5. From Text to Building: The Impact of the *Timaeus* on the Discipline of Architecture in Later Antiquity

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Abstract

The legacy of Plato's *Timaeus* in later antiquity and the early Middle Ages has generally been explored with reference to philosophical and theological traditions. Yet the text's paradigm of a world created by a demiurge applying specific mathematical ratios invites the image of a master builder designing an architectural work. Scholars of later periods have started to investigate its impact on architects and designers, but there has been little discussion of its inspiration for Greek and Roman architecture. While architectural analogies were readily absorbed in philosophical versions and interpretations of Plato's text, actual architects seem to have been slow to pick up on the potential application of this paradigm to their own work. This chapter explores the work of Aelius Nicon, an architect of the second century C.E. at Pergamon and father of the medical writer Galen. Nicon used his traning in the mathematical sciences, especially in geometry and astronomy, to develop mathematical theories of number and shape based upon later interpretations of the *Timaeus* and show alignments between his own architecture and the creation of the natural world. It also shows how Nicon's theories were themselves appropriated by a sixth-century Neoplatonist thinker adapting the tradition of the *Timaeus* in a Christian context.

The last chapter has shown how the medical writer Galen adapted the 'medical' parts of Plato's *Timaeus* to reframe the discipline of medicine.[1] In this chapter we see how, a generation earlier, his father, the architect Aelius Nicon, used the same text to inflate the importance of architecture. Nicon's work is known from a collection of inscriptions found in his home city of Pergamon. I have previously presented this dossier as evidence for the intellectual ambitions of architects in the Antonine era.[2] The present chapter reconsiders these texts, particularly a long and partially obscure geometrical inscription, in relation to the cosmological tradition of the *Timaeus*. From the point of view of Nicon and his architectural followers in the Antonine or Severan period, the text gave philosophical authority to the geometry of their designs and imparted an idea of musical harmony to their architectural forms derived from Rome. Nor did it provide only a formal paradigm. The model of the divine *demiourgos* creating an ordered world for mankind also encouraged the perception that their own architectural works were a benefaction for humanity. As the divine creator produced a harmonious and ordered universe for his creatures, so architects created harmony in their buildings for people to enjoy a happy existence. The geometrical inscription, however, does not simply replicate Nicon's words, but is a doxographical fragment inserted and reformulated as part of a late antique document, probably of the sixth century. It provides evidence, therefore, of the reception of Nicon's text in the later Christian city within the framework of the tradition of Plato's *Timaeus* and shows how his mathematical ideas were accommodated to the biblical *Genesis* tradition.

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[1] See Robert Vinkelsteijn, Chapter 4, above; cf. also Aileen R. Das, *Galen and the Arabic reception of Plato's Timaeus* (Cambridge: Cambridge University Press, 2020).
[2] Edmund Thomas, *Monumentality and the Roman Empire: Architecture in the Antonine Age* (Oxford: Oxford University Press, 2007), 92–101. Christine Luz, *Technopaignia. Formspiele in der griechischen Dichtung* (Leiden and Boston: Brill, 2010), 272–285 discusses literary aspects of the dossier.

1   The reception of the *Timaeus* by Nicon of Pergamon and his followers

The set of epigraphic documents at Pergamon associated with the architect Aelius Nicon provides evidence for how architects engaged with the creation account of the *Timaeus*. Until now, these six inscriptions have been cited mainly as instances of "isopsephic" texts – where individual lines or successions of lines have the same stated numerical value in the sum of their letters according to the Milesian numbering system – rather than for their philosophical contexts. They include: (I) a hymn to Helios "signed" by Nicon himself; (II) a dedication of a satyr by Nicon; (III) a dedication of a portico by the architect I(ulius) Nicodemus, also called Nicon Neos; (IV) an honorific inscription for Aelius Isidotus, a geometer; (V) an honorific inscription for "Nicodemus and Nicon"; and (VI) a long inscription including geometrical proofs attributed to Nicon.[3] Five of this group were found in mainly re-used contexts in or around the Lower Agora, a commercial area of the lower city just inside the "Eumenian Gate", which developed after the city's enlargement in the second century B.C.E.[4] The Lower Agora was the headquarters of the Agoranomoi or "Market Officials", who supervised the marketplace.[5] This location fits the content of inscription (III), which records the consolidation of a *peripatos agoranomios*, a "Colonnade of the Market Officials". Its similar form to inscription (IV), both blocks with text inscribed within a tabula ansata frame, points

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[3] The inscriptions are set out in Thomas, *Monumentality*, 256–258, and Luz, *Technopaignia*, 272–285.

[4] (I) was found in excavations in front of room E of the Hagiasma of St Cyriac, a modern sanctuary just north of the Lower Agora: Wilhelm Dörpfeld, "Die Arbeiten zu Pergamon 1904–1905. I. Die Bauwerke", *MDAI (A)*, 32 (1907), 161–240, at 165; K. Rheidt, *Die Byzantinische Wohnstadt, Altertümer von Pergamon 15. Die Stadtgrabung*, II (Berlin: De Gruyter, 1991), 185, with plan at 183. It is now in the courtyard of the Archaeological Museum, Bergama (Thomas, *Monumentality*, fig. 94). (II) was found in a Byzantine wall on the south edge of the Agora, and (III), (IV), and (VI) in the courtyard of St Theodore's church south of the agora: Marie-Gabriel Florent Auguste, Comte de Choiseul-Gouffier, *Voyage pittoresque de la Grèce*, ii (Paris, 1809), 169. The exception (V), an honorific text, was found in the theatre.

[5] Marianne Mathys, "The Agorai of Pergamon: urban space and civic stage", in Laurence Cavalier, Raymind Descat and Jacques des Courtils (eds), *Basiliques et Agoras de Grèce et d'Asie Mineure* (Bordeaux: Ausonius, 2012), 257–271, at 259–261. For a detailed city plan, see https://geoserver.dainst.org/maps/5548/view#/.

to the pair's original display as pendants, perhaps on the rear wall of this colonnade.[6]

Inscriptions (I) and (VI) are most interesting in the present context, which suggest how architects saw the creation of the universe as an analogy for architectural geometry and design.

Inscription (I), which opens with the name of "the architect Aelius Nicon" like a statement of authorship, may be the earliest text in this dossier.[7] This hymn to the Sun (Helios) develops aspects of Timaean cosmology, celebrating the part played by the sun in the creation of the universe and ordering of the four elements:[8]

> Of Aelius Nicon, 1,726, architect:
>
> O Sun, turning your flame with your swift mares,
>
> that day when you sent your rays fully complete to mankind,
>
> making courses of sun and the infinite earth and floods of water
>
> and air and fire brought in order.
>
> 15,000
>
> Only among humankind he shines beautiful
>
> and for men a divine pleasure for their safety,
>
> after closing things unordered into the shape of one universe,
>
> [- - -] having preserved things in harmony for ever
>
> [- - -] to complete an unstoppable course.
>
> 15,000

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[6] *I. Perg.* 333a, illustrated in Mathys, "The Agorai of Pergamon", 267 fig. 6 (DAI Istanbul neg. No. 88/192,7); *I. Perg.* 333b.

[7] H. Hepding, 'Die Arbeiten zu Pergamon 1904–1905. II. Die Inschriften', *MDAI (A)*, 32 (1907), 356–360 no. 115, with photo at fig. 9 = *IGRom.* 4.506. All translations are the author's, unless stated.

[8] Pl. *Ti.* 39b (sun), 32b (elements). As Luz, *Technopaignia*, 279 notes, Helios is presented here as a demiurge.

The numerical notation in line 1 (1,726) identifies an equal value between Nicon's full name and his profession; those of lines 7 and 13 indicate similar equivalence between the physical manifestations of the sun and its creation of the four elements (lines 2–6) and their harmonious benefits for mankind (8–12). Starting in a portentous Euripidean manner, the hymn shifts to the language of Middle Platonism as it elaborates the sun's cosmic powers.[9] The eighth Orphic Hymn, composed later in the second century, similarly addresses the Sun as "world-ruler", "drawing the melodious course of the world", and as "the world's encircling eye", "beaming with his beautiful shining rays".[10] Like Nicon, his son Galen also declares, in his *On the Function of Parts*, which he calls "the sacred discourse which I am composing as a true hymn of praise to our Creator", that "the sun is grand and the most beautiful thing in the whole universe". Galen recognises "the size and character of the sun" as "qualities inherent in its nature", whereas "its particular position in the universe is the work of One who has arranged it so".[11] This last statement suggests that, like his father, Galen regarded the sun as a precosmic entity that preceded the ordering by the Demiurge.[12] Galen identifies the Demiurge with nature and ascribes to him the ordering of the world, which he sees as demonstrable from his own observations; he attributes an important ordering role to the sun in bringing about the seasons, and thus the very existence of life on earth, close to the Stoic

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[9] Line 2–3 quotes Jocasta's prayer to Helios at Eur. *Phoen.* 1–3, and ἀκτείνας ἐφῆκας (line 4) recalls Eur. *Bacch.* 678–9 ἡνίχ᾽ ἥλιος ἀκτῖνας ἐξίησι θερμαίνων χθόνα. However, ἡλίου δρόμους (line 4) gestures to Pl. [*Ax.*] 370b περιφορὰς ἄστρων καὶ δρόμους ἡλίου τε καὶ σελήνης and Philo, *De aeternitate mundi* 88 τὸν ὑπὸ γῆς ἡλίου δρόμον ἰόντο. The spurious *Axiochus* is dated to between 100 B.C.E. and 50 C.E. by D. S. Hutchinson, in J. M. Cooper (ed.), *Plato: Complete Works* (Indianapolis: Hackett, 1997), 1735.

[10] Wolfgang Fauth, *Helios Megistos. Zur syncretischen Theologie der Spätantike* (Leiden, 1995), 218, no. 93 for the text, lines 9 (κόσμου τὸν ἐναρμόνιον δρόμον ἕλκων), 11 (κοσμοκράτωρ), and 14–15 κόσμου τὸ περίδρομον ὄμμα, / σβεννύμενε λάμπων τε καλαῖς ἀκτῖσι φαειναῖς; cf. ibid., 1–34 for interpretation.

[11] Gal. *De Usu Partium* 3.10, in Georg Helmreich (ed.), *Galeni De Usu Partium libri XVII* (Leipzig: Teubner, 1907), I, 174.3–4 (= III.237.12–13K): ἱερὸν λόγον, ὃν ἐγὼ τοῦ δημιουργήσαντος ἡμᾶς ὕμνον ἀληθινὸν συντίθημι; and 166.21–4 (= III.241.1–4K): τὸ μὲν οὖν εἶναι τηλικούτῳ τε καὶ τοιούτῳ τῷ ἡλίῳ, οἷός πέρ ἐστι καὶ ἡλίκος, οἴκοθεν ὑπάρχει καὶ παρ᾽ ἑαυτοῦ· τὸ δ᾽ ἐν τῷδε τοῦ κόσμου τετάχθαι τοῦ διακοσμοῦντος ἔργον. Translations from *Galen, On the Usefulness of the Parts of the Body*, trans. Margaret Tallmadge May (Ithaca, NY: Cornell University Press, 1968), vol. 1, 189–90. Cf. ibid. 17.3; trans. May, vol. 2, 733.

[12] Michael Frede, "Galen's theology », in Jonathan Barnes and Jacques Jouanna (eds.), *Galien et la philosophie*, Entretiens sur l'Antiquite Classique 49 (Vandoeuvres: Fondation Hardt, 2003), 73–126, at 88.

view of the Sun as 'the governing principle' (τὸ ἡγεμονικὸν) of the cosmos.[13] Yet, while Galen still supposes the sun's position arranged by the Creator, his father Nicon here (line 10) identifies the sun with the Demiurge of Plato's *Timaeus* who gave order to the cosmos.[14]

Despite this altered theological perspective, the fundamental debt of Nicon's poetic reflections to the *Timaeus* is clear from the emphases in his hymn on the completeness of creation (line 3), visibility to mankind (lines 8–9), and oneness of the universe (line 10).[15] The role he gives the sun shows a development from the primacy of fire in the *Timaeus* to make the body of the world visible to humankind.[16] Nicon was clearly familiar with the contexts of Plato's dialogue, if not with the text itself, but his reading of the *Timaeus* was shaped by its intermediate reception. The choice of the unusual word ὠρήσας, "preserved" (line 11), suggests a familiarity with the works of those, possibly Stoic natural philosophers who, according to Cornutus, claimed that the Greek word *ouranos*, "heaven", derives "from the fact that it *cares for* [ὠρεῖν, *ôr(ein)*] or *takes care of* things [ὠρεύειν, *ôr(euein)*], that is guards them", even if he did not know Cornutus' *Greek Theology* from which that alleged etymology is known today.[17] The figure of "floods of water and air … brought in order" (ὑγροῦ χύσεις ἀέρα τε … ἐν τάξει φορούμενα, 5–6) so closely resembles the passage from Aristotle's *On Philosophy* quoted by Philo for an image of the Deity as the designer of a building or city, that, whether it reflects Aristotle's own view or that of earlier "Pythagoreans", it clearly mediated Nicon's understanding of the creation account and

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[13] Diog. Laert. 7.138–9. See Eduardo Boechat, "The concept of the Sun as ἡγεμονικόν in the Stoa and in Manilius' Astronomica", *Archai* 21 (Sept-Dec 2017), 79–125.

[14] Frede, "Galen's theology", 105, esp. 111–112.

[15] Visibility: Pl. *Ti.* 47a–b; "one universe": 31a; rays sent "complete" (παντελῆ, line 3) to humankind: 31b ("this world may be like the complete Living Creature (τῷ παντελεῖ ζῴῳ) in respect of its uniqueness". Note, however, Pl. *Ti.* 37d (καὶ τοῦτο μὲν δὴ τῷ γεννητῷ παντελῶς προσάπτειν οὐκ ἦν δυνατόν, "this [eternal] character it was impossible to confer in full completeness on the generated thing").

[16] Pl. *Ti.* 31b; cf. Cornford, 45.

[17] Cornutus, *Theol. Graec.* 1, trans. from *L. Annaeus Cornutus:* Greek Theology*, Fragments, and Testimonia*, ed. George Boys-Stones (Atlanta, GA: SBL Press, 2018), 52–3, A1. Also ed. J. B. Torres (Berlin and Boston: De Gruyter, 2018), 1: ἔνιοι δέ φασιν ἀπὸ τοῦ ὠρεῖν ἢ ὠρεύειν τὰ ὄντα, ὅ ἐστι φυλάττειν, οὐρανὸν κεκλῆσθαι. Cf. Hesychius, *Lexicon* (Omega entry 334) ὠρήσαντα· φυλάσσοντα, "guarding, preserving", in P. A. Hansen and I. C. Cunningham, *Hesychii Alexandrini lexicon, vol. 4 Tau-Omega* (Berlin: De Gruyter, 2009), 271.

encouraged the architect to see an analogy between his own work and the creation of the world.[18]

One basis for that analogy was because architecture, like the creation of the world, was understood as a philanthropic exercise. Nicon's repeated emphasis in his hymn on the creation *for* humanity – θνητοῖσι (line 3), ἀνθρώποισι (line 8), [ἀνδ]ράσι (line 9) – suggests that his understanding of the *Timaeus* model was contaminated by Stoic ideas of a benevolent god creating for humans.[19] It also seems to reflect that interest in "the human" valued by the later Pythagoreans, on the supposed model of Pythagoras.[20] These were also the virtues of Iulius Nicodemus and Aelius Isidotus, apparently followers of Nicon, to judge by the alternative name of the former, "New Nicon", and the second name of the latter. Nicodemus' dedication ends with the claim that "in life only one goal is fine: beneficence".[21] The geometer Isidotus is commended for "equal fair measuredness"; this ambiguous term implies a connection between geometry and moderate behaviour, which was pursued in the later tradition.[22]

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[18] Philo, *Leg. Alleg.* 3.97–99. See above, Introduction.

[19] The philanthropy of the Stoic god has, however, been questioned. See Paola Volpe Cacciatore, "Is the God of the Stoics a Philanthropist?" in *A Life Devoted to Plutarch: Philology, Philosophy, and Reception* (Leiden: Brill, 2021), ed. and trans. Serena Citro and Fabio Tanga, 105–114. Originally published as "È il dio degli Stoici filantropo?", in José Ribeiro Ferreira, Delfim Leão, Manuel Tröster, and Paula Barata Dias (eds.), *Symposion and Philanthropia in Plutarch* (Coimbra: Imprensa da Universidade de Coimbra, 2009), 289–295.

[20] Porph. *Abst.* 3.20; Iambl. *VP* 12.59, 30, 40; cf. Julian. *Ep.* 89b.289a–c, 305a. Compare the 3rd or 4th century Pergamene Aidesius who stopped working people to talk about their businesses because he "wanted his disciples to have a feeling of harmony in their hearts and of care for the human race". Eunap. *VS* 8.1.5–8, 481–482, cited by P. Hadot, *What is Ancient Philosophy?*, trans. Michael Chase (Cambridge, MA: Belknap Press of Harvard University Press, 2002), 216; cf. *Eunapios aus Sardes: Biographien über Philosophen und Sophisten. Einleitung, Übersetzung, Kommentar*, ed. Matthias Becker (Stuttgart: Franz Steiner, 2013), 410–411.

[21] Max Fränkel, *Die Inschriften von Pergamon* II, *Alterthümer von Pergamon* VIII.2 (Berlin: W. Spemann, 1890), 246 no. 333A = *IGRom.* 4.504a, line 7. This virtue appears alongside φιλανθρωπία in Diog. Laert. 10.10, on Epicurus' "beneficence (εὐποιία) to his brothers" and "benevolence (φιλανθρωπία) to all humankind".

[22] Fränkel, *Inschriften von Pergamon*, ii, no. 333B = *IGRom.* 4.504b, line 4. Cf. Erasmus' explanation of the epigraph inscribed above the lecture room in Plato's Academy, ἀγεωμέτρητος μηδεὶς εἰσίτω ("No admission without a knowledge of geometry"): "a man who is not fair-minded should not be admitted, for by common consent geometry connotes fairness of mind". *Collected Works of Erasmus. Adages II vii 1 to III iii 100*, ed. R. A. B. Mynors (Toronto: University of Toronto Press, 1992), 301. Galen's own explanation was that Plato "theologizes in most things and busies himself with theology; and mathematics of which geometry is a part contributes to a knowledge of theology" (εἰς τὰ πολλὰ θεολογεῖ καὶ περὶ θεολογίαν καταγίνεται· συμβάλλεται δὲ εἰς εἴδησιν τῆς θεολογίας τὸ μαθηματικόν, οὗτινός ἐστιν ἡ γεωμετρία). Gal. *De Partibus Philosophiae* 1.

## 2	The Timaean geometry of Nicon of Pergamon

The links between architecture and cosmology are expressed most fully in the fifth of these inscriptions, which takes the reading of the *Timaeus* to a higher level. It was discovered in August 1776 in the courtyard of St Theodore's church, just to the south of the Lower Agora, with the inscriptions of Nicodemus and Isidotus, by the young French aristocrat Marie-Gabriel de Choiseul (1752–1817), Comte de Choiseul-Gouffier by marriage; but it was published only in 1809, in the delayed second volume of Choiseul-Gouffier's report, with explanatory notes added by the mathematician Jean-Baptiste Joseph Delambre (1749–1822).[23] In the next seven years, three more travellers viewed the stone: in 1811 the Estonian Baron Otto Magnus von Stackelberg (1787–1837); in 1813 Konstantinos Serpetzoglou (1769–1821), Patriarch Cyril VI, Metropolitan Bishop of Adrianople (now Edirne), who interpreted it as the tombstone of an architect; and in 1816 the English diplomat William Turner (1792–1867).[24] It is worth giving the surviving Greek text, as published by Max Fränkel after the transcription in von Stackelberg's travelogue:[25]

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[23] Marie-Gabriel Florent Auguste, Comte de Choiseul-Gouffier, *Voyage pittoresque de la Grèce*, ii (Paris, 1809), 169, 171–6. See Géraud Poumarède, "Voyager dans l'Empire ottoman au XVIIIᵉ siècle, l'itinéraire de Choiseul-Gouffier", in Odile Cavalier (ed.), *Le Voyage en Grèce du comte de Choiseul-Gouffier* (Avignon : Fondation Calvet, 2007), 24–39 ; Frédéric Barbier, "Le comte de Choiseul comme guide. Voyage pittoresque en Grèce en compagnie d'un noble français du XVIIIᵉ siècle", *Gryphe. Revue de la Bibliothèque de Lyon* 4 (2002), 3–12.

[24] Stackelberg : Ida Haugsted, "Brøndsted and Koës – a brief sketch of their travels in Greece", in B. B. Rasmussen, J. S. Jensen, J. Lund, and M. Märcher (eds.), *Peter Oluf Brøndsted (1780-1842), A Danish Classicist in his European Context* (Copenhagen, 2008), 47–53, at 51. Cyril: Ερμής ὁ λογίος (15 February 1813), 63–64, presenting the text of the inscriptions of Nicodemus and Isidotus (*I. Perg.* 333a-b) as continuing the same inscription. Turner: William Turner, *Journal of a Tour in the Levant*, vol. 3 (London: John Murray, 1820), 272–273.

[25] Fränkel, *Inschriften von Pergamon*, vol. 2, 245–246 *ad* no. 333; followed by *IGRom.* 4.503. The transcript, by Eugen Pridik (1865–1935), formerly in the Library of Dorpat University (now Tartu), is now in Moscow.

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ἀκακίᾳ δὲ ἐπιχρηματισμός	,α ψκς
ἰδίᾳ δὴ διὰ τὸ ὕδωρ	,α ψκς
θέσει εἷσ' ἀπ(ὸ) αἰῶνος	,α ψκς
καὶ λάβρον ἅμα εἷσ' ἐν κόσμῳ.	,α ψκς
5 Ἐπ' ἀγαθὰ τοῖς τεχνίταις	,β ρνς
τὴν διατριβὴν ἐποίησε Νείκων	,β ρνς
ἐνπείροις ἀὶ τῆς μνῆμης χάριν.	,β ρνς
Θεῖα καθόλου, φύσεως ἅμα ἡδεί|ας	,Γ
ἀεὶ ὁ κῶνος, ἡ σφαῖρα, ὁ κύλινδρος.	,Γ
10 Εἰ κύλινδρος περιλαμβάνοι	ἀμφότερα	
θίγμα ἡδείᾳ ἐπαφῇ,	,Γ
ἔσται σφαίρας ἄνοιγμα ἡ διά|μετρος	
ἴση πᾶσιν	,Γ
ἐνκυκλίοις διαμέτροις, ἀλλὰ	
15 ἰδίᾳ δὴ καὶ ὕψεσι.	,Γ
ἅμιλλα ὁ λόγος καὶ ἐν στερεῷ	
ἐστὶ προκοπὴ α β γ·	,Γ
γεννικὴ θεία τις ἐξίσωσις,	
ἀλλὰ καὶ συμπαθία	,Γ
20 τῶν στερεῶν ἀὶ λόγος α β γ.	,Γ
καλὰ δὲ καὶ θαυμάσια εἴη ἂν	στερεὰ	
τρία σχήματα·	,Γ
ἀϊδίη γὰρ λόγον ἴσον ποιέει καὶ	

στερεοῖς καὶ ὅλαις ἐπιφανίαις· | ,Γ

25 ὁ κύβος καὶ εἰ ἐναρμόζοι | κύλινδρος,

  ἀλλὰ ἰδίᾳ καὶ θεία σφαῖρα,   ,Γ

  ἅπασιν ἥγημα, κύβος μὲν μβ,

  κύλινδρος δὲ λγ, σφαῖρα | δὲ κβ.   ,Γ

  ἰδίᾳ τοιόσδε τούτων εἴη | λόγος,   ,Γ

30 θεῖος καὶ ἐν στερεῷ ἅμα | καὶ ἐν τῇ

  ὅλῃ δ'ἐπιφανείᾳ.   ,Γ

  Γένος τι καὶ ἄλλο ἥδειον

  οὐδὲν ἐν βίῳ ἐθαύμασα   ,Γ

  ὡς κόσμου ἅμα ἐπιδρομῇ

35 ἄλεκτον ἀϊκεινησίαν   ,Γ

  καὶ τοῦ ἡλίου ἀναβάσει ἡδεῖαν

  ἀϊδίῃ ὑπεναντίαν κείνησιν,   ,Γ

  καὶ ἅμα δὴ φῶς ἀγαθὸν πάν|των   ,Γ

  πάγιον τροφῇ<ς> ἅπασι | καὶ ζῴοις

40 καὶ γενήμασιν.   ,Γ

  Μουσῶν ἄρξει γεωμετ|ρία.   ,Γ

  …in acacia / innocence a divine pronouncement: 1726

  particularly even, because of the water,   1726

  He set it (the water) in position from time everlasting   1726

  and at the same time set it furiously in motion in an ordered universe.   1726

5 For good things to artists (architects)   2156

  Nicon made his theory,   2156

for experts, as an aid to memory. 2156

Quite divine, and of sweet nature, 3000

always the cone, the sphere, the cylinder. 3000

10 If a cylinder encloses the other two shapes,

at a tangent in sweet contact, 3000

the aperture of the sphere

will be equal to all 3000

the concentric diameters, but

15 particularly also to their heights. 3000

Competition the principle and in solids

the progression 1:2:3, 3000

a noble, divine equalization,

but also mutual interdependence 3000

20 of the solids, always in the ratio 1:2:3. 3000

They should be beautiful and wonderful,

the three solid shapes, 3000

because the cube makes an equal ratio

for all time for solids and surface areas, 3000

25 and if a cylinder fits inside a cube,

and especially if a divine sphere does, 3000

leading for all, the cube is 42,

the cylinder 33, and the sphere 22. 3000

Such must be the ratio for these shapes individually, 3000

30 divine both in volume and in

total surface area. 3000

No other sweeter family

have I ever wondered at in life   3000

as, with the surge of the universe,

35 an indescribable perpetual motion   3000

and a motion pleasant with the ascent of the sun,

and eternally opposite,   3000

and at the same time indeed a good light for all   3000

secure with sustenance for all creatures

40 and fruits of the earth.   3000

Geometry shall lead the Muses.   3000

At least three lines were lost at the upper edge of the slab, possibly continuing from another slab above, but the final line, inscribed on the profiled base of the stone, must be the end of the inscription. The core of the text, from lines 5 to 40, is presented as a theory of Nicon. His identification only by his familiar Greek name without Roman gentilicium or profession may be for isopsephic convenience or because he was recognisable as Nicon alone. This attribution and the similar isopsephic form to the other inscriptions have suggested that the text was inscribed in the second century for Nicon himself.[26] Choiseul-Gouffier's transcription starts only at line 5 because the mathematician Delambre regarded Nicon's theory as the important part of the inscription. His report notes the presence of three lines on physics above, but omits them because "they presuppose preceding lines inscribed on another marble which has not been found: thus detached, they present difficulties without interest".[27] Yet the matter is not so straightforward. Nicon's actual theory starts at line 8, and the preceding statement of attribution

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[26] I considered this "a reasonable inference" at Thomas, *Monumentality*, 95. Luz, *Technopaignia*, 280 leaves open whether the text refers to Aelius Nicon or to Nicodemus "new Nicon".
[27] Choiseul-Gouffier, *Voyage pittoresque de la Grèce*, vol. 2, 175–176.

(5–7) is itself preceded by another text, which implies that it continues the earlier section on physics in the voice of another author. The isopsephic sum of each of those lines (1–4), 1,726, is the same as the statement of authorship of the hymn, Inscription (I). The language of the theory also, I shall argue, contains several features of late antique philosophical and theological writing that suggest that it does not fully preserve the words of Nicon himself as has been assumed, but is a reworked version set in a new context. As with other ancient literary fragments, the mediating "cover-text" preserves Nicon's work by enclosing it in a frame, but conceals its source so that its original wording and style "are no longer discernible".[28] Subject to allusion, paraphrase, condensation or reformulation, the enclosed text does not exactly replicate what Nicon once wrote.[29] The following will first consider Nicon's theory in its own right and then the interpretative context of the cover-text in relation to the *Timaeus*.

Nicon's theory is framed "as a memento for ever" (ἀὶ τῆς μνήμης χάριν, line 5), like other philosophical or technical writings;[30] but it emphasizes the benefits for artists in particular (ἐπ' ἀγαθὰ τοῖς τεχνίταις, 5). This resembles the dedication of the market colonnade by Nicodemus Nicon Neos to "the gods, always sacred artists" (θίοις ἀὶ τεχνείταις ἱεροῖς).[31] Choiseul-Gouffier took this as a double dedication, to the gods and to artists, surmising that artists used the colonnade to buy and sell their products.[32] There, however, the opening dedication and balanced isopsephic phrasing suggest that τεχνείταις ἱεροῖς should instead be taken as a predicate of θίοις, the gods as artists themselves. This extension of the demiurgic

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[28] Guido Schepens, "Jacoby's *FgrHist*: problems, methods, prospects", in Glenn W. Most (ed.), *Collecting Fragments* (Göttingen, 1997), 144–172, at 166–167 n. 66 ; C. A. Baron, "The delimitation of fragments in Jacoby's *FgrHist*: some examples from Duris of Samos", *Greek Roman and Byzantine Studies* 51 (2011), 86–110.

[29] Cf. P. A. Brunt, "On historical fragments and epitomes", *Classical Quarterly* 30 (1980), 477–494; and, on how the fragments of Posidonius' *Histories* embedded in Athenaeus give a distorted view of Posidonius' text, see Katherine Clarke, *Between Geography and History: Hellenistic constructions of the Roman world* (Oxford: Oxford University Press, 1999), 132–137.

[30] E.g., Evenus of Paros: Pl. *Phdr.* 267a (οἱ δ' αὐτὸν καὶ παραψόγους φασὶν ἐν μέτρῳ λέγειν μνήμης χάριν· σοφὸς γὰρ ἀνήρ); Theophr. *De Pietate* fr. 13; Mnaseas fr. 5; Dorotheus astrol., *Fragmenta Graeca* 328.15, 405.16, in D. Pingree, *Dorothei Sidonii carmen astrologicum* (Leipzig: Teubner, 1976).

[31] Fränkel, *Inschriften von Pergamon*, vol. 2, 246 no. 333A = *IGRom.* 4.504a, line 2.

[32] Choiseul-Gouffier, *Voyage pittoresque de la Grèce*, vol. 2, 170.

metaphor of the *Timaeus* implies an analogy between Nicodemus' building and the divine architecture of the world. In Nicon's theory, the same word τεχνίταις refers to human artists, but the cosmological texts around his geometrical proofs also hint at connections between architectural geometry and cosmic design. In the later reception of the *Timaeus*, the Demiurge licenses the practice of any *techne* or specialist craft (τοῖς μὲν κατὰ μέρος τεχνίταις) as a way for humans to imitate God.[33] From its start, Nicon's theory invites a parallel between human art and the creation of the cosmos.

The theory itself begins by asserting the divinity and beauty of three solids, the cone, sphere, and cylinder (8-9). While this alludes primarily to geometrical problems studied by *mathematikoi*, especially Archimedes, it is not easy to disentangle those questions from an aesthetic interest in these figures, which springs from a long philosophical debate on the beauty and supposed shape of the cosmos. In the *Timaeus* an image from carpentry (ἐτεκτήνατο) for the Demiurge's construction of the world privileges the sphere as the most beautiful shape and therefore the form of the cosmos:

And he gave [the world] a shape appropriate to the kind of thing it was. The appropriate shape for that living thing that is to contain within itself all the living things would be the one which embraces within itself all the shapes there are. Hence, he gave it a round shape, the form of a sphere, with its centre equidistant from its extremes in all directions. This of all shapes is the most complete….[34]

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[33] Philo, *Prov.* 1, of artists analogous to the demiurge.
[34] Pl. *Ti.* 33b: σχῆμα δὲ ἔδωκεν αὐτῷ τὸ πρέπον καὶ τὸ ξυγγενές. Τῷ δὲ τὰ πάντ᾿ ἐν αὐτῷ ζῷα περιέχειν μέλλοντι ζῴῳ πρέπον ἂν εἴη σχῆμα τὸ περιειληφὸς ἐν αὑτῷ πάντα ὁπόσα σχήματα. Διὸ καὶ σφαιροειδές, ἐκ μέσου πάντη πρὸς τὰς τελευτὰς ἴσον ἀπέχον, κυκλοτερὲς αὐτὸ ἐτορνεύσατο, πάντων τελεώτατον ὁμοιότατόν τε αὐτὸ ἑαυτῷ σχημάτων, νομίσας μυρίῳ κάλλιον ὅμοιον ἀνομοίου.

Timaeus' judgment here mirrors Parmenides' description of Being: "complete on all sides, like the bulk of a well-rounded sphere, and pushing equally in all directions from the centre".[35] As David Sedley has observed, Cicero's otherwise faithful translation of the *Timaeus* passage elaborates this perfect roundness:

> He gave [the world] a particularly appropriate and attractive shape. … he constructed it as round, which the Greeks call *sphairoeides* ("sphere-like"), whose every extremity is touched by equal radii from the centre; *and he smoothed it off in such a way that he could make nothing more round, that it had no rough edges and no bumps, nothing indented with corners or with curves, nothing standing out, nothing missing*, and every part very like all others because in his judgment likeness excelled over difference.[36]

With this elaboration, Cicero highlighted the image of the Demiurge as a craftsman trimming the cosmic object on his lathe to achieve an aesthetically perfect form. When he revisited this passage a few months later, he presented the Epicurean Velleius as sarcastically mocking the Platonist view and proposing alternative, more attractive shapes such as the cylinder, cube, cone, or pyramid.[37] In response, Cicero had the Stoic Balbus simply echo Cicero's own recent

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[35] DK 1, Parmenides fr. 8.42–4: τετελεσμένον ἐστί / πάντοθεν, εὐκύκλου σφαίρης ἐναλίγκιον ὄγκωι, / μεσσόθεν ἰσοπαλὲς πάντηι, with Kranz's corrected punctuation, *pace* A. P. D. Mourelatos, *The Route of Parmenides* (New Haven: Yale University Press, 1970), 123 n. 24 who prefers Diels's original punctuation, with comma after τετελεσμένον ἐστί ("it is completed: like the expanse of a ball nicely circular from every side").

[36] Cic. *Timaeus* 17: *formam autem et maxime cognatam et decoram dedit. … globosum est factus, quod* sphairoeides *Graeci vocant, cuius omnis extremitas paribus a medio radiis attingitur, idque ita tornavit ut nihil efficere posset rotundius, nihil asperitatis ut haberet, nihil offensionis, nihil incisum angulis, nihil anfractibus, nihil eminens, nihil lacunosum, omnesque partes simillimas omnium, quod eius iudicio praestabat dissimilitudini similitudo*. David Sedley, "Cicero and the *Timaeus*", in Malcolm Schofield (ed.), *Aristotle, Plato, and Pythagoreanism in the first century B.C.: new directions for philosophy*. (Cambridge: Cambridge University Press, 2013), 187–205.

[37] Cic. *Nat. D.* 1.24, probably written in late 45 B.C.E., shortly after Cicero's own translation of the *Timaeus*. At 2.46 Epicurus is said to mock this.

translation of Plato's passage. Philo subsequently took Plato's "admirable encomium" of the sphere as settling the matter.[38]

Yet later Neoplatonists still felt the need to explain the "divinity" of the sphere. Proclus stresses the shape's superiority to the cylinder, cone, and pyramid:

> alone of all solids, the sphere is composed of shapes that are similar, while the others are all dissimilar: some, like the cone, have two surfaces; others have three, like the cylinder; others have four, five or even more, like pyramids arranged from bases which are successive polygons.[39]

He adds a further reason based on cosmology:

> if the heavens were not spherical in shape but rather were cylindrical or had some other such shape, then it would be necessary for the sun, when it moves to the south of us, to appear to be smaller in virtue of the fact that the interval between us and it is not equal to what it was before. But nothing of this sort appears to happen.[40]

The earth's circular movement, he argues, presupposed a spherical, rather than cylindrical body:

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[38] Philo, *Prov.* 56, trans. Runia, *Philo of Alexandria and the Timaeus*, 187; cf. *Philonis Judaei sermones tres hactenus inedit.*, trans. G. B. Aucher (Venice, 1822), 84: *Occurrunt autem in Timaeo Platonis, qui mirifice laudent figuram perfecte sphaericam cum sua utilitate, atque commendent, ita ut nullo praeterea indigeat laudis additamento.* In a more sophisticated argument than the Epicureans, possibly from "an Academic source (Carneades?)" (Runia, 187 n. 11), Alexander in Philo, *Prov.* 53 does not deny that the cosmos is spherical but does not accept that its shape is due to Providence because "if neither space nor surface owe their existence to Providence, then also the shape of the cosmos, polished into a perfect sphere, is not due to Providence". This part of Philo's work survives in Armenian only, trans. Aucher, 82–83, with Latin translation: *Atqui si nec locus neque superficies, ergo neque figura mundi secundum providentiam in verum globum polita est.*
[39] Procl. *In Ti.* 3, 75.10–14 on Pl. *Ti.* 33b1–8; trans. Baltzly, 133.
[40] Procl. *In Ti.* 3, 76.3; trans. Baltzly, 135.

He said that the universe is spherical in shape, but nonetheless here has assigned to it

movement in a circle and turning around. This is because it seems to be moved in a circle

with respect to the largest circle in it. But he has added the words **turning round and round**

for the sake of accuracy, since a cylinder is also moved in a circle when it is rolled.[41]

This insistence on the superiority of the sphere implicitly acknowledges that not everyone

considered it the best shape. Greek mathematicians subordinated the visual to textual

arguments. The interpretation of geometry through text realised the aesthetic beauty of

shapes.[42] This is also the case with Nicon's theorems here. As with other mathematicians, the

beauty appears in the ratio between certain solids.

One key idea that later commentators took from the *Timaeus* was that the shape of the

cosmos implies its divinity. They accepted the premise that the sphere is the most complete

figure, whose parts are all "like one another" (*homoiomerês*), and noted a contrast here with

the cylinder or cone, which are composed from heterogeneous parts. Thus, the sphere could be

considered "maximally unified, and to the extent that a thing is unified it imitates the One and

is made divine".[43] Yet architectural geometry could also be an aesthetic object. If the sphere

was an apparently unattainable ideal for architects, it remained an invisible motive for actual

structures such as the "Porta Rosa" at Elea of the second century B.C.E., designed from two

superimposed spheres.[44]

Drawing on calculations by Euclid and Archimedes, Nicon's text unites these three

shapes, the cone, cylinder, and sphere, in the ratio 1:2:3. Euclid had established that a cone has

one third the volume of the cylinder in which it is enclosed, Archimedes that a cylinder is one

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[41] Procl. *In Ti.* 97.1–7, on Pl. *Ti.* 34a3–8; trans. Baltzly, 159.

[42] Reviel Netz, "What did Greek mathematicians find beautiful?" *Classical Philology* 105 (October 2010), 426–444, at 433.

[43] Baltzly, 26, on Procl. *In Ti.* 2, 75.5–15 and 78.11.

[44] Elio de Magistris, "Cronologia e funzione di porta Rosa a Velia", *Orizzonti: rassegni di Archeologia* 9 (2008), 47–58.

and a half times the sphere that it contains; the sphere is twice the inscribed cone.[45] Archimedes wrote:

> in every sphere, the cylinder having a base equal to the greatest circle of the <circles> in the sphere, and a height equal to the diameter of the sphere, is, itself, half as large again as the sphere; and its surface is <half as large again> as the surface of the sphere.[46]

He attributed the recognition of this relationship to Eudoxus:

> …every cone is a third part of the cylinder having the base the same as the cylinder and an equal height. For even though these properties, too, always held, naturally, for those figures, and even though there were many geometers worthy of mention before Eudoxus, they all did not know it; none perceived it.[47]

By "verbalizing the invisibly visible", Nicon demonstrates the beautiful mathematical relationship between the three shapes, picturing a cone and a sphere enclosed within a cylinder, their edges all at a tangent to each other (10–15).[48] The ratio of 1:2:3, a "noble, divine equalization", creates a "mutual interdependence of the solids" (*sumpath[e]ia tôn stereôn*) (17–18). This idea draws on the compacting together of solids in the *Timaeus* which is said to bring about the harmony and friendship of the body of the world (32b–c), a harmony binding solids by two means.[49] The term *sympatheia* suggests an influence of Stoic physics with its strong

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[45] Euc. *Elements* 12.10; Archimedes, *Method* 3. Netz, "What did Greek mathematicians find beautiful?", 436–437.

[46] Archimedes, *On the Sphere and the Cylinder*, Book 1, trans. Reviel Netz, in *The Works of Archimedes, Vol. 1* (Cambridge: Cambridge University Press, 2004), 31–32.

[47] Archimedes, *On the Sphere and the Cylinder*, trans. Netz.

[48] Netz, "What did Greek mathematicians find beautiful?", 443.

[49] Pl. *Ti.* 32b3: συναρμόττουσιν.

emphasis on the physical interconnectedness of elements of the world, but it has its roots in the idea in the *Timaeus* of connections between different parts of the universe, which the Neoplatonist Plotinus carried in a less physical direction.[50]

From line 21, Nicon advances a second theorem. A further shape, the cube, gives these three "beautiful and wonderful" shapes additional significance by creating an equal ratio for all solids (23–24). In this alternative vision of intersecting solids the cone is forgotten, and the sphere and cylinder are enclosed within a cube (25–26), their surface areas and volumes configured in the ratio (λόγος) 22:33:42, which he also calls divine (27–28). The final part of the text, a first-person reflection, explains this divinity, replacing mathematics with cosmology. Nicon associates this γένος of geometrical solids (32) with the "surge" of the cosmos and an eternal cosmic motion, as the sun brings life and energy to all creatures and plants of the world, themes recognisable from Nicon's hymn.[51] The final coda displaces Apollo from his familiar role as μουσαγέτα, "leader of the Muses", and, in making Geometry their leader, hints at the "musical harmony" of the cosmos envisaged by Stoics.[52]

Nicon's theorems are not the abstract musings of a mathematician, but architecturally momentous. As Giangiacomo Martines has observed, Archimedes' image of a sphere inside a cylinder has its architectural correlate in the form and structure of the recently rebuilt Pantheon at Rome. The cylinder enclosing a sphere is reflected in the construction of the building: nearly

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[50] E.g., the Stoic Balbus in Cic. *DND* 2.7.19, shifting from a more static notion of the 'sympathetic agreement, interconnexion and affinity of things' (*tanta rerum consentiens conspirans continuata cognatio*) to a more dynamic one of "musical harmony of all the parts of the world" (*omnibus inter se concinentibus mundi partibus*) (trans. H. Rackham, LCL 268, 1933); M. Aur. Ant. *Med.* 6.38. Thomas Rosenmeyer, *Senecan Drama and Stoic Cosmology* (Berkeley: University of California Press, 1989), 93–112, notes at 108–112 that Stoic *sympatheia* is rooted in the *Timaeus*. Eyjólfur K. Emilsson, "Plotinus on *sympatheia*", in Eric Schliesser (ed.), *Sympathy: A History* (Oxford: Oxford University Press, 2015), 36–60.

[51] Line 34 κόσμου ἅμα ἐπιδρομῇ "surge of the kosmos", a metaphor from the continued onrush of waves; cf. Dionys. Per. *Per Bosporum Navigatio* 11 εἴργεται γὰρ ὑποδομήσεσι τειχίων ἡ τῆς θαλάττης ἐπιδρομή. For ἀιδίη (lines 23, 37), cf. Orph. 84.6 ("eternal" Hestia), in *Orphei hymni*, ed. Wilhelm Quandt, 3rd edn. (Berlin: Weidmann, 1962), 1–57.

[52] For Aristid. Quint. 3.3, the world is ordered and harmonized "by a principle that may be called the Demiurge, Form or Ratio"; cf. Pl. *Phdr.* 245c; *Ti.* 34b–c. For Apollo μουσηγέτης, cf. Pl. *Leg.* 653d3 Ἀπόλλωνά τε μουσηγέτην; *SIG* 699.1 ὁ μουσαγέτας καὶ ἀρχαγέτας τᾶς ποιητικᾶς θεός (Delphi, 2nd century B.C.E.); Orph. 34.6 μουσαγέτα. For the "musical harmony" of the world, compare the Stoic Balbus (above, n. 50).

40% of the (hemispherical) dome's height is embedded into the (cylindrical) drum, from the springing to the oculus. This building, not the distant Roman Pantheon, but its half-size replica at Pergamon, the Temple of Zeus Asclepius Soter in the Asclepieion, does not only realise Archimedes' geometric insight in built structure.[53] It also actualizes the definition of the sphere in the *Timaeus* as "the figure that comprehends in itself all the figures there are".[54] The building not only encapsulates the image of a sphere enclosed in a cylinder, but also explains Nicon's other shapes: the cone enclosed within the spherical interior is the conical flame rising from the hearth to the opaion at the summit of the dome; the outer cube containing cylinder and sphere is the enclosing cubic block between the south wall of the Propylon court and the south wall of the temple court. Although the correspondence is not exact, the sense of spatial enclosure at Pergamon facilitated the picturing of a geometrical relationship between these basic solids. The Asclepius to whom this temple was dedicated was the πάτριος θεός ("god of his father(s)") of Nicon's son Galen, who describes his workings as those of a demiurge.[55] Others went further. His contemporary Aelius Aristides saw the god as ruler and saviour of the world and observed that because of his many powers "the people here erected a temple for Zeus Asclepius".[56] The shape defined by Nicon out of the *Timaeus* tradition made the temple built by Rufinus an apt demiurgic symbol of the god's cosmic powers. His hymn hints that he may even have identified Zeus-Asclepius with the sun, like Praetextatus later, who identifies Zeus with the sun and Asclepius with the power of the sun to heal.[57]

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[53] Thomas, *Monumentality*, 98–101; Giangiacomo Martines, "The structure of the dome", in Gerd Grasshoff, Michael Heinzelmann, and Markus Wäfler (eds.), *The Pantheon in Rome. Contributions to the Conference, Bern, November 9-12, 2006* (Bern: University of Bern, 2009), 99–105, at 102; idem, "The conception and construction of drum and dome", in Mark Wilson Jones and Tod Marder (eds.), *The Pantheon. From antiquity to the present* (Cambridge: Cambridge University Press, 2015), 99–131, at 100–102.

[54] Pl. *Ti.* 33b.

[55] Gal. *Libr. Propr.* 2, in *Claudii Galeni Pergameni Scripta minora*, II, ed. Ivan Mueller (Leipzig: Teubner, 1891), 99.9–11; *PHP* 2.2, 56–58. Frede, "Galen's theology", 90–92.

[56] Ael. Aristid. *Or.* 42.4.

[57] Macrob. *Sat.* 1.17.2, 20.1. For Galen's understanding of Asclepius, see Frede, "Galen's theology", 90–107. For the temple's association with cosmic universalism, see Alexia Petsalis-Diomidis, *'Truly Beyond Wonders': Aelius Aristides and the Cult of Asklepios* (Oxford: Oxford University Press, 2010), 194–208.

Thus far, we see Nicon aligning the ideas of the *Timaeus* with Archimedean mathematics and his own architecture. Yet, if much of the language of this geometrical analysis reflects his own writing, the initial lines that introduce the theory suggest that it does not fully present his original words. The final section of this chapter explores this preceding text and its implications for the interpretation of Timaean cosmology at the time when it was most likely inscribed, in the context of the philosophical and theological discourses of late antiquity on the creation of the world.

3   Architecture, geometry, and creation: the Christian use of the *Timaeus* in late antiquity

Although its opening lines are lost, the section of the cover-text immediately before Nicon's theory is clearly cosmological in content. Lines 2-4 refer to the establishment of the primal element of water within the universe, in the tradition of the *Timaeus*, in which "the god set water and air between fire and earth, and made them, so far as was possible, proportional to one another".[58] Yet, rather than following the *Timaeus* directly, the account here of water as a primal element seems to reflect the influence of Stoic physics.[59] Moreover, the description of water as "settled in position from time everlasting … and at the same time released furiously in an ordered universe" resembles Philo's version of the creation account of Moses, in which "water poured all over the earth".[60] There Philo distinguishes philosophical versions such as Plato's, in which water is just one of the four elements, from the biblical creation account where water

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[58] Pl. *Ti.* 32b.

[59] For the primal substance as "flow" (ῥύσις) or "moisture" (τὸ ὑγρὸν), cf., e.g., Cornutus, *Theol. Graec.* 8,1 ("the plan for the universe to come into being … sent the great flow"), in *L. Annaeus Cornutus*, 60–61, with 29 for comments of Boys-Stones citing other passages.

[60] Philo, *De Opificio Mundi* 11.38: τὸ σύμπαν ὕδωρ εἰς ἅπασαν τὴν γῆν ἀνεκέχυτο.

unifies the world and gives it life, "so that the earth is chained together by its sweet quality like a unifying glue".[61] In this vision of Moses the natural philosopher, Philo's figure of the earth held together with water "by a chain" (ὑπὸ δεσμοῦ) recalls the "bond" (δεσμὸν) between fire and earth at *Timaeus* 31c; but the image of glue (κόλλης τρόπον ἐνούσης) has more in common with Empedocles' idea of the moist and dry acting as a glue to each other, "gluing meal together with water".[62]

The inscription, however, retains something of the language of the *Timaeus*. A heavy pun on the two senses of εἷσ(ε) in lines 3–4 presents the water being paradoxically both "set" or "settled in position" and "set forth" in the sense of "released". The first sense θέσει εἷσ' (3) recalls how in the *Timaeus* the god "set (θείς) water and air between fire and earth".[63] The verb εἷσ(ε) here is the aorist of ἵζειν, "place", which in the *Timaeus* describes how the shaken forms of the elements "settle" in different places.[64] The second sense of εἷσ(ε), however, in line 4 (λάβρον ἅμα εἷσ' ἐν κόσμῳ), is a Homeric usage, an aorist of ἵημι, of letting water flow in a violent manner.[65] This epic register is sustained in the archaic λάβρον, used in Homer of storms and strong river currents.[66] The final words of the line, ἐν κόσμῳ, echo Philo's description of God's separation of light from darkness "in an ordered universe".[67]

Two unusual words of the first surviving line of the inscription develop the biblical context. The hapax ἐπιχρηματισμός is puzzling, since most attested uses of the compound verb

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[61] Philo, *De Opificio Mundi* 45.131: ἵν᾽ ὡς ἂν ὑπὸ δεσμοῦ συνέχηται γλυκείᾳ ποιότητι κόλλης τρόπον ἐνούσης.

[62] DK 31 B 17, 19.19 (Plut. *De primo frigido* 16, 952b); cf. Arist. *Mete.* 4.4, 382a1-3; [*Pr.*] 21.22, 929b16–19.

[63] Pl. *Ti.* 32b3–4: οὕτω δὴ πυρός τε καὶ γῆς ὕδωρ ἀέρα τε ὁ θεὸς ἐν μέσῳ θείς, καὶ πρὸς ἄλληλα καθ᾽ ὅσον ἦν δυνατὸν ἀνὰ τὸν αὐτὸν λόγον ἀπεργασάμενος.

[64] Pl. *Ti.* 52e–53a τὰ δὲ μανὰ καὶ κοῦφα εἰς ἑτέραν ἵζει φερόμενα ἕδραν.

[65] Hom. *Il.*12.25, of Apollo flooding the river Axios against the Trojan wall: ["Ἀξιὸς], ὃς κάλλιστον ὕδωρ ἐπὶ γαῖαν ἵησι; 21.158 (Axius again); cf. *Od.* 7.130 ["κρήνη] ἵησι; 11.239 (the river Enipeus, ὃς πολὺ κάλλιστος ποταμῶν ἐπὶ γαῖαν ἵησι); Aesch. *PV* 811–12 (cataract "where the Nile *releases its stream* out of the mountains", ἔνθα Βυβλίνων ὀρῶν ἄπο / ἵησι σεπτὸν Νεῖλος εὔποτον ῥέος).

[66] Hom. *Il.* 15.624–626; cf. storm simile 16.384–386 (Hector and Trojans pressing Patroclus, like the earth pressed in a hurricane "when Zeus releases most violent waters", ὅτε λαβρότατον χέει ὕδωρ Ζεύς); 21.270–1, river pressing Achilles "flowing violently beneath him" (λάβρος ὕπαιθα ῥέων) as he tried to attack Hector.

[67] Philo, *De opificio mundi* 9.33: τὴν ἀκοσμίαν ἐν κόσμῳ τιθείς. This sense is also common in philosophical contexts, e.g., Diog. Laert. 6.72 (Diogenes); 7.147; 8.22 (Pythagoras); 9.7 (Heraclitus); 10.89 (Epicurus).

ἐπιχρηματίζειν or the simple noun χρηματισμός make no clear sense here.[68] The word χρηματισμός, however, can also denote an "oracle", notably that which the prophet Jeremiah obeyed when he instructed the Ark and Tabernacle to follow him to the mountain from where Moses had looked down on the promised land.[69] As the narrative suggested in the inscription – the establishment of water at the beginning of the world – has affinities with the story of Creation attributed to Moses, it would not be inappropriate for the author of this cosmological text to present the aetiology of the world as an oracle from God, in the tradition of Philo and others. Early Christians too knew that the revelations to Moses came from an oracle.[70] According to later tradition, Moses witnessed a theophany at Sinai, the site of Yahweh's oracle, and there received the decisive oracles for the Jewish faith: the knowledge of the creation account in *Genesis* later attributed to him; the proclamation of the Ten Commandments; and the instruction to build a tabernacle as the architectural echo of God's creation.[71] Likewise, the most obvious meaning of the other key word of the first surviving line, ἀκακία, is "innocence", a weighty term for Jewish and early Christian writers because of its association with the moral condition of humanity before the Fall.[72] Yet another meaning makes better sense here. The

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[68] Cf. *Syll.*[3] 704, H24, and LSJ, *ad loc.*: "make a further decree"; and χρηματισμός as "negotiation", "decree", "public document", or, in a technical use with ονομάτος, "use of a name".

[69] 2 Maccabees 2.4 ἦν δὲ ἐν τῇ γραφῇ ὡς τὴν σκηνὴν καὶ τὴν κιβωτὸν ἐκέλευσεν ὁ προφήτης **χρηματισμοῦ γενηθέντος** αὐτῷ συνακολουθεῖν ὡς δὲ ἐξῆλθεν εἰς τὸ ὄρος οὗ ὁ Μωυσῆς ἀναβὰς ἐθεάσατο τὴν τοῦ θεοῦ κληρονομίαν ("It was in the same document that the prophet, **having received an oracle**, ordered that the tent and the ark should follow with him, and that he went out to the mountain where Moses had gone up and had seen the inheritance of God."); cf. *Epistles to the Romans* 11.4: ὁ χρηματισμός, of "the divine answer" to the prophet Elijah). For a similar usage, cf. *PGM* IV.2205 ἐπὶ χρηματισμοῦ ("For an oracle") (Betz, 77; trans. H. M.).

[70] E.g., *Acts* 7: 38, presenting the experience of Moses recounted at *Exodus* 3.1–15 as a receipt of God's oracles.

[71] Rainer Albertz, *A History of Israelite Religion in the Old Testament period*, trans. John Bowden, vol. 1 (London: SCM Press, 1994), 54–55. For the Tabernacle as echo of Creation, see, e.g., George Van Pelt Campbell, *Invitation to the Torah. A guide to reading, teaching, and preaching the Pentateuch* (Eugene, OR: Wipf and Stock, 2020), 90.

[72] For ἀκακία in a positive sense, as "integrity" or "open-mindedness", cf. Polemo, in Diog. Laert. 4.19; Plut. *Demetr.* 1.4; Aeschin. *In Tim.* 57; or "inoffensiveness": Arist. *Rh.* 2.12, 1389b; negatively, as "guilelessness", Dem. 59.81, 83, Plut. *Dem.* 1.3. In a biblical context, Job 2.3 (ἔτι δὲ ἔχεται ἀκακίας, "still he holdeth fast his integrity"); in the 11th to 12th century, as unworldliness, in Euthmyius Zigabenus, *Commentaria in quattuor evangelia*, Evangelium 4, on John 17: 14: "I have given them thy word; and the world hath hated them, because they are not of the world, even as I am not of the world." (KJV) Δέδωκα αὐτοῖς τὸν λόγον σου τὸν εὐαγγελικόν, καὶ οἱ πονηροὶ ἐμίσησαν αὐτοὺς ὡς μὴ ὄντας ἐξ αὐτῶν ὅσον ἐπὶ τῇ ἀκακίᾳ. (J.-P. Migne, *Patrologiae cursus completus (series Graeca)* 129 (Paris : Migne, 1857–1866), 1448.6.)

Tabernacle and Ark of the Covenant built by Moses are described in the Greek Septuagint as made of "decay-resistant woods", but in the Hebrew Torah this substance is specified as shittah wood or acacia (Greek ἀκακία).[73] In the fourth century, Epiphanius of Salamis interpreted the Tabernacle of this material as symbolising the eternity of the house of God.[74]

Alongside the mention of an oracle to Moses (ἐπιχρηματισμός), a reference to the material of the Tabernacle would not be out of place. Although the preceding lacuna makes it impossible to be certain, Nicon's theory appears to be embedded in a cosmological narrative: at the start, the Creation according to Moses, in language shaped by Plato's *Timaeus* and Homeric epic; at the end, the sun giving life to plants and creatures of the world (32–40). The isopsephic numbers inscribed alongside the whole text integrate the inner mathematics with the outer cosmologies. Shared language also unifies the text. Cover-text (2) and theory (15) both contain the distinctive phrase ἰδίᾳ δὴ or ἰδίᾳ on its own (26 and 29), a "favourite word" (*Lieblingswort*) of Nicon, as Max Fränkel noted.[75] Yet, whereas in the other inscriptions of Nicon and his followers the Ionic form ἰδίη is used, as expected for a text written in second-century Ionia, either alone or interchangeably with the Doric ἰδίᾳ, all four instances of the word in this longer inscription are in its Doric spelling, even though Ionic endings appear elsewhere in the text.[76] That may suggest the amendment or inscription this text at a later period or by someone from a different region. There are, however, stronger arguments for the production in late antiquity of this rendering of Nicon's theory.

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[73] Septuagint, *Exodus* 35.24: ξύλα ἄσηπτα εἰς πάντα τὰ ἔργα τῆς κατασκευῆς (distinguished from the other sense of ἀκακία by the length of the vowel); Torah, 25 Terumah 10–16 (Scharfstein, 225): "**10** Make an ark of acacia wood, 3.5 feet long, 2.25 feet wide, and 2.25 feet high. ... **13** Make two carrying poles of acacia wood and coat them with a layer of gold."

[74] Epiph. *Panarion. Against Apostolics* 8.1–4, trans. Frank Williams, 2nd edition (Leiden: Brill, 2013), 122.

[75] Fränkel, *Inschriften von Pergamon*, ii, 251. For the Platonic use of ἰδίᾳ, cf. Pl. *Resp.* 8, 558C: τίς ὁ τοιοῦτος ἰδίᾳ ("what manner of man the individual is", trans. Jowett, 3ʳᵈ edn., 1892, iii, 265, or literally "what such a person is individually"). The combination ἰδίᾳ δή is found only at Paus. 4.10.1 and Theodorus Metochites, *Carm.* 14.50, in *Theodori Metochitae Carmina*, ed. Ioannis Polemis (Turnhout: Brepols, 2015).

[76] Fränkel, *Inschriften von Pergamon*, ii, 246–51, nos. 333A (I. Nicodemus Nicon Neos, = *CIG* 3545 = *IGRom.* 4.504a: ἰδίη φιλοτειμίηι), 333B (Ael. Isidotus: ο πρᾷος ἰδίαι … γεωμέτρης. ἰδίη δὲ ίση καλη μετριότητι), and 339 (Ael. Nicon, *IGRom.* 4.502: ἰδίη).

Nicon's appeal to a "mutual interdependence of solids" (*sumpathia tôn stereôn*) (17-18) points to Neoplatonist interpretations of the *Timaeus*. Proclus explained that Timaeus called the binding of solids a "harmony" in itself because it "institutes a symmetry of association" between different solids.[77] He noted that the "cosmos is friendly to itself on account of proportion and sympathy, so it preserves itself", but that Universal Nature "gives this friendship, engendering sympathy and the harmony of opposites".[78] The leading role attributed in this text to the Muses may presuppose Boethius' idea of "cosmic music".[79] However, it particularly responds to Proclus' description of Apollo as "Leader of the Muses" and to the role he assigns him in maintaining the cosmos:

> Because of this [harmony] the soul is able to honour all things human and to sing hymns to the gods perfectly, while imitating the Leader of the Muses himself, who hymns his father with noeric songs and keeps the cosmos together with indissoluble fetters while moving everything together, as Socrates says in the *Cratylus* [405c].[80]

Four terms in Nicon's text indicate its amendment when inserted into the cover text. First, the compound abstraction ἐξίσωσις (18) is not found until the sixth century, and then only in the work of the Christian Neoplatonist philosopher John Philoponus. Although it cannot be excluded that this word was employed earlier, its use here is close to its application by Philoponus to the "equalization" of the elements. Philoponus' technical, possibly neologizing

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[77] Procl. *In Ti.* 3.1, 29.15; trans. Baltzly, 75.
[78] Procl. *In Ti.* 3.1, 53.19–28, trans. Baltzly, 105–106.
[79] Boethius, *De institutione musica* 1.2, in Boethius, *Fundamentals of Music*, trans. Calvin M. Bower, ed. Claude V. Palisca (New Haven: Yale University Press, 1989), 9–10.
[80] Procl. *In R.* I.57, 11-16: λέγομεν … αὐτὴν τὴν ψυχὴν τὴν ἀρίστην ἁρμονίαν, δι' ἣν ἡ ψυχὴ τά τε ἀνθρώπινα πάντα δυνατὸν κοσμεῖν καὶ τὰ θεῖα τελέως ὑμνῳδεῖν, αὐτὸν μιμουμένη τὸν μουσηγέτην, ὃς ὑμνεῖ μὲν τὸν πατέρα ταῖς νοεραῖς ᾠδαῖς, συνέχει δὲ τὸν ὅλον κόσμον τοῖς ἀλύτοις δεσμοῖς ὁμοπολῶν πάντα, καθάπερ ὁ ἐν τῷ Κ ρ α τ ύ λ ῳ λέγει Σωκράτης. Trans. R. M. van den Berg, *Proclus' Hymns. Essays, Translation, Commentary* (Leiden: Brill, 2001), 22, T. 2.5 (adapted).

usage glosses Aristotle's explanation for the absence of clouds in the upper region and why the air is not condensed into water: "each of the places is full of the substance that belongs naturally there, … so the equalisation (ἐξίσωσις) of the elements is effected".[81] Even more relevant to the inscription is Philoponus' *De Opificio Mundi* or *Explanations of Moses' Cosmogony*, the earliest known Christian scientific commentary on the Hexaëmeron.[82] Its objective was to challenge prevailing exegeses and to show that the biblical account of creation was consistent with the scientific reality shown by Ptolemy and traced back to the Platonic tradition. Addressing the bishop Sergius, he warned of the risk of not believing at all in a divine demiurge because "scholars of the revered philosophy" were striving to show that the world was not created. Their negative reaction to his own calculations that it had a beginning had led him, he explained, to address pagan arguments such as Aristotle's, but to neglect "the words of the great Moses, which came from God, on the deployment of the world, which were being intolerably dragged in the mud by those who were prancing about to consider the arrangement of the universe as if Moses' natural philosophy was not in concord with visible phenomena".[83] In order to show "that Moses was reasonable in giving extensive praise to the completion of the universe" (*Genesis* 1: 31), he sets out an analogy between musical performance and cosmic harmony that derives from Ptolemaic theory after the *Timaeus*:

> This can also be seen with (musical) artists (τεχνιτῶν), when the one who sings to the lyre stretches each string towards the intended harmony and tests this sound; for someone with

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[81] John Philoponus, *In Aristotelis meteorologicorum librum primum commentarium* 1.3, in M. Hayduck, *Ioannis Philoponi in Aristotelis meteorologicorum librum primum commentarium* (*Commentaria in Aristotelem Graeca* 14.1) (Berlin: Reimer, 1901), 38–39: ἑκάτερος μὲν τῶν τόπων τῆς ἐν αὐτῷ πεφυκυίας εἶναι πλήρης ἐστὶν οὐσίας, ... οὕτω μὲν οὖν ἡ τῶν στοιχείων ἐξίσωσις γίνεται. Trans. I. Kupreeva (London: Bristol Classical Press, 2011), 69. Cf. Arist. *Mete.* 341a5–9.

[82] Clemens Scholten, *Johannes Philoponos De Opificio Mundi, Über die Erschaffung der Welt* (Freiburg: Herder, 1997), vol. 1, 46.

[83] Philoponus, *Opif.* 1 pr. (Scholten, vol. 1, 73.13–74.5): τῶν δὲ τοῦ μεγάλου Μωϋσέως περὶ τῆς τοῦ κόσμου παραγωγῆς θεόθεν ἡκόντων ἀμελήσαιμι ῥημάτων, περιελκομένων οὐκ ἀνεκτῶς ὑπὸ τῶν ἐπεσκέφθαι τοῦ παντὸς φρυαττομένων τὴν διακόσμησιν, ὡς οὐ τοῖς φαινομένοις Μωϋσῆς πεφυσιολόγηκε σύμφωνα. Cf. Scholten, vol. 1, 59.

experience of music will immediately know its beauty; but when otherwise the harmony from all the strings is heard by those who do not first know the power of each, then anyone would be exceedingly surprised at the excess of one harmony out of them all. Now this should also be considered in reference to the whole universe too; for you could call each of its parts beautiful, even considered in itself, whether an element or a creature; for the heaven is beautiful and the brightness of its constellations within it; but if you were to see the order and synthesis from all these and their mutual inspiration with each other, and how great is the arrangement of the motion of the heavenly beings, and how great is the service and organisation out of this of the things inside it, and the position and arrangement of the elements likewise again with each other, and how no part of them holds onto the change into another even under compulsion but immediately rushes to its own place, and that none endures to gain the other things, but **an equalisation** occurs in the changes into one another.[84]

Neoplatonic philosophers of the sixth century associated the creation account of the *Timaeus* with visual harmony. Porphyry explained the statement at *Timaeus* 29e–30a that the elements created at the start of the world had to be good by arguing that the demiurge created "harmony, symmetry and order, since these things are beautiful and everything that is beautiful

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[84] Philoponus, *Opif.* 7.8, in Walther Reichardt (ed.), *Joannis Philoponi de opificio mundi libri vii* (Leipzig: Teubner, 1897), 297.6–298.7 Τοῦτο καὶ ἐπὶ τῶν τεχνιτῶν ἐστιν ἰδεῖν, ἑκάστην χορδὴν τοῦ λυραοιδοῦ πρὸς τὴν μέλλουσαν συμφωνίαν τείνοντος καὶ ἀποπειρωμένου τοῦ ἤχου ταύτης· ἔμπειρος μὲν γὰρ τῆς μουσικῆς εὐθέως εἴσεται τὸ κάλλος αὐτῆς· ἐπειδὰν δὲ λοιπὸν ἡ ἐκ πασῶν συμφωνία φανῇ τοῖς ἀγνοοῦσι πρότερον τὴν ἑκάστης δύναμιν, τότε δὴ [τότε] τὴν ὑπερβολὴν τῆς μιᾶς ἐκ πασῶν συμφωνίας πᾶς ἄν τις ὑπερθαυμάσειε. Τοῦτο μὲν οὖν καὶ ἐπὶ τοῦ κόσμου παντὸς θεωρητέον· καλὸν μὲν γὰρ ἕκαστον τῶν αὐτοῦ μερῶν καὶ καθ’ αὐτὸ θεωρούμενον, εἴτε στοιχεῖον εἴτε ζῷον εἴποις· οὐρανός τε γὰρ καλὸς καὶ ἡ ἐν ἑκάστῳ τῶν φωστήρων φαιδρότης· εἰ δὲ τὴν ἐκ τούτων ἁπάντων σύνθεσιν καὶ τάξιν καὶ τὴν πρὸς ἄλληλα σύμπνοιαν κατίδοις, καὶ πόση μὲν ἡ τῆς κινήσεως τῶν οὐρανίων τάξις, πόση δὲ ἡ ἐκ ταύτης τῶν ἐντὸς αὐτῆς χρεία καὶ σύστασις, ἥ τε τῶν στοιχείων ὁμοίως πάλιν πρὸς ἄλληλα θέσις τε καὶ τάξις, καὶ ὡς οὐδὲν μόριον αὐτῶν τῆς εἰς ἕτερον ἀνέχεται καὶ βιαζόμενον μεταθέσεως, ἀλλ’ εὐθὺς ἐπὶ τὸν οἰκεῖον ὁρμᾷ τόπον, καὶ ὡς οὐδὲν τὰ λοιπὰ πλεονεκτεῖν ἀνέχεται, ἀλλ’ ἐν ταῖς εἰς ἄλληλα μεταβολαῖς **ἐξίσωσις** ἐν τοῖς ἀντικειμένοις τοῦ πλεονάζοντος γίνεται...

is good".[85] In the rendering of Nicon's theory, the "equalisation" applies not to the elements, but to the "interdependence of the solids". This shift from physics to geometry was possible because later in the *Timaeus* the elements are associated with different shapes.[86] The Demiurge creates five primal solids: the tetrahedron or pyramid; octahedron; icosahedron; cube; and dodecahedron. The last of these, which most resembled a sphere, was used for the shape of the whole universe, while the first four were assigned to the four elements: the cube to earth; the pyramid to fire; the octahedron to air; and the icosahedron to water. There is some overlap here with Nicon's solids, which include the cube and the cone, associated with the pyramid, as Proclus noted, because of the "similarity between the conic form [of the visual ray coming from the eye] and the pyramidal form of fire".[87]

What made Nicon's Archimedean mathematical calculations useful in the fifth and sixth centuries to those like Philoponus who wanted to reconcile Platonic cosmological tradition with Christian interpretations of the Hexaëmeron was the statement of an interdependence between shapes previously regarded as irreconcilable, alternative cosmological explanations. The pagan conception of the world as a sphere was also harmonized with a Christian image of the world as a cylinder.[88] This was very different from the contention of Basil of Caesarea, a century earlier, who refused to make comparisons between the biblical Creation and the many theories in pagan cosmologies about the shape of the earth, "since God's servant Moses said nothing about shapes".[89] With the alignment, however, of Nicon's theories with Philoponus' exegesis, it was no longer possible to detach the Christian story of creation from Platonic mathematics. A building that united the sphere and the cylinder had both scientific authority and religious credence. It not

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[85] Porph. *In Ti.*, fr. 46, in A. R. Sodano, *Porphyrii in Platonis Timaeum commentariorum fragmenta* (Milan: Istituto Editoriale Cisalpino, 1964), 1–48, 60–69: φησιν, ὅτι τὴν ἁρμονίαν καὶ τὴν συμμετρίαν καὶ τὴν τάξιν· ταῦτα γὰρ καλά, πᾶν δὲ τὸ καλὸν ἀγαθόν.
[86] Pl. *Ti.* 53e–56b.
[87] Procl. *In Ti.* 2, 8.12-13; Baltzly, 47.
[88] Scholten, *Johannes Philoponos De Opificio Mundi*, vol. 1, 57.
[89] Basilius Caes., *Homiliae in Hexaemeron* 9.1, in Stanislas Giet (ed.), *Basile de Césarée. Homélies sur l'hexaéméron*, Sources chrétiennes 26 bis, 2nd edn. (Paris: Éditions du Cerf, 1968): οὐ παρὰ τοῦτο προαχθήσομαι ἀτιμοτέραν εἰπεῖν τὴν ἡμετέραν κοσμοποιίαν, ἐπειδὴ οὐδὲν περὶ σχημάτων ὁ τοῦ Θεοῦ θεράπων Μωϋσῆς διελέχθη.

only satisfied the proposition of Archimedes but showed how the house of God on earth mirrored the shape of the world created by God. The Pantheon in Rome, without its projecting portico which disrupted that geometry, was already becoming the model for Christian buildings from Rome to Hexham. In 609, Emperor Phocas granted Pope Boniface IV permission to exorcise the building's pagan demons and rededicate it to Mary and the Christian martyrs.[90]

The second term in the rendering of Nicon's theory that indicates its later composition is ἀεικινησία, which describes the perpetual motion of the cosmos, regulated by the Sun. Simplicius, commenting on Aristotle's *Physics*, employs the word for "the eternal motion of the heavenly bodies" produced by the constant change of forms.[91] Proclus too uses ἀϊκεινησίαν alongside ἀειγενεσία ("eternal genesis"), explaining it as a property of the ether which comes about "because of the unstoppable period of the divine soul".[92] Later in the sixth century, the theologian Theodorus in his book on the Incarnation cites this idea as an example of quality (ποιότης) "in incorporeal things with reason: spirituality, free will, eternal motion".[93] This concept emerged out of the "moving likeness of eternity" in Plato's *Timaeus*.[94]

The other two terms point Nicon's geometry further in a theological direction. First, the sphere is not only "divine" but also a "*lead* for all" (ἅπασιν ἥγημα, 27). The only other occurrence of this word is in the Septuagint translation of the Book of Ezekiel, in Ezekiel's prophecy of the great eagle, "*which hath the leading* to enter into Lebanon".[95] In the late fourth

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[90] Erik Thunø, "The Pantheon in the Middle Ages", in Wilson Jones and Marder, *The Pantheon* (above, n. 54), 231–254, at 233–234 and 238–241; William L. MacDonald, *The Pantheon: design, meaning, and progeny* (Cambridge, MA: Harvard University Press, 1976), 104–108. For Wilfrid's church at Hexham, of the late seventh century, see Charles B. McClendon, *The Origins of Medieval Architecture. Building in Europe, A.D. 600-900* (New Haven: Yale University Press, 2005), 71–72.

[91] Simpl. *In Phys.* 9, 777 ἡ τῶν οὐρανίων ἀεικινησία.

[92] Procl. *In Platonis Parmenidem* 6, 1120 Cousin: ἥ τε γὰρ ὑλικὴ ἀπειρία συνέχεται διὰ τῆς ἀειγενεσίας, ἥ τε ἀειγενεσία διὰ τὴν ἀεικινησίαν τοῦ αἰθέρος ἐστὶν ἀνέκλειπτος, καὶ ἡ ἀεικινησία τοῦ αἰθέρος διὰ τὴν τῆς θείας ψυχῆς ἄπαυστον περίοδον ἀποτελεῖται.

[93] Theodorus, *Praeparatio* 21: ἐπὶ δὲ τῶν ἀσωμάτων λογικῶν νοερότης, αὐτεξουσιότης, ἀεικινησία.

[94] Pl. *Ti.* 37d (κινητόν τινα αἰῶνος ποιῆσαι).

[95] Cf. LXX Ezekiel 17.3–4: Τάδε λέγει κύριος Ὁ ἀετὸς ὁ μέγας ὁ μεγαλοπτέρυγος ὁ μακρὸς τῇ ἐκτάσει πλήρης ὀνύχων, ὃς ἔχει τὸ ἥγημα εἰσελθεῖν εἰς τὸν Λίβανον καὶ ἔλαβε τὰ ἐπίλεκτα τῆς κέδρου, (4) τὰ ἄκρα τῆς ἁπαλότητος ἀπέκνισεν καὶ ἤνεγκεν αὐτὰ εἰς γῆν Χανααν, εἰς πόλιν τετειχισμένην ἔθετο αὐτά. Modern translations omit the enigmatic phrase ὃς ἔχει τὸ ἥγημα.

century, John Chrysostom interpreted this parable as a foretelling of the arrival in Jerusalem of Nebuchadnezzar king of Babylon and construed the key word ἥγημα as "counsel, design" (βουλὴν, γνώμην).[96] By using this term, the inscription at Pergamon reformulates Nicon's mathematical promotion of the sphere as religious guidance.

The fourth term also gives a biblical resonance to the *Timaeus* account of the creation of the sun by the demiurge. Plato's text describes the sun as "a light" (φῶς) kindled by the god, "which we now call the sun", whose object was "to shine upon the whole universe and to bestow upon all those living things appropriately endowed and taught by the revolution of the Same and the uniform, a share in number".[97] The inscription uses the same word for the sun, but adds the predicate "good" and the distinctive term γενήματα to distinguish its living beneficiaries as "fruits of the earth" (γενήμασιν) (39–40). This word has a strong scriptural flavour, occurring both in a literal sense in the Old Testament and metaphorically in the New Testament as "the fruits of your righteousness".[98] Its use in the inscription helps to reclaim Nicon's geometrical theory for a Christian audience and present its links to the *Timaeus* tradition of creation in a new theological context.

These terms point to the text's inscription in the later sixth century when the lower city of Pergamon was a vibrant Christian neighbourhood after the construction of St John's Church in the east end of the "Red Hall" (the former Serapeum) in the fifth century.[99] Although the nature of its script is unknown, its vocabulary betrays close connections to Philoponus, other sixth-century philosophers, and Christian ideas. Philoponus' *De Opificio Mundi*, probably

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[96] John Chrysostom, *Homilies to the People of Antioch* 19.9; trans. from *The Homilies of S. John Chrysostom* (Oxford: John Henry Parker, 1856), 314. Cf. Euseb. *Demonstratio evangelica* 8.4.19-20, in *Evangelicae demonstrationis libri decem cum versione Latina Donati Veroneusis*, ed. Thomas Gaisford (Oxford: University OPress, 1852), 186–187.

[97] Pl. *Ti.* 39b4–7: φῶς ὁ θεὸς ἀνῆψεν … ὃ δὴ νῦν κεκλήκαμεν ἥλιον, ἵνα ὅ τι μάλιστα εἰς ἅπαντα φαίνοι τὸν οὐρανὸν μετάσχοι τε ἀριθμοῦ τὰ ζῷα, ὅσοις ἦν προσῆκον, μαθόντα παρὰ τῆς ταὐτοῦ καὶ ὁμοίου περιφορᾶς.

[98] Genesis 47: 24 τὰ γενήματα, "produce"; figuratively, II Corinthians 9: 11 τὰ γενήματα τῆς δικαιοσύνης ὑμῶν.

[99] Klaus Rheidt, "In the shadow of antiquity. Pergamon and the Byzantine millennium", in Helmut Koester (ed.), *Pergamon Citadel of the Gods. Archaeological record, literary description, and religious development* (Harrisburg, Pa: Trinity Press International, 1998), 395–423, at 398; Klaus Nohlen, "The 'Red Hall' (Kizil Avlu) in Pergamon", in Koester (ed.), *Pergamon Citadel of the Gods* (as above), 77–110, at 99–103 with fig. 6.

written in the late 550s, seems to have been directed beyond Alexandria, "to reach all educated

readers of Greek".[100] The message of the inscription, however, was short-lived, as Philoponus'

work fell into neglect from the seventh century. Listed as a heretic in 634, he was placed under

formal anathema by the Council of Constantinople in 680–681.[101] Arab forces pillaged

Pergamon in 716–717.

The original location of the text is less clear. As the Church of St Theodore where it

was found was not built until 1544–1545, it must have been displayed elsewhere.[102] St

Theodore was the last surviving place of Christian worship in Pergamon and a "poor, mean

edifice" when Robert Walsh, chaplain to the British Embassy in Constantinople, saw it in the

mid-1820s; only the sanctuary remained, and the surrounding ruins provided a convenient

repository for antiquities recovered from the area.[103] After its discovery in 1776, Choiseul-

Gouffier presumably moved the damaged stone to the church courtyard.[104] It probably came

from the Lower Agora where the inscriptions of Nicodemus and Isidotus with which it was

found presumably originated, along with two other Nicon inscriptions reused nearby.[105] When

August Boeckh edited the texts for his second volume of *Corpus Inscriptionum Graecarum*,

published in 1843, the Nicodemus and Isidotus slabs with attractive tabula ansata frames had

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[100] Leslie S. B. MacCoull, "The historical context of John Philoponus' *De Opificio Mundi* in the culture of Byzantine-Coptic Egypt", *Journal of Ancient Christianity* 9 (2005), 397–423, at 416–417.

[101] Sophronius, *Epistula Synodica ad Sergium Patriarcham Constantinopolitanum*, in Migne, *PG* vol. 87, part 3 (Paris, 1863), 3192C.

[102] For the lintel with this date, see Henri Grégoire, *Recueil des inscriptions grecques chrétiennes d'Asie Mineure* (Paris, 1922), 17 no. 51: ὁ θεῖος καὶ πάνσεπτος ναὸς των ἁγίων καὶ ἐνδόξων μεγαλομαρτύρων Θεοδώρων τήρωνος καὶ στρατηλάτου ("The divine and all-sacred temple of the holy and glorious great martyrs Theodori Tiron and Stratelates"), alluding to the Temple of Solomon: cf. the early Christian hagiographical Testamentum Salomonis, *Vita Salomonis* 8.5: καὶ ᾠκοδομεῖτο ὁ πάνσεπτος ναὸς τοῦ θεοῦ, in C. C. McCown, *The Testament of Solomon* (Leipzig: Hinrichs, 1922), 97. The church is unlikely to have been a rebuilding of an earlier church, as the dedication to two Theodores is unknown before the thirteenth century: MacCoull, "Historical context", 418–419.

[103] Robert Walsh, *Constantinople and the Scenery of the Seven Churches of Asia Minor* (London: Fisher, 1838), 32. Walsh does not mention any inscriptions in the church or its courtyard.

[104] The numismatist Esprit-Marie Cousinéry (1747–1833), Consul General at Thessaloniki (1786–93) saw the stone "in a Greek cemetery", but this might also refer to the churchyard of St Theodore rather than the Armenian Cemetery, further east. Bibliothèque Nationale de France, Archives et Manuscrits, MS Supplément grec 930, Papers of Jean-Baptiste Gaspard d'Ansse de Villoison, f. 26: « inscription trouvée à Pergame dans un cimetière grec, copiée par M. Cousineri, consul à Salonique ».

[105] See above, n. 4 (inscriptions (I) and (II)).

been built into the house of Elias Deliapostolis below the church, but the visually less appealing geometrical inscription, last recorded in 1816, had vanished.[106]

A further testimony links Nicon's geometrical treatise with the Lower Agora where Nicon's other inscriptions had stood. In the mid-second century, the residents of the *plateia* of the Paspareitai dedicated a bronze statue of the consul Lucius Cuspius Pactumeius Rufinus as "benefactor" (εὐεργέτην) and "founder" (κτίστην) of his home town of Pergamon.[107] This *plateia* was probably the broad street descending along the lower terrace to the Lower Agora from the gymnasium where Diodorus Pasparus, eponymous founder of the hereditary tribe of the Paspareis, had made substantial benefactions.[108] Its residents were in effect the inhabitants of the lower city, and their dedication mirrored the statue to Rufinus made by the residents of the Acropolis, probably in the Upper Agora.[109] The base of Rufinus' statue was later found beside the geometrical inscription.[110] Rufinus' most famous benefaction was the temple of Zeus Asclepius, lower down in the Asclepieion; and, although its architect is not certain, the construction date of the 130s makes Nicon a plausible candidate, especially since the geometry attributed to him unmistakably evokes Rufinus' temple, which, soon after its construction, was celebrated as his "temple of many shapes".[111] When the long geometrical and cosmological text was set up, the temple had become world-famous, added in the earlier sixth century to a list of World Wonders as "the Grove of Rufinus".[112]

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[106] *CIG* II, p. 859 *ad* no. 3546, based on an improved reading of Villoison's transcription by Immanuel Bekker. The version in F. G. Osann, *Sylloge Inscriptionum Antiquarum Graecarum et Latinarum* (Leipzig: C. G. Leske, 1834), 385 repeats Villoison's transcription.

[107] H. Von Prott and W. Kolbe, "Die 1900-1901 in Pergamon gefundenen Inschriften", *MDAI (A)* 27 (1902), 44–151, at 101 no. 102 = *IGRom.* 4.425 = PHI 316413.

[108] *OGIS* 764 = *IGRom.* 4.492. C. P. Jones, "Diodoros Pasparos revisited", *Chiron* 30 (2000), 1–14 dates Pasparos' activity to *c.* 86-69 B.C.E.

[109] Fränkel, *Inschriften von Pergamon*, vol. 2, 434 = *IGRom.* 4.424 = PHI 302096.

[110] Ερμής ὁ λογίος (15 February 1813), 64.

[111] Aristid. *Or.* 50.28. This term πολυειδὴς recalling Plato's description of the soul (*Resp.* 10, 612a) is common in the writings of Nicon's son Galen.

[112] *AP* 9.656.14; Appendix 352.13. H. Hepding, "Ρουφίνιον ἄλσος", *Philologus* 88, n.s. 42 (1933), 90–103; G. R. Bowersock, *Greek Sophists in the Roman Empire* (Oxford: Clarendon Press, 1969), 60–61; Barry Baldwin, "The development of a Byzantine theme: *AP* 9.656", *L'Antiquité Classique* 52 (1983), 255–259, at 257. Georgius Cedrenus, *Compendium historiarum* further celebrated the temple in the 1050s.

In the late fourth or early fifth century, a small apsidal basilica with nave, aisles, narthex, and atrium had been constructed within the agora, the surrounding colonnade built by Nicodemus Nicon Neos still standing, perhaps graced by his inscription and that of Aelius Isidotus.[113] The church would have been an ideal setting for this text, which presented Nicon's geometrical solutions relating to Rufinus' temple, now presumably divested of its pagan associations, in Christianized language. Its cosmological prescripts on the origins of the world aimed to reconcile Moses' creation account in the Hexaëmeron with the Platonist version of the *Timaeus*.

4   Conclusion

This chapter has shown the successive incorporation of the *Timaeus* creation account, first into a second-century architect's reflections on architectural geometry, and then into a reworking of those reflections in the framework of a later Miaphysite understanding of the Christian universe, set up in a Christian church enclosed in a classical agora. In each case, the architectural implications of the account in the *Timaeus* developed beyond a mere upgrading of Plato's demiurgic metaphor to an architectural image. Nicon's original theory adapted Archimedean geometry to a cosmological context that developed the sun's role in the *Timaeus* as generator of life and produced a specific analogy between the shapes and solids of earthly architecture and the primal elements of the universe. The cosmological aspects in the last section of the text and in Nicon's inscribed hymn are directed at an analogy between architecture and the creation of the world, mediated through Aristotle and Stoic sources, and betray a theological dimension in the conception of the sun as a demiurgic power, partly shared

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[113] Wilhelm Dörpfeld, "Die Arbeiten zu Pergamon 1900-1901. Die Bauwerke", *MDAI (A)* 27 (1902), 31–35, with fig. 4; Rheidt, *Byzantinische Wohnstadt*, 182–185; Rheidt, "In the Shadow of Antiquity", 398 with fig. 1.

by Nicon's son Galen. Nicon's geometrical conception, unifying the Platonic solids of the *Timaeus* in a "divine" interdependence or *sympatheia*, encapsulates the architectural design of the Temple of Zeus Asclepius at Pergamon, replicated from the Pantheon in Rome in the 130s and probably the creation of the architect Nicon himself. This building was the donation of the Pergamene consul Rufinus, and his benefaction continued to be celebrated through his statue in the Lower Agora, where Nicon's own written works, including his hymn, were also on display. Here in the sixth century, under the influence of Philoponus or a follower, Nicon's geometrical and cosmological reflections were amended and exhibited in the church of the Lower Agora to demonstrate the unity of Judeo-Christian beliefs about God's Creation of the world with the account of its creation by the Demiurge in Plato's *Timaeus*.

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