludes that excellence is a kind of knowledge and therefore teachable. In short, the structure of this stretch of the dialogue is as follows:

- 86e1-87b2: Geometrical problem
- 87b2-c10: First step of ethical problem
- 87c11-87d8: First part of second step of ethical problem
- 87d8-89c4: Second part of second step of ethical problem

This paper focuses on the method ἐξ ὑποθέσεως exemplified in the treatment of the geometrical problem, the first step of the ethical problem, and the first part of the second step of the ethical problem.

Scholars ubiquitously refer to the method ἐξ ὑποθέσεως as the method of hypothesis. By this they mean that the fundamental propositions on the basis of which Socrates reasons have the epistemological status of hypotheses. In other words, they are cognitively insecure. Accordingly, conclusions reached on the basis of arguments employing the hypothetical method are themselves insecure. Granted the insecurity of their foundations, hypothetical arguments may, nonetheless, be constructive. So long as Socrates and his interlocutors agree to use the hypotheses as provisional points of departure, they can reason from these to positive conclusions. Indeed, it is widely believed that this is how Socrates employs hypotheses and, therefore, that the hypothetical method is a constructive method, albeit, again, provisionally so. In particular, the hypothetical method is generally contrasted with the so-called elenctic method, whose function is understood as being to refute Socrates' interlocutor's theses. Thus, Richard Robinson expresses a common view when he writes: "With the introduction of this method [of hypothesis, Socrates] is passing from destructive to constructive thinking, from elenchus and the refutation of other men's views to an elaboration of positive views of his own."¹

In contrast to this standard conception of ὑπόθεσις and the hypothetical method, this paper argues that the method ἐξ ὑποθέσεως in *Meno* is not a hypothetical method or method of hypothesis. On the contrary, in the *Meno* passage, ὑπόθεσις means "postulate." Thus, a ὑπόθεσις is a cognitively secure proposition. Furthermore, the method ἐξ ὑποθέσεως derives

¹ Robinson (1941).

from the method of geometrical analysis. More precisely, it derives from the use of geometrical analysis to achieve reduction, that is, reduction of a less tractable problem to a more tractable problem.

The discussion will be structured as follows. Section II presents an account of the meaning of the word ὑπόθεσις in fourth century Attic and in Greek intellectual contexts relevant to the *Meno* passage. This discussion is used to clarify the meaning of ὑπόθεσις in the *Meno* passage. Sections III and IV clarify the specific ὑποθέσεις employed in the ethical sections of the *Meno* passage. Sections V-VII clarify the geometrical problem, provide a brief account of the method of geometrical analysis, explain the geometrical ὑπόθεσις in the *Meno* passage, and finally explain the method ἐξ ὑποθέσεως as a method of reduction by analysis in both the geometrical and ethical problems.

II. ὑπόθεσις

The semantic root of the word ὑπόθεσις is "something laid down." But instances of the word typically have the more specific sense of "something underlying." The distinction of the latter sense is that the thing laid down stands in a relation of priority or fundamentality to something else. So, physically, a ὑπόθεσις may be an object, but, qua underlying thing, more precisely a base or foundation. Conceptually, it may be a proposition, proposal, or subject matter, but, again, more precisely a postulate, plan of action and thus source or point of departure, or the topic about which discussion is oriented.

ὑπόθεσις does not occur in Andocides, Antiphon, Lysias, Dinarchus, Demades, Lycurgus, Isaeus, Hyperides, Aeschylus, Sophocles, Euripides, Aristophanes, or Thucydides.² The word does occur three times in Xenophon and Aeschines, seven times in Demosthenes, and thirty-one times in Isocrates. Among these, the most common sense (occurring twenty-nine times) is "subject matter" and hence "theme" or "topic."³ For example, authors speak of returning to and trying not to stray from their given

² There are three instances in the *hypothesis* sections of Isaeus 7, 8, 10, and one in Lycurgus 1, but these of course are later additions.

³ Dem. 3.1, 19.242; [Dem.] 60.9; Isoc. 5.10, 83, 138, 7.63, 77, 8.18, 145, 11.9, 49, 12.4, 35, 74, 88, 96, 108, 161, 175, 15.57, 60, 68, 138, 177, 277; Aesch. 3.76, 176, 190.

ὑποθέσεις. Nine occurrences mean “foundation.”⁴ For example, in the *Second Olynthiac* Demosthenes insists that “in affairs of the state, the principles (ἀρχάς) and foundations (ὑποθέσεως) must be true and just.” Likewise, in the oration *To Archidamos* Isocrates writes: “...but each must follow the principles which from the beginning (ἐξ ἀρχῆς) they have made the foundation (ὑπόθεσιν) of their lives.” Another notable instance occurs in Xenophon’s *Memorabilia*, book IV:

Whenever anyone argued with him on any point without being able to make himself clear, asserting but not proving, that so and so was wiser or an abler politician or braver or what not, he would lead the whole discussion back to the ὑπόθεσιν.

Xenophon proceeds to give an illustration. An anonymous interlocutor claims that one man is a better citizen than another. To resolve the question, Socrates proposes first to consider the function (ἔργον) of a good citizen.⁵ In the light of the example, the word ὑπόθεσις seems to mean the basic principle or concept upon which the debate turns.⁶

Finally, four instances of ὑπόθεσις have the sense of “proposal.”⁷

Indeed, one might propose something as a foundational principle, but this is not required by the use of ὑπόθεσις. Rather, like “subject matter” or “topic,” what is proposed may simply be a point of orientation in a discussion or inquiry.⁸

ὑπόθεσις occurs thirty-four times in Plato, excluding several instances in *Meno*.⁹ The three instances among the early dialogues, again excluding

⁴ Dem. 2.10; 10.46; [Dem.] 44.7, 60.27; Isoc. 1.48, 4.23, 6.90, 7.28; Xen. *Mem.* 4.6.13. The instance at Isoc. 15.276 seems akin to these, though more in the sense of “support” than “foundation.”

⁵ Xen. *Mem.* 4.6.14.

⁶ It is perhaps also noteworthy that all instances of ὑπόθεσις, except two from Isocrates’ *Busiris* (composed c. 390-85) with the meaning of “subject matter,” “topic,” or “theme” occur after c. 355. In contrast, four of the nine instances meaning “foundation” occur before c. 355: Isoc. 4.23 (c. 380), 1.48 (c. 374-2), 6.90 (c. 366); Xen. *Mem.* 4.6.13.

⁷ Xen. *Oec.* 21.1, *Cyr.* 5.5.13; Isoc. 2.7, 13.19.

⁸ The instance at *Oec.* 21.1 makes it clear that here a ὑπόθεσις can itself be supported or rejected by argumentation. (The four instances with the sense of “proposal,” that is, something submitted as a point of departure or orientation, whether or not a solid one, occur before c. 355.)

⁹ *Grg.* 454c4; *Euthphr.* 11c5; *Hp. Ma.* 302e12; *Phd.* 92d6, 94b1, 101d2, 3, 7, 107b5; *R.* 510b5, 7, c6, 511a3, 5, d1, 533c1, 550c6 (twice); *Prm.* 127d7, 128d5, 136a1, 4, b2,

Meno, all mean “proposal” or “thesis.”¹⁰ In *Euthyphro* Socrates refers to Euthyphro’s proposed definitions of holiness as ὑποθέσεις. Similarly, in *Gorgias* Socrates refers to Gorgias’ definition of rhetoric as a ὑπόθεσις. And, once again, in *Hippias Major* Socrates refers to the definition of beauty as pleasure through sight and hearing as a ὑπόθεσις.

These Platonic instances, taken with the range of uses in other canonical Attic authors of the fourth century, indicate that ὑπόθεσις does not imply hypotheticality. Consider Webster’s primary definition of “hypothesis”: “a tentative assumption made in order to draw out and test its logical or empirical consequences.” Thus, a hypothesis is a proposition about the truth of which the hypothesizer is unsure. But, for instance, Socrates’ interlocutors assert their definitions confident of knowing their subject matters.

Carl Huffman has recently discussed the verb ὑποτίθεσθαι and noun ὑπόθεσις in pre-Platonic intellectual contexts, specifically in Philolaus and in the Hippocratic corpus.¹¹ Huffman claims that here the concept of ὑπόθεσις is linked to the concept of ἀρχή so that to make, literally lay down, a ὑπόθεσις (ὑποτίθεσθαι) is equivalent to positing ἀρχαί. For example, the author of *On Ancient Medicine* criticizes medical theorists for the use of ὑποθέσεις in their theories. He decries as naïvely reductive the use of such postulates as the existence of the hot and the cold to explain the complexities of disease. Likewise, Huffman writes:

... the author [of *Fleashes*] asserts that a common starting-point (κοινὴν ἀρχήν) must be postulated (ὑποθέσθαι), by which he means a starting-point common to the opinions of men. This sounds very much like the call for an indisputable initial premise which was seen in the texts above [*On Ancient Medicine*, *On the Art*, and *Diseases*].¹²

In these contexts, ὑπόθεσις evidently has the sense of “foundational principle.”

No instance of ὑπόθεσις in a mathematical context predates *Meno* – even though the way in which Socrates introduces the method makes it clear that mathematicians used the word or at least the concept. Árpád Szabó

137b3, 142b1, 142c2, c9, 160b7, 161b8; *Tim.* 61d3; *Th.* 183b3; *Sph.* 244c4; *Lg.* 743c5, 812a4. See also *Amat.* 134c3; *Def.* 415b10.

¹⁰ Consider Robinson’s review of the verb ὑποτίθεμαι in Plato (1941, 95), and compare Robinson’s remarks on the noun ὑποθέσις (99).

¹¹ (1993) 78-92.

¹² *Ibid.* 82.

proposes that Eudemus' discussion of Hippocrates of Chios' quadrature of lunes suggests that Greek mathematicians were already using *ὑπόθεσις* in the fifth century. The passage in question runs:

[Hippocrates] set down an *ἀρχήν* and established as the first (*πρῶτον ἔθετο*) thing useful for his proof, that...¹³

And Szabó comments:

Although the word [*ὑπόθεσις*] does not occur in this sentence, the presence of such expressions as *ἀρχή*, *πρῶτον*, and *ἔθετο*, which are either synonymous with it or related to it, seems to suggest that Eudemus is talking about a [*ὑπόθεσις*]...¹⁴

The mathematical use of *ὑπόθεσις* closest in time to *Meno* is the much discussed passage in *Republic* VI where Socrates distinguishes the method of geometry and other mathematical sciences from that of dialectic. Socrates describes the mathematicians as *ὑποθέμενοι*, that is, laying down as *ὑποθέσεις*, the odd and the even, the basic geometrical figures, the acute, right, and obtuse angles, and "other things akin to these according to each form of inquiry."¹⁵ He then claims that the mathematicians have the following attitude toward these mathematical entities:

... they treat these as things they know (*εἶδοτες*) and as *ὑποθέσεις*, they do not think it fit to give any explanation of them either to themselves or to others because they believe that they [the mathematical] are evident to everyone."¹⁶

Possibly, as in case of the author of *On Ancient Medicine* who criticizes the uses of the hot and the cold to explain the complexities of disease, Socrates means that in laying down the odd and even and so forth, the mathematicians lay them down as fundamental beings, that is, fundamental to the given subdiscipline of mathematics that they study.¹⁷ But the main point is that the mathematicians' *ὑποθέσεις* are not tentative or provisional.

¹³ Eudem. fr. 140.59 ap. Simp. *In phys.* 9.61.5.

¹⁴ Szabó (1978) 245-6. See also von Fritz (1955) 37-42 and Mueller (1991).

¹⁵ *R.* 510c5.

¹⁶ *R.* 510c6-d1.

¹⁷ There is considerable debate over this question. See Robinson (1941) 103-4, von Fritz (1955), and Mueller (1991); in particular, consider *R.* 533c.

Rather, the existence, or nature, of the mathematical entities is taken to be obvious and beyond dispute: "evident to everyone." Consequently, the sense of *ὑπόθεσις* that here emerges is "a solid foundation."¹⁸

Socrates proceeds to contrast the mathematicians' treatment of *ὑποθέσεις* with that of dialecticians:

[Dialectic] treats the *ὑποθέσεις* not as foundational principles (*ἀρχαίς*), but really (*τῷ ὄντι*) as under-lyings (*ὑποθέσεις*), that is, as footholds (*ἐπιβάσεις*) and springboards (*ὀρμάς*)...¹⁹

Plato is here punning on the literal sense of the word *ὑπό-θεσις* (layings under). His idea is that putative *ὑποθέσεις* are merely provisional anchors or bearings in the process of inquiry. On the one hand, Socrates' epistemic degradation of *ὑποθέσεις* in *Republic* indicates an important methodological and epistemological moment in Plato's intellectual career. On the other hand, the dialectician's rejection of mathematical *ὑποθέσεις* as *ἀρχαί* precisely confirms Huffman's claim that laying down a *ὑπόθεσις* (*ὑποτίθεσθαι*) was understood in intellectual and more specifically methodological contexts as positing an *ἀρχή*.

In sum, the evidence presented strongly suggests that the introduction in *Meno* of the method *ἐξ ὑποθέσεως*, which is explicitly said to derive from geometry, is not a hypothetical method, but rather a method of reasoning from a postulate or cognitively secure proposition. In the following sections I will argue below that the evidence from the *Meno* passage confirms this interpretation of *ὑπόθεσις*.

The interpretation of *ὑπόθεσις* in the *Meno* passage as postulate or cognitively secure proposition requires one further point of clarification. Elsewhere in *Meno* Socrates distinguishes knowledge from true belief. How, then, do the *ὑποθέσεις* at *Meno* 86e1-87d8 relate to known and merely truly believed propositions? Cognitively secure propositions differ from merely truly believed propositions in that merely truly believed propositions are unstable. Merely cognitively secure propositions differ from known propositions in that known propositions imply a "reasoning of the cause." Merely cognitively secure propositions, at least those at *Meno* 86e1-87d8, are treated as self-evident.

¹⁸ It is also worth noting that both of the instances of *ὑπόθεσις* in Euclid's *Elements* (10.44, 47) have the sense of "postulate" rather than "hypothesis."

¹⁹ *R.* 511b5-6.

III. The *ὑπόθεσις* at *Meno* 87c11-d8

I will begin with the postulate (*ὑπόθεσις*) in the second step of the ethical problem. The reason for this peculiar order is both expository and exegetical. I will use what I take to be a less controversial claim (concerning the postulate in the first ethical section) to clarify a more controversial one (concerning the postulate in the second ethical section), and I will use a less controversial claim to support a more controversial one. I will argue that the postulate is:

(P) Excellence is good.

(P) is explicitly described as a *ὑπόθεσις*:

We agree that this thing, that is, excellence is good; and this postulate (*αὕτη ἡ ὑπόθεσις*) stands (*μένει*) for us, that it is good.²⁰

All commentators I have consulted agree that (P) is a *ὑπόθεσις*.²¹ Indeed, Lynn Rose writes that although there is controversy over the identity of the other *ὑποθέσεις*, [excellence] is good' is definitely considered to be a [*ὑπόθεσις*].²² But although this is uncontroversial, since many commentators conceive of *ὑποθέσεις* as hypotheses, they are obliged to explain (P) as hypothetical. The reason is obvious. The proposition that excellence is good is as conspicuously true as any. As such, there appears to be nothing hypothetical about it. For instance, Bluck observes:

It might indeed be suggested that *ἀρετή* is the noun corresponding in meaning to *ἀγαθόν* in Greek, so that to say that it is *ἀγαθόν* is to state a truism; and hence, it might be argued, the premise here is *not* hypothetical.²³

In defense of the hypotheticality of (P), Bluck argues as follows. "Beneficial" is the normal meaning of the adjective *ἀγαθός* when used in the neuter, as in the *Meno* passage; therefore:

²⁰ *Men.* 87d2-3.

²¹ Robinson (1941), Bluck (1961), Rose (1970), Zyskind and Sternfeld (1976), Bedu-Addo (1984), Sharples (1985), Weiss (2001), Menn (2002). Klein (1965) is insufficiently clear.

²² Rose (1970) 3.

²³ (1961) 88.

(i) [(P)] is making an assumption about the meaning of the unknown quantity *ἀρετή*, inasmuch as it attributes to it a quality, or identifies it with a quality, which is not *known* to be contained in the meaning of *ἀρετή*. The result is that this premise [is] ... in the strict sense, hypothetical ... (ii) Moreover, [Plato] *calls* '*ἀρετή* is *ἀγαθόν*' a *ὑπόθεσις*.²⁴

The claim in (ii) is question-begging. I include it to illustrate the influence exerted by the assumption that *ὑπόθεσις* means "hypothesis." The claim in (i) is unpersuasive. It is of course true that at this stage in the investigation the interlocutors are unclear about the identity of *ἀρετή*. However, this need not disturb their grasp of the logical relation between *ἀρετή* and *ἀγαθόν*. In comparison, consider that one may not know what knowledge is, but still be certain that knowledge is knowable. Surely Socrates would reject any account of *ἀρετή* according to which *ἀρετή* was not good or beneficial.²⁵

R. W. Sharples also explicitly argues for the hypotheticality of (P). He rejects Bluck's proposal and defends the following:

... it seems simpler to suppose that 'excellence is good' is an assumption because it is asserted with a specific purpose in mind in the context of the present argument. In fact, Bluck himself says, 'assumption' combines two ideas, the general one of something assumed for the sake of an argument, a starting point, and the more particular sense to which Plato draws attention at 86e-87b, of something assumed for the sake of argument even though one is not certain of its truth.²⁶

Sharples, then, attempts to resolve the problem by resorting to two distinct senses of *ὑπόθεσις*: (i) something assumed for the sake of an argument, a starting point, and (ii) something assumed for the sake of argument even though one is not certain of its truth. So Sharples is claiming that while Plato has Socrates use the noun (and verb) in sense (ii) in regard to the *ὑπόθεσις* in geometrical illustration and in regard to the *ὑπόθεσις* in the first step of the ethical problem, he has Socrates use it in sense (i) in regard to (P). Clearly this is ad hoc and unsatisfactory. Beyond the *prima facie* implausibility that the same term is, without explanation, used in multiple senses in a passage whose specific purpose is to demonstrate its use, Sharples's interpretation strains the coherence of the method. Indeed,

²⁴ *Ibid.* I have added the Roman numerals to facilitate exegesis.

²⁵ Compare Sharples (1985, 163).

²⁶ (1985) 163.

Sharples's solution exposes and underscores the difficulty of explaining (P) as a hypothesis on the assumption that *ὑπόθεσις* means "hypothesis."

In short, I maintain that (P) is not hypothetical. Rather, it is introduced and employed as a stable proposition, assumed by the interlocutors to be self-evidently true.²⁷

IV. The *ὑπόθεσις* at *Meno* 87b2-c10

We turn now to the *ὑπόθεσις* in the first step of the ethical problem. I will maintain that the *ὑπόθεσις* in the first step of the ethical problem is:

(Q) Knowledge is teachable.

In contrast, many commentators maintain that the *ὑπόθεσις* in the first step of the ethical problem is:

(H) Excellence is knowledge.²⁸

The principal reason for thinking that (Q) is the *ὑπόθεσις* in the first step of the ethical problem is simply that, as we have seen, *ὑπόθεσις* here means "postulate" and that (Q) is such a proposition. Like (P), (Q) is manifestly true.

In contrast, the common view that (H) is the *ὑπόθεσις* is largely based on the assumption that *ὑπόθεσις* means "hypothesis."

Indeed, at this stage of the argument the proposition that excellence is knowledge is treated hypothetically. But a number of commentators also draw attention to the following passage that occurs at the end of the stretch of argumentation from 86e1-89c4:

(M) [Me.] And it is clear, Socrates, (i) according to the *ὑπόθεσιν*, (ii) if indeed (*εἴπερ*) excellence is knowledge, (iii) that it is teachable.²⁹

²⁷ Compare Sternfeld and Zyskind (1977).

²⁸ So Cherniss (1951), Bluck (1961), Rose (1970), Thomas (1980), Sharples (1985), Menn (2002). Note that for some commentators, the hypothesis is the conditional or biconditional: if excellence is knowledge, it is teachable (Robinson, 1941); or if excellence is knowledge, it is teachable, and if not, not (Weiss, 2001). Bedu-Addo (1984) claims that the hypothesis is both that virtue is knowledge *and* that if virtue is knowledge, it is teachable.

²⁹ *Men.* 89c2-4.

On the mistaken assumption that *ὑπόθεσις* means "hypothesis," the *ὑπόθεσις* referred to in (i) is widely taken to be (H). But in that case, Meno's statement is to be understood as follows:

And it is clear, Socrates, according to the hypothesis that excellence is knowledge, if indeed excellence is knowledge, that excellence is teachable.

Yet this very re-phrasing of Meno's statement suggests that *ὑπόθεσις* in (i) does not refer to (H). In particular, the protasis in (ii) now makes little sense. On the assumption that excellence is knowledge, it is intelligible to claim that it is clear that (iii) excellence is teachable. But then one would expect (ii) to inform that this is because knowledge is teachable, viz.:

And it is clear, Socrates, according to the hypothesis that excellence is knowledge, since knowledge is teachable, that excellence is teachable.

Commentators avoid this problem by taking (ii) as standing in apposition to (i), viz.:

(M2) And it is clear, Socrates, according to the hypothesis – [namely,] if excellence is knowledge – that excellence is teachable.

But (M2) is unsatisfactory on two accounts. First, why should the alleged hypothesis be expressed as a protasis rather than a simple assertion? Consider:

And it is clear, Socrates, according to the hypothesis, excellence is knowledge, that excellence is teachable.

Second, (M2) ignores the emphatic force of enclitic particle *περ*. Consider it again in my original rendition of Meno's statement (M):

And it is clear, Socrates, according to the hypothesis, if *indeed* excellence is knowledge, that excellence is teachable.

In short, according to (M2), where (ii) stands in apposition to *ὑπόθεσιν*, Meno's statement simply makes no sense.

Let us, therefore, dismiss the common reading. Instead, given that *ὑπόθεσις* here means "postulate," (M) must be interpreted as follows:

And it is clear, Socrates, according to the postulate [that knowledge is teachable], if indeed excellence is knowledge, that excellence is teachable.

The proposition whose status is expressed hypothetically here is that excellence is knowledge. And this is as it should be. Socrates has just argued that knowledge is the only psychological good. Thus, in expressing (ii) in (M) Meno is acknowledging that the teachability of excellence depends upon the uncontroversial postulate (Q) that knowledge is teachable and the controversial claim that excellence is knowledge.

V. The Problems of the Geometrical Illustration at *Meno* 86e1-87b2

We come now to the postulate in the geometrical illustration. As I have said, the basic character of the geometrical problem is straightforward: to inscribe an area as a triangle within a circle. But Socrates' description is vague and ambiguous at several points and has generated a vast literature.³⁰ The text runs as follows:

By 'out of a postulate' (τὸ ἐξ ὑποθέσεως) I mean the following – the way the geometers often inquire whenever someone puts a question to them; for example, concerning area (χωρίον), whether this area (τόδε τὸ χωρίον) can be extended in this circle as a triangle. One of them would say, 'I do not yet know if it [the area] is of that sort [that is, can be so extended]; but I have, as it were, a certain postulate (τινα ὑπόθεσιν) useful for the task, the following one (τοιάνδε). If this area (τοῦτο τὸ χωρίον) is of such a kind that when one extends (παρὰ τὴν δοθεῖσαν αὐτοῦ γραμμὴν) it along its given line (παρὰ τὴν δοθεῖσαν αὐτοῦ γραμμὴν), it can fall short (ἐλλείπειν) by an area (χωρίον) that is of such a kind as (τοιούτῳ... οἷον) the extended [area] (τὸ παρατεταμένον) itself (αὐτὸ), then one consequence follows; and on the other hand, if it is impossible for it to experience these things, then another consequence follows. Therefore, laying down a postulate (ὑποθέμενος), I want to tell you what follows in the case of the extension of it [the area] (τῆς ἐντάσεως αὐτοῦ) into a circle, whether it is impossible or possible.³¹

³⁰ Heijboer (1955) notes that in 1832 Patze had collected twenty-two interpretations and that by 1861 Blass had collected about thirty. A century after Blass, Bluck (1961, 441-61) discusses five "among the most interesting explanations" of his predecessors: Benecke (1867), Butcher (1888), Cook Wilson (1903), Farquharson (1923), and Heijboer (1955). Note that Heath's interpretation (1921) is the same as Cook Wilson's. Since then, at least four more have been published: Gaiser (1964), Sternfeld and Zyskind (1977), Meyers (1988), and Lloyd (1992). See also the comments of Sharples (1985) 158-60. Note also that the Cook Wilson interpretation is preferred by Knorr (1986) 71-6, maintained in Grube's translation in Cooper (1997), and assumed by Menn (2002).

³¹ *Men.* 86e4-87b2.

The passage involves numerous geometrical and philological difficulties. Let us hereafter call the figure to be inscribed in the circle X , which is described as "this area" (τόδε τὸ χωρίον and τοῦτο τὸ χωρίον), can be conceived in terms of its area or its shape. We can assume that the shape of X is rectilinear, but it is unclear whether X is regular or how many sides X has.

Typically these obscurities are taken to be insignificant, for, following Euclid I.45, any rectilinear figure can be converted into a parallelogram in a given angle. Let us refer to any such converted parallelogram as Y .

It is unclear whether Socrates has a specific kind of triangle in mind. Interpreters often assume that the triangle is isosceles.³²

It is unclear whether in presenting the problem, Socrates is seeking an actual solution or rather the determination of the possibility of a solution.³³ X is said to be extended παρὰ τὴν δοθεῖσαν αὐτοῦ γραμμὴν, literally "along the given line of it." The pronoun αὐτοῦ has variously been interpreted to refer to the circle, to X , or to Y . Related to this is the question of the meaning of "given". For example, if the line refers to the base of Y , then "given" means "resulting" from the conversion of X into Y . But if the line refers to the diameter of the circle, then "given" means "produced before" X is applied to the circle. Furthermore, whatever figure is applied to the circle, the success of the inscription requires that it fall short by another figure Z of such a kind (τοιούτῳ... οἷον) as the figure applied. It is unclear whether the correlatives here mean that the area of Z is equal to the area of X or Y or whether the shape of Z is similar to that of X or Y .

Finally, there is a problem of the relation between παρατείναντα and ἐλλείπειν. The participle is masculine accusative singular. As such, it appears to refer to the agent extending and thus applying the rectilinear figure X . However, the subject of the infinitive must be the extended and converted figure Y , for it is Y , relative to the line given for the extension of X , that falls short, not the agent extending X . Accordingly, there appears to be an anacolouthon between παρατείναντα and ἐλλείπειν.³⁴

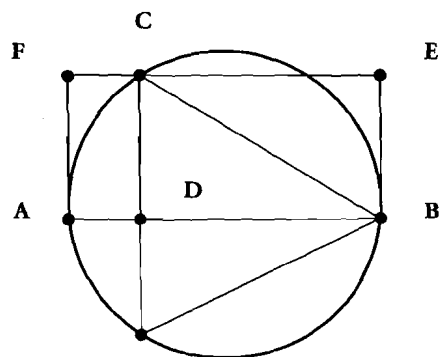
³² Compare Menn (2002) 209.

³³ See Knorr (1986) 73.

³⁴ I think παρατείναντα must be corrupt. It is attested in manuscripts BTW. Manuscript F has παρατείνοντα, but this is no better. Those who retain it, argue that it is an accusative absolute. (See Sharples, 1985, 161.) But with a personal construction, this is extremely rare. Since the sense is not really in doubt, a simple emendation to παρατείναντι may be the obvious solution, viz.: "it can fall short for one who extends it along its given line." Alternatively, we may have the aorist neuter participle παρατείνων or the infinitive

No interpretation is both compelling in itself and wholly free from problems. The so-called Cook Wilson interpretation appears to be the most widely accepted. Subsequent to Cook Wilson himself, it has been endorsed by Heath, Mahoney, Knorr, and Menn. Heijboer, Bluck, Gaiser, Sternfeld and Zyksind, and Meyers all reject it; and Lloyd emphasizes the gravity of its defects. Moreover, no one who has endorsed the Cook Wilson interpretation since Heath has actually defended it against its critics.³⁵ But the defects in the interpretations of Heijboer, Bluck, Gaiser, Sternfeld and Zyksind, and Meyers are graver than those of the Cook Wilson interpretation; and it is possible to allay a number of criticisms that they have made against the Cook Wilson interpretation.

According to the Cook Wilson interpretation, Socrates offers a reduction of the problem by means of geometrical analysis, rather than an actual solution to the problem. Precisely, the problem reduces to the problem of applying X to the diameter of the circle (AB) so that the applied figure $BDCE$ ($= Y$) falls short by a similar figure $DAFC$ ($= Z$).



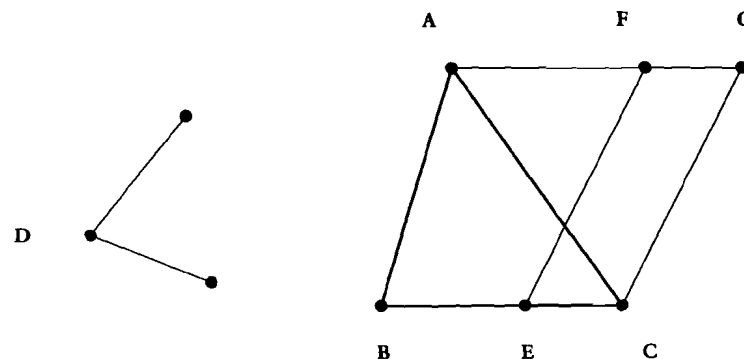
[Cook Wilson diagram]³⁶

παρὰτείνειν (used intransitively as at *R.* 527a8) perhaps followed by καὶ; viz.: “extending along its given line it [also] falls short” or “it extends along its given line and falls short.” For alternatives, see Bluck (1961) 324.

³⁵ The most incisive criticisms of the Cook Wilson interpretation can be found in Bluck (1961) 449-51, who largely follows Heijboer (1955), and Lloyd (1992) 171-3.

³⁶ This diagram is based on the one in Cook Wilson (1903).

Note that in theory any area can be extended along any line (segment) such that it equals, exceeds, or falls short of that line. Accordingly, the application of a figure to a line on what we would call the X -axis requires a correlative line on the Y -axis. Compare Euclid 1.42, the first problem to employ techniques for the application of areas in *Elements*. The problem is to construct a parallelogram – the result here is $EFGC$ – equal to a given triangle ABC in a given rectilinear angle D . Note that in the figure below $\angle D = \angle B = \angle E$.



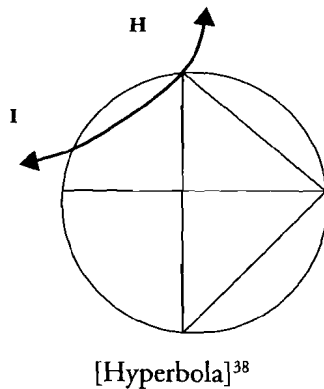
[Euclid 1.42]³⁷

Here the altitude of the triangle, specifically the vertex A , determines the correlative points that constitute a straight line parallel to the line to which the figure is applied. In the case of the Cook Wilson interpretation, X 's application to the diameter of the circle is correlative to a point on the circumference of the circle, for example, point C in the Cook Wilson diagram.

The equilateral triangle is the triangle of maximum area that can be inscribed within a circle. In other words, this constitutes the limiting condition or diorism of the problem. Therefore, if the area of X is equal to the area of the equilateral triangle, there is only one solution to the problem. However, if the area of X is less than the area of the equilateral triangle,

³⁷ This diagram is based on the one in Heath (1908).

there will be two solutions. In that case, the problem is equivalent to that of finding two mean proportionals between two given lengths. The point or points (H and I in the figure below) on the circumference of the circle determining the length and height of the possible solutions will lie in a hyperbola whose asymptotes are the diameter of the circle and tangent at its endpoint.



Accordingly, the actual solution cannot be achieved by ruler and compass, but requires the use of conics. In the second half of the fifth century Hippocrates of Chios had reduced the problem of cube duplication to the problem of finding two mean proportionals between two given lengths. And *c.* 370 or later Menaechmus, a mathematician working within the Academy, had solved the problem of finding two mean proportionals through the use of conic sections. Menaechmus' solution, then, postdates the composition of *Meno*.³⁹ Accordingly, Knorr concludes: "Plato's emphasis on the possibility of the inscription might be taken to signify that geometers had then discovered the diorism, but not the actual solution of this problem."⁴⁰

³⁸) This diagram is based on the one in Mahoney (1968/9).

³⁹) Pace Menn (2002) 214.

⁴⁰) (1986) 73.

So much for the Cook Wilson interpretation. Now for its defects. τοιοῦτῳ... οἷον means that *Y* and *Z* are geometrically similar, not equal. But Heijboer writes: "the text itself may be said to contradict the supposed geometrical meaning [of similar] on account of the addition of αὐτό [to the phrase 'the extended [space]' (τὸ παρατεταμένον)]. Of a figure similar to another figure we might vaguely say that it is like the other, but we could not possibly say that it is 'like the other figure itself'. The word 'itself' far more suggests identity than similarity."⁴¹ Note in addition that Socrates would be using the same word χωρίον to refer first to the equal areas of *X* and *Y*, but then to the similar shapes of *Y* and *Z*.

Second, according to the Cook Wilson interpretation, "its given line" refers to the diameter of the circle. But Bluck insists that the γραμμὴ of a circle is its circumference. In support of this view, he cites Euclid I def. 15: "a circle is a figure encompassed by one line (ὑπο μιάς γραμμῆς περιεχόμενον)." Moreover, as Bluck notes, since Socrates has already spoken of *this* circle,⁴² the circle is given. So why speak of its *given* line? "Surely παρὰ τὴν γραμμὴν αὐτοῦ [its line] ought to be enough?" In addition, note that there is no instance in Euclid where the γραμμὴ of a circle refers to the diameter of a circle.

I do not see that there is a solution to the first problem. If we accept the Cook Wilson interpretation, we must accept that Plato is using the cor-relatives inconsistently.⁴³ I do, however, see a solution to the second problem. The genitive here is possessive; thus, the more fluid translation "its given line," compared to "the given line of it." But possession may be variously conceived. I suggest that the sense here is equivalent to the sense that we have when, for example, with regard to driving on the highway, we criticize a driver for not sticking to *his* lane. Here we mean that the lane *belongs to him* in the sense that it is *for the driver to drive on*. Accordingly, *X*'s given line is the line for *X* to be extended along, in other words, the line to which *X* is to be applied.⁴⁴ This line may well be the diameter of the

⁴¹) (1955) 120.

⁴²) τὸνδε τὸν κύκλον at 86e6.

⁴³) I do not find Heijboer's point about the emphatic αὐτό compelling.

⁴⁴) The same idea, perhaps more obviously, could be captured by two other constructions: if, instead of αὐτοῦ, we had αὐτῷ (the line given *to* or *for* it), or if we could understand an elliptical noun like ἐντάσει, viz.: [ἐντάσει] αὐτοῦ (the line given *for the inscription of it*). In the second case, compare the phrase περὶ τῆς ἐντάσεως αὐτοῦ εἰς τὸν κύκλον at 87b1-2 in the immediately following sentence.

circle. Consequently, there is no need for supporters of the Cook Wilson interpretation to maintain that “αὐτοῦ” is masculine and refers to the circle (τὸν κύκλον) at 86e6, two lines above. That is clearly unacceptable.

Lloyd, who regards these problems for the Cook Wilson interpretation as “perhaps, of minor importance,” emphasizes three that he takes to be “more serious.”⁴⁵ First, there is no explanation of “how the problem as reduced is equivalent to the one started with.” By this Lloyd means that while the Cook Wilson interpretation explains the crucial conditional,⁴⁶ this explanation actually exposes the obscurity of Socrates’ statement. Second, it is unclear how to tackle the problem once it has been reduced. In other words, according to the Cook Wilson interpretation, no actual solution to the problem was available to Plato. Third, “nothing is said . . . concerning . . . the [diorism] of the problem.” That is, Socrates does not specify that the equilateral triangle is the triangle of maximum area that can be inscribed within a circle. Like his first objection, Lloyd’s second and third underscore the obscurity in the way the illustration is presented.

Indeed, Lloyd’s emphasis on the obscurity consequent upon the Cook Wilson interpretation serves Lloyd’s thesis: “the very obscurities [of the geometrical illustration] . . . provide the point [that Plato is trying to impress upon his readers], namely that we *stand in need of initiation* [into the science of mathematics].”⁴⁷ And others who have defended the Cook Wilson interpretation emphasize that, as far as mathematical details are concerned, Plato is being intentionally cryptic. For example, Heath: “Plato was fond of dark hints in things mathematical.”⁴⁸

Yet these are not necessarily problems of the Cook Wilson interpretation. If indeed Plato is being cryptic, then an accurate interpretation should reflect this. Of course, those who favor a mathematically simpler solution observe that Meno accepts Socrates’ statements without question. As such, supporters of the Cook Wilson interpretation may claim that Meno grasps the general form of reasoning that Socrates uses the geometrical illustration to convey; however, he does not grasp the mathematical details.

⁴⁵ (1992) 172-3.

⁴⁶ If X is of such a kind that when one extends it along its given line, it can fall short by figure Z that is similar to the extended figure Y , then one consequence follows; and on the other hand, if it is impossible for it to experience these things, then another consequence follows.

⁴⁷ (1992) 181.

⁴⁸ (1921) 302.

So much then for the problems as well as the admittedly imperfect defense of the Cook Wilson interpretation. In conclusion, let us now state the geometrical ὑπόθεσις. First, recall Socrates words:

I have, as it were, a certain postulate (ὑπόθεσιν) useful for the task, the following one. If this area is of such a kind that when one extends it along its given line, it can fall short by an area that is of such a kind as the extended [area] itself, then one consequence follows; and on the other hand, if it is impossible for it to experience these things, then another consequence follows.

In accordance with the Cook Wilson interpretation, this ὑπόθεσις is interpreted as:

(R) If X can be applied to the diameter of the circle so that the application yields Y and Z , then X can be inscribed as the triangle; and if not, not.

Observe that (R), like (P) and (Q), is true and regarded by Socrates as such. In other words, (R) is not a hypothetical proposition. I emphasize that this is so, even though (R) is a conditional proposition. Hypotheticality is an epistemic attitude; conditionality is a syntactic form. While a conditional sentence may also be hypothetical, it need not be. For example, the sentence “if $A=B$ and $B=C$, then $A=C$ ” is conditional, but necessarily true. In short, (R) shares with (P) and (Q) the characteristic of being *non-hypothetical*.

What is distinctive about (R) qua ὑπόθεσις relative to (P) and (Q), then, is that (R) is a conditional, whereas (P) and (Q) are atomic propositions. Evidently, for Socrates and so Plato ὑποθέσεις may assume either form. It is not hard to see the reason for this. Let us call the property of being able to be applied to the diameter of a circle so that the resulting applied figure falls short of the diameter by a figure similar to the applied figure the “elliptic-property”; and let us call the property of being able to be inscribed as a triangle in a circle the “inscription-property.” Observe, then, that (R) depends upon the following atomic proposition: an area that has the elliptic-property has the inscription-property. From this it follows that if X has the elliptic-property, then X has the inscription-property. In other words, the ὑπόθεσις in the geometrical illustration simply involves the application of the principle to the given figure X . Conversely, turning to the ethical problem, it would have been reasonable for Socrates to have expressed the ὑποθέσεις as the following conditionals: if excellence is

knowledge, then excellence is teachable, and if knowledge is the only psychological good, then knowledge is excellence.

VI. Socrates' Geometrical Illustration and the Method of Geometrical Analysis

Indeed, it has been suggested that the method ἐξ ὑποθέσεως, which Socrates of course says he is deriving from geometry, is specifically indebted to the method of geometrical analysis.⁴⁹ I believe that this is correct, although precisely how the method ἐξ ὑποθέσεως is indebted to geometrical analysis requires clarification.⁵⁰

Analysis is a method of discovery. The analyst seeks to determine whether a theorem is true (theoretical analysis) or whether a construction is possible (problematic analysis).⁵¹ The theorem or construct is called the thing-sought (τὸ ζητούμενον). The analysis begins by assuming the truth of the theorem or the existence of the construct.⁵² The nature of the next step in the procedure is controversial. Hintikka and Remes well articulate the problem:

⁴⁹ Heath (1921) 300-1, Mahoney (1968/9) 334-6, Knorr (1986) 72, Faller (2000) *passim* and Faller (unpublished), and most recently Menn (2002).

⁵⁰ Menn (2002, 197) claims that "there is no real doubt about what analysis was." The remark is rather amazing. Admittedly, Menn is contrasting the "unclear" and "sometimes misleading" descriptions of analysis that have survived, particularly in Pappus, but also [Euclid] and Heron, with the practice of analysis in Archimedes, Apollonius, and elsewhere. Even so, Menn ignores the discussion of Behboud, which rejects the basic position of Hintikka and Remes that Menn accepts. The point is simply that the debate persists. The principle English contributions are as follows: Heath (1921) 137-42, Cornford (1930), Robinson (1935), Cherniss (1951), Gulley (1958), Mahoney (1968/9), Hintikka and Remes (1974), Knorr (1986) 354-60, Behboud (1994). Consider also Faller (2000). At the beginning of his paper, Mahoney has helpful historical remarks on the *status quaestionis* before the twentieth century. Behboud also helpfully summarizes the debate and its limitations.

⁵¹ There is a further distinction to be noted between poristic and problematic analysis. In the former case, the objective is not to construct, but to find something such as a point, abstract magnitude, or number, "none of which are properly constructed." See Menn (2002, n.14).

⁵² As Behboud (1994, 58) and Menn (2002, 200) emphasize, the proper logical description of the geometrical practice of analysis requires the assumption of the *conjunction* of the thing-sought and its antecedent condition.

Does analysis consist of (i) drawing logical conclusions from the desired theorem, or (ii) in looking for the premises from which such conclusions (ultimately leading to the theorem) can be drawn?⁵³

(i) suggests that the analyst draws logical consequences from the assumed thing-sought. The drawing of consequences stops when the analyst hits upon something independently known to be true. In this case, the direction of analysis is conceived as "downward," that is, by deduction from the thing-sought to its consequences.

In contrast, (ii) suggests that the analyst seeks the premises from which the thing-sought is deducible, the premises from which those premises are deducible, and so on, until one hits upon a first principle or proven theorem. In this case, the direction of analysis is conceived as being "upward," from the thing-sought through its antecedents. The idea is that axioms, definitions, first principles, or more fundamental theorems preside over, govern, or control the rest.

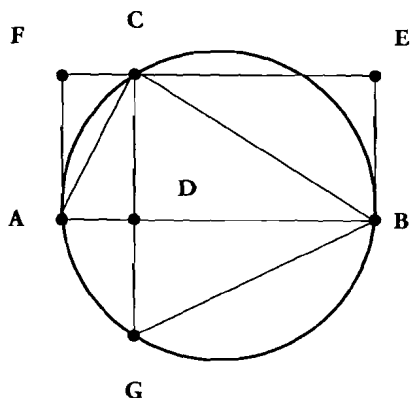
Adjudication between the upward and downward interpretations of analysis involves consideration of the relation of analysis to the complementary method of synthesis. The basic question is what synthesis contributes to analysis. For instance, assume the downward interpretation of analysis where one begins with the assumption of the thing-sought and deduces to something independently known. In that case, synthesis reverses the procedure and reasons from the thing independently known to the thing-sought. The problem here is the reversibility or convertibility of the deductions from the thing-sought to the thing independently known; P 's implication of Q does not assure Q 's implication of P . Successful analysis, therefore, requires convertible implications, in other words, equivalences. In contrast, according to the upward interpretation of analysis, where one reasons from the assumed thing-sought through premises from which the thing-sought can be deduced to more fundamental theorems or first principles, synthesis is simply the natural deduction of the thing-sought from premises. Accordingly, here where analysis involves the logic of discovery, synthesis involves the logic of demonstration.

I follow those scholars, most recently Menn, who favor the downward interpretation of analysis.⁵⁴ Menn, who also endorses the Cook Wilson

⁵³ Hintikka and Remes (1974) 11; I have inserted Roman numerals to facilitate discussion.

⁵⁴ Hankel (1874) 137-50, Zeuthen (1896) 92-104, Heath (1921) 291, Robinson (1935) 464-5, Cherniss (1951) 417, Mahoney (1968/9) 321, Knorr (1986) 354-7, Behboud

interpretation of the geometrical problem in *Meno*, proposes the following analysis to explain Socrates' articulation of the geometrical $\text{\u03c5\u03c0\u03b1\u03b8\u03b5\u03b9\u03c3\u03b9\u03c3}$:



[Menn's Analysis]⁵⁵

So let BCG be an isosceles triangle, $BC = BG$, inscribed in the circle; the diameter BA perpendicularly bisects the chord CG at a point D. Connect AC. The angle ACB is inscribed in a semicircle, and is therefore a right angle. So the triangles ADC and CDB are similar, to each other and to the triangle ACB. So, completing the rectangles ADCF and CDBE, we see that these rectangles are similar, and therefore the rectangle CDBE falls short of the line AB by a figure similar to itself. Since the rectangle CDBE is double the triangle CDB, which is half the triangle BCG, it follows that $CDBE = BCG$; but $BCG = X$, so $CDBE = X$. So the given area X has been applied to a diameter of the given circle in the form of a rectangle, in such a way that it falls short of the diameter by a figure similar to the applied area.⁵⁶

Recall that, according to the Cook Wilson interpretation, analysis is employed in Socrates' geometrical problem not to solve the problem, but

(1994) 53, and Menn (2002) 198-9. The upward interpretation has been endorsed by Cornford (1930) 43-50 and Hintikka and Remes (1974) 7-21 – but consider also Behboud's criticism (1994, 65 and n.13) of Hintikka and Remes for vagueness. Additional proponents are cited by Gulley (1958) n.1. Gulley himself (1958, 4) suggests that the upward and downward interpretations accurately reflect two forms of analysis. See also Fallor (2000) 7-22.

⁵⁵ This diagram is based on the one in Menn (2002).

⁵⁶ (2002) 212.

to *reduce* one problem (the triangle inscription of an area into a circle) to another (the application of areas). Indeed, it has been suggested that the method of analysis was originally employed to reduce less tractable problems to more tractable ones.⁵⁷ For example, we mentioned that Hippocrates of Chios reduced the problem of cube duplication to the problem of finding two mean proportionals. There is also a remarkable passage in *Prior Analytics* where Aristotle illustrates reduction ($\text{\u03b1\u03c0\u03c9\u03c7\u03b1\u03b3\u03b7}$) using an example strongly reminiscent of the ethical section of our *Meno* passage:

By reduction we mean an argument in which the first term clearly belongs to the middle, but the relation of the middle to the last term is uncertain, though equally or more convincing than the conclusion... For example, let A stand for what can be taught, B for knowledge, and C for justice. Now it is clear that knowledge can be taught; but it is uncertain whether excellence is knowledge. Now if BC [justice is knowledge] is equally or more convincing than AC [justice is teachable], we have a reduction...⁵⁸

- This passage lends support to the Cook Wilson interpretation of the geometrical passage in *Meno*, to the view that the $\text{\u03c5\u03c0\u03b1\u03b8\u03b5\u03b9\u03c3\u03b9\u03c3}$ in the passage alludes to geometrical analysis, and to the view that the analysis alluded to was used to reduce one problem to another.

VII. The Method $\text{\u03b5\u03be\u03c5\u03c0\u03b1\u03b8\u03b5\u03b9\u03c3\u03b9\u03c3}$ in *Meno*

The preceding results provoke several related questions. What is the relevance of geometrical analysis to the ethical problem that immediately follows the geometrical problem in *Meno*? If the geometrical problem that Socrates uses to illustrate reasoning $\text{\u03b5\u03be\u03c5\u03c0\u03b1\u03b8\u03b5\u03b9\u03c3\u03b9\u03c3}$ involves analysis, we would expect the ethical problem to do so as well. Indeed, we have just seen independent evidence from Aristotle's *Prior Analytics* that suggests that the examination of the ethical problem relates to reduction. But it is a question precisely how geometrical analysis relates to the ethical problem. Indeed, it is a question precisely how geometrical analysis relates to the geometrical problem. More specifically, it is a question precisely how geometrical analysis relates to the $\text{\u03c5\u03c0\u03b1\u03b8\u03b5\u03b9\u03c3\u03b9\u03c3}$ employed in the examination of

⁵⁷ See Mahoney (1968/9) 331-7.

⁵⁸ II.25.

the geometrical and ethical problems. Finally, it is a question what role the *ὑποθέσεις* in both the geometrical and ethical problems play.

Let's begin with the geometrical problem. In this case, Socrates' examination does not actually deploy analysis to reduce the problem of inscribing *X* as a triangle in a circle. Rather, the geometrical *ὑπόθεσις* depends upon reduction *yielded by prior analysis*. To be more precise, we should distinguish two aspects of the *ὑπόθεσις*, the principle itself (that which has the elliptic-property has the inscription-property), and the application of the principle to a given figure *X*. The principle is the result of analysis that has occurred prior to and independently of the geometrical illustration. The actual *ὑπόθεσις* involves the application of the given figure *X* to the principle. Accordingly, reasoning *ἐξ ὑποθέσεως* here means using something cognitively secure – in this case achieved by the method of geometrical analysis – to advance inquiry into something unknown. In other words, one reasons *from* the postulate *toward* the goal of inquiry.

In the case of the first step of the ethical problem, it appears that analysis – or, if you will, a method analogous to analysis – occurs. Socrates reasons as follows:

- (i) What sort of being pertaining to the soul would excellence be, if it were to be teachable or not teachable? (ii) Firstly, if it were different from or such as knowledge, then it would be teachable or not teachable... (iii) Or is this at least clear to everyone, that there is nothing else that a person learns except for knowledge?... (iv) Then if excellence is a sort of knowledge, it is clear that it is teachable.⁵⁹

The question governing the inquiry is whether excellence is teachable. Strictly, then, we would expect the analysis to begin with the assumption that excellence is teachable and to proceed with deduction from the assumption. Indeed, Socrates begins in a comparable way; (i) is similar to the following question: "If we were to assume that excellence were teachable, what would this imply about excellence?"

Step (ii), then, begins the deduction from being teachable to being a sort of knowledge. This step in the argument is clearly based on the proposition that knowledge is teachable, whose cognitive security is independent of the argument. As such, the proposition is akin to a geometrical proposition that a mathematician would know independently of and prior to the analysis and thus one that he could confidently deploy in the analysis. The

⁵⁹ *Men.* 87b5-c6. I have inserted Roman numerals to facilitate exegesis.

striking difference, of course, is that such propositions of geometry were not only already to some extent formalized and systematized, but, in comparison with the range of propositions that might be deployed in the analysis of an ethical problem, extremely limited in number.

Step (iii) adds important information to the deduction. As we emphasized in our brief account of analysis, the success of analysis depends upon deductions that are convertible, in other words, equivalences. In the case of the geometrical illustration, the elliptic- and inscription-properties are equivalent. Here too in the first step of the ethical problem, specifically in (iii), Socrates is careful to deduce not merely that being teachable implies being a kind of knowledge, but that since a person learns nothing except knowledge, the two are equivalent.

It is the convertibility of the deduction that explains what would otherwise be a puzzling conclusion to the first step of the ethical problem. Having used the postulate that knowledge (alone)⁶⁰ is teachable to complete the deduction, Socrates now draws the inference in (iv) that if excellence is knowledge, then it is teachable. If Socrates were analyzing the assumption that excellence is teachable, we would instead expect him to conclude with the following inference: if excellence is teachable, then excellence is knowledge. Strictly speaking, then, what we have in (iv) is not the conclusion of the analysis, but what would in fact be the first step in the synthesis of the problem. Observe that the *ὑπόθεσις* in the geometrical problem has the same form. The conditional is not: if *X* has the inscription-property, then *X* has the elliptic-property; rather, it is: if *X* has the elliptic-property, then *X* has the inscription-property. Of course, in both cases, the conditional does not mark the actual first step in the synthesis of the problem. Instead, the conditional expresses the reduction of the problem as the result of analysis. In other words, the conditional states that if it were the case that *X* or excellence had the elliptic-property or were a sort of knowledge, then

⁶⁰ There is a serious problem with Socrates' argument here. Postulate (Q) is originally introduced as "knowledge is teachable." It does not follow from this, however, that what is teachable is knowledge. In other words, knowledge and what is teachable are not equivalent. Instead, Socrates needs the stronger claim (Q2): Only knowledge is teachable. But this presents a problem for Socrates. One might charitably, originally interpret (Q) as (Q2). But then it is questionable whether (Q2) can be admitted as a *ὑπόθεσις*, for it is questionable whether (Q2) is self-evident and uncontroversial. (I am grateful to an anonymous referee for pressing me to state this difficulty with Socrates' argument.)

the problem would be solved. So, in short, the analysis in the first step of the ethical problem serves to reduce one problem, the teachability of excellence, to another, the epistemic character of excellence.

Finally, as in the case of the geometrical problem, here in the first step of the ethical problem the *ὑπόθεσις*, which is something cognitively secure, serves to advance inquiry into that which is unknown. More precisely, we can say that the *ὑπόθεσις* serves as such in the analysis of the problem which results in the reduction of the original problem to a different problem. In contrast, in the geometrical problem, the *ὑπόθεσις*, which includes the principle as well its application to the given figure *X* under examination, does not serve in the analysis, but in the expression of the reduction itself resulting from the analysis.

As we noted in the introductory section of the paper, the second step of the ethical problem has two parts. The first (87c11-d8), akin to the first step of the ethical problem, involves the reduction of one problem to another. The second part (87d8-89c4) involves an argument that knowledge is the only psychological good. It is the first part that concerns us. It runs as follows:

(i) After this, it seems, we ought to inquire whether excellence is knowledge or different from knowledge. . . (ii) What then? Do we affirm that excellence is a good thing. And does this postulate stand firm for us? . . . (iii) Then if there is something that is both good and separate from knowledge, perhaps excellence would not be a sort of knowledge. But if there is nothing good that knowledge fails to encompass, then our suspicion that it is a sort of knowledge is a good suspicion.⁶¹

Having employed analysis to reduce the problem of the teachability of excellence to the problem of the epistemic nature of excellence, the second step of the ethical problem begins in (i) with the statement of this problem: to determine whether excellence is a sort of knowledge. Here too analysis of the problem follows. This is confirmed by comparison with the analysis in the first step of the ethical problem. However, here in the second step, the order of reasoning differs. If the reasoning in the (first part of the) second step paralleled that in the first step, we would begin with an expression of the assumption that excellence is a sort of knowledge. But we get no question such as: "What sort of being would excellence be if it were to be a sort of knowledge?" Next, we would expect the claim that knowl-

⁶¹ *Men.* 87c11-d8.

edge alone is good and the deduction that if excellence is good, then excellence is a kind of knowledge. The reason why Socrates does not proceed in this way is as follows. It is controversial whether knowledge is the only (psychological) good. In contrast, it is uncontroversial that excellence is psychological goodness, in other words, that excellence is the only psychological good. Indeed, this, like the proposition that knowledge is teachable, is cognitively secure. Accordingly, instead of seeking to identify excellence with a sort of knowledge, Socrates attempts to identify knowledge with excellence.

We must, then, assume that the second step in the ethical problem proceeds upon the implicit question: "What sort of thing would knowledge be, if it were excellence?" Accordingly, (ii) states the cognitively secure *ὑπόθεσις* regarding excellence; and (iii) deduces that if knowledge is the only psychological good, then excellence is a kind of knowledge.

There are two points to observe about the deduction in (iii). First, Socrates clearly recognizes the significance of the distinction between equivalence and mere implication: "if there is something that is both good and separate from knowledge, perhaps (τόχ') excellence would not be a sort of knowledge." That is, Socrates recognizes that the identification of knowledge with excellence requires that knowledge be the only psychological good. In other words, successful analytic deduction requires an equivalence: "if there is nothing good that knowledge fails to encompass, then our suspicion that it is a sort of knowledge is a good suspicion."⁶²

Second, as in the first step of the ethical problem, the conditional in (iii) does not state the deduction we would expect from analysis. We would expect the following: if excellence is a sort of knowledge (= the assumption of the thing-sought), then knowledge is (the only psychological) good. Instead, in (iii) we get what appears to be the first step in the synthesis of the problem. But here again, (iii) does not actually serve as the first step in the synthesis; instead, it is a statement of the reduction resulting from analysis. That is, the problem of determining whether excellence is a sort of knowledge has been reduced to the problem of determining whether knowledge is the only psychological good. And, finally, as in the first step in the ethical problem, the *ὑπόθεσις*, as something known, serves in the analytic process to reduce one problem to another.

⁶² Incidentally, note that what is hypothetical here, the identification of knowledge with excellence, is described as a suspicion.

In sum, it emerges that Socrates' method of reasoning ἐξ ὑποθέσεις at *Meno* 86e1-87d8 derives from the method of geometrical analysis. More precisely, it derives from the particular use of geometrical analysis to reduce one less tractable problem to another more tractable one. ὑποθέσεις themselves, which are employed in the process, are not hypotheses, but cognitively secure propositions useful for those employing the method for purposes of reduction. Generally speaking, Socrates' presentation of the method ἐξ ὑποθέσεως suggests that when seeking whether x has a property P , something that we do not know, we attempt to identify another property Q possessed by all things that have P , something that is cognitively secure. In that case, instead of inquiring whether x has P , we can inquire whether x has Q . The procedure is valuable precisely insofar the question whether x has Q may be more tractable than the question whether x has P .

Finally, it is worth reiterating that at *Meno* 86e1-87d8 analysis is not used to solve a problem. Having reduced the problem of the epistemic character of excellence to the problem of the (psychological) goodness of knowledge, Socrates proceeds to argue (87d8-89c4), by non-analytic means – indeed, by means familiar from among the early dialogues – that knowledge is the only psychological good and thereby to solve the problem.

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Aristotle on Ontological Dependence

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Abstract

Aristotle holds that individual substances are ontologically independent from non-substances and universal substances but that non-substances and universal substances are ontologically dependent on substances. There is then an asymmetry between individual substances and other kinds of beings with respect to ontological dependence. Under what could plausibly be called the standard interpretation, the ontological independence ascribed to individual substances and denied of non-substances and universal substances is a capacity for independent existence. There is, however, a tension between this interpretation and the asymmetry between individual substances and the other kinds of entities with respect to ontological independence. I will propose an alternative interpretation: to weaken the relevant notion of ontological independence from a capacity for independent existence to the independent possession of a certain ontological status.

Keywords

Aristotle, substance, property, universal

In the *Categories*, Aristotle classifies beings into four kinds: individual substances such as you and me, universal substances such as humanity, and also individuals and universals in the various categories other than substance, such as quality and quantity, which I will lump together under the label 'non-substances'. Aristotle holds that individual substances are ontologically independent from non-substances and universal substances but that non-substances and universal substances are ontologically dependent on substances. There is then an asymmetry between individual substances and other kinds of beings with respect to ontological dependence. Such asymmetry is widely and rightly thought to be a lynchpin of Aristotelian metaphysics. What is really real for Aristotle are such ordinary mid-sized