Introduction to Book 3, Part II[*]

THE BACKGROUND TO PROCLUS' COMMENTARY ON THE WORLD SOUL IN *TIMAEUS*

Proclus' treatment of the composition of the World Soul and the harmonic ratios within it is the most in-depth portion of the surviving commentary. Proclus expends 216 pages of text on the 86 OCT lines from *Timaeus* 34b2–37c5. This yields a page-to-line ratio that slightly outstrips the effort that Proclus expends on the Demiurge and his model (*Tim.* 27c1–31b3) in Book II of the *Timaeus* commentary. (To be precise: 2.51 pages/line versus 2.39 pages/line.) The interest of the latter passage to a Platonist is obvious; we are talking about nothing less than the identity of the Demiurge and the nature of the Intelligible Paradigm to which he looks in creating the visible cosmos. It is true that Proclus must also contend with what he takes to be seriously mistaken views of this part of Plato's text, viz. those previous interpreters who suppose that Plato describes here a creation of the cosmos in time. Hence a great deal of time and effort go into refuting the views of previous interpreters, such as Plutarch and Atticus.

Naturally, the subject of the World Soul is equally interesting to a Platonist. However, I think that Proclus' level of effort on the World Soul is largely determined by the difficulties of detail in Plato's text that had already generated a considerable literature. Proclus engages at length with these alternative interpretations and in the course of doing so tells us a great deal about such figures as Severus and Theodore of Asine. Indeed, the longest and most detailed testimonia that we possess about the latter come from just this portion of Proclus' commentary. Thus in order to put Proclus' work into some sort of context, we need to consider it against the backdrop of the history of interpretations of *Timaeus* 34b–37c. The following remarks will add little to the work of Baltes and Brisson,[1] but they will perhaps be sufficient for shedding some light on Proclus' relation to the previous tradition.

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[*] The following section discusses Proclus' treatment of the composition of the World Soul in *Timaeus* 33b2–37c5. For an overall orientation to Proclus' commentary, see the General Introduction in volume I of this series.

[1] Baltes (1976), Brisson (1974).

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Previous interpretations of the psychic composition

Plutarch of Chaeronia's essay, *On the Generation of the Soul in Plato's Timaeus*, makes clear that by the first century CE there was an established set of 'problems' (*zêtêmata*) around this portion of the *Timaeus*. The one that occupies most of Plutarch's attention is the way in which we are to understand the blending of the kinds from which the Demiurge composes the soul – not only the simple question of what is being asserted by *Tim*. 35a1–b1, but also the question of what the divisible and indivisible kinds of Being are. Plato's text is grammatically puzzling and there are different versions of it, so the two questions are not really separable. The second set of problems involves the quantity of numbers or portions involved in the composition of the soul, their arrangement and their function in Plato's cosmology (*An. Proc.* 1027c). With respect to the first issue concerning the interpretation of *Tim*. 35a1–b1, Plutarch identifies a tradition of conflicting views that go back to the Old Academy. He juxtaposes what he takes to be the views of Xenocrates and his pupil Crantor.[2] According to the former, the mixture of the divisible and indivisible kinds of Being in the Demiurgic composition of the soul signifies the generation of number.[3] By contrast, Crantor seems to have stressed the epistemological significance of the soul's composition from a kind of Being associated with the intelligibles and a kind of Being associated with the sensible world.[4] At least this is the aspect of Crantor's account that Plutarch seeks to highlight. In both cases, Plutarch concentrates on the combination of the divisible and indivisible kinds of Being. The role of Sameness and Difference is minimised, with the two of them forming a kind of addition to the blend of divisible and indivisible Being. This understanding of the Demiurge's activities is quite natural given Plutarch's reading of the text – a reading that deviates in several ways from our OCT, but most importantly by having the singular αὐτήν for the plural αὐτῶν at *Tim*. 35a6.[5] Plutarch thus understands a process in which the Demiurge takes the divisible and indivisible kinds of Being and blends them together into a composite form. This is then combined with Sameness and Difference to create the "psychic dough" from which the Demiurge takes portions in 35b4–36b5. Note that in this process, we do not meet with Sameness and Difference of the divisible and indivisible sort. Only Being is thus differentiated: Sameness and Difference

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[2] Cherniss (1976), 163 thinks that the manner in which Plutarch introduces their views suggests that he may not have known their works first hand, but is instead working from some other source that summarises their interpretations.

[3] Cf. Xenocrates, fr. 188, Isnardi-Parente (1982).   [4] Brisson (1974), 303.

[5] Plutarch's version of the Demiurge's activities and the difference between his text of the *Timaeus* and ours is well analysed in Opsomer (2004).

tout court are then blended with the composite form of Being. This is made clear at 1025b where Plutarch explains how the mixture of divisible and indivisible Being facilitates the combination of Sameness and Difference. Since the indivisible sort of Being is akin to Sameness, while the divisible sort of Being is akin to Difference, the composite of the kinds of Being is able to make possible the combination of things that are normally antagonistic.

Our evidence is not extensive, but there is some reason to believe that this understanding of *Timaeus* 35a1–b1 was not just confined to Plutarch. Alcinous glosses the process this way:

Declaring that there exists an intelligible essence which is indivisible, and another which is divisible about bodies, he constructed from these a single essence, explaining that thus it can grasp in thought each of the aforesaid two essences; and seeing that sameness and difference occur both on the level of the intelligible and of divisible things, he put the soul together out of all these things. (*Handbook*, 14.2, trans. Dillon)

This passage notes that both divisible sensibles and indivisible intelligibles fall within the scope of Sameness and Difference, yet it falls short of distinguishing divisible and indivisible Forms of Sameness and Difference.[6] Plutarch's exegesis of Xenocrates suggests that his attention was similarly directed to the fact that the soul contains both divisible and indivisible *Being* – and Proclus' testimony on him is consistent with this.[7] Similar remarks apply for the remains of Crantor's earliest commentary on the *Timaeus*.[8] Sameness and Difference seem to enter in only as a means to account for the Motion and Rest that the soul manifests.[9] If either of them derived psychic stability and the capacity to move from a specifically *intermediate* Form of Sameness and Difference – analogous to the Being that is blended from the divisible and indivisible kinds – our evidence leaves us no trace of this.

This strikes us as odd because Proclus' reading of this passage has more or less won the day since the mid- to late twentieth century.[10] On Proclus' version, as we shall see, the Demiurge similarly performs two steps in composing the World Soul, but the first step is more complicated than on Plutarch's reading. He does not merely combine divisible and indivisible kinds of Being, but also divisible and indivisible kinds of Sameness and Difference. The intermediate kinds of all three are then mixed together to constitute the "psychic dough" from which the Demiurge will take portions. Therefore one reason that Proclus dedicates a

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[6] ὁρῶν δὲ καὶ ἐπὶ τῶν νοητῶν ταυτότητά τε καὶ ἑτερότητα, καὶ ἐπὶ τῶν μεριστῶν...
[7] Cf. *in Tim.* II. 165.3–13 = Test. 189 (Isnardi-Parente).   [8] Mette (1984).
[9] *De An. Proc.* 1013d = Crantor, Test. 10.3 (Mette).   [10] Grube (1932).

great deal of attention to the exegesis of this part of the *Timaeus* is because he is seeking to correct what he takes to be a serious misunderstanding of Plato's text at 35a1–b1.

In the case of Plutarch and Atticus, there are other, even more serious misconceptions about Plato's text that Proclus seeks to correct. Plutarch's essay on the generation of the soul argues that this is a genuinely temporal creation. Moreover, Plutarch associates the kind of Being that is divisible in the realm of bodies with a pre-existing evil soul. Proclus has argued at length in Book II of his commentary that the creation of the cosmos by the Demiurge is not a creation in time, so there is little need to revisit this issue extensively. Proclus does address Plutarch's claim that the Indivisible Being in the World Soul is an irrational soul that pre-exists the rational soul (153.25–154.1). Proclus' explicit reply to this idea is very succinct (154.15–18) and it is immediately followed by his exegesis of *Timaeus* 35a4–6 which concerns precisely the point that has just been under discussion – the role of the divisible and indivisible kinds of Sameness and Difference in the World Soul's composition. So perhaps the real force of Proclus' response is positive rather than negative; by showing the correct reading of the text, he removes much of the evidence for Plutarch's account. After all, this account makes essential use of the idea that it is divisible Being – and not divisible Sameness and Difference – that is to be identified with the irrational soul.[11] So Proclus' motives for detailed attention to the composition of the World Soul coalesce around 35a1–b1.

Previous interpretations of the psychic harmonies

There are three other standard problems (*zêtêmata*) that Plutarch identifies in his essay. These also provide Proclus with reasons to treat *Timaeus* 35b4–36b5 in great detail. As Plutarch's essay shows, these lines were already the subject of detailed mathematical and numerological speculations by earlier interpreters. By the time of Plutarch's essay, these have become rigidified into standard problems. Let us consider them in turn, since they provide another important part of the background against which Proclus writes his commentary.

Plato's text describes the Demiurge setting out portions of the psychic stuff that he has just mixed and these portions have ratios among them, e.g. the second portion is twice the first, the third is three times the first and half again as much as the second, and so on. It is a short step, but an important one, to go from talking about the *ratios of these portions* to one another to talking about *numbers* within the soul. The commentary

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[11] Cf. *De An. Proc.* 1015e, 1025f–1026a.

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tradition moves easily between these, though there is sometimes a sort of implicit recognition that these are slightly different issues. If the first portion were a numerical unit that serves as the measure of numbers, then it should be indivisible into smaller units (*Rep*. VII, 525e). But, on the other hand, if the initial portion is merely a quantity that stands in the 1:2 ratio to the second portion, then nothing precludes us from thinking of it as being divisible into further parts. As we shall see, Proclus exploits this duality in both treating 384 as the value of the unit, and also treating it as a 'monad of the soul'. The problems that Plutarch catalogues also involve this movement between conceiving of Plato's project in the psychogony as setting out a number sequence and setting out portions that stand in ratios.

The first problem identified by Plutarch involves the *arrangement* of the portions of soul stuff and their corresponding numbers set out by the Demiurge in *Timaeus* 35b4–36a1. There we find the numbers 1, 2, 3, 4, 9, 8 and 27 – described in just that order. One view, assigned to Crantor, arranges these in the shape of a lambda, Λ, with the doubles on one side and the triples on another. (Note that the numbers are in fact 1, 2, 3, 2^2, 3^2, 2^3, 3^3.) The alternative view, which Plutarch assigns to Theodorus of Soli, is that we should imagine the portions set out in a single line.

The second problem involves the *quantity* of numbers that are inscribed into the World Soul's substance and the *value* of each of them. Recall that Plato tells us that the Demiurge 'fills in' the intervals between the original numbers in three stages. First, he puts in the harmonic and arithmetic means in the double and triple intervals (35c2–36a6). The placement of these means produces ratios corresponding to the musical fourth (4:3), the fifth (3:2) and the tone (9:8) (*Tim*. 36a6–7). The second step involves the Demiurge 'filling' all the 4:3 ratios with the ratio of the tone (*Tim*. 36b1). This leaves us with the *leimma* – literally, 'the left-over' – or the ratio of the semi-tone, which Pythagorean tradition identifies with the ratio of 243:256. The placement of the numbers corresponding to the semi-tones is the third and final step (*Tim*. 36b2–5).

The first steps of this process are relatively easy to follow. The insertion of the means is straightforward. The following table shows the Original numbers and the Harmonic and Arithmetic means in the double and triple intervals.

	O	H	A	**O**	H	A	**O**	H	A	**O**
Double	1	$4/_3$	$3/_2$	2	$8/_3$	3	4	$16/_3$	6	8
Triple	1	$3/_2$	2	3	$9/_2$	6	9	$27/_2$	18	27

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The problem about the quantity of numbers delineated in the Demiurge's activities here intersects with the first problem about the arrangement of the psychic mixture in which the numbers are inscribed. Suppose we follow Crantor's lambda arrangement. Let '= p × . . .' mean 'is equal to the prior value times . . .' Then we'll imagine the following filling in:

	O	H	A	**O**	H	A	**O**	H	A	**O**
Double	**1**	$^4/_3$	$^3/_2$	**2**	$^8/_3$	3	**4**	$^{16}/_3$	6	**8**
		$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= \mathbf{p} \times$ $^4/_3$	$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= \mathbf{p} \times$ $^4/_3$	$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= \mathbf{p} \times$ $^4/_3$
Triple	**1**	$^3/_2$	2	**3**	$^9/_2$	6	**9**	$^{27}/_2$	18	**27**
		$= p \times$ $^3/_2$	$= p \times$ $^4/_3$	$= \mathbf{p} \times$ $^3/_2$	$= p \times$ $^3/_2$	$= p \times$ $^4/_3$	$= \mathbf{p} \times$ $^3/_2$	$= p \times$ $^3/_2$	$= p \times$ $^4/_3$	$= \mathbf{p} \times$ $^3/_2$

In this sequence, every term has to the term prior to it (p) one of the three ratios – that of the fourth, 4:3; that of the fifth, 3:2 or the ratio of the tone, 9:8. If we side with Theodore of Soli, then we'll imagine a single line of numbers created by the filling in of the means.

1	$^4/_3$	$^3/_2$	**2**	$^8/_3$	**3**	**4**	$^9/_2$	$^{16}/_3$	6	**8**	**9**	$^{27}/_2$	18	**27**
	$= p \times$ $^4/_3$	$= p \times$ $^3/_2$	$= p \times$ $^4/_3$	$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= pp \times$ $^4/_3$	$= p \times$ $^9/_8$	$= p \times$ $^4/_3$	$= p \times$ $^9/_8$	$= p \times$ $^3/_2$	$= p \times$ $^4/_3$	$= p \times$ $^3/_2$

In this sequence, nearly every term (except the first, of course) has to the one prior to it (p) one of three ratios: 4:3, 3:2 or 9:8. The only exception is $^{16}/_3$, where we must go back a term to 4 in order to generate it from one of the musical ratios. (Hence, 'pp' for predecessor of the predecessor.) This is the only point in the number sequence where terms that figured only as harmonic means between terms in the double and triple sequence lie adjacent to one another.

In the next stage Plato instructs us to insert additional numbers in between each pair of terms where the successor (s) stands to the prior (p) in the ratio of 4:3. So, for example, in between 1 and $^4/_3$ we can insert two tones. $1 \times {}^9/_8 = {}^9/_8$ and $^9/_8 \times {}^9/_8 = {}^{81}/_{64}$. An attempt to insert a third tone would "overshoot" by giving us $^{729}/_{512}$, which is more than $^4/_3$. However, multiplying $^{81}/_{64}$ by the fraction corresponding to the ratio of the semi-tone yields exactly the sought-after $^4/_3$. So we will 'fill in' the intervals between $^3/_2$ and 2, 2 and $^8/_3$, 3 and 4, 6 and 8, $^{27}/_2$ and 18 with the tones and semi-tone, just as we did the interval between 1 and $^4/_3$.

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When we do this in the interval between 4 and $^{16}/_3$ the displeasing break in the sequence between $^9/_2$ and $^{16}/_3$ is mended: $4 \times {}^9/_8 = {}^9/_2$ and $^9/_2 \times {}^9/_8 = {}^{81}/_{16}$. This, in turn, multiplied by the fraction corresponding to the ratio of the semi-tone yields $^{16}/_3$. So the number sequence here is 4, $^9/_2$, $^{81}/_{16}$, $^{16}/_3$.

We can see already at this point that the fractions make the proce-dure messy. It seems that Crantor was the first to multiply the entire sequence by 384 in order to clear the fractions and express the harmonic ratios in the World Soul in whole numbers.[12] The necessity for this may itself have been a matter of contention. Plutarch, at least, replies to the potential objector who says that such a step is unnecessary (*De An. Proc.* 1027d). One of his replies is, I think, revealing in its honesty. If we do not assign some number to the unit, so as to eliminate the fractions, then this 'debars us from another speculation (*theôria*) that has a charm that is not unphilosophical'. That is, it precludes us from the joys of the various numerological associations and debate about which inter-esting mathematical patterns are revealed. As we shall see, such spec-ulations were a mainstay of the tradition of interpretation around the *Timaeus*.

But there may also be a deeper reason than simply clearing the fractions.[13] If we suppose that we aren't dealing with numbers here directly, but rather ratios between the "sizes" of portions, then when you put a harmonic mean between the first and second portions, it will stand to the first in the ratio of 4:3. If you take three equal parts of the first portion, it will take four parts of that size to make the por-tion that establishes the harmonic mean. Hence the first portion has to be conceived of as something that is divisible into at least three equal parts. If one thinks of these parts atomistically, then when you work through the whole sequence, you will find that 384 such "atoms" are required in the first portion. Of course, there is strictly no need to think about it atomistically, but the duality in the notion of the first por-tion discussed above pulls the imagination very much in that direction. This duality is really that of the distinction between absolute and rela-tive quantity, to put it in the terms that Nicomachus uses (*Arith.* I.3.1). Arithmetic is the science of the first kind of quantity. It works with an indivisible unit, and it is prior to harmonics, which is the science that is concerned with relative quantity. That is to say, numeric quantity is prior to quantitative ratios. So it may not simply be a matter of making the expressions of the psychic ratios tidier ones between whole numbers that drives this enterprise. In any event, Plutarch also reveals to us that

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[12] *De An. Proc.* 1020c = Crantor, Test. 11a (Mette).
[13] I am grateful to John Bigelow for pointing this out to me.

there was no consensus about what number to multiply by in order to clear the fractions. Crantor opted for 384. Plutarch himself seems to prefer 192, as did Theon of Smyrna.[14] The Platonist Severus argued for 768, perhaps on the grounds that the sequence of portions is split into two when the Demiurge cuts the strip of psychic mixture length-wise (*Tim.* 36b5–7), thus necessitating twice as many units in the initial portion.[15]

Suppose we use a first value of 384 to clear the fractions from Plato's sequence of numbers. How many numbers will we arrive at if we follow Plato's directions for constructing it? Proclus' answer is 34. However, there is a tradition prior to Proclus according to which this sequence involves 36 numbers. It is equally possible to mount an argument that the answer is 29 or 37. To see that this is so, let us just ask *where* we are to insert the ratios of the tone and the semi-tone? Only in the 4:3 intervals? Or in the 3:2 intervals as well?

Let us consider the conservative approach that says we should insert tones and semi-tones only in the 4:3 intervals. One might jus-tify this by a very stringent approach to Plato's text. Though he says ἡμιολίων δὲ διαστάσεων καὶ ἐπιτρίτων καὶ ἐπογδόων γενομένων ἐκ τούτων τῶν δεσμῶν ἐν ταῖς πρόσθεν διαστάσεσιν – which might be taken to imply that the intervals of the tones are bonds among *both* the 4:3 and 3:2 ratios – he follows this general remark with the specific instruction that τῷ τοῦ ἐπογδόου διαστήματι τὰ ἐπίτριτα πάντα συνεπληροῦτο, λείπων αὐτῶν ἑκάστου μόριον. So there is textual support of a sort for what I'll call the conservative approach. Now, let us suppose that we prefer the lambda arrangement that permits numbers to appear twice. Then we'll have these two sequences shown in the table, below.[16]

This version of the numbers within soul is conservative and redu-plicative. It inserts tones only in the 4:3 ratios. It also permits the same number to appear twice. It yields 37 numbers. It would also be possible to take a conservative approach that didn't count the duplicated numbers twice. In this case we would have 29.

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[14] Theon of Smyrna (late first–early second century) was the Platonist who wrote *Aspects of Mathematics Useful for the Understanding of Plato*. Greek text, Hiller (1878); English translation, Lawlor and Lawlor (1979).

[15] Proclus, *in Tim.* II. 191.6 = Severus, 16 T Gioè (2002).

[16] In my table, T indicates that the number stands in the ratio of the Tone to what comes before, H that it is a Harmonic mean between the initial portions set out in the double and triple series, A that it is an arithmetic mean between initial portions. These portions are indicated by O2, O3, etc. to indicate the numbers that are the multiples of the originary series 2, 4, 8, and 3, 9, 27.

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Double		384		Triple
432	T		H	576
486	T		T	648
512	H		T	729
576	A		A	768
648	T		O3	1152
729	T		H	1728
768	O2		T	1944
864	T		T	2187
972	T		A	2304
1024	H		O9	3456
1152	A		H	5184
1296	T		T	5832
1458	T		T	6561
1536	O4		A	6912
1728	T		O27	10368
1944	T			
2048	H			
2304	A			
2592	T			
2916	T			
3072	O8			

A non-conservative approach inserts the tones not only into the 4:3 ratios, *but also into the 3:2 intervals*. If we arrange the number sequence in a single line so as to avoid reduplication, this will yield a sequence where every number stands to its predecessor either in the ratio of the tone (9:8) or the ratio of the semi-tone (243:256). In this case there will be 34 numbers. This is the approach that Proclus takes, since he understands

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Plato to be directing us to include tones within both the 4:3 and 3:2 ratios.[17]

Why does this matter? Again, it seems to the modern reader to be a bit of a tempest in a teacup, but Plutarch's essay and the epitome of Plato's *Timaeus*, entitled *On the Nature of the World and the Soul* and attributed to the Pythagorean Timaeus, show that this was a matter of some moment in antiquity. One issue concerns the extent of harmonic theory that is revealed in the *Timaeus*. Proclus claims that one reason why the Pythagorean Timaeus' version of the harmonies in the World Soul includes 36 terms is because it is meant to reveal the ratio of the *apotomê* or major semi-tone (*in Tim*. II. 188.10–19). (The nature of the *apotomê* and the semi-tone will be discussed in more detail below.) Plato clearly shows us the ratios associated with the fourth, the fifth, the tone and the semi-tone. Can we credit him with revealing the ratio of the major semi-tone as well? Ps.-Timaeus' *On the Nature of the World* probably included a table of 36 numbers that expressed the ratio of the *apotomê* twice – first in its lowest whole number expression (2048 : 2187) and then again at three times these numbers.[18] Proclus thought that we should not adjust the quantity of numbers specified by Plato's instructions to include the *apotomê* since Plato himself does not mention it. So one substantive issue that turns on the quantity of numbers in the psychic harmonies is the question of just how much harmonic theory there is in the *Timaeus*.

Plutarch's third standard problem concerns the *significance and function* of the harmonies in the World Soul. These numeric sequences are inscribed in the "psychic dough" that is rolled out and split down the middle to become the circle of the Same and the circle of the Different (*Tim*. 36b2–c5). These circles are, in turn, associated with the celestial equator and the path of the ecliptic (c5–d1). The circle of the Different is then divided into seven circles corresponding to the Sun, Moon and planets (d1–7). So, should the harmonic ratios in the substance of the World Soul have any correlation to the planetary orbits? And if so, what should they correlate with? Their relative speeds? Their distance from Earth? Their size? We have evidence not only from Plutarch, but also from Calcidius, Macrobius and Hippolytus that there was plenty of speculation about this question. Once one equates the planetary circles with heavenly spheres, what is at issue here is the question of the harmony

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[17] *in Tim*. II. 185.3–6: καταπεπύκνωνται δὲ οἱ ὅροι καὶ τὰ διαστήματα πάντα ταῖς τε ἁρμονικαῖς καὶ ἀριθμητικαῖς μεσότησι, <u>καὶ τῶν ἡμιολίων καὶ τῶν ἐπιτρίτων</u> αἱ διαιρέ-σεις εἴς τε τὰ ἐπόγδοα καὶ τὰ λείμματα γεγόνασιν· The most detailed of the modern commentaries – Taylor (1928) – agrees with Proclus' calculation.

[18] The question is somewhat complicated by textual issues. See Tobin (1985), 21–2 and Proclus, *in Tim*. II. 188.14–18.

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