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Hans-Georg Gadamer reportedly told a group of students in 1971 that he admired Jacob Klein’s first book “enormously” \(^1\) but that his commentary on the *Meno* \(^2\) “was a book written for the American mind.” The latter remark apparently was meant to compliment neither the American mind nor the book’s author. Just three years earlier, Gadamer had credited Klein with being the first to elaborate (in his first book, *Greek Mathematical Thought and the Origin of Algebra* \(^3\)) the “thesis that from very early on in the dialogues [of Plato] there are references to what in a word might be called the *arithmos*-structure of the logos,” \(^4\) and he also related then that “his [Klein’s] work had pointed my own research in new directions at the time when I was with him at Marburg.” Indeed, Gadamer maintains that this “is the thesis that I have been advocating for more than 30 years now,” \(^5\) which is a clear sign that his earlier remarks are meant to be complimentary, both of Klein as well as of the development of his own work subsequent to Klein’s influence.

Careful study of both Klein and Gadamer’s work, however, discloses good reasons to be cautious about the reliability of Gadamer’s interpretation of Klein’s first book. To begin with, nowhere in *GMT* does Klein refer to or otherwise attribute an “*arithmos*-structure” to the logos. What Klein does refer to and investigates extensively in this work is the *arithmos*-structure \(^6\) of two kinds of numbers, one

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mathematical and the other *eidetic*. The clarification of these two kinds of numbers in Plato’s philosophy (especially in the *Sophist*), on the basis of an exacting reconstruction of the ancient Greek mathematical context of ancient Greek philosophy, is a major goal of Klein’s first work. And in the case of both kinds of numbers, Klein endeavors to demonstrate that their peculiar part-whole *arithmos*-structure (which is a major discovery of his book) is something that, in a very precise sense, *exceeds the limits of the logos*.

This is neither a minor point nor, I would submit, one that can be properly reduced to a matter of “hermeneutical interpretation,” that is, to an unfolding of the meaning of a text that is incapable of being drawn to a conclusion, due to the finitude of human understanding. The investigations in GMT quite clearly show that what its author understands by the term “*arithmos*-structure” is something that characterizes, albeit in different ways, mathematical and eidetic numbers (*arithmoi*), and that it is because of this structure that both kinds of numbers are ultimately unintelligible to thought and therefore beyond the limits of the logos—although, again, for different reasons. Klein’s *Meno Commentary’s* account of the nature of learning is fundamentally informed by his insight into the nature of and the distinction between these two kinds of numbers in Plato’s thought, as his references (at key junctures of his commentary) to the problems they pose for the logos make apparent. But it is precisely the peculiar character of the whole that structures the relations proper to the *eide* in an *eidetic* number that holds the key to Klein’s portrayal of the myth of learning found in the *Meno*. This whole is neither mathematical, in the precise sense that the units encompassed by it are not identical units, nor “universal,” again in the precise sense that the nature of it as a whole does not belong to its parts and conversely. Klein’s commentary, nevertheless, endeavors to show that the peculiar character of the whole proper to the relations of *eide* in an *eidetic* number is precisely what characterizes the *telos*
proper to learning—as Plato’s portrayal in the *Meno* of the *logoi* belonging to the best of mortals, Socrates, makes apparent in myth and deed. Gadamer’s (or anyone else’s) lack of sensitivity to the context that GMT’s disclosure of the *arithmos*-structure of *eidetic* numbers provides for his *Meno Commentary* therefore presents an insuperable challenge for getting at the heart of the latter book, or so I will argue in what follows.

**Gadamer’s Departure from Klein on the Similarity and Difference Between Mathematical and Eidetic Numbers in Plato’s Thought**

Mathematical numbers according to Klein are ultimately unintelligible for two reasons, only one of which Gadamer addresses. The first, and more obvious reason, which Gadamer does address, is the aspect of their structural composition that brings together characteristics that, when understood as properties, necessarily appear to thought and therefore the logos as opposite and hence, when predicated of the same thing, contradictory for all time—namely, “one” and “many.” Precisely this mixture of “the one” and “the many” is what Gadamer stresses when he talks about the “mysteriousness” of numbers and of their status as the “model” for the “structure” of the logos.

For Klein, however, mathematical numbers are also ultimately unintelligible for another reason, because the being-one or unity of each number itself is different, in the sense that the unity of two things is different from the unity of three things; that is, being-two is different from being-three, and so on. Gadamer’s discussion of the “*arithmos*-structure,” however, passes over this last point in silence, and this elision can be seen to be what is behind his inversion of a fundamental aspect of Klein’s account of the one and many in Plato’s philosophy, the claim that the *arithmos*-structure of eidetic numbers has priority over the *arithmos*-structure of mathematical numbers. Klein’s claim is made in the service of showing that the unitary structure characteristic of the differ-
entia proper to each different mathematical number cannot be accounted for so long as these differentia are understood as structured by a “one” that is “one” in the sense of a mathematical unit, that is, as a one that is one among other ones, all of which are identical. The recognition of this aporia is what, Klein maintains, necessitates Plato’s introduction of beings with a non-mathematical unitary structure that nevertheless make something like the unity of mathematical numbers possible. Gadamer’s inversion of this priority, that is, his claim that what is “in common” among the eide in their being together is not what is “in common” in the sense of a genus but, rather, that “it is the number [Zahl] which serves as a model” for this commonality, misses, in effect, the main point of the first part of Klein’s GMT. That point is that only the hypothetical paradigm of something like eidetic numbers can account for the being of both mathematical numbers and of that which is rendered intelligible when thought is engaged in giving an account, a logos, of what things are.

This point is, admittedly, not easy to grasp, for reasons having to do with the scope and limits of the very intelligibility belonging to the concepts proper to Greek philosophical and mathematical thought, what Klein refers to as their “conceptuality” [Begrifflichkeit]. First off, Klein shows that there is a distinction between the unity belonging to concepts (eide) as they are employed in ordinary predication and the unity of numbers. When it is said that “the dog is an animal” and “the horse is an animal,” the genos “animal” is united with the eide dog and horse in the following manner: both together as well as each by itself is inseparable from being an animal; animal is common to dogs and horses and each dog and horse is an animal. Not so, according to Klein, in the case of the unity belonging to the structure of mathematical numbers. Two things, say, Klein and Gadamer, are each one, while they are “two” only when both are considered together. Being two, unlike being an animal, cannot be predicated of that which is united by its being. Being an animal is both common to a dog and a horse and
something that is true of each one of them by themselves; being two, while true of both Klein and Gadamer, is not true of each by himself, because each alone is precisely not two, but one.\textsuperscript{13}

The peculiar—when compared with the unity of ordinary predication—arithmetical unity characteristic of the being-two, of the \textit{arithmos} two, is what Gadamer, following Klein, refers to as the "\textit{arithmos}-structure" of the unity of a multiplicity, of the one over the many. However, Gadamer departs (without acknowledging the discrepancy) from Klein when he attributes this structure to the logos and credits Klein with its discovery. This is evident when Gadamer asserts that "\textit{t}here is an overall structural parallel between number and logos,"\textsuperscript{14} such that just as the unity of a number has "attributes which belong to the numbers [\textit{Anzahlen}] as such but precisely not to the units that comprise them,"\textsuperscript{15} so, too, does "the unity of discourse also have a certain determinate property not found in any of its single parts (letters, syllables, words)."\textsuperscript{16} And he also (knowingly or unknowingly) passes over in silence the distinction that Klein demonstrates exists between the \textit{arithmos}-structure belonging to the unity proper to mathematical numbers and that proper to the unity of eide in the so-called "eidetic numbers." This distinction is not only responsible for Klein's formulation of the priority in the order of being of the \textit{arithmos}-structure of eidetic numbers over that of mathematical numbers, that is, the ontological priority of eidetic over mathematical numbers, but it is also the reason behind Klein's claim that for \textit{both} mathematical and philosophical thinking, the unity of being is something that transcends the limits of the logos, and that it does so for all time.

Mathematical, or, more precisely, arithmetical concepts presuppose a manifold of identical and indivisible unitary beings (noetic monads) accessible only to thought that are successively unified in discrete installments, beginning with the unity of two such beings. The discrete installments of noetic monads, that is, the \textit{arithmoi}, increase by one unitary
being at a time in a manner that renders the specific unity of each installment different, even though the general nature of each discrete installment, each *arithmos*, remains the same. That is, in general *arithmoi* share the commonality of being unities of multiplicities, of being both “one” and “many,” but the specific nature belonging to the being one of each *arithmos* is precisely something that *arithmoi* do not share, because each *arithmos* unifies a different amount of units. The thoughtful attempt to provide a theoretical logos of the being of *arithmoi* by using the arithmetical concepts of “one” and “many” not only encounters the aporia (already mentioned) of the contradiction that emerges when one and the same thing is said to be both one and many. It also encounters the impossibility of making intelligible how the different *arithmoi* are different by using arithmetic’s fundamental principle, the “one.” Because the nature of the mathematical one is characterized as being a one among an unlimited field of other ones that are the same in being both indivisible and in being among unlimited many other ones, its kind of unity is totally unsuited to account for how it is that the unity of one *arithmos* is different from another; for instance, to account for how the unity of being two is different from the unity of being three.

It is precisely this characteristic of mathematical numbers that exceeds for all time the limits of the logos according to Klein, namely that the homogeneity of the principle of the one prevents it from being able to make intelligible the heterogeneity of what arithmetical thinking (also for all time) cannot deny: that there are different numbers and that each different number, despite its general commonality as a number, is also different in the sense of its being the exact—and therefore different from all other numbers—number that it is. And it is this, according to Klein, that is behind Plato’s hypothesis of non-mathematical numbers, numbers that are like mathematical numbers in the sense that their unity as numbers cannot be predicated of the single units that they unify, but totally unlike mathematical numbers in that (1) the
units that they unify are not composed of a multiplicity of identical beings and (2) the being one of each eidetic number excludes its opposite, that is, excludes its being many, and is therefore, in this sense, “pure.”

The units of eidetic numbers are more than one, and in this sense “many,” but they are not many in sense of being countable as one and one, and one, and so on. This is because the units of eidetic numbers, their parts, are not only not identical with one another but also “incomparable.” This incomparability renders as un-mathematical each eidetic number as well as the unity of its arithmos-structure.

In addition to composing the unity of more than one unit, each mathematical number is “many” in another sense, because there are arbitrarily many mathematical twos, mathematical threes, and so on, in the realm of the unlimited units accessible only to thought as well as in the sensible realm. For eidetic numbers, however, this is not the case. There is only a single eidetic Two, and a single eidetic Three, and so on (up to, most likely, the last eidetic number, the Ten or Decad), because the “units” of these numbers, being incomparable, are unique, and, being unique, they are many but not unlimited, being limited by their very uniqueness. And it is precisely the uniqueness of each eidetic number that accounts for the differentia of the unity that composes the being of each of the many “instances” of mathematical numbers whose mathematical discreteness they are responsible for, in the exact sense that this eidetic uniqueness is what is responsible for the mathematical differentia that distinguishes being-two from being three, and so on. Thus, for example, the differentia responsible for the mathematical number two being a distinct number from the mathematical number three, which, as we have noted, cannot be accounted for by appealing to the mathematically homogeneous concept of the “one,” is only accounted for by the supposition of the eidetically heterogeneous eidetic numbers Two and Three.

The arithmos-structure of mathematical numbers unifies units that are countable precisely because of their identity and
unlimited multiplicity. The \textit{arithmos}-structure of eidetic numbers unifies units that are \textit{uncountable} precisely because their incomparable unity rules them out as countable beings. The “units” in an eidetic number have nothing in common that could be predicative of each of them; they are therefore not identical and so it does not make any sense to say that there is more than one of “them.” Thus, although the unity of eidetic numbers exhibits what Klein calls an “\textit{arithmos}” or “arithmological” structure, this structure is not mathematical, that is, it is not countable. Not being countable, the \textit{arithmos}-structure of eidetic numbers, the structure of the relationship of various “communities” of \textit{eide} to one another, is something that thought and therefore the logos cannot obtain complete clarity about. And it is for this reason that, even more so than the \textit{arithmos}-structure of mathematical numbers, the \textit{arithmos}-structure of the being together of the \textit{eide} is for Klein something that ultimately exceeds the limits set by the logos for rendering completely intelligible what something is.\textsuperscript{29}

	extbf{Gadamer’s Departure from Klein Regarding the Relation of the Logos to the \textit{arithmos}-Structure of Eidetic Numbers}

What is at issue in Gadamer’s exclusive focus on the “mysteriousness” of the \textit{arithmos}-structure of \textit{mathematical} numbers, on the fact that the being whole or a unity of such numbers contains properties that are not predicative of the identical units that are nevertheless unified by this structure, extends beyond the scholarly question of whether he has precisely followed Klein’s GMT. It gets to the heart of Gadamer’s derogatory statement about Klein’s \textit{Meno Commentary}, because it raises the question whether Gadamer’s narrow focus is rooted in a failure to penetrate the deeper implications of Klein’s GMT, a failure that would inform his negative judgment of the \textit{Meno Commentary}. What this statement points to, beyond any shortcomings in Gadamer’s perspective on Klein’s thought, is the importance that Klein’s fundamental discoveries in GMT hold for an
interpretation of his *Meno Commentary* whose goal is to get at its deepest core.

We have seen that Gadamer credits Klein's GMT with uncovering references to the *arithmos*-structure of the logos in Plato's dialogues. We have shown that, on the contrary, for Klein the *arithmos*-structure concerns both mathematical and eidetic numbers, but not the logos. Moreover, we have shown that Gadamer's discussion of the paradigmatic function of number in the dialogues understands number exclusively mathematically, in a manner that elides Klein's account of the non-mathematical *arithmos*-structure responsible for the unity of both the diversity of mathematical numbers and the being together and therefore unity of the relation of *eide* to one another. The significance of this last point should not be understated, because for Klein it is the non-mathematical nature of the eidetic *arithmos*-structure that is responsible for its incomplete "intelligibility" to the logos. In contrast, for Gadamer "[t]here is an overall structural parallel between number [*Zahl*] and logos," in which "the paradigmatic function of number" points to "the proper [eigentliche] problem of the logos," which "lies in its being the unity of an opinion composed of factors or items that are distinct from the opinion itself." For Klein, however, what unity there is to the logos manifestly does not have its structural parallel in the being of mathematical numbers but in the non-being of the peculiar "being" proper to "the image." Klein, unlike Gadamer, thus takes seriously Plato's claims that the logos is not only a being, but a being whose mode of being is to be what it is not, namely, an image. Gadamer's reason for not taking seriously these claims is the same as Klein's are for taking them seriously: Martin Heidegger. Gadamer follows Heidegger in understanding the fundamental structure of the logos to be interpretative and therefore "hermeneutical," in the sense that all meaning is taken to originate from out of the pre-predicative interpretation of things "as" something, what Heidegger calls the "hermeneutic 'as'." Klein's understanding of the logos is based on an explicit rejection of
Heidegger’s understanding of both the priority of hermeneutical understanding and his formulation of the question of the meaning of Being as originating from this priority.

For Gadamer, then, the logos is not understood as an image but as a proportion, in the sense that “the logos always requires that one idea be ‘there’ together with another,” such that “[o]nly when the idea is ‘located’ [angepeilt] in respect to another does it show itself as something.”

For Klein, however, arithmos is more fundamental than analogia, both for mathematical and eidetic being. This is the case because the being of a proportion, whether mathematical or eidetic, presupposes relationships between arithmoi (again either mathematical or eidetic, as the case may be)—“ratios”—that are similar but not identical. The being of an analogia, in other words, therefore presupposes the being of arithmoi. And this means that the logos as a proportion is derivative. The showing itself “as” something of anything therefore has its deeper ground in the logos’ relation to arithmoi, to eidetic arithmoi, or, more precisely, to the arithmological structure of the “five” greatest genē: Rest, Motion, Being, the Same, and the Other. Moreover, the logos’ relation to these genē is inseparable from the peculiar being of non-being that characterizes both its (the logos’) being as an image and these originals from which its being as an image is inseparable.

Anticipation of the Importance of the Context that Klein’s Account of the Difference Between Mathematical and Eidetic Numbers Provides for His Account of the Myth of Learning

Before discussing the problems that emerge in Gadamer’s attempt to understand the crucial last point from the standpoint of the “universality” that the “mysterious character of number” putatively makes possible, and, therefore, from a peculiarly “formal” understanding of the being of ideas in Plato, I want to anticipate the importance that the account of the logos found in Klein’s GMT has for understanding his Meno Commentary. Klein’s account of the logos’ encounter
with its limits in the GMT concerns precisely its ability to give an account of the relationship between the *genos* of Being and the *genê* of Motion, Rest, the Same, and the Other. The logos' encounter with the non-mathematical unity that allows these five greatest *genê* to "participate" in one another is what, according to Klein, defines its limits. The GMT's presentation of the non-mathematical unity or, better, community (*koinônia*) of the kinds, is designed to support Klein's contention that the question of being in Plato is not singular but two-fold, because the being of non-being, in the guise of the being belonging to the image, has to be admitted if the embodiment of falsehood, the sophist, is to be rendered somewhat intelligible, even if not made totally clear. Klein highlights the major finding of Plato's investigation of that which follows for thought when it admits that non-being, in some sense, is. Thinking of the most fundamental unity of being, difference, knowledge, and the image is then most aptly characterized by the recognition of a "whole" whose wholeness is intrinsically not a part of that which it unifies. The unity of the whole that encompasses the parts of what it unifies nevertheless does not characterize these parts and conversely, the unity of these parts nevertheless does not characterize the whole. And it is precisely this aspect of Plato's finding that Klein maintains necessarily transcends the limits of the logos, because of its "natural" inclination to articulate "what is" in terms of recognizable common qualities that the multiplicity of things in the world share with one another, common qualities that, as a result of this articulation, are also said to belong to each single one of these things.

Klein's *Meno Commentary* does not hesitate to refer to the common qualities of things singled out by the logos by using the Aristotelian term "universal" (*katholon*), and to distinguish its mode of being a whole from the wholeness of being, difference, knowledge, and the image investigated by his GMT. Indeed, it is the inability of the logos to cope fully with the intelligibility of these kinds of wholeness that
provides the indispensable context for Klein’s showing that the subject matter of Plato’s dialogue the *Meno* likewise presents something to the logos that exceeds the limits of what it can fully account for, to wit: learning. The inability of the logos to account for the whole of learning, moreover, is tied by Klein in the *Meno Commentary* to its similarity with the non-universal structure of knowledge as a whole. Both knowledge and the logos reflect, in Klein’s words, “the inescapable plurality of a ‘world’ subjected to the rule of ‘The Other’,” with the consequence of this for the logos being that it is a fragmented medium “not quite capable of coping with wholeness.” Because learning presumably involves the soul’s acquisition in time of a knowledge that is what it is for all time, no logos, no matter how philosophical, technical, or mythological, is well-suited to speak about learning as a whole, about the unity of its time-bound and timeless dimensions.

The fact that Plato’s Socrates ultimately ends up speaking about learning mythologically in the *Meno* is therefore not explained by Klein to be because myth is capable of telling a truth in words that philosophical or technical words cannot. Rather, it is because the truth of learning, “what it consists in and how it may be achieved,” can only be revealed in “its actual exercise,” and it is the function of all myth, and thus a Platonic-Socratic myth, to initiate action. For Klein, then, it is not speech about learning that “conveys the truth about it,” but only “the action of learning itself” that can do this. Myth, according to him, is “the paradigm of all rhetorical art: it tends to initiate an effort in the soul of men and to beget action.” And “the myth of recollection is the prototype of all myths,” in the sense that talking about it in order to convey its truth “clearly defeats its purpose,” which, “[m]ore than any other myth . . . requires transposition into a medium in which our own action or reaction may embody its content.”

The *Meno Commentary*, however, does contain a lot of talk about learning, talk grounded in Klein’s analysis of the role played by the interrelation and interdependence of
drama, arguments, irony, and comedy in Plato’s tale of Socrates’ unlikely conversation about virtue with the mercenary Meno. Klein’s analysis, in turn, is grounded in his understanding of (1) the non-symbolic nature of the concepts employed by Greek mathematics, one consequence of which is that they lacked the modern ontological notion of a general mathematical object, (2) the arithmological structure of being and the ontological participation proper to the greatest kinds, and (3) the being of the non-being that is the defining trait of the image, all of which is established in his GMT.

Before returning to the question of whether Gadamer’s narrow focus on the arithmos-structure of the mathematical numbers that are revealed by Klein’s GMT is rooted in his overlooking the deeper implications of what I have just enumerated as the ground of Klein’s Meno Commentary, and thus whether Gadamer faced an obstacle to understanding the latter book because of this, I want to highlight the importance that Klein’s understanding of the being of the image’s non-being provides for the whole analysis in the Meno Commentary. The being of an image, alone among all beings, according to Klein, is shown in Plato’s Sophist to be such as to force the human soul to reproduce its very mode of being any time it is encountered. Thus, in Klein’s words, “image is uniquely that which is not what it is.” This means, first, that the recognition of an image is inseparable from the recognition of its dependence on that which is somehow “like” but not—its original. Second, it means that the being of the image’s likeness is essentially tied to neither a representing nor picturing function. An image, of course, may effect the likeness to its necessary original by being visually similar to it, but we need look no further than the logos that manifests a Platonic dialogue to see that the being of an image is in no way bound to representation or picturing. The logoi of a Platonic dialogue are images of originals, Socrates, Meno, Anytus, the slave, their spoken words, the opinions and opining expressed through these words, the objects of thought and thinking contained in these opinions and
opining, the originals’ actions, explicit or implied, and they are so without visual similarity to any of these originals.

For Klein, the being of the image and the faculty of the human soul that is moved by its recognition, eikasia, are no trivialities but the very centerpiece of Platonic philosophy and, therefore, the rightful focus of his analysis of this philosophy generally and of the *Meno* in particular. In fact, it is Klein’s claim that the words spoken by the figure of Socrates portrayed by Plato’s written words in the dialogue *Meno* present the *original* of Meno’s soul, not its image! Socrates, Klein writes, “[h]as made us see Meno as Meno is,” and he has done so without “the use of imagery.” Klein’s entire analysis of this dialogue hinges on this particular. Meno’s soul, the impossibly pure archetype of all human ignorance (*amathia*) and vice (*kakia*), is laid bare by Socrates’ logos, as is the derangement of Meno’s memory that is responsible for the shrunken being of his soul. Klein goes on to say that “[t]he action presented in the dialogue revealed that soul in its whole emptiness without any imagery,” and that this “has thus put us in the position to draw a picture of Meno’s soul.” I will turn to the picture drawn by Klein, using the image of the soul that the recollection myth about learning elicits—and thus not Meno’s soul—, an image that Klein suggests “seems to furnish the foundation for all the others” found in Socratic myths, as soon as my discussion of Gadamer is complete.

**Gadamer’s Departure from Klein Regarding the Relation of the Logos to Being and Non-Being**

Gadamer characterizes the Stranger’s doctrine in the *Sophist* about being and non-being as relating to the logos’ ability to reveal being. For Gadamer this doctrine establishes that “the power of the logos to reveal the being of what is derives from the intrinsic interwovenness in it of Being and Not-being.” This account of these matters is instructive for our purposes, because it permits the truly radical content of Klein’s “thesis” about the same matters to be brought into
bold relief. And, it bears repeating, Gadamer’s own self-understanding of his account of these matters is that it elaborates the thesis first put forward by Klein. According to Gadamer, the Stranger’s doctrine “implies the structure of number [Zahlstruktur],” namely, “that something taken together is two while each of the two is only one.” In other words, according to Gadamer, “Selfsameness [the Same] and Difference [the Other],” which are to be taken as Being and Not-being, present a unity when both are taken together that each, considered independently, does not possess. Attentiveness to the “arithmos-structure” of the being together of these two contrary genê—the Same and the Other—is supposed to present “no real contradiction at all,” because of “the hidden implication beyond this . . . that these aspects, which can be distinguished from each other only in thought, are, insofar as they are ideas, actually inseparable from each other and belong together, two as one.” This unity, according to Gadamer, is supposed to be “in” the logos and to be what allows it to reveal the being of what is, because the logos, as a proportion, is “universal” like the mathematical proportion. Just as in the latter, where “[t]he same relation can exist even when the numbers in it are changed,” so, too, “[e]very logos contains the unity of an opinion which results from the multiplicity of words and concepts bound together in it.”

The problem with Gadamer’s account of the arithmos-structure here is not, as I have pointed out above, that he does not see or appreciate the difference between the kind of unity that structures a mathematical number and that which structures ordinary predications. For the latter type of unity, things that are the same cannot be said to be other, things that are one cannot be said to be many, and so on, because the “same” and “other,” “one” and “many” are understood to be whole units of intelligibility—categories that are universal—which appropriately characterize some of the things we can point to or otherwise point out in this world of ours, but not others.
Hence, if something is one, that is, if the whole of the intelligible unit “one” can be “predicated” of something, that category and that of which it is “predicated” are one. And this means, among other things, that the opposite category, the whole of the intelligible unit “many,” cannot, without contradiction, be predicated of the same thing. The one and the many, therefore, cannot “be” together without contradiction at the level of ordinary logos. But, according to Gadamer, the structure of the unity of this logos, which is responsible for it as a whole having the capacity to unify many different words and concepts into a unified opinion, and for it to do so not only without contradiction but also in a manner that allows it to reveal the being of what is, is not predicative. Rather, it can be seen to be parallel to the structure of something that unifies items without the whole of that unity being predicative of these items singly; and this, of course, is akin to the structure of number.

Where Gadamer departs from Klein in all of this is in his attribution of this structure to the logos and his claim that it is the “paradigm which we refer to as Plato’s doctrine of ideal numbers.” The being of the logos in the Stranger’s doctrine does indeed mix being and non-being for Klein, but not in accord with the mathematical structure of number. That the paradigm for the nature of this mixture cannot be found in number is evident in Klein’s account of the uncountable relationship of the being together proper to the Same and the Other and, therefore, of the inability of the logos to account for it with complete clarity. Klein begins by showing that the Stranger and Theaetetus first establish that the “number” of the genus Being, Motion, and Rest is two, not three. And because the logos wants to count “three” where there is, in truth, only two, the number in question is eidetic, not mathematical. Precisely the inability of thought to count the genus of Being, Motion, and Rest defines the failure of the logos. This inability is manifest in the fact that in order to give an “account” of these genera, thought cannot help but count each genus as one, and therefore, as a discrete genus, whereas the
consideration of the nature of Being in relation to Motion and Rest cannot help but to conclude something very different, to wit: that the genos of Being is not discrete from these gene, but rather encompasses them in a manner that unifies them, but unifies them without the basis of that unity being something in common among the incomparable “units” that are unified.

The understanding that leads to this conclusion is both mathematical and philosophical. It is mathematical insofar as it knows that the units of numbers are identical and many and that the unity of each distinct number is one and different. It is philosophical insofar as it knows that Motion and Rest are both exhaustive and exclusive opposites. They are exhaustive because everything that exists is either in Motion or at Rest and they are exclusive because anything that is in Motion cannot be at Rest and anything at Rest cannot be in Motion. Because they are exclusive, it is impossible for Motion and Rest to mix, that is, either for something in motion to be at rest and conversely or for the genos Motion to include the genos Rest and conversely. Moreover, because they are exhaustive, Being cannot be some “third” genos, alongside of Motion and Rest, as that would result in something even more impossible than Motion and Rest mixing, namely, neither Motion nor Rest having the nature of Being.

It is this impossibility of understanding the genos Being as something countable that moves Klein to write that “[i]n respect of on, kinesis, and stasis, the logos fails!”; it fails because “it must count ‘three’ when in truth there are only ‘two’, namely stasis and kinesis, which are ‘each one’ and “both two’.” While the “each one, both two” character of their relationship exhibits something structurally similar to the arithmos-structure of mathematical numbers, it also departs from it. It is similar because just as the unity of the mathematical number two is irreducible to the units it unifies, in the sense that each of these units taken singly is exactly not two, so, also, the unity of the genos Being is irreducible to the
“units” it unifies, in the sense that each one of these units (Motion and Rest) taken singly is precisely not Being. However, it is dissimilar, because in the case of Rest and Motion the logos cannot conclude its count with “two,” as it is compelled to say that they are together as well as singly, and it therefore wants to count Rest as one, Motion as another one, and Being as yet another—and thus a third—one. This contrasts sharply with the case of two mathematical monads, each of which is understood by itself precisely as one, not two. In other words, because both Rest and Motion have the nature of Being, Being must be predicated of them both, whereas the single units of mathematical numbers do not have the nature of number and thus number cannot be predicated of them singly.

It is thus the being uncountable of Rest, Motion, and Being that “defines the ‘failure’ of the logos”46 for Klein, such that the “dialectical” thinking that follows the mathematical and philosophical understanding of this matter can only achieve partial clarity about the limits of its ability to articulate the “three” things that it must presuppose in order to articulate anything at all. This incomplete clarity is manifest in its recognition that each of the three things presupposed by it is, in its “self-sameness,” an “other” in relation to the “two” others. Each is thus other than the two others but the same with itself. Thus dialectical thinking is compelled to recognize another pair of genê, the Same and the Other, as being responsible for the limited ability of the logos to articulate anything at all.47 These genê are more fundamental than Rest and Motion, because the Other, which is itself always the other of an other, pervades all the genê insofar as their difference is discernable, just as the Same must do, insofar as their identity in being different is also discernable. Rest and Motion, of course, do not pervade all the genê, because (as we have seen) they do not pervade each other. It is the interdependence of the Other and the Same that renders partially intelligible Being’s twofoldness, respectively, Motion and Rest. At the same time, the Other and the Same, conjointly,
are responsible for the "imagining" [Ab-bild] of being in recognition [Erkennen], as well as for all image making.

According to Klein, then, knowing (gignōskein) for Plato involves imaging and being known (gignōskēsthai) involves recognition, and these, in turn, are made possible by the belonging together of Rest and Motion, both of which, while opposite, can only "be" when in community with one another. The paradigm for this community is the eidetic Two, because Motion and Rest can be precisely only when both are together. This means that a "not" necessarily belongs to being, because Rest, in being other than Motion is therefore not Motion, and Motion, in being other than Rest, is not Rest. The Other, which is responsible for the articulation of anything at all and which dialectical thinking is only able to achieve partial clarity about because of its divided unity, is thus also responsible for the being of non-being, and it is therefore what Klein refers to "as the ontological meaning [Sinn] of 'non-being'." Therefore, on Klein's account there is absolutely nothing "general" about Plato's doctrine of ideas. This is in marked contrast to Gadamer, for whom "Plato's doctrine of ideas turns out to be a general [allgemeine] theory of relationship," the structure of which is captured in Heidegger's disclosure of the "constitutive significance" of the hermeneutic 'as'. The paradigm for Plato's doctrine of ideas is clearly not the "generality" of mathematical being, understood as either the arithmos-structure of the unity of numbers or what Gadamer problematically attributes to a proportion as its "mathematical value." The relationship of one idea "there" together with another, as Gadamer has put it, and which he maintains is required by the logos, is clearly not analogical on Klein's reading of Plato and therefore, clearly not hermeneutical in Gadamer's sense. The ability of the logos, via the assertion, to raise the particular thing asserted into our consciousness (as Gadamer maintains) is grounded in something more fundamental than the (categorical or otherwise) taking of it in this or that respect, "as" this or that in "the relationship actually
announced in the GMT, by presenting an image of Meno’s soul that discloses the true being of the knowledge that is human virtue.

On Klein’s analysis, the methodical line of Socrates’ questioning that ends up provoking Meno’s articulation of his paradox about the impossibility of investigating what is unknown, because, being unknown, the soul is both at a loss as to where to look for it and not in a position to recognize it, is illegitimate. Klein locates its illegitimacy in the unexamined supposition that drives Socrates’ questions, namely that human virtue in its “generality” is a whole that structures all its parts and is therefore something that can be investigated in a technical manner akin to the method of investigation that leads to the knowledge of continuous magnitudes in geometry. The “knowledge” that the supposition behind Socrates’ questioning (up to Meno’s statement of the paradox) cannot withstand dialectical treatment is what is behind Socrates’ disingenuousness according to Klein, and the latter is warranted because Meno not only claims to know what virtue is but to have been taught this knowledge by another human being. Socrates’ initial questioning therefore aims to move Meno’s soul to: (1) think hypothetically, which would enable him to examine with Socrates, as a supposition, what he claims to have learned and therefore to know; (2) discover, once his thinking has become hypothetical, that the generality of virtue is not of the nature of a whole that can be encompassed by thought; that is, to discover that it is not “universal” in the sense of a unit of intelligibility predicable of certain men and women or actions that can pointed to or otherwise pointed out in our world and in our thought; and (3) abort this commonly held but nevertheless false opinion about what virtue is, in order to be in a position to search for a true opinion about it by confronting the unknown in a manner that submits it to the necessity revealed by his own thinking.

On Klein’s view, the failure of Socrates’ questions to engage Meno’s soul to move toward any of these goals is
instructive, above all, because the lack of movement toward each of these goals—goals which these questions nevertheless reveal—points to a corresponding lack of movement whose proper medium is the soul of each silent participant in Plato’s dialogue. Meno’s ignorance, his habitual reliance upon the opinions fathered by others occupying his memory—rather than upon his own thinking—when dealing with the generality of virtue (as of all other things), is—as Klein points out more than once—something we all share and share for the same reasons. These reasons have to do with the effort required to think, to submit, as Klein puts it, “ourselves to the necessity revealed by our own thinking.”56 Klein goes on to observe that this necessity “is the only necessity that it is in our power to submit or not to submit to.” From the fact that Meno is incapable of submitting to it in the instance of Socrates’ technical line of questioning it does not follow that the supposition behind these questions is true, namely, that in order to know the parts of virtue it must first be known what virtue as a whole is. On the contrary, Klein shows that Meno’s inability to submit to the necessity revealed by thinking not only does not prevent him from thinking technically—witness his knowledge of the geometrical definition of a solid—but also that it is precisely this kind of thinking that prevents his soul from learning, from recollecting.

It is a rule of technical thinking that any “unknown” terms are prohibited from being used in a cognitive investigation, in the sense of a word whose significance is not agreed upon in advance by the inquirers.57 It is a straight line from this rule to the eristic paradox that Meno recites, to the effect that the movement of the soul from ignorance to knowledge is impossible; it is impossible because ignorance is a condition of not knowing that precludes any relation to what is unknown and therefore, to what the presumably impossible preconditions necessary for learning must somehow already make apparent, namely, where and what to look for in order to secure the acquisition of the unknown. According to Klein, the myth of learning that Socrates tells in response to both
Meno’s statement of this paradox and his own restatement of it to the effect that inquiry into the unknown and known alike is impossible, the former because it is unknown and the latter because it is already known, never addresses the main point raised by Meno’s formulation of the paradox: how knowledge that is not currently in the soul is nevertheless able to get into it in the first place. Thus the myth’s three major images, (1) the soul’s deathless nature responsible for its seeing and having learned all things in both this and the netherworld, (2) the kinship of all generated things, and (3) the “recollection” in time of the knowledge of a single thing being able to lead, because of this kinship, to recollecting—learning—them all, not only do not address this point but they seem to presuppose that it has already occurred.\(^{58}\) Moreover, the obvious comparison and indeed confusion of mythical recollection with psychological recollection invited by Socrates’ telling of the myth raises the apparently insuperable problem of how to reconcile the orientation to the future of learning, as the acquisition of “new” knowledge, with recollection’s relation to the past, that is, to knowledge already in the soul, but forgotten.

The technical rule about the need for agreement (homologia) about all unknown terms in a cognitive inquiry, however, is something that Klein maintains has to be broken if Meno’s so-called paradox is to be overcome and learning and therefore inquiry is to prove possible at all. Klein’s GMT contains a discussion of the analytical method employed by mathematics that provides the context for the reason that he maintains this.\(^{59}\) Greek mathematical analysis is a non-formal method of cognitive discovery that grants what is sought after in a mathematical investigation and therefore “unknown”—which is either a theorem or the solution to a problem—as something already given and, on the basis of this, it proceeds to a synthesis that either demonstrates the sought after theorem or constructs the figure that solves the problem. The synthesis, called the “conversion,” transforms by “demonstration” (apodeixis) the unknown but granted as known
sought after knowledge into demonstrated knowledge by establishing its consistency with other knowledge that is already known about either the theorem or figure. It is for good reason according to Klein that ancient writers credited Plato with the discovery this method, because, on Klein’s view, philosophy, in the guise of a Platonic dialogue and therefore in the guise of an inquiry into something unknown, is only possible if what is sought after and therefore unknown is granted as something already known. However, because of the radically different “nature” of mathematical being from the being that is sought after in philosophy, the analytical character of its method cannot have the exactness characteristic of mathematics. Above all, philosophy cannot begin with agreed upon definitions, axioms, and postulates about the “unknown,” about what it seeks after, because—in marked contrast to mathematics—nothing about the whole of what philosophy investigates can be already known in a manner that is analogous to the whole of what is investigated in mathematics. In mathematics, it is already known that the whole of the unknown will either be a continuous or a discrete magnitude or a proportion that is also about these (albeit not insofar as they are such as to have a magnitude or to be divisible into discrete units); in philosophy, nothing comparable can be known “in advance” about the whole of the soul and its virtue, about being, non-being, truth, falsehood, and the logos.

In its very being philosophy is therefore a violation of the technical rule that cognitive inquiry cannot begin without first arriving at an agreement about words. The manifestation of this violation is called “opinion” by philosophers and non-philosophers alike but it is the philosopher alone who recognizes that the remarkable power of the opinion to cloak the unknown in the guise of the known brings with it a responsibility that is as unavoidable as it is impossible for any human soul to measure up to completely. This responsibility involves “testing” the unknown that is unified and therefore made one by an opinion for its veracity vis-à-vis the true being of the
unknown. This test that can only occur through *(dia)* the logos, either in the soul’s silent conversation with itself or in its spoken discourse with another soul, because it is logos that, in the face of the unknown, forms an opinion about it that nevertheless treats it as something known, and it is also logos that discerns that the true being of the unknown must be something other than its unknowing opinion about it. This testing of the logos by the logos, of course, is called dialectic by Socrates and its most basic supposition termed recollection. It is Klein’s contention in his *Meno Commentary* that not only is the outcome of this testing something that can only end in failure, but also that the most appropriate word for this failure is “learning.”

That the testing of logos by logos can only end in failure is rooted in its inability—for all time—to appropriate the *telos* proper to its dialectical search, namely knowledge *(epistêmê)*. This is signaled by Socrates’ dialectical recognition of his inability to provide an account of the difference between true opinion and knowledge, even though he is convinced that they are different. The logos’ investigation of the unknown must necessarily posit *epistêmê* as something “other” than the opinions, even the true opinions, with which it cloaks what is unknown in the guise of what is known. Socrates’ exhibition *(epideixis)* with Meno’s slave makes manifest, above all, that the condition for the movement of dialectic is the recognition of the difference between opinion and knowledge, a recognition that Meno’s soul is incapable of making. Meno’s failure to recognize this difference is tantamount to his failure to “recollect.” Klein’s commentary calls attention to the decisive reason for this, which is Meno’s inability to make the effort necessary for learning. But on Klein’s telling, the motion in the soul that follows this effort and leads to learning does not straight away yield the *eidê* and their interconnectedness, to which, presumably Meno’s and each of our souls already somehow have *noetic* “access.”

What is decisive in this regard according to Klein is rather the soul’s submitting to the necessity made apparent by the
dialectical interrogation of its opinions in the face of the unknown, namely, that despite its logos’ somehow being related to the “invisible looks” (*eidos*) of what is sought after and therefore unknown, the latter nevertheless remains unknown and therefore must be sought out. The search for the unknown that follows the soul’s submitting to the necessity of its own thought is called learning, and learning’s ultimate inability and therefore “failure” to cognize the *telos* of its learning is the lesson Klein draws from Plato’s Socrates’ telling (in the *Meno*) of the myth of recollection.

The learning exhibited in the *Meno* involves the soul’s (1) excogitation of its opinions whose father is another soul and the expulsion of the false ones, (2) formation of its own opinions about the unknown matter at hand and its submission to the necessity about this matter disclosed by its own thinking, and (3) actions guided by the right or true opinion that is generated from its thinking, actions that must also be recognized by the souls of others, a recognition that is signaled by their “‘good repute’,”62 *eudoxa*, of the learner’s soul. Klein avers that all of this occurs between two extremes that are equally unattainable for the human soul, pure knowledge and pure ignorance. The myth of recollection’s tale about this learning, which relates the soul’s acquisition of knowledge in time to its remembrance of pieces of knowledge somehow already in it before this time, together with the only possible conclusion that can be drawn from this, that ignorance is tantamount to the loss of knowledge and therefore to forgetting, represent for Klein mythic images whose originals are not mythological. The original of mythological remembrance is the mysterious awareness of having forgotten something that accompanies (non-mythical) psychological recollection, this awareness being what distinguishes recollection from memory,63 and the original of mythological knowledge is the “unknown knowledge” that the philosopher must tacitly appeal to when his or her thinking gets to the point of inquiring into the difference between true opinion and knowledge.64
The mysterious awareness of having forgotten something that was previously in one's memory as the result of either the conjoint motion of body and soul, perception, or the soul's own motion, for example, learning, is something that is universal according to Klein. The connection of this awareness to learning, however, not only is not universal, but, on Klein's view, it is something that, while originally unique to the Platonic Socrates, is now, thanks to this image, originally accessible in other and therefore our own souls. This original access involves motion and rest, both together. The motion is the soul's own, the movement back from its awareness of having forgotten, which then searches forth from this awareness toward its memorial images, and then back again, in order to test them—somehow—against a standard of recognition that until the recollection is successful, remains forgotten. The rest is this standard of recognition, which is neither memory nor forgetfulness but something uncannily in between. The motion inseparable from psychological recollection is the original for the mythological image of recollection characterized as the recovery of pieces of knowledge called learning, an image that invites being likened to the dimension of depth in a solid, because the shrunken soul of Meno laid bare by Plato's Socrates lacks precisely the dimension of depth. This lack of depth, in turn, likewise exhibited by Socrates, originates in Meno's deranged memory, which is always able to provide one of its "memory 'imprints'" of the logos of others in response to any question and thus is constitutionally incapable of being aware of forgetting and, therefore, the awareness of having forgotten that is inseparable from recollection. The rest inseparable from psychological recollection is the original for the mythological image of knowledge, as that which guides its own recovery in the lifetime of the soul from its mythical place in the nowhere "outside" the heavens. This image invites being likened to philosophy's very being, which is inseparable from the necessity of its having to violate technical inquiry's rule of homologia to be at all. The recog-
nition of opinion’s power to cloak the unknown in the guise of the known that initiates philosophical inquiry must therefore posit as known something other than opinion, namely, knowledge. But because the soul’s acquisition of knowledge is only accessible through a kind of opinion, true or right opinion, this knowledge will also remain inaccessible to such opinion, and thus remain forever beyond the scope of philosophical inquiry even as the analytical positing of it as something other than opinion directs every step of its analysis.

For Klein, then, the measure of the difference between true opinion and knowledge (epistêmê) for Plato is not discerned in terms of the criterion of reliability. Socrates says in the Meno that he does not know the difference between true or right opinion and knowledge, that he therefore just gropes for the truth about this difference using images, even though he is convinced that their difference is not a matter of imagery—and he then adds that this conviction is among the few things he would claim to know (eidênaí). Socrates’ attempt, nevertheless, to convince Meno that it is precisely the criterion of reliability that distinguishes right opinion from knowledge does not contradict his claim not to know their difference, but, according to Klein, it rather illustrates it, because knowledge, no less than right or true opinion, is unreliable, in the sense that our memory, as the repository of knowledge, is prone to “‘outgoing of knowledge’ (epistêmês exodos)” as Diotima puts it, that is, to forgetting. Socrates does not know the difference in question because neither he nor any other mortal is in possession of the criterion that would permit thought to reckon the difference between image and original, or, in other words, the difference between doxa and on, between the unknown treated as known that characterizes the being of opinion and the true being of that unknown, unmediated by opinion and therefore untouched by non-being. The inquiry into the unknowable being of this difference is what the myth of recollection is intended to initiate according to Klein, and
it is for this reason that he characterizes it as the prototype for all other Platonic-Socratic myths.

The Inner Beauty of *Phronēsis* and the Recollection of its Wholeness

Gadamer’s apparent inability to see that Klein’s *Meno Commentary* presents just such an inquiry and, as I will conclude momentarily, as successful a one as is possible given the immensity of the problem and the weakness of thought, is rooted in something more than his not following Klein by stressing the importance of the difference between the mathematical and eidetic *arithmos*-structure for understanding Plato. A better appreciation of Klein’s scholarly solution to the participation problem in Plato does not by itself insure comprehension of Klein’s logos in the *Meno Commentary*. Klein himself suggests why, in a footnote to his discussion of recollection in that book: “In ‘recollecting’ we are aware of our ‘having forgotten’... This awareness is an essential element in the phenomenon of recollection. Gadamer’s analysis [in his book, *Plato’s Dialectic Ethics: Phenomenological Interpretations Relating to the Philebus*] seems to neglect that element.” The neglect of this element no doubt presents an obstacle to realizing that Klein’s account of recollection relates not only to the insoluble problem of the criterion for knowing the distinction between *orthē doxa* and *epistēmē*, but, also, to the equally insoluble problem of the criterion for knowing the distinction between *eudoxa* and *phrontēsis*—good repute and good judgment. And only a soul capable of juxtaposing these two insoluble problems is able to resolve Plato’s formulation of the problem of image and original and therefore to catch a glimpse of a phenomenon (the memory of Socrates) whose origin and abode is in the “invisible realm” (*haidēs*).

To follow Klein’s account of the latter one must see that his analysis does something that Socrates refused to do: he (Klein) draws an image that is faithful to Meno’s “beauty.” Socrates’ logos, as we have seen, is capable of revealing that
there is no depth, and therefore, no “inside” to Meno’s soul, once we realize that the absence of the movement characteristic of its thoughtlessness is something that we share and share for the same reason. The picture that Klein draws of this soul images the opposite of a soul that is beautiful “inside,” which he therefore describes as a soul whose ignorance is its vice.78 The opposite soul imaged by Klein’s depiction is the wisdom of phronēsis that is good, which displays that rare “inner” beauty, and which, in his words, “like [visible] beauty” is something that “can be found, rarely enough, amongst us, with this difference that [visible] beauty, when we see it, has lost its wholeness though it never loses its splendor, while the wisdom of phronēsis, when it affects us, lacks splendor though never wholeness.”79 This latter soul, of course, is Socrates’ soul, and it can be glimpsed, following Klein following Plato’s Socrates, by the soul that recognizes that the truth of the Socratic dictum that virtue is knowledge is something that will be forgotten so long as the search for its truth seeks a knowledge (epistēmē) that is universal. This is to say, what must be recognized is that the whole that renders intelligible the parts of virtue is neither something “general,” like the wholes that characterize mathematical beings, nor something “formal,” like the wholes that characterize eidetic beings. And this is why Klein’s GMT provides the indispensable context for getting at the core of his Meno Commentary, because the insight into these two different kinds of wholes, which is ever-present in Klein’s analysis, is what rules out the whole proper to the knowledge that is virtue from being identified with epistēmē. Once this is ruled out, the shift is made to the recognition and thus recollection of the whole in question as that which has its source in phronēsis’ wholeness. Thus only the awareness of having “forgotten” this truth and, therefore, the “recollection” that ensues, is capable of turning the soul inward in a manner that holds the promise of generating in it that state of mind in which the dialectical questioning that Socrates characterized
as maieutic, as a peculiar form of midwifery, reaches its telos, its final form.

That this state of mind's natural expression is teaching, and that, to quote Klein, "It [teaching, in the sense of questioning, erōtaō] becomes indistinguishable from Love, from erōs, as its very name—in Greek—suggests," is something that can only be "seen" by a soul who has recognized the divinity of the phronimos and, lured by this inner beauty, aspires to the unforgettable wholeness of her or his wisdom.


5 Ibid.

6 What Klein actually refers to in this context is an "'arithmetic' structure ['arithmetischen' Geliederung]" (GMT 87/89), but Gadamer's phrase is certainly apt, because for Klein the "arithmetic" refers precisely to the arithmos.

7 Klein, GMT, 78/78, 89/92.

8 Gadamer, 145/146.
9 Klein, GMT, 89/92-90/93.
10 Gadamer, 136/134.
12 GMT, 93/99.
13 Ibid., 79/79-81/82.
14 Gadamer, 149/149.
15 Ibid.
16 Ibid., 135/132.
17 Klein, GMT, 60/56-64/60; 78/78.
18 Ibid., 87/90-89/92.
19 Ibid., 86/89.
20 Ibid., 94-95/99; 192/184.
21 Gadamer, 149/149.
22 Klein, Meno Commentary, 133-134. See also 115-125; GMT, 83/85-84/86.
23 Gadamer, 151/152.
24 Ibid.
25 Ibid., 149/150.
26 Ibid.
27 Ibid., 151/153.
28 Klein, GMT, 81/82; 90/94.
29 Klein, Meno Commentary, 56, 65; see also his references to “generality”: 61, 71, 80, 100.
30 Ibid., 168.
31 Ibid., 172.
32 Ibid., 171.
33 Ibid., 115.
34 Ibid., 110-125 and passim.
35 Ibid., 190.
36 Gadamer, 149/149 f.
37 Ibid., 149/150.
38 Ibid., 138/136.
39 Ibid., 149/150.
40 Ibid., 147/148.
41 Ibid., 138/136.
42 Klein, GMT, 90/94-91/95.
43 Ibid., 83/85-84/86.
44 Klein translates “kinēsis” as “change [Wandel]” (GMT, 92/96) no doubt to signal that it means all change, and not just motion in space and time. I have rendered it as “motion,” following (among others) Eva Brann, Peter Kalkavage, and Eric Salem, translators of Plato’s Sophist (Newburyport: Focus Philosophical Library, 1996).
45 GMT, 95.
46 Ibid., 91/95.
47 Ibid.
48 Ibid., 92/96.
49 Ibid.
50 Gadamer, 151/152.
51 Ibid., 149/150.
52 Ibid., 151/153.
53 Klein, GMT, 166/161.
54 Meno Commentary, 71.
55 Ibid., 165-166.
56 Ibid., 104.
57 Ibid., 63.
58 Ibid., 167.
59 GMT, 159/154-162/158.
60 Meno Commentary, 84; GMT, 155, n. 218.
61 Meno Commentary, 85, 92, 96.
62 Ibid., 253.
63 Ibid., 111.
64 Ibid., 160.
65 Ibid., 112.
66 Ibid., 186.
67 Ibid., 199.
68 Ibid., 186.
69 Ibid., 186.
70 Ibid., 151.
71 Ibid., 163-164.
72 Ibid., 247-248.
73 Ibid., 249.
74 Ibid., 154.
75 Ibid., 154 n. 142.
76 Ibid., 247, 253.
77 Ibid., 90, 190, 199.
78 Ibid., 200.
79 Ibid., 217.
80 Ibid., 165-166.

82 Meno *Commentary*, 248.
The Secret Art of Isaac Newton's \textit{Philosophiae Naturalis Principia Mathematica}\textsuperscript{1}

Judith Seeger

I. Introduction

All things depend from one beginning, but the beginning depends from the one and only, and the beginning moves so it can again become a beginning; only the one, however, stands still and does not move. There are these three, then: god, the father and the good; the cosmos; and the human. And god holds the cosmos, but the cosmos holds the human. And the cosmos becomes the son of god, but the human becomes the son of the cosmos, a grandson, as it were. (Discourses of Hermes Trismegistus)\textsuperscript{2}

Thanks to groundbreaking work begun in the twentieth century, it is no longer possible to deny that Isaac Newton was for many years deeply involved in alchemical and theological pursuits. What has not yet been decided, however, is whether there is a connection between those activities and his mathematical and scientific work. Richard Westfall, who has written the definitive biography of Newton, observed that the more he studied Newton, the more Newton

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seemed to recede from him; specifically, he stated that in many years of looking he had found no way to determine the unity of Newton’s theological and scientific thought. In addition, the leading Newtonian scholars I. Bernard Cohen and Derek Whiteside have gone on record that they found no connection between Newton’s mathematical work—in particular his greatest work, the *Philosophiae Naturalis Principia Mathematica*, commonly known as the *Principia*—and his alchemical endeavors and theological interpretations. On the considerable strength of their many years of study, they ventured to assert that none is to be found. Others, however, including Richard Popkin and James E. Force, are not so sure that Newton can be neatly divided into two or more unrelated personalities. They believe that more work needs to be done, particularly on the as yet unstudied manuscripts, before we can make that determination.

Newton, thus, to this day presents us with a problem. As he himself seems to have nothing directly to say on this question, it is certainly possible to infer that his various inquiries were never related to each other. Both the fervor with which he pursued those inquiries, however, and the nagging fact that in all of them he is attempting, albeit in distinct manners, to discern the nature of our created world make it difficult to lay to rest the question of the unity of his thought simply by stating that, because no connection has been found, there is none. A less radical possibility is that Newton’s understanding of the world changed as he grew older and that the *Principia*, in particular, marked a turning point at which mathematical physics, as a way to understand the natural world, replaced in his mind the magical thinking characteristic of his failed alchemical aspirations. This paper will attempt to make the case that this inference, too, fails to capture the relationship between Newton’s scientific work and his other pursuits. In it I will argue that those who hold that Newton’s life and work must have been of a piece are correct. Further, I will argue that the key to the unity they have been seeking can be found in the only place it could
have been hidden: in the *Principia* itself, a book whose artful construction has not been fully appreciated. I hope to show that Newton’s *Principia* both encompasses and expresses all of the deepest questions—mathematical, philosophical, alchemical, and theological—that its author pursued passionately throughout his life. I am aware that my claim that the work of this great interpreter is itself subject to interpretation may seem shocking, but it seems to me that by this time we should be inured to surprise when it comes to matters concerning Isaac Newton.

In order to see this unity, it is necessary to read the *Principia* in a new way: We must recognize it as a book carefully designed to speak to us on more than one level. In brief, I submit that the full meaning Newton intended to convey in his masterwork is revealed only when we are able to see and read two texts he has hidden within it, which are composed in different styles but which are related to each other and which together, and in the context of the entire work, express the fullness of their author’s aspiration. To locate the first of these texts we will follow the direction of Newton himself, who writes in the Preface to Book 3:

> On this subject I composed an earlier version of book 3 in popular form, so that it might be more widely read. But those who have not sufficiently grasped the principles set down here will certainly not perceive the force of the conclusions, nor will they lay aside the preconceptions to which they have become accustomed over many years; and therefore, to avoid lengthy disputations, I have translated the substance of the earlier version into propositions in a mathematical style, so that they may be read only by those who have first mastered the principles. But since in books 1 and 2 a great number of propositions occur which might be too time-consuming even for readers who are proficient in mathematics, I am unwilling to advise
anyone to study every one of these propositions. It will be sufficient to read with care the Definitions, the Laws of Motion, and the first three sections of book 1, and then turn to this book 3 on the system of the world, consulting at will the other propositions of books 1 and 2 which are referred to here. (793)6

It is here that we will find the first hidden text, whose discovery requires noting in particular the numerical organization of the propositions in sections 2 and 3 of Book 1; reading the text requires interpreting that organization in the light of Newton’s religious and alchemical convictions. The second text he has incorporated into the discussion of comets toward the end of Book 3. In order to see it we must take seriously the strangeness of some of Newton’s remarks about comets in the context of this particular book, and in order to interpret it we must again take into account his alchemical and religious beliefs. In both cases recognizing that there is a concealed text requires realizing that Newton is providing us with more information than is necessary to achieve his ostensible purpose and then asking why he is doing so.

In the part of this paper published in this issue I will first provide some brief background information about the Principia, focusing on aspects of the work that are pertinent to my concerns. I will then identify the two concealed texts—discussing the first in this issue, the second in the next issue—and suggest readings of them, seeking interpretations that are internally consistent and that accord with what we know of Newton’s interests from his other writings and outside sources. Finally, in the next issue I will consider the following crucial questions: why Newton would have included such texts in his masterwork; why he would have hidden the teachings these texts contain, rather than stating them openly; and to whom they would have been addressed. My goal is to show that the Principia is a consummate work of art, combining both reason and mysticism, a rich and
complex book which, in its aspiration to encompass the entire universe, engages every level of our understanding.\(^7\)

II. The *Principia*: Numbers and Geometry

Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth. (Galileo Galilei)\(^8\)

The *Principia* (which Newton when writing in English sometimes called his “Book of Principles,” “Principles of Philosophy,” or simply “Principles”) was first published, in Latin, in 1687. A second Latin edition, extensively edited by Roger Cotes and substantially revised by Newton himself, was published under the direction of Richard Bentley in 1713; and a third Latin edition, somewhat revised, was published under the direction of Henry Pemberton in 1726, the year before Newton’s death at the age of 84. The work was not translated into English during his lifetime.

One of the greatest books ever written by any standard, the *Principia* is surely the greatest book ever written by chance. Had Edmund Halley not decided in August of 1684 to consult the reclusive Cambridge scholar about the relationship between the shape of a planetary orbit and a force of attraction to the sun reciprocal to the square of the planet’s distance from it, and, further, had he not acted with extraordinary patience and persistence as midwife to this delicate parturition, the *Principia* would very likely not have come into existence; for Newton was a fiercely sensitive and secretive individual, who repeatedly resisted making his work
public. In the event, cajoled and supported by Halley and goaded (as Newton seems to have perceived it) by Robert Hooke, who insisted that during a correspondence of 1679-80 he, Hooke, had taught Newton what has come to be called the inverse-square law of gravitational force, Newton produced two works. The first was a tract known collectively as *De Motu*, a rendering of which he submitted to the Royal Society in the winter of 1684/5. *De Motu* exists today in five known versions, four of which, including two fragments, have been published, though none was published during Newton's lifetime. Urged by Halley to prepare *De Motu* for publication, Newton instead produced the *Principia*, a work whose scope far exceeds that of its predecessor in every way. Most notably, only as he was writing the *Principia* did Newton come to understand universal gravitation. In *De Motu* there is no hint of it.

Though he had published little by the time Halley came to visit him, Newton seems to have been a compulsive writer. By 1684 the papers with which his study was littered included a list of philosophical questions; voluminous notes on his extensive reading and his optical and alchemical experiments; pages of mathematical calculations; and manuscripts on mathematical, theological, and other subjects. His "New Theory about Light and Colours" had been published by the Royal Society in 1672, a publication he had come to regret bitterly because of the criticism and misunderstanding with which it had been received. He had also allowed some mathematical manuscripts to circulate. Composition of the *Principia*, however, was an activity of an order different from anything he had ever done. The manuscript of Book 1 was complete by Easter of 1686, within the eighteen months in which Newton later said he had written the *Principia*. He sent the manuscript of Book 2 to Halley on March 1, 1687; and Halley acknowledged receipt of Book 3 on April 5th of that year. Thus, he finished the entire work—which, indeed, shows signs of haste—in an astonishing two-and-a-half years from the time of Halley's visit. And yet his alchemical exper-
imentation and theological concerns were not far from his mind. There is no evidence that Newton performed any alchemical experiments during 1685, but in April 1686 his notes indicate that he resumed that work. During the decades of the 1670s and 1680s he also drafted several versions of a theological manuscript, which I will discuss below. Moreover, despite the speed with which the *Principia* was written, however, its author seems to have given great thought to certain aspects of its composition. Two features of that composition immediately raise questions whose answers, at least initially, elude us. One is Newton’s use of numbers as an organizational principle. The other is his decision to write his book in the language of geometry, rather than to use the calculus he had already derived. Let us look first at the numbers, focusing on their appearance in the Definitions, Laws, and first three sections of Book 1.

1. An overabundance of numbers

Though numbers are conspicuously absent from the beginning of the *Principia*, they are conspicuously present as an organizing principle of the text. Indeed, anyone who considers the structure of the work as a whole cannot avoid being struck by the number of twos and, particularly, threes encountered. Of course, the *Principia* itself is a single work divided into three books. Further, binary and ternary organizing principles abound in the text. The Preface alone contains numerous pairs: among them ancients and moderns; geometry and mechanics; and, within mechanics, rational mechanics and practical mechanics. Turning to the Definitions (the first of the sections Newton commends to us in Book 3), we find a progression from double to triple organizing principles. The first two definitions—of quantity of matter (*quantitas materiae*) and quantity of motion (*quantitas motus*)—form a pair. These are followed by definitions of three forces. The first two of these—in Definition 3 the inherent force of matter (*materiae vis insita*) to resist change in its state of rest or motion; and in Definition 4 impressed
force (*vis impressa*), which is the action exerted on a body to make it change its state—themselves form a pair of contraries insofar as the first force, inertia, is passive and the second is active. The third and culminating force, the subject of Definition 5, is the particular species of impressed force central to the *Principia*. This is centripetal force (*vis centripeta*), that is, force directed toward some point as to a center, a force discovered and named by Newton himself. The three forces of Definitions 3, 4, and 5 do not form a natural triad, but rather two overlapping dyads: one based on contraries, the other on a relationship of genus and species. More clearly a triad are the definitions of the three quantities of centripetal force. Definition 6 defines the absolute quantity of centripetal force (*vis centripetæ quantitas absoluta*), Definition 7 its accelerative quantity (*vis centripetæ quantitas acceleratrix*), and Definition 8 its motive quantity (*vis centripetæ quantitas motrix*). The triadic organization of the forces defined in Definitions 3, 4, and 5 (inertial, impressed, and centripetal), whose beginnings nearly parallel each other, can be seen even more clearly in the parallel beginnings of Definitions 6, 7, and 8. To summarize: Within the Definitions considered as a whole we proceed from a dyad:

1. Quantitas materiae
2. Quantitas motus;

**to a triad composed of overlapping dyads:**

3. Materiae vis insita
4. Vis impressa
5. Vis centripeta;

**to a pure triad:**

6. *Vis centripetæ quantitas absoluta*
7. *Vis centripetæ quantitas acceleratrix*
8. *Vis centripetæ quantitas motrix*

The organizing principles are both double and, increasingly, triple.

The triad becomes the dominant organizing principle of what Newton calls the Axioms or Laws of Motion, for there are three laws.\(^\text{10}\) The first law—that every body perseveres in
its state of being at rest or of moving uniformly straight forward, except insofar as it is compelled to change its state by forces impressed—has antecedents in the work of Galileo, Gassendi, and Descartes. The second law—that a change in motion is proportional to the motive force impressed and takes place along the straight line in which that force is impressed—becomes original with Newton when taken to the limit. The third law—that to any action there is always an opposite and equal reaction; in other words, the actions of two bodies upon each other are always equal and always opposite in direction—is, like the definition of centripetal force, original with Newton. This is the culminating law, the one that will lead us to universal gravitation. The organization of the laws—acknowledging prior learning in the first law; acknowledging in the second prior learning which he will soon move beyond; and, finally, in the third stepping boldly into unmarked territory—amounts to a summary of Newton’s procedure in the *Principia*.

Now that I have pointed out these binary and ternary groupings (which by no means exhaust the examples that can be found in the book), let me hasten to observe that I am not yet claiming that the abundance of twos and threes on the structural level of this text necessarily means anything more than that Newton considered the *Principia* a work of rhetoric as well as of mathematics. Doubles and triples are common principles of organization which Newton was neither the first nor the last writer to use. One might, however, wonder why such a structure should appear in a treatise on mathematical physics. And one should in any case note that, although it could be argued that the longest manuscript of *De Motu* possesses a rhetorical structure of its own based on numbers, the structure of the *Principia* is much more elaborate, as a comparison of the organization of those two works readily shows.11 So let us continue.

Book 1 is titled “The Motion of Bodies.” In Section 1 of this book Newton in eleven lemmas establishes his new geometry of first and ultimate ratios. I do not claim that he
has concealed a text in this section, which is appropriate as he is not yet describing the workings of his mathematical universe. The lemmas are, nevertheless, essential to everything that follows. Without Newton’s mathematics of the nascent and the evanescent the *Principia* could not have been conceived, much less written. Indeed, the lemmas may also be understood in terms of the ancient geometrical dilemma of squaring the circle, a dilemma that for Newton would have had theological overtones. Unlike Dante, in whose *Divine Comedy* the impossibility of squaring the circle symbolizes the failure of the poet’s reason to fathom how our fallen human effigy suits the divine circle, Newton dares to approach the sacred, giving us in the lemmas a procedure by which the straight becomes curved. This remarkable instrument will provide the means of understanding the lawful workings of the universe, a task that Newton begins in sections 2 and 3.

In sections 2 and 3 Newton constructs a mathematical universe of mass points and centers of accelerative force (a system into which his third law does not enter as there are no material bodies in it), and proves that in this ideal universe Kepler’s three laws of planetary motion—which Newton considered only rules (or guesses) until he established their mathematical foundation—apply.12 This mathematical level of the *Principia* is the most accessible to readers, which is not to say that it is accessible to most readers, for truly understanding it requires a depth of mathematical knowledge and ability possessed by few. Nonetheless, despite their difficulty, the propositions of sections 2 and 3 of Book 1 seem straightforward if we concentrate merely on what they say.

But let us examine their organization more closely. Looking into these sections we find that Newton has grouped the ten propositions of Section 2 into three groups of three plus a final proposition and he has grouped the seven propositions of Section 3 into two groups of three plus a final one.13 Very briefly, these groupings come about in the following way: Propositions 1, 2, and 3 address a mathematical
situation analogous to Kepler’s second law, also known as the area law, which states that bodies acting under the influence of a centripetal force sweep out equal areas in equal times. Propositions 4, 5, and 6 form another triad, which begins by interpreting force in terms of ratios between arcs and radii—geometrical representations of time and distance from a center of force—and culminates with the geometrical “solid” that will enable Newton to determine the law governing motion in the presence of any centripetal force. Propositions 7, 8, and 9 find the force laws that govern given orbital motions. Proposition 10—the final problem of Section 2, set apart from the others by Lemma 12, has in common with the preceding three propositions that it finds yet another force law. It differs from them, however, in that this particular law—the law of simple harmonic motion, according to which the force is proportional to the distance from the center, which applies when a body revolves in an ellipse whose center of force is located at the center of the figure—unlike the others, applies to motion in our world, though it is not the law of gravitational attraction. Thus, it both is (as it is a problem concerning centripetal force) and is not (as it concerns a force law pertaining to our universe) of the third group.

In Section 3 Newton finally reveals (though he has hinted at it in Corollary 6 of Proposition 4) the law that in Book 3 will be shown to govern gravitational attraction in our physical universe. This law is known as the inverse-square law, according to which centripetal force is inversely proportional to the square of the distance from the affected body to the center of force. In this section, propositions 11, 12, and 13 find that the inverse-square law governs the orbits of bodies tracing the three conic sections (ellipse, hyperbola, and parabola) when the center of force is a focus of the figure. Propositions 14, 15, and 16 treat of several bodies revolving in an ellipse around a common center of force located at one of its foci according to the inverse-square law. Proposition 17 stands alone, a final problem dealing with setting bodies into
motion around a center of force according to the inverse-square law when the absolute quantity of centripetal force is known.

Obviously, it is possible to study the *Principia* without seeing this organization, but once you have seen it you are left holding more information than a simple sequence of propositions can bear. At this point I believe that attentive readers of this book cannot avoid wondering whether something more than a merely mathematical treatise—even a highly sophisticated mathematical treatise with dual and triple organizing principles—is unfolding before our eyes. One might say that there is no more at work here than an aesthetic principle and leave it at that. But why not look further and ask why Newton might have grouped the propositions of sections 2 and 3 into patterns so readily susceptible (as we shall see) to symbolic interpretation? I intend to do so, in order to see where such an inquiry might take us. My working hypothesis will be that through these patterns and others Newton has constructed a text built on a multiple understanding of the language of numbers. Specifically, I assert that in order to craft that text he appeals to symbolism taken from numerology, esoteric geometry, theology, and alchemy.\textsuperscript{14}

If there is a concealed text here, it must be intelligible. But how are we to read it? In numerology alone, perhaps the most accessible of the four symbolic systems, an immediate difficulty is that any number capable of being endowed with numerological significance—and this is the case with every number from 1 through 17—is capable of expressing more than one meaning, including some that are mutually contradictory. Unsupported by the stark clarity of mathematical demonstration or even the relatively straightforward exposition of discursive argument, when dealing with symbolism we have to determine what a particular symbol means to a particular person in a particular context. When the particular person involved is Isaac Newton the difficulty is compounded; for Newton read widely and deeply, and
always with an eye to interpretation, seeking the single truth he believed had been revealed in the Bible, as well as in classical, theological, magical, and alchemical works. These works were themselves expounded in enigmas and in some cases lavishly furnished with illustrations designed to be interpreted in terms of esoteric geometrical and numerological symbolism. Newton was entirely at home in this terrain which for most of us is a dark labyrinth.

So how do we find the correct path? As triads are so prevalent in the part of the *Principia* under consideration, it makes sense to begin with the number 3, a number richly symbolic in traditions throughout the world, and one that affords us a warning as well as an entrance into the hidden text. The warning is against taking the wrong path through overhasty interpretation. Someone unfamiliar with Newton might be tempted to suppose that the number 3 symbolizes the Trinity (as it often does for Christian writers), but reading the number 3 as representing the Trinity in this case would be a mistake. An exhaustive interpreter of scripture and patristic writings, Newton was convinced that Trinitarianism was a fourth-century corruption of pristine Christianity, a turning away from true monotheism to idolatry and unholy polytheism. Though his heterodoxy may have been suspected, he kept up the appearance of proper piety during his lifetime, and probably only his closest friends and disciples actually knew what has become common knowledge now that his unpublished manuscripts are becoming available. Thanks to these manuscripts we can be certain that the number 3 could not have signified the Trinity to Isaac Newton. So we have to look elsewhere. Alchemy and religious symbolism that does not invoke the Trinity may come to our aid here, in that they suggest the possibility of interpreting the number 3 as a hierarchy rather than as an unranked unity.

In terms of alchemy, the number 3 suggests to anyone familiar with the writers that Newton studied so assiduously the “three principles,” which manifest themselves in
numerous forms: among them the three worlds (elementary, celestial, intelligible), analogous to the three forms of being (body, spirit, soul), as well as to the three philosophical "metals" (salt, mercury, sulphur), and the three colors exhibited during the progress of the Great Work of purification by fire (black, white, red). In terms of religion, there is a doubly three-fold image dear to Newton, which I believe is especially helpful here: the image of the Temple of Solomon. In the late 1670s Newton began a treatise on the history of the church, and as part of his studies he attempted to discover the exact configuration of the Temple of Solomon. A version of this work, characterized by precise measurements and illustrated with plates of three diagrams he had drawn himself, was published shortly after his death as Chapter 5 of his *Chronology of Ancient Kingdoms Amended*. Passage from one section of the temple grounds to another was regarded as moving inward toward increasingly holy space, as can be seen in Newton's carefully measured drawing in which the Great Court or Court of the People surrounds the Inner Court or Court of the Priests, which, in turn, surrounds the Central Altar. Within the Court of the People stood the temple, which Newton called the Separate Place. According to his diagram the Separate Place was reached by climbing ten steps from the Court of the Priests and was itself divided into three sections of increasing sanctity: labeled the Entrance, the Holy Place, and the Most Holy Place. Unlike the Trinity, these alchemical principles and the layout of the temple are hierarchical. Following their lead, we may look for three, increasingly holy, levels in the hidden text. But now we have left the realm of numbers, for the image of the temple takes us into the spatial, that is, the geometrical, realm. So before proceeding further, we must consider one more question: that of Newton's use of geometry in the *Principia*.

2. The puzzle of geometry

It has been wondered why Newton wrote the wholly revolutionary *Principia* in the language of classical geometry
instead of using the notation of the calculus of motion, which he called his method of fluxions. The accessibility of the familiar language of geometry might seem an obvious response, but we have ample evidence that Newton was not particularly concerned with accessibility. On the contrary, access to the work was strictly limited. Only those who could read Latin could read the book at all; and, within that already select group, access was further restricted to accomplished mathematicians. Newton, as he reminds us in the preface to Book 3, deliberately composed "The System of the World" so that it would be intelligible only to those who had made their way through the sections of Book 1 with which I am most concerned here. Moreover, he remarked to William Derham that "to avoid being baited by little smatterers in Mathematicks...he designedly made his Principia abstruse" (Iliffe, 1: 234). When Newton's supporter Richard Bentley asked him how someone who was not a mathematician might prepare to read the Principia, Newton provided a reading list, which included, in addition to several astronomical works and Euclid's Elements, "either the first part of ye Elementa Curvarum of John De Witt, or De la Hire's late treatise of ye conick sections, or Dr. Barrow's epitome of Apollonius," as well as Bartholin's introduction to algebra, Francis Schooten's Commentaries on Descartes' Geometry and other algebraic writings, with a particular recommendation of Huygens' Horologium oscillatorium (Correspondence, 3: 155-6). One might say that the work is accessible only to mathematical initiates.

Indeed, the inaccessibility of the Principia was famous in its day. Newton's mentor at Cambridge, Humphrey Babington, was said to have remarked upon receiving his gift copy that he would have to study for seven years before he could understand it. A Cambridge student reportedly pointed Newton out as a man who had written a book that neither he nor anyone else understood. Indication of Newton's recovery from his breakdown of 1693 was his supposedly regained ability to recognize his own Principia. As his first biographer,
Bernard le Bovier de Fontenelle, wrote of the *Principia* (in the English translation of his *Éloge*, published in 1728 as *THE LIFE OF Sir Isaac Newton. WITH AN ACCOUNT OF HIS WRITINGS*):

In 1687, *Sir Isaac Newton* resolved to shew himself to the World, and publish his *Mathematical Principles of Natural Philosophy*. This Book, in which he makes the profoundest Geometry a Basis for a new System of Physicks, had not, at first, all the Encouragement it deserved, and was one Day to meet with. It is wrote with a great deal of learning, but as the Author has been very sparing of his Words, and the Conclusions are often very hastily drawn from the Premises, and the Reader is sometimes forced to supply an intermediate chain of Consequences, it requir’d some time before the Publick could be able to understand it. Great Mathematicians were oblig’d to study it with care; the middling Ones did not attempt it, but as they were excited by the Testimony of the others; but at length, when the Book came to be sufficiently known, the Suffrages it had gain’d so slowly, increas’d every where to a general Cry of Admiration! (Iliffe, 1: 111)

An outcome of Newton’s decision to construct the *Principia* in the geometry that both Fontenelle (Iliffe, 1: 111) and Newton’s disciple Colin Maclaurin (8) called “sublime” was that in order to evaluate Newton’s mathematical demonstrations, the early students of his work including d’Alembert, Laplace, and Euler—all of whom were exceptional mathematicians—immediately translated them into the language of the calculus (using Leibnizian notation, which has become standard). Newton’s sublime geometry was simply too cumbersome.

But if accessibility cannot be the reason that Newton chose to write the book in the language of geometry, why did
he do so? His repeatedly stated respect for ancient geometry and the synthetic method as compared to modern algebra and analysis suggests that the geometrical language of the Principia may have been in part his homage to those he considered his illustrious predecessors. But I believe that this answer is only the beginning of the conversation. Close reading of the work suggests strongly to me that, through careful construction as well as content, Newton was paying homage to his predecessors in both the exoteric (or secular) and the esoteric (or sacred) traditions of geometry. I will discuss further his possible reasons for paying such homage in Section 4 of this paper. But first I would like to suggest a reading of sections 2 and 3 of Book 1 of the Principia in the spirit in which I think Newton may have composed them and in which, to my knowledge, they have never been read before. According to this reading, the text concealed in sections 2 and 3, built on numbers and geometry used as structural principles, consists of three levels. Its first level—expressed primarily in the triadic grouping of the propositions—concerns the exoteric tradition of geometry and Newton’s place in it. Its second level—expressed in the numbers 10, 7, and 17 and their corresponding geometrical figures—concerns the esoteric traditions of numbers and geometry. And its third level—which treats sections 2 and 3 as a whole and is the culmination of the journey—concerns the place of man with respect to God and the universe. Let us begin with the first level, the one closest to the surface of the Principia.

III. The First Hidden Text

1. The First Level: Ancient Geometry Perfected

Of their taste, and form of demonstration
Sir ISAAC always professed himself a great admirer: I have heard him even censure himself for not following them yet more closely than he did; and speak with regret of his mistake at the
beginning of his mathematical studies, in applying himself to the works of Des Cartes and other algebraic writers, before he had considered the elements of Euclid with that attention, which so excellent a writer deserves (Henry Pemberton).\textsuperscript{18}

There are five sets of triads within sections 2 and 3: three in Section 2 and two in Section 3. From the perspective of the concealed text, the first and second triads of Section 2 (propositions 1, 2, and 3, consisting of three theorems; and 4, 5, and 6, in which 4 and 6 are theorems and 5 is a problem) allude to geometry itself as it has evolved from Euclid to Newton, while the third (7, 8, and 9, consisting of three problems) provides examples of the power of Newtonian geometry to solve problems concerning forces. The fourth triad (11, 12, and 13, consisting of three problems), which begins Section 3, has a dual role: both solving problems using Newtonian geometry and alluding to the progress of the geometry of conic sections from Apollonius to Newton, thus reprising the original theme in a new context. The fifth triad (14, 15, and 16) uses Newtonian geometry to elucidate theorems concerning bodies revolving around a center of force according to the inverse-square law, finding first the ratio of their areas (14), then that of their periodic times (15), and finally that of their velocities with respect to each other (16). The organization of these propositions expresses Newton’s implicit claim that his own work is the culmination of the geometrical tradition within which, rather than appealing to his new method of fluxions, he explicitly locates it. I am not concerned here with numerology or esoteric geometry, but rather with the first and “lowest” level of the secret text, the one that interprets the history of exoteric geometry as an instrument tending toward perfection insofar as it may be used to reveal the workings of the “most perfect mechanic of all” (381), whom Newton has postulated in the Preface to the \textit{Principia}. In the metaphor of the Temple, this level is analogous to the Court of the People or the Entrance.\textsuperscript{19}
Let us examine the grounds for my assertion more closely. To begin with the first triad, Proposition 1 is a proof of stunning elegance and simplicity, an exposition in classic Euclidean style which, as it treats of a theoretical mathematical body, also recalls Archimedes. But the enunciation proves to be true only when the equal triangles Newton has constructed are diminished in infinitum, that is, only at the limit when, as in Corollary 4 of Newton's Lemma 3, the straight segments of which a polygon is composed become a curve. Instantly we are swept from Euclid's old geometry into Newton's new geometry. Newton, thus, within this single proposition manages to place himself firmly in the geometric tradition, simultaneously revering ancient geometry and perfecting it as a tool to address curvilinear motion. The same procedure is followed in Proposition 2, which is the converse of the first, and in Proposition 3, which expands the first two by locating a mathematical body at the center of force and allowing it to be accelerated. Both 2 and 3 are new in the Principia, as compared to the longest extant version of De Motu.

The second triad (4, 5, and 6) tells a similar story in a different manner. Proposition 4 takes us back to the beginning; because it treats of regular circular motion, it is true not just at the limit, but always. By the time we reach Proposition 6, though, we have returned to the geometrical present of the first three propositions, and the foundation of the Principia is complete; for in Proposition 6 Newton devises the "solid" that will give him access to the force law governing any orbit in the presence of centripetal force. I cannot believe it accidental that Newton's fundamental task is completed in Proposition 6, that number being both the first perfect number in the Pythagorean system (as \(1 + 2 + 3 = 1 \cdot 2 \cdot 3\)) and the number of days in which God, in the book of Genesis, created the world. Proposition 5, like 2 and 3, is new with respect to De Motu. Unlike 2 and 3, however, it is not cited in subsequent propositions. Thus it seems to be an anomaly, for if it is not required in some way for the estab-
lishment of universal gravitation, why is it here? Are we to believe that Newton inserted propositions in the mathematical foundation of the *Principia* for no reason at all? I will discuss this very puzzling proposition more fully below. At this level its function, like that of 2 and 3, is to complete its triad. Of course, propositions 2, 3, and 5 together—all new with respect to *De Motu*—enable Newton to locate Proposition 6 at its very significant number.

In the third triad (7, 8, and 9) we are given not history, but rather demonstrations of the power of the ratio of Proposition 6 to discover force laws. When I first read these problems I thought they were mathematical jokes, born perhaps of the sheer exuberance of discovering so powerful a procedure. The circle of Proposition 7 and the circle of Proposition 8 (drawn as a semi-circle) are so very eccentric that the center of force of Proposition 7’s circle may be located on its circumference, while that of Proposition 8’s circle, located at an infinite distance, could not be farther away. In Proposition 9, the path of the revolving body is not a closed figure; it is, instead, an equiangular spiral. But whether or not these propositions have any hint of playfulness in them, Newton here, in addition to demonstrating the power of his ratio to discover force laws governing different trajectories, is showing us that there is no inherent necessity to any particular law. Further, in Proposition 7 he shows us that the law (not to mention the mechanics) governing the circular motion long considered perfect, divine, and beautiful is awkward at best if the center of force is not the center of the circle. Propositions 8 and 9 are original in the *Principia* as compared with *De Motu*. Neither one is cited again. Moreover, Newton calls attention to the superfluity of Proposition 8 by remarking at the end of the demonstration: “The same is easily gathered also from the preceding proposition” (457). As for Proposition 9, the inverse-cube force is simple, but the path it governs leads to a trajectory which, applied to planets, would be devastating; unless the given angle is right, they will spiral inexorably into
or away from the center. (If the angle is 0°, the body will head straight into or away from the center.) Thus, part of the rhetorical effect of Proposition 9 on this level may be to make us uneasy insofar as we cannot help thinking of planetary motion. Surely part of the function of superfluous 8 and disquieting 9 is to fill out the third triad, thereby locating Proposition 10—which I will discuss when I consider the second level of the hidden text—and, of course, all of the succeeding propositions, in their proper numerological and sacred geometrical place.

The first triad of Section 3, consisting of propositions 11, 12, and 13, in addition to applying Newton’s ratio of Proposition 6 to three more orbits, recalls Apollonius’ *Conics*, in which propositions 11, 12, and 13 of Book 1 derive the parabola, hyperbola, and ellipse (in that order). Newton, thus, acknowledges his illustrious ancient predecessor, but not simply, for he has altered the sequence of the conic sections, giving us the ellipse in Proposition 11 and the parabola in Proposition 13. In the *Conics*, the ellipse both etymologically and geometrically falls short of the perfection of the parabola. In the *Principia*, concerned with celestial dynamics, ellipses are far more important than hyperbolas or parabolas, for a body tracing either of the latter two paths will do so only once. Newton, therefore, gives the ellipse pride of place, analogous to Proposition 1 in Section 2. Here with the power of his new geometry he perfects Apollonius’ work as the geometer of motion in conic sections, just as in Proposition 1 he perfected that of Euclid by showing that geometry could now address curvilinear motion. Proposition 11 proves for Newton’s mathematical universe the case known to astronomy as Kepler’s first law: that the orbital path of a planet is an ellipse whose center of force, the sun, is located at a focus of the figure the planet traces. While this proof is analogous to Problem 3 of *De Motu*, Propositions 12 and 13 are new in the *Principia*. Strictly speaking, they are also redundant in terms of the *Principia* itself, as Newton tells us, after Proposition 11: “This solution could be extended to
the parabola and the hyperbola as concisely as in prop. 10
[which Newton expanded to the other two conic sections by
means of a scholium following the demonstration], but
because of the importance of this problem and its use in what
follows, it will not be too troublesome to confirm each of
these other cases by a separate demonstration” (463).
Propositions 12 and 13 generalize the theory and complete
the triad.

The last triad is that of 14, 15, and 16, all of which make
the minimal assumptions necessary for proving Kepler’s third
law, also known as the harmonic law: that if bodies revolve
around a common center when the centripetal force is
inversely as the square of the distance of places from the
center, the squares of the periodic times in ellipses are as the
cubes of the major axes. In Proposition 15 Newton gives a
succinct demonstration of that law. While Propositions 14
and 16 are new in the Principia, Proposition 15, the center-
piece of the triad, is an analogue to Theorem 4 of De Motu.
With Proposition 15, Newton completes the work that
converts Kepler’s three rules into the laws we call them today.

I have already suggested that in terms of the requisites of
the surface text this triadic structure is redundant. Now that
we have looked at the propositions themselves in some detail,
we can see that Newton himself has alerted us to the fact that
more is going on than is evident on the surface. He does this
by failing to cite some of these propositions subsequently
(though discovering this requires reading the rest of the
work); by stating quite plainly that Proposition 8 is unnec-
essary; and by choosing not to demonstrate the law of
Proposition 10 for hyperbolas and parabolas, then, in
contrast, demonstrating the law of Proposition 11 for those
two figures, and, finally, justifying that choice. So why is this
structure here? It seems to me that it begins to tell a story, and
that on the first level of the concealed text that story is the
history and development of exoteric geometry, from Euclid
and Archimedes through Apollonius to Newton. Newton,
thus, situates himself firmly at the apex of this venerable
tradition. At the second level of the text—analogous in the Temple to the Court of the Priests or the Holy Place—the numbers 10 (that is, the number of propositions in Section 2); 7 (the number of propositions in Section 3); their sum, 17; and the geometrical figures that correspond to these three numbers become significant. This level will treat of numerology and esoteric geometry both as they express Newton’s acknowledgment of his predecessors in astronomical knowledge and as they expand his aspiration in this work to encompass all of nature and the worship of its maker.

2. The Second Level: Sacred Numbers and Sacred Geometry

To his intimates he was wont to utter symbolically oracular sentences, wherein the smallest number of words were pregnant with the most multifarious significance, not unlike certain oracles of the Pythian Apollo, or like Nature herself in tiny seeds, the former exhibiting conceptions, and the latter effects innumerable in multitude, and difficult to understand. Such was Pythagoras’ own maxim, “The beginning is the half of the whole.” In this and similar utterances the most divine Pythagoras concealed the sparks of truth, as in a treasure, for those capable of being kindled thereby. In this brevity of diction he deposited an extension of theory most ample and difficult to grasp, as in the maxim, “All things accord in number,” which he frequently repeated to his disciples. Another one was, “Friendship is equality; equality is friendship.” He even used single words, such as kosmos or “adorned world;” or, by Zeus, philosophia, or further, Tetraktys! (Iamblichus on Pythagoras)\(^2\)

At this level we will look beyond the triple groupings of the propositions within sections 2 and 3 to examine first each
section as a whole and then the two together. Immediately striking is the division of these sections into ten and seven propositions, both numbers of daunting symbolic richness. The task, again, is to discern what these numbers might have meant for Isaac Newton in the context of the *Principia*. I submit that for him, here, the numbers 10 and 7 would have given rise to geometrical figures: specifically in Section 2 the equilateral triangle and in Section 3 the circle, both of which carry symbolic significance in esoteric geometry and alchemy, while the circle also symbolizes ancient uncorrupted religion as Newton understood it. Further, when combined to form 17, they generate the magic square, the esoteric figure associated with all of nature. The unity of this second level of the secret text is analogous to that of the first level. Whereas the concealed text of that level traced from ancient geometers to Newton the perfection of geometry as a tool for comprehending orbital motion, the text on this level traces from Pythagoras and Moses to Newton the journey of our understanding of the universe. In rising to this level we have entered a holier space, the second stage in the three-stage journey upward and inward toward the presence of God himself.

Depending to some degree on the organization of the first level, the esoteric figure of Section 2—the equilateral triangle—is formed by ordering the propositions. Acknowledging the power of Proposition 1, we locate it at the top of the triangle consisting of the first three propositions. Propositions 4, 5, and 6 make up the third row of the larger triangle, and (in a departure from the first level) propositions 7, 8, 9, and 10—all of them applications of the ratio devised in Proposition 6—constitute its final row. The apexes of the triangle are 1, 7, and 10; and its center is 5:

```
  1
 2 3
4 5 6
7 8 9 10
```
What does it mean? Perhaps most importantly, this triangle represents the *tetraktys*—the Pythagorean decad or perfect number 10—thus paying homage to those Newton considered his true antecedents in astronomical knowledge. Newton believed that certain ancient philosophers, including the Pythagoreans, had known the law of gravitational attraction, but that their understanding had been lost and corrupted. As his biographer, John Conduitt, wrote: “Sr I thought Pythagoras’s Musick of the spheres was intended to typify gravity, & as he makes the sounds & notes to depend on the size of the strings, so gravity depends on the density of matter” (Iliffe, 1: 193). Similarly, in a passage from one of the so-called “classical” scholia, which in the early 1690s Newton contemplated adding to Book 3 of the *Principia*, he writes that Pythagoras “understood by means of the harmony of the heavens that the weights of the Planets towards the Sun were reciprocally as the squares of their distances from the Sun” (McGuire and Rattansi, 116-17). Newton decided not to publish these scholia; he did not, however, destroy them.

But the significance of the *tetraktys* is not limited to the law of gravitational attraction. As the geometrical representation of the sacred number 10, the *tetraktys* is read in Pythagorean mystical tradition as the all-encompassing combination of the first four natural numbers \((1 + 2 + 3 + 4)\). Geometrically these numbers represent the point, the line, the surface, and the solid. In terms of creation they represent “the primordial one essence, the polarity of manifestation, the threefold activity of the spirit, and the fourfold existence of matter as seen in the four elements” (Schimmel, 180). These associations with nature point toward the work of alchemy, where the triangle may be interpreted as a symbol of the essential three substances, represented by its apexes: sulphur, mercury, and salt. Thus, the number ten—encompassing number, geometry, alchemy, and nature itself within a single symbol—represents multiplicity emerging from unity.
and returning to it. This number and its geometrical representation, when interpreted in the tradition of sacred geometry, show that there is more at stake here than the determination of planetary orbits. They reveal that Newton intends to encompass all of nature in the *Principia*.

The esoteric figure of Section 3—the circle—serves two purposes, as it is simultaneously an alchemical image of the work of nature and a religious image of the ancient and proper worship of God. Both circles, as we shall see in the images described below, are formed by the number 7, the number of propositions in Section 3. Without attempting to exhaust this number’s many symbolic meanings, I suggest that, when viewed as a combination of the spiritual number 3 and the material number 4, the number 7 may be seen as the organizing principle of the universe. Support for this reading can be found in a draft scholium Newton wrote to follow Proposition 8 of Book 3. Asserting that the Pythagoreans associated the number 7 with both the inverse-square relation of gravitational attraction and the vibration of musical strings, Newton writes, in part:

> By what proportion gravity decreases by receding from the Planets, the ancients have not sufficiently explained. Yet they appear to have adumbrated it by the harmony of the celestial spheres, designating the Sun and the remaining six planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, by means of Apollo with the Lyre of seven strings measuring the intervals of the spheres by the intervals of the tones. (McGuire and Rattansi, 115)

Light, also, in Newton’s eyes, by analogy to the seven-tone musical scale, obeyed a seven-fold organizing principle. As an academic, Newton would have been familiar with the seven liberal arts. As an alchemist, he would have been familiar with the account that the ancient alchemists had invented the seven liberal arts so that they would have a
means of making a living while pursuing the Great Art: transmutation of the earthly dross we find all around us into the most precious stone of the philosophers.

The alchemical process was represented iconographically in many ways, one of which—the circular arrangement of the seven stages of the procedure around a center—is particularly suggestive in this context. Newton left among his papers a copy of a symbolic diagram of the seven-fold creation of the philosophers’ stone. The diagram consists of seven seven-pointed “stars” (as Newton calls them in the accompanying notes), each associated with a heavenly body (Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn), a metal (gold, silver, mercury, copper, iron, tin, lead), a gender, a humor, and a color. The small stars, each enclosed in double circles, surround a larger, more elaborate star (which Newton calls the “great star”), itself enclosed in a circle labeled Prima Materia, and surrounding a circle which in turn surrounds another circle (Golinski, 156; and Westfall 1984, 297). This many-circled image encompasses the knowledge and practice of the alchemist. But the image thus described can be read in another way as well, a way that draws Newton’s theological beliefs into the esoteric text.

From the 1670s through the 1690s (including the time he was working on the Principia) Newton wrote a number of partial drafts of a manuscript collectively known as "Theologiae gentilis origines philosophicae," or “The Original of Religions,” traces of which can be found in both the General Scholium to the Principia and the Opticks. In this work he writes of the religion of the prytanea, which were sacred places, envisioned as circles centered on perpetual fires. Chapter 2 of the manuscript begins: “The religion most ancient and most generally received by the nations in the first ages was that of the Prytanea or Vestal Temples” (1r). Newton continues: “And as the Tabernacle was a symbol of the heavens, so were the Prytanæa amongst the nations. The whole heavens they reckoned to be the true & real Temple of God & therefore that a Prytanæum might deserve the name
of his Temple they framed it so as in the fittest manner to represent the whole systeme of the heavens. A point of religion then which nothing can be more rational" (6r). And again: “So then twas one designe of the first institution of the true religion to propose to mankind by the frame of the ancient Temples, the study of the frame of the world as the true Temple of the great God they worshipped” (7r).

In an article titled “Isaac Newton’s Theologiae Gentilis Origines Philosophicae,” Westfall paraphrases parts of two other manuscripts on this subject, writing of Newton: “In the Apocalypse,” he asserted, “the world natural is represented by the Temple of Jerusalem & the parts of this world by the analogous parts of the Temple.” When the priests approached the altar, they always circled the fire and lighted seven lamps which represented the planets circling the sun (a numerical problem with a Copernican Universe which Newton did not pause to explicate)” (1982: 24-5). The seven lamps representing seven planets would indeed be problematic if Newton intended for them to represent our solar system, for he knew of only six primary planets circling the sun. I believe, however, that in constructing the frame of the world in this way, Newton was not exactly envisioning our solar system. Instead, he may have been thinking of an image like the alchemical image I have just described. Religion and alchemy were not separate realms for Newton. In the years preceding the composition of the Principia he apparently came to believe that the story of creation in the book of Genesis was an alchemical allegory. In the mid-1670s, for example, he copied a manuscript note ascribed to a “Robert Lane,” which begins:

It may seem an admirable & new paradox ye Alchemy should have concurrence with Antiquity and Theology; ye one seeming merely humane & ye other divine; & yet Moses, ye ancient Theologue describing and expressing ye most wonderful Architecture of this great world tells us ye ye spirit
of God moved upon \( y \) water \( w^{th} \) was an indigested chaos, or mass created before by God. (Golinski, 159)

Just as Newton considered his work to be in part a recollection of lost knowledge of natural philosophy, he considered it to be in part a renewal of ancient pure religion. This double image, then—the religious image of the seven lamps circling the sacred fire, superimposed upon the alchemical image of the Great Work surrounding the “great star”—expands the reach of the sacred geometrical circle of Section 3, bringing both the quest for the philosophers’ stone and the worship of God as expressed in the uncorrupted ancient rites of the prytaneum into this level of the concealed text.

There is one more figure that must be closed before we can pass on to the last level of this hidden text, and that is the one that unites sections 2 and 3. Newton accomplishes this link in two ways. One is the connection among the propositions from 7 through 13, all of which are problems based on Proposition 6. Even though he deliberately separates sections 2 and 3 between propositions 10 and 11 (a logical break as Section 3 is entirely devoted to the motion of bodies subject to the inverse-square law of attraction), both 10 and 11 concern ellipses and both demonstrate force laws that obtain in our universe.\(^{29}\) Propositions 10 and 11 (which are problems 5 and 6) thus bridge the gap between the two sections. Newton reinforces the link between them by locating a lemma referring us to Apollonius’ \emph{Conics} after Proposition 9, setting 10 apart from the preceding propositions and joining it to 11, 12, and 13, which also refer explicitly to the \emph{Conics}.\(^{30}\)

The other connection is accomplished by joining propositions 1 and 17. In Proposition 1 we are given bodies driven in orbital motion (\emph{corpora in gyros acta}). If we have Definition 4 in mind we might wonder what had caused those bodies to move in their orbits. Proper reading of a geomet-
tical proposition, however, does not include stopping to question its enunciation, so as conscientious students of geometry we let it be and move on to the demonstration. But Newton has not forgotten, and Proposition 17, which is Problem 9, finally hints at how those bodies came to be in motion, for this last proposition of Section 3 establishes the conditions for a biblical *fiat*. The direction of the surface text of sections 2 and 3 has been toward consideration of bodies governed by the inverse-square law whose center of force is located at one focus of the ellipse traced by their motion. But we have also been apprised that elliptical orbits will occur only if the bodies encounter the proper amount of centripetal force when they are moving with the correct velocity. If they have too little inertial motion with respect to the force exerted by the center they will fall into it. If they have too much they will escape its influence. If on reading the *Principia* we are thinking of the planet that is our home (and surely we cannot help doing so even as we remind ourselves that there are no material bodies in the ideal universe of Book 1), this austere mathematical treatise may spark a surge of fear. The necessary conditions for our existence seem so very precarious. But then Newton recalls to us the perfect mechanic of the Preface, the only one who could actually fulfill the requirements of Proposition 17.

Newton, contemplating the lawfulness of our universe, does not doubt for a moment that its creation required a mechanic who would know the absolute quantity of the force of every center (for he allows that the fixed stars may be as suns in their own systems, and according to universal gravitation every body is a center of force); who would have the power to set bodies in motion at the velocity required to establish elliptical orbits in accordance with his laws; and who would have both the goodness and the will to do so. Newton believed, as he wrote later in the General Scholium, that the *Principia* testified to the existence and action of a good and powerful deity. Only that deity could solve the problem posed in Proposition 17, and, when he did, the
bodies would begin to move as we see in Proposition 1.\textsuperscript{32} Proposition 17 is the first one in the *Principia* to refer to an actual, though unspecified, number: the absolute quantity of force. It is also the first one in the *Principia* to end with Q.E.F. (*Quod erat faciendum*). On the exoteric level of the text this signals the completion of a certain kind of geometrical task. On the esoteric level, it tells us that the task that could have been done only by the divine geometer has, in fact, been accomplished.

It is fitting, then, that the number 17 also has its appropriate esoteric geometrical figure. Its figure is the magic square, identified with the possibly apocryphal Arabic alchemist Jābir Ibn Hayyān who European alchemists believed had in the eighth century restored the spagyric art lost with the fall of Rome.\textsuperscript{33} The simplest magic square is formed of all the natural numbers from 1 through 9, again, as in the tetraktys, with the number 5 in the center. Each of its lines adds up to 15, the product of 5 and 3, and the numbers of alternate corners and opposite sides add up to 10, the product of 5 and 2. This is the square:

\[
\begin{array}{ccc}
4 & 9 & 2 \\
3 & 5 & 7 \\
8 & 1 & 6 \\
\end{array}
\]

If you separate the gnomon, the sum of the numbers in the small square remaining in the lower left-hand corner (1 + 3 + 5 + 8) is 17, while that of the gnomon is 28. Both of these numbers in Sufi philosophy were considered the natural numbers concerned in all movements and combinations of natural things. Further, the numbers of the small square—1, 3, 5, and 8—can be related to the numbers 1, 2, 3, and 4 of the Pythagorean *tetraktys* and to Plato’s *Timaeus*, and thereby identified with the elements: fire, water, air, and earth. Seventeen, thus, rendered in esoteric geometry as a square composed of numbers, is the number of nature itself. With this very significant number the creation of Newton’s ideal
universe—incorporating the wisdom of the ancients into the world formed by the God of the Bible as Newton understood him—is complete. There is only one step remaining: to determine the place of man in that universe. That place is associated with the number 5.

3. The Third Level: “... to find that center”

Around the man and woman draw a ring,
   From which an equal-sided square springs forth.
From this derive a triangle, which should touch
   The sphere on every side: and then the Stone
Will have arisen. If this is not clear,
   Then learn Geometry, and know it all. (Michael Maier)

Now that sections 2 and 3 have been sealed into the sacred geometrical figure comprising them both—which, like the alembic during the Great Work of alchemy and the Temple of Solomon, represents the universe itself—we may move on to the third and highest stage of the hidden text. This stage is analogous to the Central Altar or Most Holy Place of the Temple; in it Newton achieves the mystical union of mathematical and alchemical symbolism through his use of the number 5. This number has appeared repeatedly in our journey. It is, for example, the number of the definition of centripetal force; it appears in the harmonic ratio 3:2 (the ratio of the musical interval we call the fifth), which is reflected in the harmonic law, demonstrated in Proposition 15 of the Principia; it can be seen in the arrangement of the three triads of Section 2 alongside the two triads of Section 3; it is the central number both of the Pythagorean triangle and the magic square; and it is the number of that problematic proposition in Section 2. But its significance has not been clear. On this level, the meaning of the number 5 can finally be understood.

With the number 5, we find ourselves again in exceedingly fertile symbolic territory, only a very little of which we
will explore here. Geometrically speaking, the five-sided figure, the regular pentagon, is associated with the golden section, as can be seen in Euclid's demonstrations II.11, IV.10, and VI.30. The proportion of this section is also that of the equiangular, or logarithmic, spiral, the spiral of Proposition 9. In the context of the surface text of the *Principia*, Proposition 9, the central proposition in the sequence of seventeen, is deeply disquieting, all the more so as Newton will later (Book 1: Proposition 45 and Corollary 14 of Proposition 66) show that the inverse-cube force, which governs the equiangular spiral, inevitably intrudes into any system (like, say, that of our sun, our earth, and our moon) comprised of more than two bodies. Proposition 9 as seen at the highest level of the sacred text, however, does not foretell mindless mechanical destruction; on the contrary, it reveals both the beauty of the universe and God’s love and care for his creation. For the lurking presence of the inverse-cube force teaches us that Newton’s God was no absentee landlord, as he could have been, had the inverse-square law, characterized by its remarkable stability, ruled unchallenged. To Newton the perturbation inherent in the inverse-cube force would not be, as the mechanical philosophers would have it, an indication of imperfection. Rather, heavenly collisions, caused by the deviation of bodies from their orbits, are for Newton the means of seeding life throughout the universe (as we shall see in our consideration of comets in Part Two of this essay) and they are also the means by which our created world will inevitably come to an end, as Scripture has foretold. For Newton, 5 connects the beginning to the end. The number 5 is intimately concerned with generation and growth. In alchemical terms, 5—comprising the four material elements and the spiritual quintessence—is the number of the philosophers’ stone, the universal medicine, called by Philalethes “a little world, because it contains within itself the active and the passive, the motor and the thing moved, the fixed and the volatile, the mature and the crude—which, being homogeneous, help and perfect each other.”
(Waite, 2: 265) And 5 is the number of purified man: the microcosm containing the quintessence of the universe in perfect proportion to the macrocosm, the universe itself. This association may be traced to Pythagorean numerology, according to which 2 is the first feminine number and 3 the first masculine number. In alchemical, as in Pythagorean, tradition, the combination of these two numbers in order to create a third is not strictly a matter of addition. The joining of 2 and 3—seen as the union of mercury and sulphur, female and male, the queen and king of the alchemical fables—is regarded as the sexual union of alchemy’s two fundamental principles—matter and spirit—whose hermaphroditic offspring is soul. This “birth,” which for many alchemists completed and consummated the work of nature, was equated with perfect knowledge of God.

May we dare to hope then that God will allow us to know him? Proposition 5 suggests that we may. Definition 5 has told us: “Centripetal force is the force by which bodies are drawn from all sides, are impelled, or in any way tend, toward some point as to a center” (405). The enunciation of the seemingly superfluous proposition of the same number—Proposition 5—which is also the first problem of the text, states: “Given, in any places, the velocity with which a body describes a given curve when acted upon by forces tending toward some common center, to find that center” (453). To follow the veiled text at the beginning of the Principia is to accompany its author on a mystical journey both upward and inward to that sacred center—the Central Altar (for the people) or (for the priests) the Most Holy Place—where we may behold insofar as we are able the fullness of God’s glory. One of the very few things we know about the composition of the Principia is that Proposition 5 was the last one added, for Newton included it only after the manuscript was finished (Cohen 1971, 86). If we see the book as no more than what I have been calling the surface or exoteric text, last-minute inclusion of this remarkably redundant proposition seems senseless. If, instead, we see in it a carefully constructed
symbolic edifice, the final insertion of this proposition, which locks the structure into place, is, in effect, the placement of the keystone.

This is the point at which, it seems to me, mere rhetorical or aesthetic considerations can no longer account sufficiently for the organization of the text of the Principia. Isaac Newton was a gifted toolmaker, and the method of nascent and evanescent ratios as he uses it is a tool (and, I believe he would have thought, literally, a gift) that enables the finite mind of man to approach the infinite mind of God. If the Principia, in both the open and the concealed texts, teaches us that man is at home in an intelligible universe, the instrument by which we may rise to understanding God and the universe is the mathematical art that reconciles for the first time the crooked with the straight. Newton has, in a sense, reversed the Fall, inasmuch as with his new geometry he has conquered the incommensurability that had separated man from the presence of God. This interpretation of the number 5’s role teaches us that purified man is, intellectually, one with the universe. As we will see in the second part of this essay, to be published in the next issue of the Review, the veiled text found toward the end of Book 3, read as an alchemical allegory, will teach us that, materially and spiritually as well, we and the universe are one.

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The title of this paper comes from the first line of a poem Newton's lifelong friend Mrs. Vincent recited to William Stukeley, which she said hung on the wall of his room in his boyhood home at Woolsthorpe Manor, beneath a drawing of Charles I, in a frame Newton had made and colored:

A secret art my soul enquires to try
if prayers can give me what the wars deny.
Three crowns distinguished here in order doe
present their objects to my knowing view.
earth's crown thus at my feet I can disdain,
which heavy is & at the best but vain.
but now a crown of thorns I gladly greet,
sharp is this crown, but not so sharp as sweet.
the crown of glory that I yonder see,
is full of bliss & of eternity (lliffe 1: 74)

Mrs. Vincent told Stukeley that she fancied Newton himself had “made” the verses, but he seems instead to have adapted them from the 18-line poem printed in some editions of the “ΕΙΚΩΝ ΒΑΣΙΛΙΚΗ” which circulated clandestinely after the king’s execution in 1649. E. N. da C. Andrade, who was perhaps the first scholar to remark upon the source of these verses, after transcribing the full poem from the “ΕΙΚΩΝ ΒΑΣΙΛΙΚΗ,” writes, “There seems not the slightest doubt that the verses written by Newton are the above imperfectly recollected” (427). It seems to me at least equally likely that Newton deliberately altered and truncated the verses to express his own sentiments.


3 In his article, “Newton’s Theological Manuscripts,” Westfall writes: “Having studied the entire corpus of his theological papers, I remain unconvinced that it is valid to speak of a theological influence on Newton’s science. I say specifically ‘theological influence,’ not ‘religious influence.’ The second can, I believe, be readily shown and is generally admitted. A theological influence, by which I mean the influence of Newton’s central Arian position and his allied view of the prophecies, is another matter. As I indicated earlier, perhaps we can find the source of the God of the General Scholium in his Arianism. It is not clear which came first, however, his view of God or his Arianism; and even if we grant the influence we remain still on a plane of high generality from which it is difficult if not impossible to demonstrate an influence on some concrete element of his science” (1982a, 139-40).

4 Whiteside, who edited and published Newton’s copious mathematical papers and who by his own account spent many hours immersed in Newton’s mathematics, writes that in all the thousands of sheets of Newton’s preserved mathematical papers he “can detect no hint of any belief by him in number-mysticism, no trace of the extravagance of hermetic mathesis: no neo-Pythagorean arithmologies lurk there that I know of, no cabalistic gematria, no cryptic magic squares or motifs in John Deeist style complexly intertwining pentacles and stellate heptagons” (1982, 121). Put in this way such beliefs do sound rather silly. But Whiteside himself admits (tongue in cheek, perhaps?) that he may be somewhat biased. In the sentence that precedes the one I just quoted, he
speaks of Newton’s exceptional power of intense, unremitting concentration, adding: “And behind the concentration—do I show my bias in thinking so?—was an earthy core of straight-thinking common sense.” Newton’s *Principia* does indeed contain many of the features Whiteside has not seen and his including them in that work is quite consistent with common sense. Cohen, for his part, writes about the influence of a possible Hermetic or alchemical background: “What seems to me remarkable about Newton in this regard, however, is that although he was steeped so deeply in alchemy and the Hermetic philosophy, his *Principia* is so little tinctured by this thought and activity. Even if it should turn out that there is some secret and hitherto-unrevealed direct effect of Hermeticism on the *Principia*—then it would still be remarkable that there are no great apparent or obviously visible traces of alchemy or Hermeticism in the *Principia*. Such traces, if any, would have been hidden so well that they would have remained indiscernible to scholars and critics for three centuries. In short, what may be most astonishing about the *Principia* is not that its author was deeply touched by alchemy and the Hermetic philosophy, but that he should have been able to put aside his alchemical and Hermetic concerns to such an extent that he could, despite them, produce a work of positive science which has influenced the development of the exact sciences and of all science ever since. This is in itself remarkable, a wholly unexpected kind of behavior. But then—as Frances Yates once remarked to me—in dealing with Newton we must always remember that he was a genius; a man with the mind of a Newton does not necessarily follow the expected rules for other human beings” (1982, 75-6). It is because of Newton’s alchemical and Hermetic beliefs, not despite them, that he could create the *Principia*, and I certainly agree with Yates’ quoted observation that we should not expect Newton to follow expected rules.

5 Popkin, for example, writes, “The problem of whether there is just one Newton, or two, or more still needs to be worked out” (Force and Popkin, xii) and he expresses his hope that further work on Newton will help “recapture the vision that animated his whole intellectual life” (xvii). Force, in the same volume, aspires “to knit together the ‘two Newtons’ of historiography into one historical person whose apparently diverse historical and scientific works are unified by Newton’s persistent thematic focus upon the power of the Lord God as that power is revealed not only in scripture but also as it is manifested in the book of nature . . .” (242), and, further, that: “If it is our goal to understand Newton in his own terms (in so far as such a goal is even approachable), then we must confront the interaction in his thought—as evidenced in his manuscript writings—between his metaphysical conception of God with what human beings may claim to know and with how human beings can make such knowledge claims about the creation” (256). I agree that the manuscripts are of crucial importance. They, after all, provided early insight into the
fact that Newton’s published work may not be exactly what it seems and they continue to fuel our suspicions that there is more to Newton than immediately meets the eye.

All my citations from the *Principia* in English are taken from the 1999 translation by I. Bernard Cohen and Anne Whitman. My Latin quotations are from the 1972 variorum edition compiled and edited by Alexandre Koyré and Cohen.

I am not the first to assert that Isaac Newton was a mystic. Newton himself referred to his “mystical fancies” in a letter to John Locke concerning his interpretation of Scripture (*Correspondence*, 3: 147). He writes in one of the suppressed “classical” scholia, of the mystical philosophy of the ancients regarding, for example, the active principle of gravitational force: “And therefore those Ancients who rightly understood the mystical philosophy taught that a certain infinite spirit pervades all space & contains and vivifies the universal world; and this supreme spirit was their numen, according to the Poet cited by the Apostle: In him we live and move and have our being” (quoted in Westfall 1984, 511).

Newton’s own references to mysticism were not part of the public record during his lifetime. In 1742, however, only fifteen years after Newton’s death, the English mystic William Law made the following claim:

The illustrious Sir Isaac Newton, when he wrote his *Principia* and published to the world his great doctrine of attraction and those laws of nature by which the planets began and continue to move in their orbits, could have told the world that the true and infallible ground of what he there advanced was to be found in the Teutonic Theosopher in his three first properties of Eternal Nature; he could have told them that he had been a diligent reader of that wonderful author, that he made large extracts out of him, and could have referred to him for the ground of what he had observed of the number Seven.

Why did he not do it? Not because he was ungenerous enough to wish to conceal his debt, but because he thought that many people and some great scholars would be so prejudiced as to suspect or condemn as false and wicked theories that were held by an enthusiast. (quoted in Hobhouse, 27-8)

The Teutonic Theosopher to whom Law refers is Jacob Boehme, also known in England as Behmen. No one, to my knowledge, has discovered any evidence to support Law’s assertion (through hearsay) that “when Sir Isaac Newton died, there were found among his papers large abstracts out of J. Behmen’s works written in his own hand” (28), but the question of Newton’s indebtedness to Boehme in particular is not important here. More interesting for my purposes is noting Law’s claim that mystical teachings expressed in numbers can be found in the *Principia*. More
recently, Thomas Simpson, while not going as deeply into this aspect of the work as I intend to do, has also written: “‘Nature’ is for Newton, I suspect, the field of God’s working among us; the *Principia* is a tortured, mystic work, shaped to open the way to this vision” (99).


10 It seems so right for there to be three laws of motion that we might be inclined to make the mistake of thinking that Newton always thought there actually were three laws. One curious and interesting fact about the *Principia* is that, uniquely among Newton’s compositions, apparently no manuscripts survive prior to the one Newton submitted to Halley for publication. As Cohen states, we remain wholly in the dark on the fundamental topic of how any of the propositions were discovered as well as any difference there may be between the methods of discovery and those of presentation (1971, 87). But it is possible to trace the evolution of Newton’s thought on this particular matter through the manuscripts of *De Motu*. The longest manuscript of that treatise has five hypotheses, later designated laws, while the version called *De motu corporum in mediis regulariter cedentibus* has six laws of motion (1971, 59). Thus, from one manuscript to another we see change in number, name, and content of what became the *Principia*’s three axioms or laws of motion. As one of his goals in his *Principia* seems to have been to rectify Descartes’ errors, this triad (as others have noted before me) may allude to the three laws of force in Descartes’ *Principia Philosophica*. The laws also illustrate the care Newton took with sentence construction, as all three are given in the accusative-infinitive construction called “oratio obliqua.” After publication of the first edition Newton contemplated some changes to the second law, which he drafted in the nominative-infinitive construction of “oratio recta,” but he then altered the sentence to correspond to the “oratio obliqua” construction of the other two laws, retaining their syntactic parallelism (Cohen 1970, 161).

11 *De Motu*, in its longest version, consists of three definitions, four hypotheses, four theorems, and seven problems. I do not intend to argue that those numbers are structurally or otherwise significant, though it could be done. My purpose here is merely to observe that, if they are structurally significant, their structure is much simpler than that of the *Principia*. Comparison of the propositions in *De Motu* and the *Principia* can be found in Brackenridge’s Key to Newton’s Dynamics. A comparative chart of *de Motu* and the *Principia* is available on the St. John’s Review website: www.stjohnscollege.edu/news/pubs/review.shtml.

12 Kepler did not identify as laws the three statements we commonly call his three laws; nor is he responsible for their being a triad, as they were
published separately. Newton knew that demonstration of these statements was the necessary and sufficient mathematical foundation of his *Principia*, and he acknowledged them as Kepler's, but he did not consider them laws until the mathematical demonstrations were complete. The one we know as the third, or harmonic, law, which Newton demonstrates for a purely mathematical universe in Proposition 15 of Book 1, he called Kepler's "rule" (Cohen, 1971, 291). In a scholium to *De Motu*, he stated that Kepler had "supposed" the first two laws (Cohen 1971, 28: n. 3), which he elsewhere called Kepler's "propositions" (Cohen 1971, 295 and 296). In a letter to Halley regarding Hooke's claim to have discovered the inverse-square law, Newton writes with regard to Kepler's first law: "... Kepler knew ye Orb to be not circular but oval & guest it to be Elliptical ...," and later in the same letter, "Kepler guest right at ye Ellipsis" (*Correspondence*, 2: 436 and 437). Guesses, even correct guesses, are not laws.

13 I am indebted to colleagues who were teaching junior mathematics during my first year of doing so, in 1993-4, for pointing out the first two triads. Making my way through the propositions literally letter by letter, I might not have perceived them myself on a first pass through the *Principia*. Additionally, among other things in the thoroughly annotated margins of my copy of the *Principia* are some intriguing questions and observations whose sources among my colleagues I cannot recall, which have helped lead me to this reading.

14 Unlike Force and Popkin, I would not necessarily expect the manuscripts to provide us with a "key" to Newton's symbolic thinking, for they consist of notes and unpolished drafts and my claim is that his incorporation of symbolic meaning into the *Principia* is a work of art. Nevertheless, we might be able to read the manuscripts in a new way if we took seriously the possibility that numbers might have multiple significances in Newton's work. Something like this has, in fact, been done. As I was finishing the first version of this paper, in 1998, I encountered *The Expanding Force in Newton's Cosmos*, by David Castillejo. Castillejo's principal assertion is that Newton's work should be considered a whole, and that its unity may be seen in Newton's pervasive structural use of certain numbers. The numbers he calls "vital" because they seem to be organizing principles particularly in the theological studies, but also in the alchemical works and the *Opticks*, are 3, 7, 8, and 10. The number 5, also important according to Castillejo, seems to him to be in a class by itself. Castillejo attempts to assimilate a huge number of documents in a relatively short study, most of which is devoted to the alchemical and theological manuscripts. By the time he gets to the *Opticks*, he can do little more than indicate that its books and propositions are organized according to certain numbers seen throughout Newton's work. Castillejo has even less to say about the *Principia*, observing merely that it may provide the first published example of detectable numerical patterns,
writing: “The work is composed in *three* books; and it opens with *eight* definitions, followed by *three* laws of motion. It’s possible that Newton even saw the vital numbers in the astronomical phenomena, since he has 7 large bodies in his solar system, and 10 secondary planets or moons” (101). In the context of an argument that the number 5 for Newton “always describes the attack or moment of contact or invasion,” Castillejo calls attention to the fact that the *Principia* “first mentions the attractive force of gravity” in Definition 5 (103). If Castillejo is right, using significant numbers as a structural principle was Newton’s ordinary practice. Castillejo is considered somewhat eccentric himself, and I am not entirely in agreement with his reading of the numbers (if I understand it correctly), but I think it unlikely that two people, working independently on different texts, should have perceived such organization in a single author had there not been something there.

15 His unpublished writings include, for example, a list of fourteen *Argumenta*, supported by biblical passages, which he claimed showed that the Son was neither coeternal with nor equal to the Father. In another unpublished paper he listed seven *Rationes* against the doctrine of the Trinity, the first of which states baldly that, “Homoousion is unintelligible. ‘Twas not understood in the Council of Nice [Nicaea] (Euseb, apud Soc . . . .) nor ever since. What cannot be understood is no object of belief” (quoted in More, 642). These are among his milder statements. Elsewhere he railed against “this strange religion of the west,” which in moments of outrage he called, for example, a “fals infernal religion,” corrupted with superstitions of every sort, a “fornication,” and a “cult of three equal Gods” (quoted in Westfall 1984, 323 and 344).

16 This document is available at www.newtonproject.sussex.ac.uk.

17 At St. John’s College we are concerned with the philosophical and literary aspects of all the works we read, including those that are mathematical and scientific. So perhaps it is not surprising that we regard the *Principia* somewhat differently from most who study it. Among my colleagues, Curtis Wilson has published numerous articles on Newton, though not at all in the vein I am pursuing here. But there are others, as well. As I began to formulate this reading, I came upon two articles in which my colleagues engaged in uncommon but suggestive readings of the *Principia*. One is an article by Thomas Simpson, called “Science as Mystery: A Speculative Reading of Newton’s *Principia*,” which I cite several times in this paper. The other is Howard Zeiderman’s allegorical interpretation, “Newton’s and Adam’s Apple.” Zeiderman takes care to stress the playfulness of his reading, calling it “merely a story, a springtime diversion” (12), but Simpson’s article is quite serious.

Curiously, David Castillejo was a tutor at St. John’s for a year, but I do not know if he first encountered Newton there. Finally, Peter Pesic has written sensitively and speculatively about Newton in several places,
including his book, *Labyrinth*. None of these writers approaches Newton in exactly the way I do, but all have raised interesting questions in their attempts to understand his life and work.

18 Iliffe, 1: 144. The quotation comes from Henry Pemberton’s *View of Newton’s Philosophy*, published in London in 1728. Its beginning concerns the ancients in general.

19 I am treating both hierarchies within the temple image as one in this paper. It is quite possible, however, to separate them by regarding the first ten propositions as symbolically mapping the temple grounds as a whole and the second seven as tracing the progress within the Separate Place to the Holy of Holies. Both approaches can be instructive, and perhaps they are not mutually exclusive. I do not believe that Newton was engaged in simply encoding a particular meaning in a particular number. The layering of the text requires reading it with a shifting perspective.

20 Cohen observes that Proposition 2 is not merely the converse of Proposition 1, “for it states that the area law implies a centripetal force directed to the point about which equal areas are swept out” (Cohen 1971, 76).

21 In addition, Newton, almost as an aside, established the foundation of terrestrial mechanics in the six corollaries to the Laws. At the end of the section Newton writes: “But my purpose here is not to write a treatise on mechanics. By these examples I wished only to show the wide range and the certainty of the third law of motion” (430).

22 I am not the only one who has noticed the apparent superfluity of this proposition with respect to what I am here calling the exoteric text. Dana Densmore omits it altogether from her *Newton’s “Principia”: The Central Argument*, which includes all the other propositions in sections 2 and 3; and it is the only proposition in these two sections not mentioned even in passing by I. Bernard Cohen during his discussion of the structure of Book 1 in “A Guide to Newton’s *Principia*,” a substantial study which precedes his translation of Newton’s work. Curiously, in all three editions of the *Principia*, instead of ending with the Q.E.I characteristic of problems, Proposition 5 ends with the Q.E.D. characteristic of theorems. This apparently uncorrected error calls attention to this very peculiar proposition.

23 If the center of force happens to be the center of the circle, of course, any force law may apply. But if the motion is eccentric, Newton proves that the law governing it is \( f \approx \) (ultimately) \( 1 / (SP^2 \cdot PV^3) \), where PV is the chord passing from the position of the body through the center of force (S) to the other side of the circle. Both Ptolemy and Copernicus struggled with the undeniable fact that celestial motion, whether in a geocentric system (in the case of Ptolemy) or in a heliocentric system (in
the case of Copernicus), was eccentric with respect to the observable bodies; but both chose to try to save regular, circular motion, even at the cost of awkward theoretical accommodations. Kepler, however, abandoned circular orbits. As Densmore writes, "in Chapter 39 of the New Astronomy, Kepler takes up the question of how a body may be made to move in a circle about a center other than the circle's own, using either physical forces or moving intelligences. His conclusion is that circular motion is extraordinarily complicated and cannot be generated by those means. Some sort of track or rigid sphere (which devices Kepler rejected) would be required in addition to the moving forces." Then she observes, "Newton's proof here may be intended as a commentary on Kepler's physical speculations. Using an entirely different physical theory, he nonetheless comes to the same conclusion: there seems to be something unnatural about eccentric circular motion" (155).

24 In Proposition 45, the final proposition of Section 9 of Book 1 (which section, by the way, consists of three propositions), Newton shows that a force approaching the inverse cube leads to motion of the apsides of an elliptical orbit, and, thus, to perturbation of that orbit. This proposition is cited repeatedly. Then, in Corollary 14 of Proposition 66 of Book 1 he shows that in a system containing three centers of force (labeled S, T, and P, in the diagram, and evidently intended to represent Sol, Terra, and Terra's revolving Planeta, the moon), the inverse-square force will tend toward the inverse-cube, a clear implication that our solar system, despite the wonderful stability of the inverse-square law, may well be heading for dissolution.

25 Guthrie, 97. The quote is from Iamblichus' Life of Pythagoras. Newton possessed a copy of "De vita Pythagorica" (Harrison, 166).

26 A neat bit of structural symmetry emerges if we designate the propositions as theorems (T) or problems (P), rather than using their numbers. In that case the triangle looks like this:

\[
\begin{array}{ccc}
T & & T \\
T & T & T \\
T & P & T \\
P & P & P & P
\end{array}
\]

This symmetry, which emphasizes the centrality of Proposition 5, becomes visible only when the propositions are arranged in a triangle.

27 Newton, while assuming that the color spectrum was infinite, contrived to see in it seven principal colors: violet, indigo, blue, green, yellow, orange, and red. He recounts in a paper submitted to the Royal Society in
that, "possibly colour may be distinguished into its principal
degrees, red, orange, yellow, green, blue, indigo, and deep violet, on the
same ground, that found within an eighth is graduated into tones" (Correspondence, 1: 376). He asked a friend to determine "where every
one of the seven aforenamed colours was most full and brisk, and also
where he judged the truest confines of them to be." His reasons for
seeking the help of someone else were, "partly because my own eyes are
not very critical in distinguishing colours, partly because another, to
whom I had not communicated my thoughts about this matter, could
have nothing but his eyes to determine his fancy..." Newton had,
however, told his friend to look for seven colors. The resulting spectrum,
drawn in the manuscript, shows seven colors analogous to the seven tones
of the diatonic scale (Correspondence, 1: 377). Correspondence between
the diatonic scale and the color spectrum was another feature of
Newton's belief in the unity of the cosmos. Two fairly recent studies of
the importance of music for Newton have been written by Gouk and

28 Newton varied the bodies he included in his groups of seven,
depending upon his purpose. In the metaphor of Apollo's lyre, quoted
above, the bodies are "the Sun and the remaining six planets: Mercury,
Venus, Earth, Mars, Jupiter, Saturn." In the alchemical diagram they are
the sun, the moon, Mercury, Venus, Mars, Jupiter, and Saturn. Note that
the sun belongs to both groups. In "The Original of Religions" he wrote:
"Now the corruption of this religion I take to have been after this
manner. ffirst the frame of the heavens consisting of Sun Moon & Stars
being represented in the Prytanæa as the real temple of the Deity men
were led by degrees to pay a veneration to these sensible objects & began
at length to worship them as the visible seals of divinity. And because the
sacred fire was a type of the Sun & all the elements are parts of that
universe which is the temple of God they soon began to have these also
in veneration. For tis agreed that Idolatry began in the worship of the
heavenly bodies & elements" (8r). Though the religion of the prytaneum
seems to have encoded the heliocentric universe, Newton was no sun
worshipper.

29 The force laws of 10 and 11 are the only laws consistent with a
rationally ordered universe, as Newton will prove in the sequence of
propositions 71-78 of Book 1, for in these two cases alone the force is
directed to the centers of the attracting bodies. Newton himself reminds
us in the brief scholium to Proposition 78 that the forces governing ellip­
tical orbits whose centers of force are either at the center of the ellipse or
at one of the foci (f = d in Proposition 10 and f = 1/d² in Proposition 11)
behave in similar ways. In that scholium he observes:

I have now given explanations of the two major cases of attractions,
namely, when the centripetal forces decrease in the squared ratio of
the distances or increase in the simple ratio of the distances, causing bodies in both cases to revolve in conics, and composing centripetal forces of spherical bodies that decrease or increase in proportion to the distance from the center according to the same law—which is worthy of note. (599)

30 Such shifting perspectives suggest to me the value of regarding the temple image as two-fold. In Proposition 11 we have entered a different space, which will begin our progress toward the fiat of Proposition 17, the manifestation of God in the universe Newton has created. The transition is not abrupt, however; rather, it is one that has been prepared by the ten propositions that have preceded it.

31 In the General Scholium he writes: "All bodies must move very freely in these spaces, and therefore planets and comets must revolve continually in orbits given in kind and in position, according to the laws set forth above. They will indeed persevere in their orbits by the laws of gravity, but they certainly could not originally have acquired the regular position of the orbits by these laws" (940). Shortly later he adds: "This most elegant system of the sun, planets, and comets could not have arisen without the design and dominion of an intelligent and powerful being" (940). His first letter to Richard Bentley begins: "When I wrote my treatise about our Systeme I had an eye upon such Principles as might work with considering men for the beleif of a Deity & nothing can rejoice me more then to find it usefull for that purpose" (Correspondence, 3: 233).

32 Following the implications of this argument, I have to agree with Brackenridge, against Cohen who, despite his awareness of the care Newton took with his writing, claims that the alteration of grammatical voice from active in De Motu to passive in the Principia is insignificant. The presence of God, the origin of active force in the universe of passive material, pervades the Principia, grammatically as well as in every other way. Brackenridge summarizes Cohen's arguments against attributing meaning to the change in voice in a note to his translation, on pages 286-7 of The Key to Newton's Dynamics. These arguments are not persuasive in the light of the secret text.

33 Vladimir Karpenko, in his article "Between Magic and Science: Numerical Magic Squares," argues that the magic square did not pass directly from Arabic alchemy to European alchemy, but rather through magic treatises, such as the De occulta philosophia of Agrippa and the Archidoxa Magica attributed to Paracelsus (124). It does not matter. Newton's library at his death included an annotated copy of Geber's Chimia and other writings attributed to him (Harrison, 19 and 148), as well as works of Paracelsus (Harrison, 209-10). He also owned Agrippa's De occulta philosophia (Harrison, 84).
These are Drawing 21 and Epigram 21, from Michael Maier's *Atalanta Fugiens* (147). In that work, they are preceded by a three-voice fugue, also numbered 21. The discourse accompanying this emblem discusses shifting geometrical figures made possible by quadrature of the circle. *Atalanta Fugiens* was not among the books in Newton's library at the time of his death, but he did own nine other works of Maier (Harrison, 188-9). A link to an online image of this diagram is available on the *St. John's Review* website: www.stjohnscollege.edu/news/pubs/review.shtml.

Simpson makes the excellent point that Newton's "system of the world is not a static and permanent harmony, a lasting 'design,' but a design which has the shape of prophetic history. The orbits are designed not for permanency but for a life of interactions, and for a lifetime which is finite and foreseeable, if not calculable, by the human mind. So, too, the planetary system is a creation which had a beginning and for which science can teach us to foretell an end. So the *Principia* takes us directly to, and itself becomes, prophetic history, and its 'science' is to be understood in that context. As the mathematical principles of a science of time, the *Principia* is mathematical mirror to Scripture and prophecy" (154). As we shall see later, Newton did not find the prospect of the end of the world troubling. He believed that the earth had been destroyed before and that it would be destroyed again.

The particular spiral of Proposition 9 has also been associated with nature. Newton's contemporary Jacob Bernoulli, for example, called the equiangular or logarithmic spiral, which expresses the ratio of natural growth, the *spira mirabilis*, and asked to have it engraved on his tombstone. I do not know whether Newton was familiar with the association of Φ with the Fibonacci series, but if he was, the spiral would have deeper resonance than I have claimed here.
A Slanting Light on Pride and Prejudice: For Larry Berns from Eva Brann

Eva Brann

I hope, indeed expect, that my old friend Larry may get some pleasure from the little jeu d'esprit I am offering in his honor. For it brings together two authors, about the first of whom I don't recall I ever had a conversation with Larry, but who is bound to be a favorite of so eager an observer of the human scene. I imagine him, who writes in so pleasantly plain and dignified a style, to be a lover of Jane Austen's way with language.

Of the second, Adam Smith, I know that Larry has studied his Theory of Moral Sentiments, in his own favorite term of praise and admonishment, "carefully."

I have admired Larry these forty-eight years that we have been colleagues—for his candor (where candor was in order), for his dogged defense of principles he has worked out for himself as true, for the temperance and fairness with which he treats opponents, and for the utter lack of meanness in his human relations.

There is, however, another less well known side to Larry: He is a great mimic and can be rib-crackingly funny in his imitations of great and small.

I should offer anecdotes, but can think of two only, one of which I will suppress. A car trip to Virginia occasioned the other.

We were driving through a pastoral scene when Larry pointed to a distant slope and demanded to know what breed of dog that was on yonder hill. They were in fact sheep. I looked at Larry and saw in him a soul-mate of Socrates, who

Eva Brann is a tutor and former dean at St. John's College, Annapolis.
seldom went into the country because it had little to teach him. Larry is a man of the polis.

Let this, then, be a token of my affectionate respect.

A Slanting Light on Pride and Prejudice

I wish to communicate to the civilized world what I consider a matter of some moment. It is, without further ado, that Jane Austen’s own Elizabeth Bennet is not in love with Fitzwilliam Darcy.

That it is so I shall prove from the richly supportive text. That it is good I shall argue with the help of Adam Smith. That it is of consequence I shall leave to my readers to conclude.

To begin with, Mr. Darcy is most certainly in love with Elizabeth. (It is, please observe, always “Darcy” or “Mr. Darcy,” but Miss Elizabeth Bennet is, to the author, familiarly, “Elizabeth” or to her family, “Lizzy.”) Elizabeth herself defines “violently in love”—it is synonymous with “in love”—by its symptoms as seen in Bingley:

   He was growing quite inattentive to other people, and wholly engrossed by her [Miss Bennet]... At his own ball he offended two or three young ladies, by not asking them to dance, and I spoke to him twice myself, without receiving an answer. Could there be finer symptoms? Is not general incivility the very essence of love? (109)¹

Being “in love” is therefore a trifle harder to discern in Darcy who is uncivil on principle, but eventually her friend Charlotte surmises, and Elizabeth herself infers, that he is indeed in love with her (138, 200). Finally, Darcy himself, on Elizabeth’s desiring it, accounts to her for “his having ever fallen in love with her” (291), and so confirms the fact.

Indeed people fall in love quite punctually in Jane Austen’s novels, not only young men who have no other employment—Bingley, for example, has done it quite often (151)—but also serious girls like Anne Elliot of Persuasion, to
whom it comes “rapidly and deeply.” Miss Bennet—Jane—herself, another young woman who cannot be accused of being “too light and bright and sparkling” (the terms in which the author herself characterized the whole book, *Letter to Cassandra Austen*, February 4, 1813), is in love fervently and tenaciously, though reticently and undemonstratively (160). So being in love is a permissible situation for all, the merry-, mild-, and heavy-hearted, but it is not a condition in which the heroine of *Pride and Prejudice* finds herself, the Elizabeth whom the author thinks “as delightful a creature as ever appeared in print” (January 29, 1813)—as do we.

I will now adduce proof that this delightful creature is not at any point *in love* with haughtily but also nobly reticent Mr. Darcy—nor ever was with the charming but also dangerously wicked Wickham. With the latter, she neither displays any symptom of being “seriously in love” to others (110), nor does she declare herself ever to have cared in that way for him;

> [F]or had I really experienced that pure and elevating passion, I should at present detest his very name, and wish him all manner of evil. (116)

Against the former, against Darcy the proud, she conceives from the first a powerful and apparently justified prejudice—and so not really a prejudice but rather an aversion. As she takes Darcy’s bewitched gaze for a censorious stare (38), she thinks that “she liked him too little to care for his approbation.” She feels “an immovable dislike” for what she takes to be his arrogance, and declares to him that

> I had not known you a month before I felt that you were the last man in the world whom I could ever be prevailed upon to marry. (148)

There comes a moment—to the delight of one sort of reader and the dismay of another—when that immovable dislike, always a sign of heightened awareness, begins to shift. In the
company of her socially acceptable aunt and uncle, the Gardiners (much of the rest of her family is an embarrassment), she is touring Darcy's magnificent estate, Pemberley—beautiful by nature and improvement. She and her party are there in the supposed security of its owner's absence; they wax vocally enthusiastic, while she silently reflects:

They were all of them warm in their admiration, and at that moment she felt, that to be mistress of Pemberley might be something! (185)

This new sentiment is reported in Jane Austen's famous oratio obliqua, the indirect discourse with which she speaks, as it were, from within those characters with whom she is on intimate terms, as if to say: "I heard her say to herself that..." A little later she lets Elizabeth exclaim more directly:

'And of this place,' thought she, 'I might have been mistress!' (186)

She is now disposed to hear more praise of him (188). Just a hundred pages later, in answering Jane's question about the time of her change of mind—"Will you tell me how long you have loved him?"—Elizabeth says:

It has been coming on so gradually, that I hardly know when it began. But I believe I must date it from my first seeing his beautiful grounds at Pemberley. (286)

Gentle Jane entreats her to be serious, but the not so gentle reader will suspect that she is not just sparkling wildly here. Pemberley has transformed prejudice into predisposition.

Yet it is true that her prejudice against him had begun dissipating even before the sight of Pemberley, namely upon the discovery of Wickham's wickedness. Unlike Jane, "who would willingly have gone through the world without believing that so much wickedness existed in the whole race of mankind as was here collected in one individual,"
Elizabeth had accepted it and, now convinced that Darcy was the injured party, had abated her prejudice:

And yet I meant to be so uncommonly clever in taking so decided a dislike to him, without any reason. It is such a spur to one’s genius, such an opening for wit to have a dislike of that kind. (172)

Nonetheless, Pemberley is decisive in the alteration of her feelings, though her more just opinion of a man whose pride turns out to be more stiffness than haughtiness is conditioned not just by mere gratification stemming from his declared attachment to her, but eventually by “a deeper sentiment of gratitude” (149, 163): “[S]he remembered its warmth, and softened its impropriety of expression.” (189)

“Of the lady’s sensations,” those affectionate observers, the Gardiners, “remained a little in doubt” (198), but Jane Austen, who knows the lady inside out, has Elizabeth say to herself at Pemberley with some implied regret “[I]t is impossible that he should still love me” (193), surely an inner confession of a new inclination. Of Darcy her relations have no doubt at all: “[I]t was evident that he was very much in love with her.” (200)

In time Elizabeth has certainly ceased to hate him, and observing his newly amiable conduct toward her family, she attributes “such a change in a man of so much pride...to love, ardent love” for her.

And as such its impression on her was of a sort to be encouraged, as by no means unpleasing, though it could not be exactly defined. She respected, she esteemed, she was grateful to him, she felt a real interest in his welfare, and she only wanted to know how far she wished that welfare to depend upon herself... (201)

“[N]ever had she so honestly felt that she could have loved him, as now, when all love must be in vain.” (210) Then
comes what must be the most convoluted paragraph in any of the six novels:

If gratitude and esteem are good foundations of affection, Elizabeth's change of sentiment will be neither improbable nor faulty. But if otherwise, if regard springing from such sources is unreasonable or unnatural, in comparison of what is so often described as arising on a first interview with its object, and even before two words have been exchanged, nothing can be said in her defense, except that she had given somewhat of a trial to the latter method, in her partiality for Wickham, and its ill-success might perhaps authorize her to seek the other less interesting mode of attachment.

(211)

To the astonished reader it would seem that Jane Austen feels compelled to offer a formal justification for her Elizabeth's "less interesting" mode of attachment as reasonable and natural: Since falling in love at first sight (rendered here in a formal circumlocution expressing the author's distance from such an effect) was unsuccessful, Jane Austen says in cool disregard of her having depicted Elizabeth as never actually thus in love with Wickham that Elizabeth is warranted in trying the long-hatching and more sedate sentiment, love for good cause.

Is this young woman, like the novel that is her world, "too light, and bright, and sparkling" for full, deep feeling? Does she "want shade," the recesses of the heart where "in love" turns to "love"? Is she at once too scintillating for sentiment and too sensible to lose her heart and head?

Well, she is her father's daughter, the light-footed female version of this phlegmatic lover of absurdity (117). She doesn't embrace the world uncritically: "There are few people whom I really love, and still fewer of whom I think well" (104). She is almost uncontainably witty under pressure: "What are men to rocks and mountains?" (119) and
jocose in her happiness: "I am happier even than Jane, she only smiles, I laugh." (293), and the object of her sportiveness is often Mr. Fitzwilliam Darcy (297). In that vein she is curiously measured, restrained in her feeling for Darcy, both as she expresses it for herself or as her authoress does it for her. She knows she could be happy with him; he is the man who "would most suit her" (236-37). Her feelings for him, after her recantation, are "if not quite so tender, at least as reasonable and just, as what Jane felt for Bingley" (254). She says to Jane "Till I have your disposition, your goodness, I can never have your happiness" (267). Indeed, in the aftermath of their mutual declaration, when both Elizabeth and Darcy have put behind them both pride and prejudice, she "rather knew that she was happy, than felt herself to be so" (285). And the declaration itself! She gives "him to understand that her sentiments had undergone so material a change...as to make her receive with gratitude and pleasure, his present assurances" (280). He tells her of his feelings "as sensibly and as warmly as a man violently in love can be supposed to do." She seems to lack a response, at least nothing is reported directly or indirectly. In Emma we are told that upon being proposed to, a lady says "just what she ought, of course. A lady always does." I don’t know what a lady always does say; neither I suppose could Jane Austen—but it must have been something, if only a circumlocution for our "I love you." Elizabeth confesses her love in words we actually hear only to her sister and with curious reluctance: "I do, I do like him...I love him" (288).

Of course she loves him, but it is a love that does not develop so much from attraction as from esteem. Most of Jane Austen’s women (excepting her youngest, Catherine Morland, and her eldest, Anne Elliot) even that ninny Fanny Price, are intellectually more agile than their men. But Elizabeth Bennet—who knows but that she was modeled on that person most intimately known to Jane Austen—is, to my mind, the most double-faceted of them. Toward the outside she is bright, witty, quick. Toward the inside she can be
mordant, critical, recalcitrant to easy feeling. This bright exterior is not in the least a defensive shield, nor are her apparently sober depths, as is often the case, actually its insidiously sentimental obverse. The sparkling surface is rather the scene of a chemical reaction, as it were, between a self-opaque and thus comical society and an unusually observant and discerning soul: Her love of absurdity, unlike her father’s soured quietism, is the mode of a—not unaffectionate—intelligence activated to laughter by the folly of the world. *Pride and Prejudice* is the account of its animation into an uncharacteristically excessive prejudice by the pride of an unsociable man who is Elizabeth’s natural complement.

People who tend toward observant laughter are not, however, as a general rule, themselves ridiculous. Few are the Falstaffs who can say: “I am not only witty in myself, but the cause of that wit is in other men” (II Henry IV, I, 2,9). Witty observers know all too well what conduct to eschew so as to avoid becoming in turn the object of witty observation. That, then, seems to me to be the humanly consistent reason why Jane Austen does not let Elizabeth Bennet fall in love: Her appreciative wit, what I want to call her affirmatively critical intelligence, stands guard over the engagement of her heart lest it make a fool of itself. For the estate of being in love is laughable to bystanders. At least, so says one other wise in the ways of human appearances.

There is a great likelihood (though no direct evidence) that Jane Austen knew Adam Smith’s *Theory of Moral Sentiments* (1759), a set of lectures for students, whose six editions during his lifetime attest to its broad readership. I am far from thinking that she *needed* to read that elegantly sensible and wittily observant book with which I am about to connect her. Indeed, *he* might as soon have read *her* works for instruction, were it not that he died in 1790 when she was but fifteen. For the most famous element of Smith’s moral theory is “sympathy,” the ability to imagine oneself in the other’s situation, thence—God forefend—not empathetically to “feel their feelings,” but coolly to judge the “propriety,” that is, the
proportionateness, of an impassioned response to its occasion. Thus sympathy requires an alert imagination, and the moral arbiter needs to be a novelist, practicing penlessly but incessantly Jane Austen's art.

Adam Smith, however, says:

Our imagination not having run in the same channel with that of the lover, we cannot enter into the eagerness of his emotions. If our friend has been injured we readily sympathize with his resentment, and grow angry with the very person with whom he is angry. If he has received benefit, we readily enter into his gratitude, and have a very high sense of the merit of his benefactor. But if he is in love, though we may think his passion just as reasonable as any of the kind, yet we never think ourselves bound to conceive a passion of the same kind, and for the same person for whom he has conceived it. The passion appears to everybody, but the man who feels it, entirely disproportioned to the value of the object; and love, though it is pardoned in a certain age because we know it is natural, is always laughed at, because we cannot enter into it. All serious and strong expressions of it appear ridiculous to a third person; and though a lover may be good company to his mistress, he is so to nobody else. (I,ii,2.1)

If the above is true at all, it surely applies, mutatis mutandis, to women. And if, further, there is some truth in the claim that being witty and being ridiculous are not compatible—that those who laugh discerningly are not apt to permit themselves to become laughable—then it follows, once more, though by a different route, that Elizabeth will not fall in love. For she will not be disposed to let lapse that distance between herself and the object of love which keeps her from becoming ridiculous and allows her to remain the "impartial spectator" of her own and others' actions. The term is Adam
Smith's and signifies the imaginary "man [or woman] within" through whom we observe our external selves from within ourselves. Hence she will not be enmeshed in that absurdly inarticulable particularity which captivates those who are "in love." Moreover, her very capacity for "sympathy" in Smith's sense, the acuteness of observation Elizabeth shares with her authoress, will protect her from that infectious empathy, that "emotional identification" as we would say, which might induce her to indulge in those violent feelings other couples display in novels and in life. Her own will thus evince the gravity arising largely from rationally expressible causes. I think Jane Austen intends that Elizabeth and Darcy shall, consequently, grow into the happiest of marriage partners:

> It was a union that must have been to the advantage of both; by her ease and liveliness, his mind might have been softened, his manners improved, and from his judgment, information and knowledge of the world, she must have received benefit of greater importance. (237)²


² In April 2008, my colleague Adam Schulman delivered a lecture on *Pride and Prejudice*, dwelling more seriously on Elizabeth's "philosophy," and showing me, incidentally, that two very different readers can converge quite independently on similar appreciations of Jane Austen's Lizzy. I took it as a delightful corroboration.
On Translating the *Republic*

Cordell D.K. Yee

In the fall of 2006 tutors leading freshman seminars on the Annapolis campus of St. John’s College were given advance copies of Joe Sachs’s translation of Plato’s *Republic.* I read the translation in preparation for my seminars on the *Republic,* though the pace of our assignments precluded a careful reading.

This was the first time that I had not used the Loeb translation by Paul Shorey, still serviceable after more than 70 years, unlike more than a few other Loeb translations from the same period. The Loeb’s format of parallel texts in Greek and English makes it convenient to construct one’s own translation using the Loeb as a base—palimpsestically as repeated readings result in further revisions and reinterpretations. But since 2006 was the third year in a row in which I had led a freshman seminar, I was willing to try a new translation.

My first impressions of Sachs’s translation were favorable. Admittedly I may have been favorably predisposed. As is mentioned in Sachs’s acknowledgments, I assisted the translator in transferring the text to electronic format. More significantly, for several years I participated in a study group on Aristotle led by Sachs. The first order of business at each meeting was to translate a passage from the work under consideration. There I was able to hear Sachs at work. Sachs impressed me as an excellent sight translator of Greek (though I can hear his protestation that no one really learns how to read Greek)—at least as proficient as, if not more so than, some of the specialists with whom I began to study Greek. Even the knottiest Aristotelian prose unwound when Sachs translated for the group.

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Outside the group, I was familiar with Sachs's translations of Aristotle and had used them regularly in my classes at St. John's. In his translations of Aristotle Sachs did not promise smooth English renditions. He tried to follow the Greek syntax in the interest of defamiliarizing the text, to help readers get past customary ways of expression and thinking, and to preserve Aristotle's ways of connecting thoughts. Sachs's departures from standard translations could be objected to on the ground that they cut readers off from traditional scholarly practice, which has settled on conventional renditions of Aristotle's terms. But at St. John's where initiation into the ways of the larger academic world is not an aim, and where students are not encouraged to read, if not discouraged from reading, scholarship, the objection has little force.

What might seem to be more valid are objections to some of the replacements that Sachs offers for traditional terms: ἐνετέλεσθαι as "being-at-work-staying-itself"; ἔνσωσις as "being-at-work"; τὸ τὴν ἐνεκαὶ as "what it is for something to be"; οὐσία as "thinghood." Such translations at first do not seem to be translations at all since they are not quite standard English. But in the years since Sachs put forth his English Aristotelian terms, they have become a regular part of classroom discourse at St. John's College. If a sign of literary success is the power to affect language, for example, through the introduction of new phrasings, it may be a sign of a translation's success, as Walter Benjamin has suggested, that it introduces new idioms, transforming the language of the translation.

Since Plato's style differs from Aristotle's, one might expect Sachs to make some adjustments, and he does, adopting a somewhat more conversational style. I say "somewhat" because as he makes clear in his translation of the Theaetetus, published two years before his translation of the Republic, Sachs is willing to sacrifice some smoothness and economy for the sake of bringing out what is in the Greek. For example, while most translators translate
δύνασθα as “to be able,” Sachs renders it as “have the power” or “be in one’s power” emphasizing the word’s connection to δύναμις—a key word in a dialogue introduced by two interlocutors who would deny the existence of potency. Sachs preserves this rendition in his translation of the Republic.

As before, one of Sachs’s cardinal principles from his work with Aristotle is to avoid technical terms where none are used. This means translating an understandable Greek word into understandable English. Sachs is aware of the problems with this approach. In the introduction to his translation of Aristotle’s Physics he writes: “no English word ever has the same full range of meaning as any Greek word.” In addition, the meanings of a Greek word “may differ according to context.” Despite the difficulties, there have been some successful translations. In his introduction to the Republic, Sachs points to Allan Bloom’s translation as a noteworthy predecessor. Sachs does not find much fault with it as far as accuracy is concerned: it is, he says, “by far the most accurate available.” Since nearly 40 years have elapsed since its publication, the time may be right, Sachs says, to try to offer a “worthy alternative.”

Bloom intended his translation to be literal, citing as a model a Latin translation of Aristotle so authoritative that it served as an authority for the emendation of the Greek text. Bloom set his translation against that of Cornford, who argues against literal translation in his preface because the effect is “misleading, or tedious, or grotesque and silly, or pompous and verbose.” Cornford aims to convey to the English reader “as much as possible of the thought of the Republic in the most convenient and least misleading form.” This aim justifies certain “liberties,” such as paraphrasing and reorganizing the work into six main parts, subdivided into 40 chapters, rather than the traditional ten books.

Cornford’s translation was published in 1941, but still has its admirers and is still widely used. Nevertheless, as with Bloom’s translation, more than a few other translators have
thought recently to try to offer alternatives to Cornford’s. In
the preface to his translation of the Republic, R.E. Allen
proposes Cornford’s translation as the measure by which to
judge any new translation, saying that no English translation
“matches Cornford in style and accuracy of understanding.”
In the preface to his translation Tom Griffith observes that
many translators have the speakers in Plato’s works utter
things that no English speaker would say. In response, he aims
to make the Republic sound as much as possible like a conver­
sation.

Under the circumstances a double confrontation between
“ancients” and “moderns,” and between literalists and anti­
literalists (or perhaps better, spiritualists) seems to come
almost ready-made. Allen adopts a standard that is opposed
to Sachs’s; neither Bloom nor Sachs would agree with Griffith
that the speakers in Plato’s works need to sound English.
Sachs, for example, says it is enough if they are “recognizably
human and natural.”

For good measure, I will also consider the translations of
Shorey and Raymond Larson. I have been using Shorey’s
translation, as I have said above, for nearly 20 years, and
Bloom himself expresses a high opinion of it. From what
Shorey says in his introduction he attempts to strike a balance
between letter and spirit: while “following the text closely,”
he endeavors “to use a justifiable apparent freedom to bring
out the meaning of passages which . . . are liable to misap­
prehension.” Larson’s translation has been highly recom­
mended to me by the redoubtable Eva Brann. Larson recog­
nizes that no translation can capture the virtuosity of Plato’s
prose style, but he says that he “often strained for effects in
English similar to those of the Greek, in the hope that behind
these awkward attempts the reader may sense an author of
great power, brilliance, and beauty.”

I begin the comparison at the beginning—with the
opening of the Republic. This passage is included as a reading
in the Greek manual used at St. John’s, but because of time
constraints in the freshman language tutorial, it may or may
not be studied. Here I am taking this opportunity to give the passage some attention it might not otherwise get.

Here is the Greek text, followed by the various English translations:

Κατέβην χθές εἰς Πειραιᾶ μετὰ Γλαύκωνος τοῦ Ἀρίστωνος προσευξόμενος τε τῇ θεῷ καὶ ἥμα τὴν ἔορτὴν βουλόμενος θεάσασθαι τίνα τρόπον ποιήσουσιν ἀτε νῦν πρῶτον ἄγοντες. καλὴ μὲν οὖν μοι καὶ ἡ τῶν ἐπιχωρίων πομητή ἐδοξέων εἶναι, οὐ μέντοι ἔττον ἐφαίνετο πρέπειν ἢν οἱ Θεοίκες ἐπεμπον. προσευξόμενοι δὲ καὶ θεωρήσαντες ἀπῆμεν πρὸς τὸ ἄστυ. κατιδών οὖν πόρῳ ήμᾶς ὴκαδε ὅρομηνοις Πολέμαρχος ο Κεφάλου ἐκέλευσε δραμόντα τὸν παῖδα περιμέναι ἐ κελεύσαι. καὶ μοῦ ὄνειοθαν ὃ παῖς λαβόμενος τοῦ ἱματίου, Κελεύει ὡς ἐφη, Πολέμαρχος περιμεῖναι. καὶ ἐγὼ μεταστράφην τε καὶ ἡρώην ὃποιον αὐτὸς εἰη. Οὔτος, ἐφη, ὄπω θε-note proo-ρεχται; ἄλλα περιμένετε. ἄλλα περιμένοντες, ἢ δ' ὃς ὁ Γλαύκων. [327a-b]16

Bloom

Socrates: I went down yesterday to the Peiraeus with Glaucon, the son of Ariston, to pray to the goddess; and, at the same time, I wanted to observe how they would put on the festival, since they were now holding it for the first time. Now, in my opinion, the procession of the native inhabitants was fine; but the one the Thracians conducted was no less fitting a show. After we had prayed and looked on, we went off toward town.

Catching sight of us from afar as we were pressing homewards, Polemarchus, son of Cephalus, ordered his slave boy to run after us and order us to wait for him. The boy took hold of my cloak from behind and said, "Polemarchus orders you to wait."

And I turned around and asked him where his master was. "He is coming up behind you," he said, "just wait."

"Of course, we’ll wait," said Glaucon.
Cornford

Socrates. I walked down to the Piraeus yesterday with Glaucon, the son of Ariston, to make my prayers to the goddess. As this was the first celebration of her festival, I wished also to see how the ceremony would be conducted. The Thracians, I thought, made as fine a show in the procession as our own people, though they did well enough. The prayers and the spectacle were over, and we were leaving to go back to the city, when from some way off Polemarchus, the son of Cephalus, caught sight of us starting homewards and sent his slave running to ask us to wait for him. The boy caught my garment from behind and gave me the message.

I turned round and asked where his master was.

There, he answered; coming up behind. Please wait.

Very well, said Glaucon; we will.

Shorey

Socrates. I went down yesterday to the Peiraeus with Glaucon, the son of Ariston, to pray to the goddess and see how they'd conduct the festival since this was its inauguration. I thought the procession of the citizens very fine, but it was no better than the show made by the marching of the Thracian contingent.

After we had said our prayers and seen the spectacle we were starting for town when Polemarchus, the son of Cephalus, caught sight of us from a distance as were hastening homeward and ordered his boy run and bid us to wait for him, and the boy caught hold of my himation from behind and said, “Polemarchus wants you to wait.” And I turned around and asked where his master was. “There he is,” he said, “behind you, coming this way. Wait for him.” “So we will,” said Glaucon . . . .

Larson

Socrates: I went down to the Piraeus yesterday with Glaucon, Ariston’s son, to pray to the goddess and see how they’d
manage her festival which was being held for the first time. I thought our local procession was beautiful, though it seemed no nicer than the Thracians' procession. When we had prayed and watched the procession we started back to town. Polemarchus, son of Cephalus, spotted us hurrying home and ordered his slave to run up and tell us to wait for him. The boy pulled at my cloak from behind: "Polemarchus tells you to wait," he said. I turned around and asked where the master was. "There," he said, "right behind you. Just wait."

"We will," said Glaucon.

Griffith

I went down to the Piraeus yesterday with Glaucon the son of Ariston, to offer a prayer to the goddess. Also I wanted to watch the festival, to see how they would conduct it, since this was the first time it was being celebrated. The parade of Athenians struck me as excellent, and the show put on by the Thracians was every bit as impressive as I thought. We offered our prayers, watched the festival, and then started off on our journey back to town. We were already on our way home when we were spotted by Polemarchus the son of Cephalus. He got his slave to run after us and tell us to wait for him. The slave tugged at my cloak from behind, and said, "Polemarchus says you are to wait." I turned round, and asked him where his master was.

"There he is," he said, "coming along behind you. Wait for him."

"We will," said Glaucon.

Allen

I went down to the Piraeus yesterday with Glaucon son of Ariston, intending to pray to the goddess and at the same time wishing to see how they conduct her festival, because they are doing it now for the first time. Well, I thought our own procession was beautiful, though the one the Thracians sent appeared no less fine.
After we offered prayers and saw the spectacle, we left for the City. As we were heading home, Polemarchus son of Cephalus caught sight of us at a distance, and told his slave to run and ask us to wait for him. The boy caught my cloak from behind and said Polemarchus asks you to wait. I turned and asked where his master might be.

There he is, he said. Coming up from behind. Please wait. Why, of course we will, Glaucon replied.

Sachs

Socrates: I went down yesterday to Piraeus with Glaucon, Ariston’s son, to pray to the goddess, wanting at the same time also to see the way they were going to hold the festival, since they were now conducting it for the first time. The parade of the local residents seemed to me to be beautiful, while the one that the Thracians put on looked no less appropriate. And having prayed and having seen, we went off toward the city. Spotting us from a distance then as we headed home, Polemarchus, Cephalus’s son, ordered his slave to run and order us to wait for him. And grabbing me from behind by my cloak, the slave said, “Polemarchus orders you to wait.” And I turned around and asked him where the man himself was. “He’s coming along from behind,” he said. “Just wait.” “Certainly we’ll wait,” said Glaucon.

In my experience seminars tend to gloss over this passage, if not ignore it entirely. This treatment is understandable. The opening is notable for what it does not do. It does not announce its subject. It does not explicitly raise any philosophical questions. It does not seem to pose any serious interpretive difficulties. With such an unproblematic passage, it would seems unlikely that anyone would seriously misunderstand the original by reading any of the translations above. From any of them, one would understand that, on the way back to town, after going to Peiraeus, the narrator is stopped by a slave, acting on his master Polemarchus’s orders. In that respect, all the translations are accurate.
To lay the foundation for further comparison, I will, at the risk of seeming amateurish, present some basic quantitative information. I do not provide such numerical data to conform to current politico-academic expectations that outcomes be assessed with objective measures. Such data, independent of such expectations, can be helpful in getting a first look at the textual object, though I admit they constitute a blunt instrument. I have tabulated counts for words, sentences, and paragraphs in the Greek text and in each of the translations.

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The data concerning word-, sentence- and paragraph-counts may be arbitrary in that they reflect the judgment of textual editors. The manuscripts on which editors have based their work differ in punctuation, accentuation, and paragraphing.\(^{17}\)

The translations of Bloom, Larson, Griffith, and Allen are based on Burnet’s Oxford edition.\(^{18}\) Shorey follows the Teubner edition of K.F. Hermann.\(^{19}\) Sachs’s translation mostly follows Slings’s Oxford edition published in 2003. The publication of a new standard edition often is a spur to new translations, though Allen, whose translation was published in 2006, relies on Slings’s predecessor, the John Burnet edition of 1902. As luck would have it, the choice of Greek edition makes little difference in the case at hand, since the three editions agree in almost all particulars.
Sachs alone of all the translators here follows the textual editors in presenting the excerpted lines as a single paragraph. The other translators divide it into two to four paragraphs. Shorey seems to follow his manuscript source fastidiously, reproducing a page break as a paragraph break. For the other translators, the paragraph divisions seem to correspond to temporal breaks or changes of speaker. These divisions may be concessions to modern taste, which, perhaps under the influence of newspapers and hypertext, seems averse to long paragraphs. The textual purist (or textual materialist) in me says that one ought to read the text, as far as possible, as it was originally organized. It is not clear to me that Plato organized his prose in the way that modern English writers would. Furthermore it is not clear that lack of paragraphing is a hindrance to reading. Something that I had not paid attention to until working on this review is that Shorey generally presents his translation without modern paragraphing, but as an almost continuous block of text, reproducing the organization of his Greek original.

The data here seem to support Cornford's claim that a literal approach does not allow one to match the economy of the Greek original. Bloom's translation of the opening lines is one of the longest. Cornford's is shorter, in part because he omits some direct discourse. The omission could be justified on the grounds of redundancy: since Socrates has already said that Polemarchus had ordered his slave to stop Socrates and his companions, the slave's exact words are unnecessary. Thus, the sooner one can move past the narrative frame to the philosophic discussion, the better. Cornford's deletions, however, may come with a cost: he chooses to speed up the narrative where Plato chooses to prolong it. Plato may want to linger on a scene in which a slave stops a free man from going where he wants to go—a possible foreshadowing of key elements in the analogy of the cave: the forceful turning away from shadows of one who eventually ascends towards the light, and the forced turning back of the would-be philosopher toward the cave in order to rule.
In any case, Larson shows that Cornford’s omission was unnecessary. Larson’s translation comes closer than Cornford’s to matching the brevity of the Greek text. He sacrifices some fidelity to the syntax of the original. For example, in the first sentence he leaves out a circumstantial participle (“wishing to . . .”) so that it appears that Socrates’ walk had two purposes. One could argue that the change in meaning here is slight. But the distinction here seems deliberate. I think the other translators are right in retaining the participle. According to the syntax Socrates’ purpose was to pray to the goddess. He only wished to see how the festival was conducted. The human event was secondary to the devotion shown to the divinity. This ordering of affairs is consistent with what Socrates says about the divine later in the work.

Allen’s translation matches Cornford’s in concision, despite preserving the direct discourse that Cornford omits. Apparently Griffith thinks that subordinate clauses are unconversational. He recasts some of the subordinate clauses as complete sentences, thereby necessitating the introduction of more subject pronouns. Partly for this reason his translation of the passage turns out to be the wordiest of the translations surveyed here.

Sachs’s translation is more concise than Griffith’s and follows the sentence structure of the original more closely. It is less concise than Allen’s, but more concise than Bloom’s. Here, in at least one respect, Sachs has outdone his standard. He has also come close to matching his less literal contemporaries as far as economy is concerned.

All of the translations begin with a word that does not appear in the Greek text.

In five of them this word is a speech prefix, “Socrates,” added perhaps as an aid to the reader. The identity of the narrator, however, is made clear early in the work, so that it is not clear what benefit there is in announcing it at the outset. Furthermore, it may have been Plato’s intention to surprise the reader when the narrator’s identity is revealed.
Since no speech prefix appears in the manuscripts of the Greek text, the Republic is not explicitly dramatic. If Plato had wanted to compose the work as a dialogue, he could easily have done so, as C.D.C. Reeve has shown by his recent translation, which recasts the work into a dialogue.21 By Socrates’ own account, however, such a manner of presentation would have been more appealing. But it would also have befitted a low sort of person, one who would undertake to imitate anyone and anything with gestures and sound effects. This sort of performance is banished from the just city on the grounds that it is inconsistent with the principle that a person ought to do the one thing that he or she does best. What is allowed instead is the unmixed imitator, one who relies mostly on narration. The narrator of the Republic presents himself as just this sort of imitator. The text of the Republic presents itself as univocal, narrated by single person. The addition of a speech prefix clouds the character of the work and leads to an appearance of a conflict between form and content.

Such conflicts have often been used to posit conflicts between author and character. The narration, of course, is not actually Socrates’, but Plato’s imitation of Socrates. The author behind the text imitates Socrates in the mode that Socrates himself says is unfit for the just city. One might be tempted to conclude that here is an instance of a text being at odds with itself, Platonic irony at work on the Socratic. But Socrates’ narrative does provide for exceptions when the object of imitation is a good man. So assuming that Socrates is a good man, the form of the Republic accords with the claims made in it. Any suggestion that there is dissonance between the author’s views and the narrator’s, about poetry in particular and the just city in general must rest on other than formal grounds.

The narrative is anti-poetic in the sense that it represents a rejection of the manner that is said to belong to the poets. According to what Adeimantus and Socrates conclude, this anti-poetic manner is fit for the just city (398b). A reader of
the Republic is thus allowed to experience the sort of art to
be cultivated in this city.

There is also a Spartan spareness to the narration, as
distinguished from what the characters including Socrates are
quoted as saying. There is little context for the narration. The
time given for the events recounted in the work is given as
“yesterday.” It could be that Socrates is recounting events to
interested listeners. But he does not address an interlocutor
or even pause to allow an interlocutor to interject, as he does
in the Apology. It seems that the narrative is written so as not
to sound conversational. The length of the sentences in the
opening of the narrative contrasts with the short sentences of
the early instances of direct discourse. So it is not clear that
Socrates is represented as being engaged in a conversation,
albeit a one-sided one, about a conversation. Thus Griffith’s
contention that a translation of the Republic should aspire to
the condition of conversation may not be as sound as it might
seem at first.

As mentioned before, the choice to add a speech prefix
misrepresents the text as to its form. The choice taken by the
other translators tends to alter the emphasis of the opening.
The other translations begin with the word “I.” Like the
speech prefix, the pronoun has no explicit counterpart in the
Greek text since subject pronouns are not obligatory, and
person is indicated by the verb ending. The first word in the
Greek text is κατέβη, “I went down.” So one cannot object
to translating the beginning as “I went down” on grammatical
or semantic grounds. In retrospect, however, beginning with
“I” may give too much weight to the “I” in a text that is in
part about the suppression of the “I.” The “I” also seems
absent in Socrates’ account of the soul: it is hard to say what
the “I” is, what in the soul would call itself “I.”

A translator could follow the Greek more closely and,
perhaps taking a risk, begin with “Down I went . . . .” The
risk is that the sentence, though grammatically correct, might
sound artificial. But since the narrative is not necessarily
conversational, the artificiality would be a small price to pay.
“Down” would correspond to the prefix κατά-, which actually begins the text.

That the text begins with this prefix does not seem accidental. Almost every sentence in the passage begins with a κ-sound, and κατά- recurs at the beginning of the fourth sentence in κατιδῶν. All the translators considered here lose this repetition. Bloom, Shorey, Cornford and Allen render κατιδῶν by adopting one of the dictionary definitions, catching sight of. Sachs, Griffith, and Larson take κατά- as an intensifier and render the participle as “spotting” (a more focused seeing). The thought seems to be that the usual meaning of κατά- having to do with downward motion does not work here. The situation is that Polemarchus sees Socrates as Socrates is making his way back up from Peiraeus, so downwardness does not seem to be implied. But the downward implications of κατά- can be retained if one regards Polemarchus as seeing Socrates from down the way: the act of seeing is opposed to Socrates’ movement. The repetition of κατά- may be intended as a reminder that Socrates in being engaged by Polemarchus is also being drawn back down.

The repetition of κατά- may also foreshadow the recurrence of descent in the Republic. Descent is closely associated with the notion of the philosopher-king, introduced near the center of the work, when Socrates suggests that establishing a just city will require that philosophers rule, that they be forced back down into the cave. Descent is also an element of the myth of Er, who goes to the underworld and returns to the world of the living.

The upward and downward movements are mirrored in Socrates’s closing words, which for the sake of symmetry I will present in the Greek and in the various translations.

Καὶ οὖτος, ὦ Γλαύκων, μῦθος ἐσώθη ἄλλ' οὐκ ἀπώλετο, καὶ ἡμᾶς ἂν σώσειν, ἂν πειθόμεθα αὐτῷ, καὶ τὸν τῆς Λήμνης ποταμὸν ἐν διαβησίμεθα καὶ τὴν ψυχήν οὐ καταθησίμεθα. ἄλλ' ἂν ἔμοι πειθόμεθα, νομίζοντες
And thus, Glaucon, a tale was saved and not lost; and it could save us, if we were persuaded by it, and we shall make a good crossing of the river of Lethe and not defile our soul. But if we are persuaded by me, holding that soul is immortal and capable of bearing all evils and all goods, we shall always keep to the upper road and practice justice with prudence in every way so that we shall be friends to ourselves and the gods, both while we remain here and when we reap the rewards for it like the victors who go about gathering in the prizes. And so here and in the thousand year journey that we have described we shall fare well.

And so, Glaucon, the tale was saved from perishing; and if we will listen, it may save us, and all will be well when we cross the river of Lethe. Also we shall not defile our souls; but, if you will believe with me that the soul is immortal and able to endure all good and ill, we shall keep always to the upward way and in all things pursue justice with the help of wisdom. Then we shall be at peace with Heaven and with ourselves, both during our sojourn here and when, like victors in the Games collecting gifts from their friends, we receive the prize of justice; and so, not here only, but in the journey of a thousand years of which I have told you, we shall fare well.
Shorey

"—And so, Glaucon, the tale was saved, as the saying is, and was not lost, and it will save us if we believe it, and we shall safely cross the River of Lethe, and keep our soul unspotted from the world. But if we are guided by me we shall believe that the soul is immortal and capable of enduring all extremes of good and evil, and so we shall hold ever to the upward way and pursue righteousness with wisdom always and ever, that we may be dear to ourselves and to the gods both during our sojourn here and when we receive our reward, as the victors in the games go about to gather in theirs. And thus both here and in that journey of a thousand years, whereof I have told you, we shall fare well."

Larson

"Thus, Glaucon, the tale was preserved and did not pass away. And if we listen to it, it may preserve us and we shall cross the River of Lethe without defiling our souls. And if we believe what I say, convinced that the soul is immortal and strong to endure all good and all evil, we shall ever hold to the upward path and practice justice with knowledge in all that we do, to the end that, while lingering here, we may be friends with ourselves and the gods, and when, like victorious athletes collecting their spoils, we have won the prize for justice both here and in the thousand-year journey we have gone through, we shall fare well."

Griffith

'In this way, Glaucon, his story was saved and not lost. And so it can be our salvation, since if we believe it we shall pass the river of Forgetting in the right way, without polluting our souls. And if we take my advice, we shall believe that the soul is immortal and capable of coping with all evils and all goods, and we shall keep always to the upper way, doing whatever we can to practise justice with wisdom. That way we shall be friends to ourselves and to the gods, both while we remain here and when we carry off our prizes afterwards,
like winning athletes on their victory tour. And so, here and on the thousand-year journey we have described, let us fare well.’

Allen

And thus, Glaucon, the story was preserved and not lost, and it would preserve us, should we be persuaded by it, and we shall safely cross Lethe, the River of Oblivion, and not be stained in soul. But if we are persuaded, and acknowledge that the soul is immortal and capable of bearing all good things and all evils, we shall always hold to the upward path, and in every way pursue justice in company with wisdom, so that we may also be friends to ourselves and to the gods, both while we abide here and afterward, when we receive the rewards of justice, like victors at the Games who collect their prize.

And both here and in the journey of a thousand years which we have described,
Let us do and fare well.

Sachs

“And so, Glaucon, the tale was saved and didn’t die; it could save us too, if we’re persuaded by it, and we’ll get past the river Lethe in good shape without a stain on our soul. If we’re persuaded by me and believe the soul is immortal and able to keep itself intact in the face of every evil, and every good as well, we’ll always keep to the higher road and pursue justice with good sense in every way, so that we might be friends to ourselves and to the gods, both while we remain here in this place and when we carry off the rewards for it like athletes on their victory laps. Both here and in the thousand-year journey we’ve been going through, we will do well.”

As before, I have tabulated some raw linguistic data:
The Greek editions behind the translations agree in almost all particulars. In the first line Slings has \( \text{άλλα} \) before \( \text{ούκ} \ \text{ἀπώλετο} \), whereas Burnet and Becker have \( \text{καί} \). All the translators, even Sachs (who is basing his translation on Slings), follow the latter reading—rightly so since the relationship between \( \text{ἐοὼθη} \) and \( \text{ούκ} \ \text{ἀπώλετο} \) seems more coordinate than adversative. The Burnet and Slings editions have the closing lines as two sentences making up a single paragraph. The Hermann edition, which generally does not have paragraphing, punctuates the speech as a single sentence. It has a colon after \( \text{μανθοῦμεθα} \) where the other editions have a period. Nevertheless, it locates a major syntactic division in the same place as the other edition.

As with the first specimen passage, Larson’s translation comes closest to matching the concision of the Greek, this time followed by the Bloom, Griffith, and Sachs translations. Cornford’s this time turns out to be one of the wordiest, undermining his claim that literalism leads to a loss of concision. Two of the more literal translators, Bloom and Sachs, succeed in being more economical.

Larson is able to achieve greater economy than Bloom by being less literal in one way and more literal in another. He renders \( \text{εὔ} \) as a single word, the adverb “safely,” which accurately captures its function in the sentence. Shorey and Allen make the same choice. But this rendering of \( \text{εὔ} \) obscures the word’s root meaning of “well” or “good,” and may even be misleading. It is not clear that there are risks in crossing
the Lethe. Bloom tries to convey the word’s meaning, but at the expense of economy: two words in Greek become four in English. Bloom also sacrifices grammatical fidelity: an adverb becomes an adjective. Griffith and Sachs also sacrifice economy but at least they render the adverb as an adverbial phrase. Griffith’s “in the right way” does not quite make sense, implying that there is a wrong way to cross the Lethe and raising a distracting question in the process. One might try to defend this translation by interpreting the adverb as referring to the preparation for the crossing, but such a construal would seem to call for a different main verb. In any case, Sachs’s “in good shape” is better. But as a result, one is more likely to miss the repetition of εὖ, translated simply as “well,” toward the end of the passage.

In fact, all the translations surveyed here lose that echo of εὖ. It is not insignificant, since it serves to emphasize the contrast in the two outcomes described in the two sentences of the Greek text: a contrast between crossing the Lethe well in a descent to the underworld and doing or faring well over a much longer journey on “the upper road.” These outcomes are themselves the result of a choice between different beliefs: belief in the story of Er or belief in Socrates. The contrast between the two seems to be emphasized by ἄλλα at the beginning of the second sentence. Thus translating ἄλλα as “and” as Larson and Griffith do is somewhat misleading. The second sentence is not simply an addition to or elaboration of the first.

In the Greek the two possibilities are presented as the apodoses of two more-vivid future conditionals. Most of the translators, including Sachs, consistently render the more-vivid future as such. Bloom and Allen do not. Bloom renders one apodosis as if it were counterfactual, which makes the contrast between the two possibilities even stronger than the original Greek text suggests. Allen renders the first as a less-vivid future conditional and the second as a more-vivid future conditional. This new contrast may in the end suggest correctly which alternative is more vivid to Socrates, but the
grammar suggests two conditions of equal vividness. And though Allen’s translation brings out the contrast in one way, it loses it in another. Allen does not translate ἐμοί so that the contrast loses some of its import: it is not immediately clear that a choice is presented between the myth and Socrates.

The grammar of second sentence is rather complicated: it ends with a compound purpose clause introduced by ἵνα. Alone among the translators considered here, Larson retains the unity of the second sentence by rendering it as a single sentence. But he disrupts its unity in other ways. Both clauses have verbs in the subjunctive mood to denote that the intention has not been realized yet. But Larson uses two different auxiliaries, “may” and “shall,” when “shall” would have sufficed for both verbs and preserved the parallelism of the original. He also unnecessarily divides up the temporal modifiers between the two purpose clauses. The τε in one looks forward to the καὶ in the other. The temporal qualification belongs to the first clause about being friends to ourselves, not to the final clause.

The other translators break up the second sentence, treating the final clause as a separate sentence, with the result that it may be unclear that the last clause is part of a purpose clause. Bloom, Cornford and Shorey try to suggest a connection with the adverb “so.” But doing so makes it possible to read the last clause as a result clause as well as a purpose clause. The difference is that between what one expects to happen, whether intended or not, and what one intends to happen.

In rendering this passage, Sachs eliminates two connectives, the ἀλλά between the two sentences and the καὶ introducing the last result clause. He may be striving for concision, and perhaps thinking that the contrast between the two alternatives is clear from context, omits ἀλλά. Like most of the other translators he casts the final purpose clause as a separate sentence. He renders the verb πράττειν with the auxiliary “will,” which can suggest intention or purpose. Insofar as it does so, the auxiliary links this sentence grammatically to the
preceding purpose clause. But it also suggests futurity, so that the last sentence could be read as a simple declarative sentence in the future tense. The translation thus introduces an ambiguity that is not present in the original text.

Unlike the editors of the Greek text, and the other translators considered here, Griffith and Allen do not read the last clause as part of the result clause, preferring to interpret it as a complete sentence in itself—as a hortatory subjunctive. Griffith makes the grammar of the original even less clear by translating the first purpose clause as a separate sentence in a manner that suggests that it is a result. Allen, wishing to emphasize its difference in function, goes as far as to make the last clause a separate paragraph. It is possible to read the last clause as an exhortation, but *καὶ* seems to be an odd way to conjoin two sentences with contrasting functions. Something other than a simple coordinating conjunction, a more explicitly logical connective, would seem to be more appropriate. In addition, it is unclear how the exhortation would follow more clearly from the second conditional more than the first. If it followed from both, it would not seem to matter which choice one made. But the main argument of the Republic seems to be predicated on the belief that there is an important choice to be made. It would seem strange if Socrates were to close by offering an unnecessary, or inconsequential choice.

The verb at issue here, ποιάττω, is rendered by most of the translators as “fare.” If the last clause were an imperative, it is hard to understand how one would act on a command to fare well, as Griffith phrases it, especially since, as Socrates concedes, how one fares is not completely a matter of choice. An optative of wish would make better sense here: presented with these two alternatives, “may we fare well.” Allen tries to make the exhortation more intelligible by rendering ποιάττω also as “do.” But he misleadingly makes the single verb double, “do and fare,” and still leaves one to puzzle about how one is to react to an exhortation to fare well.
Sachs renders πράττω simply as “do,” trusting that the double meaning will suggest itself from the double meaning of the English phrase “do well,” which can mean “fare well.” This active meaning of πράττω is important, and I think primary, as Sachs has it. This sense of the verb is consistent with what Socrates implies about the upward path, which is associated with the practice or pursuit of justice. Staying on the upward path is a matter of doing. Therefore one’s purpose should be to do well.

Before leaving Socrates’ closing lines behind, I will deal with one more crux: translations of πάντα μέν κακὰ ἀνέχεσθαι, πάντα δὲ ἀγαθὰ. For the sake of brevity almost all the translations simplify the syntax and treat all evil things and all good things as a compound object of ἀνέχεσθαι. Cornford, Shorey, and Larson reverse the order of evil and good in the Greek text, so that good is mentioned first. The reversal may result in a more idiomatic phrasing, but prevents a reader from considering why Socrates would mention evil things first. It also may produce some confusion, since it is not clear from what Socrates has said why good things would need to be endured in the same way as evil. Bloom and Griffith preserve Socrates’ order of presentation, but simplify the syntax so that evil and good things become the compound object of a single verb. The confusion as to why good things need to be endured, coped with, in the same way as evil things is just delayed. Such confusion, however, does not arise from the Greek.

Most of the translations suppress the rhetorical technique employed here. If Plato had wanted to make good and evil things the compound object of the verb, he easily could have done so. Instead he employs a μέν-δὲ construction. Greek grammars say that the particles often do not need to be translated, but that they can suggest a contrast. This instance is one in which there is a contrast. Evils and goods are rightly construed as objects of the verb, but they are objects of verbs in separate clauses. The verb is not explicitly mentioned in the δέ-clause, but parallelism suggests that ἀνέχεσθαι should
be supplied. The verb can mean to endure, but it can also mean to uphold or maintain. The first meaning seems to apply better to evils, the second to good things. Thus ἀνέχεσθαι seems to be used sylleptically—it governs two clauses, but is used in a different sense in each. The μὲν-δὲ construction points out a contrast not only between evil and good, but also between different senses of the verb.

Unlike some of the other translations, Allen’s rendition of ἀνέχεσθαι, “to bear,” preserves the syllepsis. It has two senses: “carrying” and “enduring,” the former appropriate for good things, the latter appropriate for evils. But like some of the other translators, Allen inverts Socrates’ phrasing by mentioning good things first. If Plato had wanted to express Socrates’ thought in a more conventional way, he could easily have had Socrates mention good things first. Plato may be phrasing Socrates’ speech in an unconventional way to make readers take notice and ask why evils receive first mention.

One possible reason is that there is a contrast in the application of the two clauses. The μὲν-clause, having to do with enduring evils, looks back to one of the main arguments in the Republic—that it would make sense to be just at the cost of enduring evils. In the conversation Socrates makes no claim as to whether one could endure evils and be just, only that being just would be worth the price. No amount of argumentation could prove that the soul is strong enough; the proof would seem to lie in the practice. One would have to believe strongly enough to be willing to put one’s soul to the test. The δὲ-clause, about upholding good things, seems to look forward to the purpose of practicing justice. Again, Socrates has made no claim about the soul’s ability to uphold or maintain good things, and such a claim seems to be difficult to support solely by reasoning. The proof again would seem to be in the enactment: as Socrates suggests, in advance of the activity, one must believe strongly enough to make an attempt. All this commentary may be at best a likely story, and a more imaginative reader would probably come up with a likelier story. But in most of the translations here
these stories have no chance of arising and facing possible refutation as not so well-born falsehoods.

Alone among the translators here, Sachs both preserves the order of evil and good and seems to recognize that the relationship between the two is more than a matter of simple coordination. He sets off his translation of the δέ-clause in commas, and tries to capture the force of δέ with "as well." Consistent with his practice with Aristotle, Sachs does not employ any of the usual equivalents for ἀνέχεσθαι, such as "endure" or "bear." Instead he translates the verb as "keep itself intact." Unlike the usual translations it preserves the middle voice of the Greek verb form. "Keep" is also one of the meanings of ἔχω, from which ἀνέχω is formed. The possibility of syllepsis is raised when one tries to understand what it means to keep oneself intact in the face of every evil and in the face of every good. It could be that keeping oneself intact means something different in each case. Understood as maintaining wholeness, which is a strength of the just city and just soul in Socrates' account, it might mean keeping out evils, holding them at bay. With good things, it might mean promoting them, as when νοῦς is placed in the ruling position within the soul. Or it might mean pushing them down, as in the case of the philosopher-king. All these possibilities are consistent with the dictionary definitions of the verb.

Sachs stands apart from the other translators in at least one other respect, one that makes clearer the problems with the supposed contrast between letter and spirit. He renders καλός and related forms consistently as a form of "beautiful," even when it is used adverbially to modify verbs of speech. Other translators refrain from doing so, thinking perhaps that it would sound strange to have Socrates keep saying that someone has spoken beautifully. Instead they have Socrates say that something has been well said, treating καλός as synonymous with εὖ. The result is that one loses a sense of how frequently καλός and related forms occur in the text: more than 200 times. In comparison, δίκαιος and
related forms occur more than 450 times, and ἀγαθός occurs more than 200 times.

The just city that Socrates constructs is described late in the book as a καλλιπόλις, a city of beauty (527c). As such, it is knowable, and as something that is knowable, it must be. But it was constructed in speech. The repeated use καλός to modify verbs of speaking seems to anticipate the connection between beauty and the construction in speech: a beautiful thing brought out in speech is among the things that are, though it may be nowhere. The καλόν is also the object of ἔσως. As a beautiful thing, the city itself is an object of ἔσως. Plato suggests as much by having Socrates’ discourse on the city arouse a longing in Socrates’ interlocutors to hear more about it. In this case, ἔσως helps to further the inquiry. The desires may have to be moderated by noetic rule, but the impulse toward the noetic is provided by the erotic through the καλόν.

In examining the specimen passages I have begun by focusing on lexical and grammatical matters. I could fairly be accused of bias toward the letter if not for my showing how such matters bear on other questions. What began as an apparent confrontation between the varying demands of letter and spirit has suggested that it is in practice difficult to separate the two. Attention to grammar and other formal features can reveal something about the spirit.

Thus there seems to be something spurious about attacks on literalism, which often seem to be written as if lexical and grammatical matters could be ignored in favor of something else, or as if the spirit of a work were something that could be translated independently of the letter. It might be argued that a literalist approach amounts to a refusal to recognize different senses and connotations. But as the example of Sachs’s translation of καλός suggests, it is often by frequent repetition that one becomes aware that a word or phrase is being used in different ways. Even then, determining the spirit of a work is not as easy as detractors of a literalist
approach would make it seem. Literate readers can sense widely disparate connotations, overtones, and undertones even in texts written in their own languages. With an ancient language, the difficulty of identifying the spirit of a work becomes even harder. For our purposes in seminar, furthermore, what the spirit of a work is should be a matter of discussion, not a conclusion handed down by a translator. A disciplined approach to translation, therefore, does not necessarily preclude freedom.

A translation can be conservative in ways that meet demands of the letter and spirit: it can preserve meanings, and it can allow one to begin to reconstruct the Greek text, or at least remind one of a few of its features. Of course, one would not, and cannot, expect complete transparency of a translation, that it serve as the linguistic equivalent of a photocopy of the original text. Progress toward such an end, however, can be made depending on the resourcefulness, imagination, daring, and ingenuity of the translators.

My sense is that in his translations Sachs has shown those qualities in abundance. At the moment it seems that, of the available translations of the Republic, Sachs’s comes closest to providing what I seek. By its treatment of θεός alone, it seems to go further than other translations in preserving the texture of the work. I think that in the future it would be possible to do even more, such as distinguishing more clearly between φιλία and ἔρως, so that one could more easily trace the interplay between the two. But until that time, Sachs’s translation will serve as the first layer of my new palimpsest. 24

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3 For example, *Aristotle’s Physics* (New Brunswick: Rutgers University Press, 1995) and *Aristotle’s Metaphysics* (Santa Fe: Green Lion Press, 1999).


13 Shorey, introduction, *Republic*, 1.i.iii.


20 In the Slings and Burnet editions Socrates is the sole character named in the list of personages; Becker lists Socrates among others.

Mollin and Williamson (p. 187) also hint at this point by noting that καταβάλω recurs at Republic 520c.

If I were to attempt a translation, I would try “sustain,” which can mean “endure” and “maintain”: “sustain every evil on one hand, and every good on the other.”

The volume’s generous margins make it well suited for that purpose.