Proclus on Nature

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Proclus on Nature

Philosophy of Nature and Its Methods in Proclus' Commentary on Plato's *Timaeus*

by

Marije Martijn

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To my grandmothers

CONTENTS

Acknowledgements ix

Chapter One. Introduction 1
1. Preliminaries 1
2. Philosophy of nature as theology 7
3. Προψηλαφήματα—the prooemium of the *Timaeus* 10

Chapter Two. Platonic Φύσις according to Proclus 19
1. Introduction 19
2. The essence of nature 23
3. Nature, soul, and the natural 24
4. The ontological level of Nature 39
5. Nature's working 55
6. Conclusion 65

Chapter Three. The prooemium: the geometrical method of physiologia 67
1. Introduction—φυσιολογία, θεολογία, and the geometrical method of the *Timaeus* 67
2. The constituents of the geometrical method in the prooemium 71
3. After the starting points—Proclus takes stock 132
4. In conclusion 159

Chapter Four. After the prooemium: mathematics, the senses, and life 163
1. Introduction 163
2. Book III: Intermediate Philosophy of Nature and mathematics 166
3. Books IV and V: Lower Philosophy of Nature, the Senses, and Life 204
4. General conclusion 214
5. Appendix: The Elements of Physics 216

Chapter Five. Discourse and Reality: The εἰκὼς λόγος 219
1. Introduction 219
2. The εἰκὼς λόγος today—a selection 222

3. Proclus on the εἰκὼς λόγος: preliminaries 226
4. The nature of the εἰκὼς λόγος: resemblance 229
5. Unlikeness 240
6. A true and likely story 271
7. The practice of discourse: assimilation 276
8. In conclusion: φυσιολογία as scientific mimesis 293

Chapter Six. Conclusion 297
1. Introduction 297
2. Chapter II: Nature 297
3. Chapter III: Theological philosophy of nature 299
4. Chapter IV: Mathematical, empirical, biological philosophy of nature 300
5. Chapter V: The likely story 301

Bibliography 303
Index rerum 321
Index locorum 333

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Of Proclus' immensely dense and variegated philosophical system, the part concerning the sensible world is by far the most fascinating, as it combines a very demanding idealist metaphysics with the givenness of everyday life in the material world. This is where the true challenge lies for a Neoplatonist: how to maintain the standards of idealism without denying the given?

This study aims to contribute to meeting the growing interest in those lower echelons of Neoplatonic reality by giving insight into how Proclus performs his Herculean task of 'saving the phenomenal'. He does so by weaving an intricate web that relates philosophy of nature to theology, without reducing the former to the latter. I owe Proclus an apology, as I have not always been nice to him in the past: I now admit that he has absolutely convinced me, if not of the truth of his system, then at least of its beauty and sophistication.

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Translations are mine, unless otherwise indicated. Small capitals are used for cross-references to sections and texts quoted.

CHAPTER ONE

INTRODUCTION

1.1. *Preliminaries*

1.1.1. *The aim of this book*

> **T 1.1** True philosophy of nature must depend on theology, just as nature depends on the gods and is divided up according to all their orders, in order that accounts too may be imitators of the things they signify.[1]

In this brief statement from Proclus' *Commentary on the Timaeus* we find the essential elements of Proclus' philosophy of nature: (i) the dependence of nature on the gods and the division of nature into different strata; (ii) the dependence of philosophy of nature on theology and (implicitly) the division of philosophy of nature into different types; and finally, (iii) the mimetic relation of the account of philosophy of nature to its subject matter.

The main aim of the book lying before you is to present an analysis of Proclus' φυσιολογία,[2] philosophy of nature, from the point of view of the above elements. In a nutshell: the conception of nature as depending on the intelligible and as having a particular presence on different ontological levels determines the structure of the study of nature as consisting of a chain of *different kinds* of philosophy of nature. The imitation of this chain in the didactic account, which is what Plato's *Timaeus* is

[1] *In Tim.* I 204.8–12. Note that in this context, 'theology' also means 'metaphysics'. Proclus usually applies the term in this sense, although on occasion he uses it to distinguish the philosophy of the Oracles from dialectical metaphysics, as at *In Tim.* I 391.1–4. Proclus does not use the expression τὰ μετὰ τὰ φυσικά.

[2] I use φυσιολογία here, as elsewhere, as a blanket term. Besides φυσιολογία, Proclus also uses the terms ἡ τῆς φύσεως θεωρία (I 83.29; 132.17–18, both concerning the role of the Atlantis myth for the theory of nature), περὶ φύσεως πραγματεία (I 6.23–24), περὶ φύσεως λόγος (I 338.24–25), περὶ φύσεως λόγοι (I 351.20–21), and φυσικοὶ λόγοι (I 19.23; 337.24–25; cf. 237.21; II 23.12; III 153.31–32) to denominate the account of philosophy of nature. Note that the latter expression is also used for the creative principles of nature. See chapter II.

according to Proclus, assists the Neoplatonic student in his ascent to the intelligible—but no further than to the Demiurge.

For Neoplatonic students the *Timaeus* was the penultimate text of the curriculum, preparing them for the final stage of their education, the study of the intelligible *per se* as set out in the *Parmenides*.[3] As such, the *Timaeus* was the intermediary dialogue *par excellence*, starting from the physical world, and revealing its connection with the intelligible. Proclus' *Commentary on the Timaeus*, of which only the first five books, up to *Tim*. 44d, are extant, is the only Neoplatonic text we possess in which we find an elaborate and sophisticated explanation of why this connecting of the physical with the intelligible is possible and how it is accomplished.

In the past, Proclus' philosophy of nature as we find it in his *Commentary on the Timaeus* has been described as "the final stage of frustration reached by the scientific thought of ancient Greece at the end of a long creative era of nearly a thousand years".[4] More recently, a radically different position has been defended, according to which Proclus' philosophy of nature is actually theology and a study of the divine transcendent causes of the universe.[5] Despite the fact that the latter position is in a sense the opposite of the former, both have a foundation in one and the same presupposition of otherworldliness, and a rejection of an intrinsic value of the world of sense perception, either forthwith or through a reduction of physics to metaphysics.

That presupposition, I maintain, is largely incorrect. Any value the natural world has for a Neoplatonist is ultimately due to its transcendent causes, but that implies neither that the natural world should be distrusted as an object of study, nor that physics is valuable only if it is reduced to metaphysics.

Instead, one of my main conclusions regarding the metaphysics and epistemology underlying Proclus' philosophy of nature is that the subject, the nature and the methods of philosophy of nature presuppose a fundamental and crucial *continuity* between the world of generation and the intelligible realm.

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[3] *In Tim*. I 13.4–11; *Theol.Plat*. I 8, 32.14–18; cf. *In Tim*. I 13.14–19 for Iamblichus' opinion, see also Anon. *Prol*. 26.12–16. See also Wallis (1995: 19); Siorvanes (1996: 114–121).

[4] Sambursky (1965: 11, cf. 6–7).

[5] Lernould (2001), cf. Steel (2003).

After a methodological remark, I will explain in what manner this book responds and contributes to the current debate on Proclus' philosophy, discuss a number of preliminary issues to set the stage for the following chapters, and present an overview of the structure of this book.

In the following, I will speak of φυσιολογία and of 'philosophy of nature', rather than of science of nature, or physics, for two reasons. First of all, I wish to avoid the suggestion that there is one modern science, or a common cluster of sciences, with which Proclus' φυσιολογία compares, as it contains elements both of what we call the natural sciences (physics, astronomy, biology) and of psychology, metaphysics, theology, philosophy of science and epistemology. Secondly, I am more interested in Proclus' commentary for its philosophical considerations pertaining to the study of the natural world—especially in the fields of metaphysics, epistemology and philosophy of language—than for the details either of its contribution, if any, to the science of his age or of its comparison to that of our age.[6] I shall attempt to reconstruct the philosophical foundations of Proclus' philosophy of nature, and any comparison of Proclus' theory to that of his sources will be subordinate to that aim. The main approach in this book will be that of conceptual analysis and what Kenny calls "internal exegesis".[7]

1.1.2. *Status Quaestionis*

As the above comparison of a past and a recent view of Proclus' philosophy of nature illustrate, in recent years, the scholarly attitude amongst historians of philosophy towards the philosophical traditions of late antiquity has changed. From a depreciatory attitude, according to which post-Hellenistic philosophy constitutes the final phase of decay after the summit of rationality of the great philosophical systems of classical Greece, developed an attitude that is more appreciative of the riches and philosophical sophistication of the theories of late antiquity, as well as of the extent to which they determined the reception of classical philosophy. The most obvious result of this changing attitude has been an explosive expansion of the number of translations, handbooks, sourcebooks, monographs and papers on the topic. As concerns Proclus, for example, one need only compare the two existing bibliographies of primary

[6] See Siorvanes (1996) for an evaluation of Proclus' contributions to the science of his time and his influence on its later developments.

[7] Kenny (1996).

and secondary scholarly literature on Proclus, the first of which, offering around 350 pages of references, covers 40 years of scholarship (1949–1992),[8] whereas the more recent one edited by Carlos Steel and others provides over 270 pages covering as little as 15 years (1990–2004).[9]

As to Proclus' philosophy of nature and his *Commentary on the Timaeus*, more and more publications appear on different topics from the commentary,[10] a tendency which will only increase with the publication of the new English translation of the commentary by Tarrant, Runia, Baltzly and Share.[11]

More specifically, a wide range of themes in Proclus' *Commentary on the Timaeus* and his philosophy of nature have been addressed, such as the generation[12] and the structure[13] of the cosmos, the different demiurges,[14] astronomy,[15] psychology,[16] and, most relevant for this book, the role of mathematics in philosophy of nature,[17] the relation between philosophy of nature and theology/dialectic,[18] methodological issues,[19] and the status of the physical account.[20] Most recently the increasing interest in the more 'down to earth' aspects of Proclus' philosophy shows from a volume edited by Chiaradonna and Trabattoni, which is dedicated entirely to Proclus' views on the lowest aspects of reality, such as matter.[21]

Surprisingly, Proclus' notion of nature (φύσις) itself has so far hardly received any attention of modern authors, despite the fact that, as I will show, grasping that notion is crucial for a proper understanding of Proclus' philosophy of nature.[22] Those authors who do discuss it, present a notion of φύσις that obeys to Proclus' metaphysical principles

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[8] Scotti Muth (1993).
[9] Steel, et al. (2005).
[10] See Steel, et al. (2005: esp. 53, 79–82, 137–142, 157–179) for references.
[11] Baltzly (2007), Runia and Share (2009), Tarrant (2007), other volumes forthcoming.
[12] Baltes (1976).
[13] Siorvanes (1996) offers a discussion of numerous physical issues. Cf. Baltzly (2002) on elements and causality.
[14] Opsomer (2000a, 2000b, 2001b, 2003), Steel (1987).
[15] Lloyd, G.E.R. (1978).
[16] MacIsaac (2001).
[17] Lernould (2000), O'Meara (1989).
[18] Lernould (2001), Martijn (2006b), Steel (2003).
[19] Gersh (2003), Martijn (2006b), Siorvanes (2003).
[20] Lernould (2005), Martijn (2006a).
[21] Chiaradonna and Trabattoni (2009). See also Opsomer (2001a).
[22] See e.g. and Cleary (2006), and cf. Gersh (2003: 152–153, highlighting the divinity of nature), Lernould (2001: 32).

but does not cohere with the material Proclus himself offers on the subject of nature.[23]

Since the present book to quite some extent covers the same field as the main recent work on Proclus' *Commentary on the Timaeus*, *Physique et Théologie* (2001) by Alain Lernould, a sketch of the difference between his views and mine is in order.

1.1.3. *Proclus' philosophy of nature according to Alain Lernould*

The main difference between Lernould's reading of Proclus' philosophy of nature and my own lies in our presuppositions regarding Proclus' philosophical system. Whereas Lernould emphasizes the existence of a chasm between the perceptible and the intelligible, my main conclusion from Proclus' commentary on the *Timaeus* regarding the underlying metaphysics and epistemology, as said above, is that they are characterized by the assumption of a fundamental and crucial *continuity* between the world of generation and the intelligible realm.

Physique et Théologie, the reworked dissertation of Alain Lernould, has as its main aim to show how Proclus 'dialectizes' the *Timaeus* in the second book of his commentary (I 204-end). The work has two parts. In the first part (1–112) the author shows how Proclus imposes several structures on the *Timaeus* that are all different from Plato's own division into the "works of intellect" and the "works of necessity". What these imposed structures have in common is that they reduce the *Timaeus* to its first part (up to 44d), i.e. the part that is covered by the commentary insofar as it is extant.[24] In the second part of Lernould's book, entitled "La Dialectisation du Timée" (113–354) Lernould argues that Proclus in the second book of the commentary interprets the *Timaeus* as a triple dialectic ascent to the transcendent causes of the universe (the Demiurge, the Paradigm, the Good).[25] He finds the three ascents in the so-called hypotheses (27d5–28b5; *In Tim.* 227.6–274.32), the demonstrations (*Tim.* 28b5–29d6; *In Tim.* I 275.1–355.15), and the demiurgy (*Tim.* 29d7–31b3; *In Tim.* I 355.18–458.11) respectively. Lernould's book ends with three appendices, containing the text of *Tim.* 27c1–31b3, a discus-

[23] Rosán (1949) and, more extensively, Siorvanes (1996).

[24] This does not mean that Lernould thinks the commentary ended there, although he does suggest a relation between the restructuring and the fact that we no longer possess the remainder of the commentary (2001: 108).

[25] Lernould (2001: 15).

sion of the relation between the body of the world and the elements, and a brief discussion of Alcinous' summary of the *Timaeus* in the *Didaskalikos*.

According to Lernould Proclus 'dialectizes' Plato's philosophy of nature and turns it into theology, thereby sacrificing the professed Pythagorean character of the dialogue to its Platonic character.[26] Lernould is the first to present an elaborate study of the relation between φυσιολογία and θεολογία in Proclus' philosophical system, in a thorough analysis of the second book of the commentary, which contains many valuable discussions, e.g. regarding the notion of 'becoming'.[27]

The main objection to Lernould's monograph is that he gets carried away by the thesis that philosophy of nature should be theology, to the extent that he looses sight of the φυσιολογία itself and reduces it to theology altogether. This interpretation is incompatible with a number of aspects of Proclus' discussion of φυσιολογία, and has problematic consequences, most notably that it constitutes an equation of the *Timaeus* and the *Parmenides* as both dealing with the divine *per se*, although these two dialogues are considered to belong to two different stages in the philosophical development of the Neoplatonic student.[28] The *Timaeus* is a work of theological philosophy of nature, but not pure theology.[29]

Similar problems are present in Lernould's other work. In a paper on Proclus' views on the relation between mathematics and philosophy of nature (regarding *Tim.* 31c), Lernould concludes that the mathematization of physics, combined with a theologization of mathematics, in turn leads to a theologization of physics, at the cost of the role of mathematics.[30] The clearest signal that Lernould's interpretation runs into problems is found in his most recent paper, on the status of the physical account

[26] For this purpose in the first pages of his book (11–13) Lernould takes Proclus' characterization of Timaeus' method in the prooemium as "geometrical" (which Lernould associates with the Pythagorean character) and explains it as meaning no more than "demonstrative" (associated with the Platonic character). See on this topic chapter III.

[27] Lernould (2001: ch. 8, 153 ff.).

[28] Lernould himself later adjusted his position in his paper on the likely story (2005: 152) and in private conversation.

[29] Cf. Siorvanes (2003: 174).

[30] Lernould (2000: esp. 140–141). Here the author seems to conflate mathematics as the discursive science of discrete and continuous quantity with the originally mathematical principles that constitute the heart of Neoplatonic metaphysics. On this topic see chapter IV.

(the "likely story"), where he is forced to conclude that Proclus' reading of the likely story is incompatible with his overall views of philosophy of nature.[31]

The objections to Lernould's interpretation of Proclus' philosophy of nature can all be explained as caused by the same assumptions regarding some basic features of Proclus' philosophical system. Lernould emphasizes the opposition between the physical and the transcendent, the sensible and the intelligible, physics and theology. I will show, however, that Proclus in his overall reading of the *Timaeus* is concerned especially with the *continuity* both of reality and of cognition. All his writings are deeply imbued with the principle "all in all, but appropriately to each thing".[32] According to Proclus, all sciences are theology in some manner, since they all discuss the divine in its presence in some realm or other, just as all Aristotelian sciences study some aspect of being. Only pure theology, however, studies the divine *per se*, just as for Aristotle only metaphysics studies being *per se*. The other sciences study some aspect of the divine, with the appropriate methods and subject to the appropriate limitations.

In what sense, then, *can* we say that philosophy of nature is theology?

1.2. *Philosophy of nature as theology*

> **T 1.2** It seems to me to be glaringly clear to all who are not utterly blind to words (λόγοι) that the aim (πρόθεσις) of the Platonic *Timaeus* is firmly fixed upon the whole of physical inquiry (φυσιολογία), and involves the study of the All, treating it systematically (πραγματευομένου) from beginning to end.[33]

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[31] Lernould (2005). On the likely story see chapter V.

[32] *El.Th.* prop. 103. On the source of this principle, which Wallis (1995: 123) somewhat unfortunately calls the 'principle of correspondence', and its role in Proclus' metaphysics, psychology and exegetical method see Siorvanes (1996: 51–56). For the related principle of the Golden Chain see Beierwaltes (1979: 150–151, and n. 120).

[33] *In Tim.* I 1.4–8 trans. Tarrant, slightly modified. The same force speaks from *Theol. Plat.* I 8 32.16–18: "That the *Timaeus* contains all of the science of nature is agreed upon by all who are capable of even the smallest amount of insight." Cf. *In Tim.* I 1.17–24: "This whole dialogue, throughout its entire length, has philosophy of nature as its aim, examining the same matters both in images and in paradigms, in wholes and in parts. It has been filled throughout with all the finest rules of philosophy of nature, tackling simples for the sake of complexes, parts for the sake of wholes, and images for the sake of their originals, leaving none of the originative causes of nature outside the scope of the inquiry" (trans. Tarrant, slightly modified).

This very first sentence of Proclus' fourteen page introduction to his commentary is a straightforward and emphatic statement of the aim (the σκοπός or πρόθεσις) of the *Timaeus* as "the whole of physical inquiry (φυσιολογία)".[34] According to late Neoplatonic exegetical principles, a text has one and only one σκοπός, and every last detail of the text should be interpreted as pertaining to that σκοπός.[35] In order to enhance the precision of exegesis of all these details, the σκοπός has to be defined as narrowly as possible.[36] This entails that it does not suffice to mention a general subject, in this case φυσιολογία. Instead, one should narrow down the σκοπός as far as possible, i.e. to *Platonic* φυσιολογία.[37] That is precisely what Proclus does in the first pages of the commentary, while at the same time giving a justification for studying the natural world through reading the *Timaeus* rather than Aristotle's *Physics*.[38] Proclus describes three approaches to φυσιολογία, one which concentrates on matter and material causes, one which adds to that the study of the (immanent) form, and rather considers this to be the cause, and a third, which regards matter and form as mere subsidiary causes (συναίτιαι), and focuses on other, real causes of everything natural, i.e. the transcendent efficient, paradigmatic and final causes.[39] Only Platonic φυσιολογία as presented in the *Timaeus*, following Pythagorean practice,[40] studies both the secondary and the real causes—and rightly so, Proclus states, since ultimately everything, including the secondary causes themselves,

[34] See also Lernould's discussion of the σκοπός (2001: 32 ff.). Note, however, that his overall thesis makes him reduce the σκοπός to the primary causes.

[35] Even the introductory passages, i.e. the recapitulation of the *Republic* and the Atlantis story (*Tim*. 17b5–25d6), are explained as providing meaningful information, presented in images, regarding φυσιολογία. See *In Tim*. I 4.7–26. For the exegetical principle of εἷς σκοπός, the formulation of which is ascribed to Iamblichus, cf. *In Remp*. I 6.1–4. See also Coulter (1976: 77 ff.), Martijn (2006a), Praechter (1905).

[36] As Siorvanes (2003: 166–167) points out, the theme of the *Timaeus*, the "nature of the universe", seems to be straightforward, but the vagueness of the terms "nature" and "universe" leaves a lot of room for interpretation.

[37] Cf. Anon. *Prol*. 22.21–30: "We will not accept it when people say that the aim of the Timaeus is teaching about philosophy of nature, since that is general and vague: after all, Aristotle and many others also teach philosophy of nature… So we should say, proceeding on firmer footing, that the aim is [teaching] about philosophy of nature according to Plato, and what philosophy of nature is according to Plato, but not about philosophy of nature *simpliciter*."

[38] On Plato vs. Aristotle see *In Tim*. I 2.15 ff. and Steel (2003).

[39] *In Tim*. I 2.1–9.

[40] Proclus followed the tradition that in writing the *Timaeus* Plato imitated a Pythagorean named Timaeus who also wrote a cosmology, *In Tim*. I 1.8–16. On this Timaeus Locri see Baltes (1972).

depends on the real causes.[41] Plato treats all the causes of the universe in that he "gives the universe matter and a form that derives from the hypercosmic gods, makes it depend from the universal demiurgy (i.e. the efficient cause), likens it to the intelligible living being (i.e. the paradigmatic cause), and shows it to be a god by the presence of the good (i.e. the final cause), and in this manner he renders the whole universe an intelligent ensouled god."[42] This approach has far-reaching consequences, primarily that philosophy of nature becomes "a kind of theology".

> **T 1.3** The dialogue is divine (σεμνός), and makes its conceptions from above, from the first principles, and combines the categorical with the demonstrative, and equips us to reflect on physical things (τὰ φυσικά) not only physically (φυσικῶς), but also theologically (θεολογικῶς).[43]

This Pythagorean character of the dialogue does not result, however, in the reduction of philosophy of nature to theology pure and simple.

Proclus divides all of philosophy into two fields, the study of the encosmic and that of the intelligible, analogous to the "two κόσμοι", the perceptible and the intelligible.[44] As said above, for Proclus, as for the majority of Neoplatonists, this division is typically represented in two dialogues, which form the last phase in the school curriculum as established by Iamblichus: the representative dialogue for the study of the encosmic is the *Timaeus*, whereas the *Parmenides* is considered the summit of the study of the intelligible. This should not be understood to mean that the science of the encosmic and that of the divine are considered entirely separate sciences. Instead, they are different approaches to the same subject, namely reality including all of its levels, which theology (in the *Parmenides*) studies from the intelligible archetype, and philosophy of nature (in the *Timaeus*) from the ontological image (εἰκών) that is the natural world.[45]

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[41] *In Tim.* I 2.29–3.13.

[42] *In Tim.* I 4.1–5. Cf. *In Parm.* 641.1 ff.

[43] *In Tim.* I 8.2–5. Cf. the end of book I (*In Tim.* I 204.8–12), quoted above as **T 1.1**, and 217.25–27. As Dillon (1991) has shown, Proclus uses the word θεολογικῶς in different senses, referring to metaphysics on the one hand and to the "wise men of old" (Homer, Hesiod, Orpheus, Pythagoras) on the other. In this study, the two will be kept apart by reserving "theology" for metaphysics, which is our main concern, and "theologians" for the "wise men of old".

[44] *In Tim.* I 12.30–13.4, referring to *Tim.* 30c.

[45] *In Tim.* I 8.13, 13.4 ff.; cf. 87.6 ff., III 173.2 ff., and *El. Th.* 145 with Dodds (1963: 187). Dodds notes the 'Aristotelian' use of θεολογική in the title of the *Elements of Theology*. The same goes for φυσική in the other manual, the *Elements of Physics* (cf. Arist. *Met.* VI 1). As Dodds notes, in Neoplatonism the distinction that is thereby made between theology

Philosophy of nature in Proclus' view consists of a chain of different disciplines with different subject matters and respective methods, and crowned by theological philosophy of nature. It is theology—i.e. the science of the first, divine principles, their properties and their emanation into Being[46]—in the sense that it provides insight in the divine *as cause* of the physical world, especially (διαφερόντως) its transcendent efficient cause, the Demiurge, but also its paradigmatic and final causes;[47] and on a lower level philosophy of nature provides insight also in the material and formal causes of the universe.[48] Where the *Parmenides* reveals how *all beings* are the offspring of the One, the *Timaeus* shows how the *physical universe* is ordered by the Demiurge; the former teaches about God (ἁπλῶς θεός), the latter about a god (τὶς θεός).[49]

1.3. *Προοψηλαφήματα—the prooemium of the* Timaeus

For the definition of φυσιολογία and Proclus' concept of *nature* the introduction to the *Commentary on the Timaeus* is the most informative source. For the elaboration of his notion of the philosophy of nature and its methods, on the other hand, the main source of information is his expansive exegesis of the *prooemium* (*Tim*. 27c1–29d3, *In Tim*. I 204–355), Timaeus' methodological preamble to his cosmological exposition. Although we find clues throughout Proclus' commentary, both in numerous methodological remarks and in the practice of the commentary, the density of methodological information is at its highest in Proclus' comments on the prooemium, and hence this section can be considered the heart of Proclus' theory of φυσιολογία, its methods and limitations.

A brief introduction of the prooemium will allow me to bring forward two clues which set the frame within which Proclus' entire exegesis of Timaeus' cosmological account is to be understood: (i) Proclus reads the

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and physics, is not as rigid as these titles suggest, because "all things are full of gods". On ontological images see chapter v.

[46] *Theol.Plat*. I 3 and 4.

[47] At *Theol.Plat*. III 15 52.23–54.20, where Proclus collects the teachings on the divine from the *Timaeus*, this dialogue turns out to contribute especially to the knowledge of the intelligible living being and in book V (esp. 20 72.7–76.12) to the knowledge of the Demiurge.

[48] *In Tim*. I 217.18–28, 2.29–3.4. Cf. Simpl. *In Cat*. 6.27–30: "the divine Plato … also investigates the natural insofar as it participates in what transcends nature."

[49] *In Parm*. 641.1–643.4 (-5 Cousin).

Timaeus as a hymn to the Demiurge, and (ii) the main function he gives to the prooemium is that of ensuring a scientific status for philosophy of nature.

1.3.1. *The prooemium and the* Timaeus *as a hymn*

One of the characteristics of Plato's *Timaeus* that sets it apart from most other Platonic dialogues is that it is not in fact a dialogue, except initially. After the opening, the 'recapitulation' of (part of) the discussion of the *Republic*, and the Atlantis-story, Timaeus takes the stage (at 27c1), not to leave it even at the end of the dialogue. The only interruption in Timaeus' long account is a short remark of Socrates', just after Timaeus' famous request to his audience to be content with a likely story:

> **T 1.4** Bravo, Timaeus! By all means! We must accept it as you say we should. This overture (τὸ μὲν οὖν προοίμιον) of yours was marvellous. Go on now and let us have the work itself (τὸν δὲ δὴ νόμον).
>
> (*Tim.* 29d4–6, trans. Zeyl)

This remark is important for two reasons. First of all, through this one remark, the foregoing section of Timaeus' account (*Tim.* 27c1–29d3) is set apart from the sequel as its prooemium. It is thereby identified as a unity, and given extra weight and a special function with respect to what follows. Secondly, by his choice of words Socrates summons an image of the account Timaeus is in the course of giving as a poem or a musical piece (a νόμος). A prooemium is, generally speaking, any preamble, be it to a piece of music, a poem, or a speech.[50] But by the addition of νόμος, which among many other things means 'melody', or 'strain', Timaeus' account is compared with a musical performance. As the Athenian stranger in the *Laws* points out:

> **T 1.5** … the spoken word, and in general all compositions that involve using the voice, employ 'preludes' (a sort of limbering up (ἀνακινήσεις), so to speak), and […] these introductions are artistically designed to aid the coming performance. For instance, the νόμοι of songs to the harp, and all other kinds of musical composition, are preceded by preludes of wonderful elaboration.[51]

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[50] Cf. *Phdr.* 266d7–9. The term prooemium is not uncommon in Plato (e.g. at *Rep.* VII 531d7–8 and 532d7 the term is applied to all of education before dialectic, which is called the νόμος), and occurs especially frequently in the *Laws*. See for the parallel between the prooemium of a speech and of a poem or musical performance also Arist *Rhet.* III 14, 1414b19–26.

[51] *Laws* IV 722d3–e1 (trans. Saunders modified), cf. V 734e3–5. The metaphor

This same image of a musical performance is present in the very first lines of the *Critias*, the sequel of the *Timaeus*. It is here that we find the end of Timaeus' account, in the form of a prayer for forgiveness for any false notes.[52] With this added element of the prayer, Timaeus ends his νόμος the way he commenced his prooemium at *Tim*. 27d1–4.[53] Whereas at the outset of his account he prayed to the gods in general, he here addresses "the god who in fact existed long before but has just now been created in my words",[54] that is, the Demiurge.

In his explanation of Socrates' remark that delimits the prooemium, Proclus picks up the image of the musical performance, but interestingly chooses a particular instrument: the lyre. This choice is not a casual one: Proclus deliberately compares Timaeus to a lyreplayer, who composes hymns to the gods.

> **T 1.6** The word νόμος [at *Tim*. 29d6] is taken from the νόμοι of the lyre-players: they are a particular kind of songs, made in honour, some of Athena, some of Ares, some are inspired, and others aim at regulating behaviour. They usually had a prelude precede these νόμοι, which they called for this reason "pre-stroking of the strings" (προψηλαφήματα).[55]
>
> (I 355.4–9)

As has been shown by Van den Berg, Proclus considers Critias' Atlantis story to be a hymn to Athena.[56] More important for our purposes is that *Timaeus' own account* is here ranked among the hymns. And elsewhere, in the *Platonic Theology*, Proclus tells us that the divinity celebrated by

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becomes an actual pun in the context of the *Laws*, of course, since the preambles are in fact followed by νόμοι, in the sense of laws. The main purpose of the *prooemia* expounded in the *Laws* is to convince the possible wrongdoer otherwise; just as in a speech, the preamble is persuasive in nature. Cf. IV 722e7 ff.; VI 773d5 ff.; etc. At XI 925e6 ff., however, the stranger speaks of a more general prooemium, which would have an apologetic character, like the prooemium in the *Timaeus*, cf. Runia (1997: 104–106).

[52] *Crit*. 106a3–b7, esp. b1 "discordant note", b2–3 "bring the musician who strikes the wrong note back into harmony", cf. 108b4–5.

[53] There is another image, namely that of the account as a journey. This image is also evoked by the word προοίμιον (οἶμος in the word προ-οίμιον), and recurs at the beginning of the *Critias* as well. In the first line of the *Critias*, which is in content also the last one of the *Timaeus*, Timaeus expresses his relief at taking a rest, as it were, after a long journey (ἐκ μακρᾶς ὁδοῦ, διαπορείας) (*Crit*. 106a1–3). This image is less relevant to our purposes as it is not picked up by Proclus.

[54] *Crit*. 106a3–4.

[55] Note that the term Proclus uses to refer to the custom of playing a prelude, προψηλάφημα, as if it were common (ἐκάλουν) is in fact a *hapax*, which emphasizes the novelty of his interpretation.

[56] Van den Berg (2001: 22–34).

Plato in the *Timaeus* is the Demiurge. Through Timaeus' entire exposition he presents "a kind of hymn" to Zeus the Demiurge:

> **T 1.7** The providence of the Demiurge manifests itself from above down to the creation of this [visible world], and this text has been presented by Plato as a kind of hymn (οἷον ὕμνος τις) to the Demiurge and the Father of this universe, proclaiming his powers and creations and gifts to the cosmos.[57]
> (*Theol.Plat*. V 20, 75.10–14)

A similar position was taken two centuries earlier by Menander Rhetor, who classifies the *Timaeus* as a ὕμνος φυσικός/φυσιολογικός,[58] i.e. a hymn in which we identify an aspect of the natural world with a divinity and study its nature.[59] Menander, however, refers to the *Timaeus* as a hymn to the *universe* (τοῦ Παντός, 337.23), rather than to the Demiurge.[60] The importance of Proclus' choice is that as a hymn to the Demiurge, the dialogue is also considered an ἐπιστροφή to him,[61] and this, we will see in later chapters, has its reflection in Proclus' analysis of the structure and function of the *Timaeus*.

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[57] The *Timaeus* is not the only dialogue which Proclus calls a hymn. See Saffrey and Westerink (1968–1997: vol. V 187, n. 3) for references to other examples. Strictly speaking, the phrase 'this text' (οὗτος) refers only to the description of the demiurgic creations, not those of the lesser gods, and therefore not to Timaeus' entire exposition. Still, Proclus here also refers to the entire range of creation, ἄνωθεν … ἄχρι τῆς τούτων ποιήσεως, and thus we can conclude that he does include all of Timaeus' account into the hymn to the Demiurge.

[58] Menander Rhet. 336.25–337.32, esp. 337.5 and 22 ff. (Spengel).

[59] On the so-called φυσικοὶ ὕμνοι see Russell and Wilson (1981: 13–15 with 235–237) and Van den Berg (2001: 14–18). I propose to translate φυσικοί as "of nature" rather than "scientific" (as Russell/Wilson), to emphasize that we are dealing with hymns that reveal the *nature* (essence, cf. 333.12) of a divinity through a (scientific, true) discussion of their presence in *nature* (the natural world, cf. 337.5). On the commentary as prayer see Brisson (2000b). Cf. the 3rd/4th c. Pythagorean hymn to Nature, see Powell (1925: 197–198), and Simplicius, who dedicates his own commentary on Aristotle's *De caelo* as a hymn to the Demiurge (*In Cael*. 731.25–29).

[60] In fact, Menander states that Plato himself in the *Critias* calls the *Timaeus* a ὕμνος τοῦ Παντός. As has been remarked by modern commentators Russell and Wilson (1981: 236), Van den Berg (2001: 16), nowhere in the *Critias* can such a remark be found. Russell/Wilson propose that Menander was thinking of *Tim*. 27c and 92b, or *Critias* 106a, all invocations. I propose that in addition Menander may have had in mind *Tim*. 21a, where Critias (rather than *the Critias*) calls his own account a kind of hymn (οἷόνπερ ὑμνοῦντας).

[61] And not, e.g. to the One. On hymns as ἐπιστροφή see Van den Berg (2001: 19–22 and chapter 3).

1.3.2. *The prooemium and philosophy of nature as a science*[62]

The prooemium has a second important function, namely that of securing a scientific status of philosophy of nature.

As has been shown by Runia, the *Timaeus* places itself in the tradition of the Presocratic περὶ φύσεως literature by incorporating in the prooemium the following elements: (1) invocation of the gods, (2) introduction of the author, (3) indication of the audience, (4) statement of the subject, (5) truth claim, and (6) outline of the method to be followed.[63] The only element of the *Timaeus* prooemium that does not fit the tradition is what Proclus will call "the hypotheses and what needs to be demonstrated from them beforehand",[64] i.e. Timaeus' developing of the starting points of his account (*Tim*. 27d5–29d3). Interestingly, Proclus considers this same eccentric element to be the very core of the prooemium.

Proclus presents two summaries of the prooemium on one page. The first contains five items, in the order of the Platonic text: (1) "the kind (εἶδος) of research subject", (2) "the hypotheses" and (3) "what needs to be demonstrated from them beforehand", (4) "the kind (εἶδος) of text", and (5) "the disposition of the audience".[65] In the second summary, however, all that is mentioned as the content of the prooemium are the hypotheses and the demonstrations.[66] The εἶδος of the subject matter is no longer separated from the hypotheses, and as a consequence the nature of the text (which is determined by the subject matter) is no longer separated from the demonstrations. The disposition of the audience is left out altogether.

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[62] I am grateful to David Runia for letting me mine his unpublished paper 'Proclus' interpretation of the proœmium of Plato's *Timaeus* (27d–29d)', which was presented at "Plato's Ancient Readers", a conference held in Newcastle (AUS), June 2002.

[63] Runia (1997: 104–106).

[64] *In Tim*. I 355.2–3.

[65] I 354.27–355.4. A comparison with Runia's analysis of Plato's text shows several similarities, and one puzzling difference: the prayer, one of the traditional constituents of the prooemium, occurs in neither summary, despite the fact that Proclus comments on it extensively. That does not mean he thinks that the prayer is not really needed (as does Menander, who states that a hymn of nature does not require a prayer, 337.25–26), but rather that it does not belong to the prooemia (cf. *In Tim*. I 206.26–27). Another difference is that in Proclus' summaries there is no mention of the author/speaker. As to the similarities, we recognize the introduction of the subject matter in (1), the truth claim in (4), and the mention of the audience in (5).

[66] I 355.23–28 (Proclus subsequently adds the characterization of the text).

We can conclude, then, that in his exegesis of the prooemium Proclus concentrates on (2) and (3): "the hypotheses and what needs to be demonstrated from them beforehand", that is, on the only non-traditional element of the prooemium. Proclus' main reason for this, as will be shown, is that it is precisely the presence of hypotheses and demonstrations that give Platonic philosophy of nature its status of a science.

I.3.3. *The structure of this book*

> **T I.8** (= **T I.1**) True philosophy of nature must depend on theology (III), just as nature depends on the gods (II) and is divided up according to all their orders (II/IV), in order that accounts too may be imitators of the things they signify (V).[67]

The elements of this statement, which as mentioned at the outset of the introduction, sum up the basic ingredients of Proclean philosophy of nature, have their counterparts in the different chapters of this book (II–V).

Chapter II discusses the ontological realm that is the subject matter of philosophy of nature: φύσις. The chapter presents an analysis of Proclus' notion of nature (φύσις) as described in the introduction to the commentary on the *Timaeus*, as well as elsewhere in his work. The main issues discussed in this chapter are the ontological status of nature, its relation to soul, and its activities. I will argue that in Proclus' metaphysical system universal Nature is an intermediary hypostasis, which, together with Soul, connects the physical world with its intelligible causes. It is also the proximate cause of physical objects. This universal nature, however, only partly transcends its effects, and is part of a *chain* of natures, from the highest intelligible "source of nature" to its lowest manifestation in individual natures.

In chapters III and IV, the elements of this metaphysical chain of nature will be shown to have their correspondents in an epistemological chain of different kinds of philosophy of nature. In the five books of Proclus' commentary we find different phases of philosophy of nature—mostly with different methods and limitations—depending on the subject matter at hand.[68]

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[67] *In Tim.* I 204.8–12.

[68] The part of the first book in which Proclus interprets the summary of the *Republic* and the Atlantis story as presentations of the universe in images and symbols respectively (*Tim.* 17b5–20c3 with *In Tim.* I 26.21–73.21, and 20c4–26d6 with I 73.23–196.29

In chapter III, the highest kind of φυσιολογία is discussed. This theological and dialectical philosophy of nature, the main part of which Proclus finds in the prooemium, consists in an analytic proceeding from the nature of the sensible world to its primary cause, the Demiurge, and in him also to the intelligible Living Being and the Good. Proclus presents an analysis of this highest kind of philosophy of nature in which he emphasizes certain parallels between Plato's procedure and that of a geometer. I argue that the aim of this comparison is not just to give philosophy of nature a scientific status, but also to determine the main characteristics of that science: the starting points of the ascent to the Demiurge remain hypothetical and are partly *a posteriori*. The combination of partly empirical starting points and a scientific status rests on an ingenious notion of δόξα as the cognitive faculty with which we study the natural world.

Chapter IV contains an analysis of the notion of philosophy of nature as it occurs in the later books of the commentary. I will show that we there find lower kinds of philosophy of nature, matching the respective subjects of the books in question: mathematical φυσιολογία for the body and the soul of the world, empirical philosophy of nature for the heavenly bodies, and something like biology, a science of the living being. As part of this chapter I discuss the explanatory role of mathematics in philosophy of nature. I argue that in Proclus' view the structure of the natural world is in a sense mathematical, but that at the same time for understanding that world mathematical explanations are helpful but not sufficient. I also argue that the manner in which mathematics helps us reach a proper explanation of the natural world is determined by the aspect of the world that is being explained, namely the body or the soul of the world respectively.

In the last chapter, chapter V, I discuss Proclus' interpretation of the textual and didactic aspects of the *Timaeus*, as he finds them in Plato's famous remark that the account of nature is a mere "likely story". Rather than discuss the limitations of an account of the natural world, Proclus' main aim in his inventive interpretation is to demonstrate how such an account facilitates the ascent to knowledge of the intelligible causes of the universe. A crucial element in the account's fulfilment of this function

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respectively), will be left out of consideration. These passages are preparatory, according to Proclus, and as opposed to the other preparatory passage of the *Timaeus*, the prooemium, hardly elicit remarks on his part concerning the nature and methods of φυσιολογία.

is the ontological nature of its subject, the natural world. Because the natural world is an *ontological image* (εἰκών) of its own transcendent causes, an exposition about that world is an iconic account in the sense that it is a *direct* presentation of *ontological images*.

I moreover show that for Proclus all discourse, including that about the natural world, can have a didactic function due to its two 'directions', namely one of natural resemblance to its subject matter, comparable to emanation, and one of a further assimilation to its subject matter by the author/speaker, comparable to reversion.

In the conclusion I bring together the findings of chapters II to V.

CHAPTER TWO

PLATONIC ΦΥΣΙΣ ACCORDING TO PROCLUS

II.1. *Introduction*

The subject of this chapter is Proclus' concept of φύσις. Our primary focus will be on the content and role of this concept as the subject matter of the *Timaeus*, but since such a crucial and complex notion as φύσις deserves more than just an isolated contextually bound study, we will also delve into more general issues regarding Proclus' concept of nature.[1]

The last part of Proclus' introduction to his commentary on the *Timaeus* is a treatise on φύσις (*In Tim*. I 9.31–12.25).[2] At first sight this treatise does not fit among the elements that traditionally constitute the introduction to a commentary, the *schema isagogicum*. Its presence can be explained, however, as a further delimitation of the σκοπός of the *Timaeus*, which is in first instance determined as "all of φυσιολογία".[3] As we have seen in chapter I, Proclus immediately delimits this σκοπός by digressing on the different kinds of φυσιολογία, and selecting the study that focuses on the true causes of everything natural as the real Platonic philosophy of nature. This leaves us in the dark with respect to the actual subject of the *Timaeus*, as long as we do not know what *the natural* is. At I 2.7–8 we see that the natural is what "becomes by nature" (τῶν φύσει γινομένων).[4] This implies that the character of the entire dialogue, and of its σκοπός, is ultimately determined by what is meant by φύσις,[5] although of course the actual subject of the *Timaeus* has a wider extension than φύσις alone. Since φύσις is a highly polysemous word,[6] the discussion of the σκοπός is not complete until we have reached an agreement on what its meaning—or range of meanings—is in the context of Plato's

[1] In the following, I will write Nature (capitalized) to indicate universal, divine φύσις, which is a hypostasis (on φύσις as hypostasis see below).

[2] For useful notes on this passage see Tarrant (2007: 103 ff.).

[3] See T I.2.

[4] Cf. *In Tim*. I 1.23–24, 2.29 ff.

[5] Cf. Hadot, I. (1987: 115).

[6] See e.g. RE s.v. Natur.

Timaeus. Or, as Proclus remarks, since different people have understood φύσις in different ways, we should find out what exactly φύσις means for Plato, and what he thinks its essence (οὐσία) is, before moving on to the main text.[7]

It is for this reason that Proclus devotes a section towards the end of his introduction to a systematic treatise on Plato's notion of φύσις, and how it differs from—and of course improves on—that of just about any non-platonic philosopher.[8]

Of course, another reason for presenting an answer to the question "what is nature?", apart from determining the σκοπός of the dialogue at hand as precisely as possible, is the wish to comply with a standard of physical works, set by Aristotle, who starts his *Physica* from answering the question what nature is, and includes a doxographical discussion.[9]

Because in the introduction to the *In Tim*. Proclus is emphatically giving an account of a *Platonic* notion of nature as part of *Platonic* philosophy of nature, he puts Plato's notion in a polemic contrast to that of others. As a result, the description of the notion of nature is purposefully stripped of any Aristotelian or Stoic aspects. Elsewhere, however (mainly in the discussion of *Timaeus* 41e, and in book III of the *In Parmenidem*) different features of nature are discussed more extensively, resulting in a more subtle picture. The fact that the treatise takes up over three pages of the fourteen page introduction cannot but be indicative of its significance. Nonetheless, no systematic explanation of its contents has been given in modern scholarship.[10] In the following, this treatise on Platonic nature, which is the most concise description of Proclus' own ideas regarding φύσις, will be the starting point for a broader discussion of Proclus' notion of φύσις.

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[7] *In Tim*. I 9.31–10.2. Note that the meaning of φύσις in the treatise in the *In Tim*.—and consequently in this chapter—is limited to nature as it figures in the ἱστορία περὶ φύσεως, accounts of origin and generation of and in the universe. On this topic in Plato see Etienne (1996: 397), Naddaf (2005).

[8] Hadot, I. (1987: 113, 115) suggests that the purpose of such systematic treatises on the σκοπός was to ensure that the reader is forewarned of the difficulty of the subject matter. In the *In Tim*., however, there is no sign of such a warning.

[9] Arist. *Phys*. II 1 192b8 ff., cf. Festugière (1966–1968: vol. I, 35 n. 4). Cf. Arist. *Met*. V 4 for an enumeration of different meanings of φύσις.

[10] See, however, Phillips (2007: 151–205) for a discussion of parts of the treatise in the context of a treatment of Proclus' doctrine of evil. For a critical discussion see below II.4.2.iii.

II.1.1. *Plato's φύσις*

One of the difficulties Proclus must have encountered in describing a Platonic notion of nature concerns his source material: Plato himself hardly ever characterizes nature as such, let alone discusses it. Of course, in accordance with good Neoplatonic practice, the theory on φύσις offered is really that of Proclus, rather than Plato, but as we will see our commentator does find the source of his theory in Plato. There are few Platonic passages that today are considered informative with respect to Plato's notion of nature, namely *Phaedo* 96a6 ff., *Phaedrus* 270a ff., *Sophist* 265c–e, and *Laws* X 891b8–892c7.[11] At *Phaedo* 96a6 ff. Socrates refers to the study of nature (περί φύσεως ἱστορία) as concerning the causes of generation, perishing, and being (existential or predicative).[12] Crudely speaking, nature here refers to the class of objects that are subject to generation and perishing. *Phaedrus* 270a ff. clearly makes a connection between the φύσις that figures in περὶ φύσεως ἱστορία and φύσις as the essence of something (to understand the nature of something, one has to understand the nature of the universe). Again, *Sophist* 265c–e and *Laws* X 891c–892c are both criticisms of the common opinion that everything growing owes its existence to mindless nature and chance, rather than to a divine cause (in the *Laws*, that cause is soul). So here we find another meaning of φύσις, that of an irrational automatic agent. The *Timaeus*, paradoxically, is not considered by modern scholars to contain valuable information regarding Plato's concept of φύσις,[13] although according to Proclus it does. For him *Tim*. 41e, where the Demiurge is said to show the souls the nature of the universe (ἡ τοῦ παντὸς φύσις), is a crucial addition to the source material. Today this passage does not sparkle any scholarly discussions with respect to the concept of nature, but we will see that it is central to Proclus' analysis of the ontological level of

[11] E.g. Etienne (1996: 397, n. 3), Claghorn (1954: 123–130), Naddaf (2005), Solmsen (1960: 92 f.). The other passages mentioned by Etienne (*Lysis* 214b, *Prot*. 315c, *Tim*. 57d, *Epist*. VII 344d) are mere mentions of natural inquiry. Some dialogues abound in mentions of φύσις, but most of them involve nature in the sense of the essence of something. On the notion of φύσις in antiquity see Holwerda (1955).

[12] Cf. Plato *Phil*. 59a. For an assessment of Plato's place in the περὶ φύσεως tradition see Naddaf (1997), Runia (1997).

[13] E.g. Claghorn (1954: 121 ff.). As he has shown, the word φύσις is hardly used in the *Timaeus*, and when it is, it has the sense of substance (74d, 75d, 84c), basis of characteristics (18d, 20a, 30b, 48b, 60b, 62b, 90d), or proper order of action (29b, 45b). See also Johansen (2004: ch. 1, esp. 22–23), who argues that the cosmology of the *Timaeus* is primarily a defence of a life of reason.

nature. Another passage Proclus relies on is the myth of the *Statesman*, and especially 272d ff., where the universe is abandoned by the helmsman and turned over to its natural motions (εἱμαρμένη τε καὶ σύμφυτος ἐπιθυμία, 272e6).

Like Proclus, modern authors tend to overlook or ignore the fact that there is hardly such a thing as Plato's doctrine of φύσις and describe "Plato's concept of nature" in a manner that is tailored entirely to their own purposes, e.g. interpreting Plato's utterances through the Aristotelian material. By way of illustration, let us briefly look at Claghorn, who writes in an Aristotelian context, and at the more recent discussion of Naddaf. Claghorn claims that Plato in the *Timaeus* "had taken the name φύσις to apply to Reason, rather than to the world of things", and that he "identified the ὄντως ὄντα with the φύσει ὄντα." His main source is *Tim*. 46de, in which Plato speaks of ἡ ἔμφρων φύσις—where φύσις is clearly to be read as "essence" or "being". What Claghorn could have said, then, is that Plato ascribes to Reason, *rather than* to nature, the creation of order and motion in the world. But this in no way implies an identification of nature and Reason.[14] In general Claghorn confuses Reason, Mind and Soul: " 'Mind' in the *Timaeus* then, is the φύσις of the world, for it basically is rationality, and this is what directs its movements … To Plato, therefore, Nature is the world of Reason. It is described as Soul to emphasize its ability to initiate motion, since only soul can do that, and mind dwells in soul."

More recently, Naddaf has argued that φύσις is the "development of the contemporary world (…) from beginning to end",[15] and that we find it in this sense in Plato's *Laws* X.[16] The disadvantage of Naddaf's interpretation of Platonic φύσις is that it is made subservient to his attempt to demonstrate that early Greek περὶ φύσεως literature contained a 'politogony'.[17] Thus it cannot, in fact, be considered an interpretation of φύσις as such. For example, he selects from *Laws* X the passage in which φύσις is opposed to τέχνη (889a4–e2), while at the same time taking the

[14] Claghorn (1954: 124, 130). For criticism of Claghorn see Solmsen (1960: 97, n. 22), who brings forward some suggestion concerning Plato's notion of φύσις in which inadvertently—or at least without warning—the word is used in three different senses within one paragraph: first as "essence", then as "the realm of movement", and finally as "something relating to the realm of movement" (1960: 92 f.).

[15] Naddaf (2005: 20, 28–29).

[16] Naddaf (2005: 32–34). Unfortunately volume II of Naddaf's work, which will deal with an analysis of φύσις in Plato, and especially with regard to *Laws* book X (2005: 1), is not published yet.

[17] Naddaf (2005: 2).

latter as concerning the development of human culture and therefore as part of φύσις in the sense defined. Naddaf does not, however, include the sequel of *Laws* X (891c–892c), where the argument culminates in the analysis of the relation between φύσις and ψυχή, and as a consequence he leaves the main point of the *Laws* discussion out of consideration, which is the question whether the gods exist and whether the natural world is ensouled.

It may not be possible to come up with a meaningful account of Plato's concept of nature, and it certainly is not needed here. By way of starting point, let me merely state the very general claim that since φύσις is associated with growth, we tend to assume that Plato takes it to go hand in hand with generation and decay, temporality, perceptibility, and with irrationality. Interestingly, the passages in which he speaks of nature in the sense of περὶ φύσεως ἱστορία, do not warrant that assumption. For example, in the *Phaedo*, Socrates hopes to discover the rationality of nature (97c–99d). According to the *Sophist*, Nature does not produce everything natural, as the Athenian stranger says, "by some spontaneous cause that generates it without any thought", but "by a cause that works by reason and divine knowledge derived from a god" (*Sophist* 265c, trans. White). Nature is here not replaced by a divine cause, but supplemented with it. Proclus, we will see, takes this more optimistic angle in his views of nature.

II.2. *The essence of nature*

In ancient philosophy, very generally speaking, the range of concepts referred to by the word φύσις runs from nature as a class of things characterized by growth and change, matter, and spatiotemporality, through nature as a principle active in that class of things, to nature as the essence of a thing, not tampered with by man, as opposed to e.g. τέχνη or νόμος.[18] In Proclus we find the same spectrum. For our present purposes the latter, nature as the essence of a thing, is least relevant.[19]

[18] For general literature on the early and classical Greek concept of φύσις: Lloyd, G.E.R. (1991c), Naddaf (2005) (mainly Presocratics, and somewhat controversial, cf. Mansfeld (1997)), Schmalzriedt (1970: 113 ff.) for a description of the development from "Individualphysis" to "Allphysis" in the second half of the 5th century BC, and Vlastos (1975: 18–22).

[19] But see II.5.2.

Proclus commences his treatise on nature at *In Tim*. I 9.31–12.25 with three questions:

> T II.1 τίς ἡ φύσις καὶ πόθεν πρόεισι καὶ μέχρι τίνος διατείνει τὰς ἑαυτῆς ποιήσεις;

What is nature, where does it come from, and how far does it extend its activities?[20] In other words: (1) what are nature's essence, (2) ontological origin and (3) causal power? (1) The question of the essence of nature divides into two subquestions: (i) Is nature a kind of, or a part of, lower soul (treated in II.3.1), and (ii) if not, then is it identical to "everything natural"? (II.3.2) It will become clear that nature for Proclus is neither soul nor the aggregate of everything natural, but primarily a hypostasis of its own in between the two, where hypostasis is to be understood in the narrower technical sense of "fundamental ontological level"—something that does not merely have, but also *is* a hypostasis.[21]

(2) The second question, regarding the origin of nature, results in a discussion of the different levels of reality on which we find nature, of the interdependence of those different "natures" and of the question which of them is primarily considered nature (which is not the same as the question which of them is ontologically primary) (II.4).

(3) And finally, the third question concerns the activity of nature as source of motion and unity of all bodies (II.5). These are all questions that were at the heart of the late ancient debate on nature.[22]

II.3. *Nature, soul, and the natural*

According to Proclus Plato surpasses other philosophers in giving an account of the essence of nature. Proclus' support of this claim, an explanation of the mistakes made by other philosophers, amounts to a nice—albeit incomplete—history of the concept of nature through antiquity, presented in ascending metaphysical order.[23] Let us briefly

[20] *In Tim*. I 10.4–5.

[21] Cf. Steel (1994: 79–80), Dörrie (1955), Witt (1933) on the history of the notion. Cf. Gersh (1973: 30–32), who apart from the causal dependence also emphasizes the complex (often triadic) structure of many hypostases.

[22] See Sorabji (2004a: esp. 33–60) for a selection of discussions on these and related issues from the ancient commentators on (mainly) Aristotle, and Remes (2008: chapter 3) for a concise overview of Neoplatonic themes regarding nature and the sensible.

[23] For reff. to similar doxographies see Festugière (1966–1968: 35, n. 4).

review it before taking a closer look at two aspects thereof: the relation between nature and soul (II.3.1), and between nature and the natural (II.3.2).

Proclus starts out with Antiphon, who identified nature with matter. This unexpected presence of Antiphon reveals that Proclus' main source for the doxographical material is Aristotle.[24]

The second target is Aristotle himself, and his equation of nature with form.[25] In this polemic context Proclus does not refer to Aristotle's definition of nature as the source of motion, probably because Proclus in fact maintains that definition (see below II.5).[26]

Thirdly, Proclus mentions some anonymous predecessors of Plato who underestimated nature by identifying it with "the whole" (τό ὅλον), as those who are scolded by the Athenian stranger in book X of the *Laws* for calling the products of nature "natures" (τὰ φύσει φύσεις προσηγόρευον).[27] In light of the fact that τὸ ὅλον is subsequently called τὸ σώμα, we have to assume that it refers to any whole consisting of both matter and form, rather than to the sum of everything physical.[28] Proclus here seems to be repeating Aristotle's criticism that that which is constituted of matter and form is not a nature, but natural, for example a man.[29]

Yet another mistaken conception of nature Proclus mentions, and which is like the previous one criticized in the *Laws*, is that nature is identical with physical powers such as weight or density.[30] The philosophers who adhere to such notions are identified as Peripatetic philosophers[31] and "even older ones" (probably atomists).[32]

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[24] *In Tim*. I 10.5–6. Proclus' source is Arist. *Phys*. II 1 193a9–17, but as Festugière shows Antiphon is also part of the Aetian tradition. Tarrant (2007: 103, n. 52) refers to *Dox*. 1.22.6, 2.20.15, 2.28.4, 2.29.3, 3.16.4. Cf. Alex.Aphr. *In Met*. 357.7 ff., Simpl. *In Phys*. 273.35 ff., Philop. *In Phys*. 207.19 ff.

[25] *In Tim*. I 10.6–7. For nature as form see Arist. *Phys*. II 1 193a30 ff.; cf. *Met*. XII 3 1070a11–12.

[26] Cf. Schneider (1996: 439). For nature as source of motion see Arist. *Phys*. III 1 200b12–13, *Cael*. I 2 268b16.

[27] *In Tim*. I 10.7–9, see below, II.3.2.

[28] *In Tim*. I 10.14. Cf. Festugière (1966–1968: vol. I, 36 n. 4).

[29] Arist. *Phys*. II 1 193b5–6.

[30] Plato *Laws* X 892b3 ff.

[31] *In Tim*. I 10.9–12. Perhaps Proclus is here confusing the Peripatetic theory that physical changes start from the four δυνάμεις cold, warm, dry and moist (Arist. *Meteor*. I 3 340b14 ff.) with lists of 'secondary' physical properties such as weight and density, e.g. at Arist. *PA* II 1 646a18 ff. See also Alex. *In Meteor*. 13.27 ff. and 181.13 ff.

[32] *In Tim*. I 10.10–11.

Proclus ends the list with two theories that he does not ascribe to anyone, namely the theory that nature is the craft of (a) god (τέχνη θεοῦ),[33] and finally the theory that equates nature and soul.[34] With respect to the latter theory we can safely assume that Proclus has in mind Plotinus, who maintained that nature is the lowest, non-descended, part of the World Soul.[35] The former, that nature is a divine craft, has been identified as Stoic, according to the reasoning that if Stoic nature is a god, as well as a πῦρ τεχνικόν, then nature is also a divine τέχνη.[36] I will argue, however, that instead Proclus here has in mind a Platonic passage (*Soph.* 265e, see below II.5.1).

In general Proclus' judgment is harsh: Plato would not deem matter, form, the body, or physical powers worthy of being called φύσις primarily. And as to the option he mentions last, Plato shrinks (ὀκνεῖ) from calling nature soul just like that (αὐτόθεν). Instead, in Proclus' view Plato gives us the most exact description, saying that the essence of nature is *in between* soul and physical powers. It is significant that Proclus does not reject the theory of nature as a craft of (a) god. We will return to this later.[37]

As Festugière points out, the doxographical character of the above listing of definitions of nature could indicate that it was copied from a handbook, but the real paradigm of the list is Aristotle's *Physics*.[38] More importantly, the list is not given merely for reasons of scholasticism, but to demarcate the area of the Platonic notion of nature by eliminating notions that are too high or too low. The order of presentation is revealing of a Proclean (or at least Neoplatonic) interpretation: rather than present the different definitions in chronological order, Proclus gives them in an increasing order of ontological status ascribed to nature (ranging from the lowest, matter, to the highest, soul).

The most interesting aspects of Proclus' little history of the concept of φύσις for our purposes are the fact that the theory of nature as a craft of

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[33] *In Tim.* I 10.12. This is a separate theory, and not a further explanation of the previous, *pace* Romano (1991: 242). On nature as τέχνη θεοῦ see below II.5.1.

[34] *In Tim.* I 10.12–13. He adds "or some other similar thing" (ἄλλο τι τοιοῦτον), but this seems to be an addition for the sake of completion rather than a real alternative for soul.

[35] See below, II.3.1.

[36] This is the argument of Festugière *ad loc*, who refers to Zeno' s πῦρ τεχνικόν (= ap. Diog. Laert. VII 156 τὴν μὲν φύσιν εἶναι πῦρ τεχνικὸν ὁδῷ βαδίζον εἰς γένεσιν = *SVF* I 171). Tarrant also refers to *SVF* II 774, 1133–1134.

[37] See below II.5.1.

[38] Festugière (1966–1968: vol. I 35 n. 4).

(a) god is not rejected, and that the Plotinian theory of nature as soul, although it is not rejected forthright, is at least considered in need of modification.

II.3.1. *Nature is not soul*

The relation between nature and soul was a matter of debate among ancient philosophers, primarily with regard to the question whether lower animate and inanimate beings possessed soul, or only nature. Another issue in the Platonic tradition was how both nature and soul could be the ἀρχὴ κινήσεως.[39] A more implicit issue in the discussion of soul and nature concerns the ontological relation between nature and soul themselves. For our purposes the most interesting position on the latter issue is that of Plotinus, as this is the position Proclus challenges. In short, Plotinus maintained, as is well known, that nature is the lowest part of soul, and more precisely of the World Soul.[40]

Proclus' position on the ontological relation of nature to soul has been assessed in different ways, but the general assumption is that Proclus follows Plotinus. Romano (1991: 242) points to the difference between nature and soul (he capitalizes only soul: "natura e Anima"), but incorrectly ascribes to Proclus the Plotinian view that nature is nothing other than the activity of Soul in matter.[41] Siorvanes (1996: 137) is not very specific on this point (e.g. "… Platonists came to regard nature as a kind of lower soul"), but also seems to assume that Proclus' position was the same as Plotinus'. Leisegang, however, identifies Proclean φύσις, correctly, we will see, as a separate entity in between the corporeal and the psychic.[42]

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[39] Mohr (1980: esp. 47), reprinted in Mohr (1985: 158 ff.), cf. Sorabji (2004a: 44). For φύσις as source of motion see II.5.2.

[40] *Enn*. IV 4 [28] 13, esp. 3–4: ἴνδαλμα γὰρ φρονήσεως ἡ φύσις καὶ ψυχῆς ἔσχατον and III 8 [30] 4.14–16. See also Armstrong (1967: 254), Brisson (2008: 34–35, 292 n. 117 and forthcoming), O'Meara (1993: 77), Phillips (2007: 189–201), Wilberding (2006: esp. 178–182).

[41] Cf. Dörrie and Baltes (1998: 328 f. and n. 18, cf. 343), who refer to Syr. *In Met*. 39.21 and Simpl. *In Phys*. 298.18 ff. as indicating that nature is the lowest level of soul. In both these passages, however, nature is mentioned next to soul, and there is no indication in either passage that nature should be understood to be ontologically included in or part of soul. As to the former, Proclus' teacher Syrianus, it is difficult to assess his view on the relation between nature and World Soul (see below). It is clear, however, that Syrianus distinguishes an ontological level of nature from that of soul. *In Met*. 12.6, cf. 81.33, 113.2–3, 119.6, 147.12. Cf. Praechter (1932: 1753).

[42] Leisegang (1941).

That Proclus distances himself from Plotinus has hitherto been noticed only recently by Phillips (2007: 163, 166 ff.).

Proclus summarizes the ontological position Plato assigns to nature as follows:

> **T II.2** [Plato] locates the essence of nature in between the two, I mean soul and corporeal powers, inferior to the former due to being divided over bodies and by not reverting upon itself,[43] but rising above everything that comes after it[44] by possessing their λόγοι and producing everything and giving it life.[45]

The second half of this description concerns the relation between nature and the natural and will be treated in the next section. For now let us focus on the relation between nature and soul. Nature's place on the ontological ladder just beneath soul is explained from two points of view, namely their respective relations to body and their capacity of reversion (ἐπιστροφή). In his treatise on nature, Proclus is more interested in the relation to body (for nature's lack of reversion see below):[46]

> **T II.3** Intellective (νοερά) soul is not the same thing as nature. For nature belongs to bodies, immersing itself in them and being unseparable from them, but soul is separate and roots in itself and belongs at the same time both to itself and to another, having the "of another" through being participated, and the "of itself" through not sinking into the participant … for these things are continuous: itself, its own, its own and another's, another's, other.[47] The latter is, of course, everything perceptible, which is full of all kinds of separation and division; and of the former the one (another's) is

[43] Accepting Festugière's reading αὑτήν for Diehl's αὐτήν.

[44] This cannot, as Tarrant (2007: 104, n. 58) proposes, mean 'after soul'.

[45] *In Tim*. I 10.16–21 ἐν μέσῳ δὲ ἀμφοῖν τὴν οὐσίαν αὐτῆς θέμενος, ψυχῆς λέγω καὶ τῶν σωματικῶν δυνάμεων, ὑφειμένην μὲν ἐκείνης τῷ μερίζεσθαι περὶ τὰ σώματα καὶ τῷ μὴ ἐπιστρέφειν εἰς αὑτήν, ὑπερέχουσαν δὲ τῶν μετ' αὐτὴν τῷ λόγους ἔχειν τῶν πάντων καὶ γεννᾶν πάντα καὶ ζῳοποιεῖν.

[46] In his essay on the *Myth of Er*, instead, Proclus focuses on divinity and motion: he speaks of the nature of the all, which he identifies with Fate, and which is inferior to soul because it is not a god, but is superior to body because it does not move (*In Remp*. II 357.11–27).

[47] Cf. *In Tim*. I 373.7 ff., where the same enumeration from "itself" to "other" is given to argue for the principle of plenitude. Tarrant (2007: 105, n. 62) suggests that the five members of the series may be related to the five causes, and shows that this works for the paradigmatic cause (itself) and the efficient cause, the Demiurge (its own). His tentative connexion of soul, nature and the sensible world with final, formal and material cause is not convincing. Soul is not the final cause of the universe, the Good is. And nature is a sixth cause, namely the instrumental cause (see below).

> nature, which is inseparable from bodies, and the other (its own and another's) is soul, which is in itself and illuminates something else with a secondary life.[48]

The word 'intellective' (νοερά) in the first line of this passage leaves open the possibility that φύσις is a non-intellective kind of soul, but in view of Proclus' emphatic distinction between soul and nature in this passage a reading of the adjective as a pleonasm here as at I 12.19 is more likely to present Proclus' theory accurately. We have as yet no conclusive evidence, however, that this is the right interpretation.[49]

The main difference between soul and nature, according to this passage, lies in their different relations to body. Nature is not only intrinsically and essentially related to bodies (τῶν σωμάτων, ἀχώριστος ἀπ' αὐτῶν), but is also physically immersed in them (δύνουσα κατ' αὐτῶν). As such, it is "the of another" (τὸ ἄλλου): it is not self-sufficient. Intellectual soul, on the other hand, is separate from bodies, and roots in itself (χωριστή ἐστι, ἐν αὑτῇ ἵδρυται).[50] As opposed to nature, soul has an existence that is somehow tied up with bodies—which is expressed by its being "of another" (τῷ μὲν μετέχεσθαι τὸ ἄλλου ἔχουσα)—yet does not sink into them, and is therefore "of itself" (τῷ δὲ μὴ νεύειν εἰς τὸ μεταςχὸν τὸ ἑαυτῆς). Soul is an αὐθυπόστατον, i.e. it is capable of maintaining its own existence, without depending on a lower entity.[51]

Later on in the second book (*In Tim*. I 257.6–11) we find a subtle indication of the same difference between soul and nature, pertaining to their respective degrees of divisibility. When discussing the question whether Timaeus' definitions of 'Being' and 'Becoming' encompass all of reality, Proclus points out that by assuming the summits, the intermediates are included. The intermediates, following the principle of plenitude, are 'being-and-becoming' and 'becoming-and-being'.[52] Soul is said to be intermediate between being and becoming in that it is *being and at the same time becoming*, just like Time, whereas the "summit of

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[48] *In Tim*. I 10.24–11.5. This passage gives us important information regarding the question whether there exists an imparticipable nature, for which see section II.4. Cf. *In Tim*. I 12.19–21.

[49] In *El.Th*. prop. 111 Proclus distinguishes between souls connected with their proper intelligence, i.e. intellective souls, and 'bare souls'. See further below, the discussion on irrational souls.

[50] Accepting Festugière's αὑτήν instead of Diehl's αὐτήν.

[51] See also below.

[52] *In Tim*. I 257.5–6 τὸ ὂν καὶ γινόμενον, τὸ γινόμενον καὶ ὄν. See on this passage also III.3.

things that have become" (ἡ ἀκρότης τῶν γενητῶν), to which (universal) Nature belongs, is *becoming and at the same time being*.[53] These somewhat obscure formulations "being-and-becoming" and "becoming-and-being" are more than a mere dialectical spinning out of possibilities. They are intended as what we might call dynamic conjunctions,[54] in which the former member takes precedence over the second, and the terms cannot be inverted without semantic consequences—as opposed to an ordinary conjunction, in which such an inversion would not have any consequences. The predicate that comes first expresses the predominant property, while the second predicate is that of the minor property. In a normal conjunction the two properties, in whichever order, would add up to the same. In these dynamic conjunctions, however, soul, having the ontologically more valuable property of "being" *before* the less valuable property of "becoming", has a sum total of properties that is more valuable (more real in the sense of "being", and less divided) than that of nature, which has the lower property of "becoming" first and "being" second. Note that in this context the participles "being" and "becoming" (at I 257.5–8) pertain not so much to existence in time, as to degree of divisibility and dependence.[55] The word "becoming" in this context is an expression especially of nature's divisibility over bodies, and "being" of its incorporeality.[56]

The formulation using the two dynamic conjunctions also tells us that both Soul and Nature are what we might call transitional hypostases, i.e. hypostases that bridge or close the gap between the indivisible (Being) and the divisible (Becoming), by essentially belonging to both.[57] This is confirmed by Proclus' discussion elsewhere of the two intermediates (μεσότητες) between true indivisibility and true divisibility.[58] These two

[53] Proclus' formulation suggests that not only Nature belongs to this category (τοιαύτη δέ ἐστι καὶ ἡ τοῦ παντὸς φύσις, I 257.8–9), but he names no other occupants. Perhaps one should think of the lower universal natures (see below II.4.2).

[54] This is a notion from dynamic semantics. Dynamic semantics is used mainly to explain and formalize anaphora. See Asher (1998).

[55] I thank Jan Opsomer for pointing out the importance of divisibility in the notion of nature. On the different senses of "becoming" see Lernould (2001: 222 f.) and chapter III. There are other differences between soul and nature that accompany their respective combinations of Being and Becoming, such as degrees of rationality and causal power, but Proclus is not interested in these differences at this point.

[56] *In Tim*. I 257.9–11 καὶ γὰρ αὕτη πάντως ὡς μὲν μεριστὴ περὶ τοῖς σώμασι γενητή ἐστιν, ὡς δὲ παντελῶς ἀσώματος ἀγένητος, cf. *Theol.Plat*. I 15 76.20–21.

[57] Cf. Schneider (1996: 439).

[58] *In Tim*. II 152.9–20.

intermediates are soul and 'the divisible essence' (ἡ μεριστὴ οὐσία), and their description is similar to that of soul and nature in the passage discussed above. The reasoning is the following: the divisible essence is a second transitional hypostasis (μεσοτής), just below soul. Just as there are two intermediates between true Being and true Becoming, so too are there two intermediates between the corresponding true indivisibility and true divisibility (i.e. divisibility into infinity): soul is divided (over some things, but not everything, cf. II 142.2 ff.), and yet remains a unity through having a separable existence. The divisible essence on the other hand is divided into many (but not divisible into infinity, as is body) and has its existence in another (is ἄλλου), not in itself. The terminology here is so similar to that of the passage quoted above that we can assume that by 'the divisible essence' Proclus intends nature.[59]

In general, the impression that Nature for Proclus constitutes a hypostasis separate from Soul is reinforced by the many enumerations of the main (ontological) strata of reality (or corresponding aspects of e.g. the universe or human beings). These enumerations differ from one context to the next, and therefore as such can be used only to reconstruct a picture of all the different levels Proclus assumes. That is, they should not be taken separately as exhaustive representations of reality. This said, the following can cautiously be stated. Nature figures next to soul in quite a number of those enumerations, which supports the thesis that Proclus takes nature to be a separate level of reality.[60] On many other occasions, however, nature is not mentioned.[61] This would weaken our thesis, if it implied that nature, in these cases, is subsumed under soul. However, rather than to take the absence of nature as an indication that nature is there subsumed under soul, I propose that in these cases nature and body are implicitly folded into one, since the former constitutes the latter (see below). This is moreover suggested by the fact that, when "body" is mentioned in the enumerations, it is often in the plural (e.g. *In Tim.* I 132.28 ff.), or in some other way that indicates that Proclus is speaking

[59] Cf. Opsomer (2006: 159).

[60] For some examples of 'lists' including a reference to nature, other than the ones from *El.Th.* quoted above (limited to the *In Tim.* and the *Theol.Plat.*, and leaving out the introduction of the *In Tim.*), see: *In Tim.* I 261.26 f., 263.5 f., 314.14 f., 386.13 ff., 454.23, II 24.7–11, 300.21 f., III 6.4 ff., 28.18 f., 115.23–27, 193.30 f., 198.11–16, cf. 270.16–271.27; *Theol.Plat.* I 22 103.26–28, II 10 62.12–15, III 2 8.2 f., 3 12.8–10, IV 15 47.7 f., 25 74.20 ff.

[61] 'Lists' without nature, and more precisely consisting of mind, soul, and body, are numerous in the *In Tim.*, mainly because of *Tim.* 30b4–5: νοῦν μὲν ἐν ψυχῇ, ψυχὴν δὲ ἐν σώματι. e.g. *In Tim.* I 269.17 f., 291.26–28 (re. *Tim.* 30b); cf. *Theol.Plat.* III 6 25.11 ff., 28.3 ff., IV 20 60.1 ff., V 26 98.14 ff., 30 111.22–23 etc.

of informed body (e.g. *Theol.Plat*. IV 20 60.2, σωματικὴ σύστασις). As we will see (II.5) Nature is the proximate cause of the information of body.

One of those enumerations, in *El.Th*. prop. 111, is especially revealing as it describes the relation between nature and soul as that between any two adjacent hypostases: the universal of every level is a likeness of its immediately superior level, and the first members of any order participate in the superior level;[62] for nature that means that universal Nature is similar to universal Soul,[63] and that higher particular natures somehow participate in Soul, whereas the lower ones do not, but are mere natures. In other words, Nature is no more a kind of soul than Soul is a kind of Intellect.

The above is evidence in favour of assuming that universal Nature is a real hypostasis in Proclean metaphysics. We have to keep in mind, however, that there are also indications that it is only barely so. What qualifies something as a hypostasis are primarily the following properties: self-sufficiency, self-constitution and self-motion. Nature is primarily Becoming, however, and only secondarily Being, it is irrational, divisible, and most importantly, it does not revert upon itself.[64] And that nature does not revert upon itself means that it has no self-contemplation and hence is not self-sufficient or self-constituted (αὐϑυποστατόν). It also tells us that nature is not self-moving, as everything self-moving is capable of reverting upon itself.[65] So Nature does not possess the properties that would qualify it as a hypostasis.

Proclus' motivation for nonetheless separating nature from soul is more than just obedience to, for example, the principle of continuity or of plenitude, which result in the seemingly endless proliferation of ontological levels. Rather, following his teacher Syrianus,[66] he hereby tries to dissolve the incongruity he felt in the fact that there are things which are considered entirely soulless (i.e. they do not even have a vegetative soul), yet have some properties normally associated with being ensouled:

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[62] For these principles see *El.Th*. prop. 108–112.

[63] Cf. *In Tim*. III 115.23–27.

[64] See *In Tim*. I 10.16–21, quoted above as **T II.2**.

[65] *El.Th*. prop. 17. On reverting upon oneself see also *El.Th*. prop. 15–16, and Dodds' comments (1963: 202 ff.), cf. prop. 29–39. Steel (2006: with bibl. in n. 16). Nature does, however, possess a kind of self-motion due to its divine user. See below II.5.1.

[66] Syrianus *In Met*. 186.3–5, see also below II.5. For more references on nature in Syrianus see Cardullo (2000: 38–41).

> T II.4 Nature … through which even the things that are most devoid of soul (ἀψυχότατα) participate in a kind of soul (ψυχῆς τινός).[67]

Saying that something participates in a kind of soul (ψυχῆς τινός) either means that it partakes in something that belongs to the genus of souls, and more precisely to a certain species thereof, or that it partakes in something that does not belong to the genus of souls, but to another genus that has some properties primarily belonging to souls, and hence is similar to a soul. Proclus could have chosen the former alternative, by adding a yet lower species to Soul, similar in part to the Peripatetic vegetative soul. As Opsomer's discussion of irrational souls reveals, Proclus does not explicitly do this.[68] The indications that Proclus supposed a vegetative part, or vegetative capacities of the soul, are part undecisive and part indirect and based on the assumption that Proclus' doctrine can be gathered from that of later Neoplatonists (Ammonius and Philoponus).[69]

It is exactly on this issue of irrational souls, and their relation to nature, that Proclus' philosophy becomes rather inarticulate. For example, when answering the question whether there is an Idea of Soul, Proclus informs us that the irrational souls proceed both from the paradigm in rational souls, and from one monad and one Idea, which is called "the highest, spring-like Nature, which exists before the many natures".[70] This seems to contradict the ontological separation of nature from soul, and might lead one to believe that nature is a kind of soul after all.[71] There is another

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[67] *In Tim.* I 11.23–25. Considering the use of the very rare superlative of ἄψυχος there is an undeniable presence in the background of *Tim.* 74e, where Timaeus describes different kinds of bones, the ones full of soul, which are covered with little flesh, and the soulless ones (*Tim.* 74e2–3, ἃ δ' ἀψυχότατα ἐντός), which are instead very meaty. Syrianus mentions spontaneous generation and the procreations of trees and grasses. Other examples of the soulless are stones and pieces of wood (see e.g. *In Parm.* 735.12 (17–18 Cousin)).

[68] Opsomer (2006: 138–140, 144–145) shows that Proclus limits the name 'soul' to anything rational, but does distinguish lower faculties of the irrational 'souls', among which the vegetative powers. The latter, however, are often said by Proclus to coincide with ἐπιθυμία.

[69] For the evidence see Opsomer (2006: 144–146). See e.g. *In Remp.* I 95.2–7.

[70] *In Parm.* 819.22–820.24 (819.30–37 Cousin), esp. 820.4–5 (5–6 Cousin): ἀπὸ τῆς φυσέως τῆς ἀκροτάτης καὶ πηγαίας προϋπαρχούσης τῶν πολλῶν φύσεων). Note that nature is the source only of their appetitive powers (ὄρεξις). The irrational souls owe their cognitive powers to the Demiurge (*In Parm.* 820.2–3 (2–5 Cousin)). Moreover, they also descend from the paradigms in the rational souls, and depend on those rational souls (820.15 ff. (Cousin 23 ff.)). Cf. *In Remp.* II 12.13 ff. for the relation φύσις, fate, and vegetative part/kind of soul, and why τὰ φυτά … ἀπὸ φύσεως ὠνόμασται.

[71] Cf. Opsomer (2006: 158). Note that awareness of this complex metaphysical level of irrational souls, where nature and soul are hardly distinguishable, may be why Proclus

option, however, which is that irrational souls are in fact natures. This option is to be preferred, because, as Opsomer (2006: 137 ff.) has shown, according to Proclus the irrational souls are not really souls, but rather images of souls.[72] So, without going into the details of Proclus' notion of irrationality, we can say that also with respect to irrational souls there is no need to assume that nature is a kind of Soul.

Another rather complex issue is that of the relation between the World Soul and Nature. In general, Proclus is hopelessly vague on this topic. Sometimes he ascribes to the World Soul properties that elsewhere belong to universal Nature (e.g. the animating of things that have no life of their own),[73] but there are three clinching arguments, I submit, against an identification. First of all, nature is entirely inseparable from the corporeal, but the World Soul is considered to be separable and partly separate from the corporeal.[74] After all, soul, as opposed to nature, does not really reside in body. As a consequence, nature is not a kind of soul.[75] Secondly, when wondering what Fate is in his essay on the *Myth of Er*, Proclus clearly rejects the option that it is the World Soul, only to embrace the option that is the Nature of the universe, which is a clear indication that he thinks of them as separate strata of reality, with distinct properties.[76] And finally, the Demiurge is said to insert a life into the universe in order to make the universe receptive to soul.[77] This life, which must therefore be ontologically distinct from soul, is in fact nature (see II.5). The conclusion is warranted, therefore, that nature is neither identical to the World Soul, nor a part of the World Soul.[78]

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speaks of 'intellective soul' when first stating that nature is not soul at *In Tim.* I 10.24. See above II.3.1.

[72] *El.Th.* prop. 64 ἴνδαλματα ψυχῶν, *Theol.Plat.* III 6 23.23 εἴδωλα ψυχῶν.

[73] *In Tim.* I 407.13–17, cf. II 105–106. Cf. Praechter (1932: 1753). On the World Soul in Proclus see Siorvanes (1996: 145–146).

[74] E.g. *In Tim.* I 406.31–407.1.

[75] Cf. *In Tim.* III 249.27 ff., where Proclus limits the productivity of the mixing bowl of *Tim.* 41d to psychic life, and excepts physical and noeric life. That is, physical life and psychic life do not have the same source.

[76] *In Remp.* II 357.7–27. Note that Linguiti (2009) has shown that for Proclus Fate and Nature are not identical. That does not diminish the use of the above paraphrased passage as argument for the separation of nature from soul.

[77] *In Tim.* I 401.25 ff.

[78] Also in Syrianus the relation between nature and World Soul is unclear. See on this subject Praechter (1932: 1753) and *In Tim.* III 248.24 ff., where Syrianus' view on the mixing bowl is described in a way that seems to imply that nature is a kind of encosmic soul.

In conclusion we can say that for Proclus, as opposed to Plotinus, Nature is not a part of Soul, but rather is a separate level of reality, the lowest transitional hypostasis between the intelligible and the perceptible.

For Plotinus, Nature had to be a kind of Soul because there are no more than three hypostases,[79] while at the same time Nature, as a cause of Becoming, cannot be *in* Becoming but has to be ontologically prior to it.[80] Proclus has a different solution for Nature's causality. Before discussing that, however, we return to Proclus' doxography on nature to see why, just as those ancient philosophers who claim that nature is a part of soul were off the mark, so too the ones who equated nature with physical powers, are wrong.

II.3.2. *Nature is not the natural*

As we have seen above, Proclus puts nature above "corporeal powers", i.e. physical powers such as weight and density,[81] and thereby also above matter, form, and the combination of both.[82]

Just as Plotinus did, Proclus denies that nature is somehow identical with its products.[83] Proclus initially bases his rejection of the equation of nature with its products, a theory held by "some predecessors of Plato", on *Laws* X.[84] Proclus mentions how those philosophers "called the natural 'natures'" (τὰ φύσει φύσεις προσηγόρευον). This echoes Plato's "… the natural, and nature, that which they incorrectly call just that …" (τὰ δὲ φύσει καὶ φύσις, ἣν οὐκ ὀρθῶς ἐπονομάζουσιν αὐτὸ

[79] *Enn.* V 1 [10], esp. 8.

[80] See below.

[81] *In Tim.* I 10.9–10.

[82] It is clear from I 10.13 ff. that this is what Proclus has in mind. He rejects the described theories in two clusters, soul on the one hand, and matter, form, their combination, and physical powers on the other, and consequently states that Plato places nature "between the two" (ἐν μέσῳ δὲ ἀμφοῖν), namely below soul, and above corporeal powers (i.e. the highest of what is below nature).

[83] For Plotinus see *Enn.* III 8 [30] 3.1–5, cf. Wagner (2002: 303) and *Enn.* IV 4 [28] 13, esp. 8–11, with Brisson's discussion of the passage (forthcoming). Brisson points out that the notion of identity of nature with its products is Aristotelian and Stoic. It is true that at times Aristotle equates nature with its products (see below), but on occasion he also explicitly distinguishes between nature and the natural, *Phys.* II 1 192b35–193a1; cf. II 8 199b14 f. Note that Proclus, who connects the identification of nature and its products with the passage from *Laws* X, is aiming his criticism primarily at pre-Platonic philosophers.

[84] *In Tim.* I 10.7–9, see above.

τοῦτο, *Laws* X 892b6–7).[85] In the latter passage, the Athenian stranger is in the process of explaining to Clinias that philosophers of nature tend to have the "mindless opinion" (ἀνόητος δόξα, 891c7) that the natural (e.g. the elements) is identical to nature, where nature is "the coming into being of the first things".[86] They are wrong, the stranger says, because in fact soul is prior to those natural things, and hence soul should be called "natural" a fortiori. As in other Platonic passages, it is difficult to decide which value Plato gives to "nature" and "natural" here, as he is playing on the whole semantic spectrum between "what grows" and "what is primary".[87] His main point, however, can be construed as follows. The conclusion Plato wants to reach is that soul is 'more natural', i.e. ontologically prior to what the Presocratics call nature. This conclusion is reached from the starting point "whatever is the origin of the 'coming into being of the first things' is nature", and the subsequent demonstration that soul is the origin of everything, and hence is 'more natural' than the elements. In this way, the philosophers who hold their 'mindless opinions' and ignore the superiority of soul to nature are refuted.

Proclus in the *In Tim*. and elsewhere makes very selective use of the above argument and leaves out the mention of soul altogether. For example, in the essay on the *Myth of Er* he refers to the *Laws* passage, and states that the fact that nature is obviously (δηλαδή) not identical to the natural is reason to suppose that nature is something beside (ἄλλη τις) bodies, i.e. the natural. When discussing the superiority of 'the origin of everything' to everything natural, Proclus assigns that superiority to nature, rather than to soul.[88]

In support of Plato's position (as Proclus sees it) that nature is distinct from its products, our commentator adduces three arguments.

(1) First of all:

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[85] The relevant passage starts at 891b, where the equation of physical substances to nature is first mentioned. The argument runs up to 899d.

[86] τὰ πρῶτα here refers to the four elements, cf. 891c.

[87] This meaning of 'natural' can be understood only against the background of the wider context: the debate on the relation between φύσις, τυχή, and νόμος, and the question whether the faculties and products of soul belong to the former or the latter. See esp. 888e–889e and 892a–c.

[88] *In Remp*. II 357.22–26. Note that in the *In Remp*. Proclus uses the singular φύσιν, which we also find in the Platonic text. As said above, nature is there identified by Proclus as Fate (Εἱμαρμένη).

> T II.5 … in accordance with our common notions (κατὰ τὰς κοινὰς ἐννοίας) 'nature' is one thing, and 'according to nature' and 'by nature' another. (*In Tim*. I 10.22–23)

Although Proclus does not explain this claim—after all, the whole point of introducing a common notion is that it is self-evident—, the emphatic juxtaposition of "nature" (φύσις), "according to nature" (τὸ κατὰ φύσιν) and "by nature" (τὸ φύσει) suggests that he is referring to the purely logical sense in which anything is prior to that which is derived from it (as the prepositional phrase and the 'dative of agent phrase' are derived from the noun).[89]

(2) The second argument adduced is one from a well-known analogy, namely that between nature and τέχνη: "After all," Proclus states, "the product of art is not the same as art" (καὶ γὰρ τὸ τεχνητὸν ἄλλο παρὰ τὴν τέχνην, *In Tim*. I 10.23–24), which allows him to infer that therefore the natural, understood as the product of nature, is not the same as nature. The parallel between nature and art, which assumes that art imitates nature and that therefore observations concerning art allow us to draw inferences about nature, is of course a common one in antiquity.[90] This particular argument, however, stating that the artificial is not the same as art, and that the natural is not the same as nature, was first formulated by Alexander of Aphrodisias, in an explanation of Plato's motivations for supposing the existence of Forms ("natures") besides everything natural.[91] Proclus' formulation of it, which concerns not the Forms themselves, but Nature as a lower cause transcending its products, may contain an implicit criticism of Aristotle: in *Phys*. II 1 we find a passage that is verbally very similar, but in content almost the opposite: "just as we call what is artificial and a work of art 'art', so too do we call what is according to nature and natural 'nature' ".[92]

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[89] Which is also expressed by the δηλαδή in *In Remp*. II 357.23.

[90] See e.g. the well known passages in Aristotle: *Phys*. II 1 193a31 ff., II 8 199a12 ff. The parallel between art and nature, on which see Lloyd, G.E.R. (1966) and Fiedler (1978: 260–288), of course plays a crucial role in the *Timaeus* itself, in the sense that the Demiurge is portrayed as a craftsman who chisels, moulds and constructs the universe. On this theme see Brisson (1994: esp. I.1.2). For the relation between nature and the Demiurge according to Proclus see below, II.5. On the parallel between Timaeus and the Demiurge see chapter V.

[91] Alex. *In Met*. 54.23 ff.

[92] *Phys*. II 1 193a31 f. ὥσπερ γὰρ τέχνη λέγεται τὸ κατὰ τέχνην καὶ τὸ τεχνικόν, οὕτω καὶ φύσις τὸ κατὰ φύσιν [λέγεται] καὶ τὸ φυσικόν. A small but revealing difference between the two passages is the fact that Aristotle has the verbal adjective τεχνικόν, whereas Proclus uses a (post-classical) passive participle (τεχνητόν). The *passive* form has

(3) The final argument brought in for nature's separation from and in fact priority to its products is that nature contains the creative principles of "what comes after it" (Proclus is not bothered by the fact that with regard to the thesis he is arguing for this argument is merely begging the question):

> **T II.6** ... rising above (ὑπερέχουσαν) everything that comes after it by possessing their λόγοι and producing everything and giving it life.[93]

Behind this argument lies a principle of causation that is central to Proclean metaphysics.

One of the tenets of Neoplatonic metaphysics is the rule that every productive cause is superior to what it produces.[94] The hidden assumption in the context of the argument quoted above is, of course, that nature is indeed a productive cause. The fact that nature contains the creative principles of everything coming after it, and in that sense produces everything, implies that nature must be superior to, and therefore distinct from, those products.[95] Nature's incorporeality, which is also brought up in the treatise in *In Tim*.,[96] can be explained from this same principle. Since nature is the cause of everything corporeal, and a cause is altogether different from its effect (πανταχοῦ ἐξήλλακται), nature is incorporeal.[97] Thus, when considered as the aggregate of all that which is caused by nature, "the natural" cannot be identical to nature. Instead, there has to be a separate, incorporeal, causally efficient nature. Siorvanes and Rosán take this to imply that there has to be a transcendent monad of Nature,[98] which brings us to the question on which ontological level nature should primarily be placed.

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a connotation that the verbal adjective lacks, namely that of an *efficient cause* of what is artificial that is *distinct* from the artificial (i.e. τέχνη). The parallel then suggests that there is also an efficient cause of the natural, and distinct from it: φύσις. The same connotation cannot be summoned by the corresponding adjective derived from φύσις, φυσικός (and φυτόν is semantically too limited).

[93] *In Tim*. I 10.19–21, quoted above as part of **T II.2**.

[94] *El.Th*. prop. 7, Πᾶν τὸ παρακτικὸν ἄλλου κρεῖττόν ἐστι τῆς τοῦ παραγομένου φύσεως and 75, Πᾶν τὸ κυρίως αἴτιον λεγόμενον ἐξῄρηται τοῦ ἀποτελέσματος.

[95] Cf. *In Tim*. III 198.13–14 οἱ ἀπὸ τῆς φύσεως [λόγοι προϊόντες] φυσικὰ [ποιοῦσι]. On the working of nature see II.5.

[96] *In Tim*. I 11.11, see further below.

[97] *Theol.Plat*. II 10 62.11–13. Cf. *In Tim*. I 257.10–11 παντελῶς ἀσώματος.

[98] Cf. *El.Th*. prop. 109, *In Tim*. III 115.23–27, *Theol.Plat*. V 18, 64.3–20 for indications in that direction. For Siorvanes and Rosán see the next section.

II.4. *The ontological level of Nature*

In summary, the preceding paragraphs yield the following picture. On the one hand, nature is set apart from soul, because of its immersion into bodies, its divisibility, and its lack of self-sufficiency. On the other hand, that which is called nature primarily, especially in the introduction to the *in Tim*., is an incorporeal productive cause, and hence, Proclean metaphysics would suggest, a transcendent monad (Nature).

These two sides do not sit easily together. Immanence and divisibility as such are incompatible with transcendence and productive causality.[99] The tension becomes even more acute if one considers nature in terms of *participation*, i.e. assuming that everything natural somehow participates in Nature, which presupposes the existence of an *imparticipable* Form of Nature. We have seen above (II.3.1) that Nature is the "of another", whereas soul is "of another and of itself", and mind is "of itself". These expressions were explained among other things with reference to participation: Soul is "of another" because of being participated, and "of itself" due to not descending into the participant (τῷ μὴ νεύειν, I 10.28). From this we can conclude by analogy that nature, being "of another", is participated, and does descend into its participant (cf. δύνουσα, I 10.25)—if it did not, it would also be "of itself". If nature is participated, however, according to Proclean metaphysics there should be an unparticipated Nature,[100] i.e. a Nature that is not connected with body.[101]

One can see this tension very nicely illustrated in Lowry's table of (im-)participables, which I reproduce at the end of this chapter.[102] Lowry's table II presents an overview of all of Proclean reality in terms of what is participated and imparticipable, and the corresponding levels of divinity found in the *Platonic Theology*. It is revealing that the table has two question marks, where by analogical reasoning one would expect (1) divine unparticipated Nature with the hypercosmic and encosmic gods and (2) divine participated Nature with the encosmic gods.[103]

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[99] This tension is present in Platonic metaphysics as a whole, but is most acutely felt in the case of nature, since, as opposed to other levels of reality that are related to the corporeal, such as soul, nature is explicitly *denied* any existence separate from the corporeal.

[100] According to the general principles expressed in *El.Th*. prop. 23.

[101] This has been pointed out by Siorvanes (1996: 138), albeit in confusing terms, as he takes 'monadic' to be an equivalent of 'imparticipable'. Proclus does not use the word 'monadic' only or even predominantly in this sense.

[102] Lowry (1980: 103). Note that Lowry gives a Hegelian reading of Proclus.

[103] On Nature's divinity see also II.5.1.

As I will argue, Proclus himself is well aware of the impossibility of an imparticipable Nature, and the first question mark will remain. The second question mark, however, will be shown to be the place of the Nature of the universe.

II.4.1. *Hypercosmic-and-encosmic—Siorvanes' solution*

Rosán (1949) and Siorvanes (1996) have assumed the existence of imparticipable Nature, and have assigned to this imparticipable Nature a particular level of divinity, namely that of the hypercosmic-and-encosmic gods.[104] This identification is nowhere made by Proclus, yet Rosán assumes it to be correct without any argumentation. Siorvanes does present an extensive argumentation. In the following, we will look into his main arguments, which will be shown to be untenable. The question whether there is an imparticipable Nature will not be answered here, but in the next section.

Siorvanes (1996: 137–138) assumes the following. Immanent nature cannot be imparticipable. Yet for every participable there has to be an imparticipable monad. Therefore, there has to be an imparticipable monad of Nature that "is exempt from any link with body". His support for this thesis concerning the existence of an imparticipable monad of Nature rests mainly on the assumption that the level of divinity of Nature is that of the hypercosmic-and-encosmic gods, also called—among other things—the 'unfettered gods' (ἀπόλυτοι),[105] due to their indivisibility, and the 'immaculate gods', due to the fact that they do not descend (μὴ ῥέπον).[106]

Siorvanes' reading has several problems. First of all, apart from the fact that Proclus never explicitly assigns Nature to this order of gods (as Siorvanes also admits), the properties Proclus ascribes to them, i.e. being indivisible and non-descending, are themselves associated with Soul, not with Nature. This is enough reason to conclude that these hypercosmic-and-encosmic gods cannot be on the same ontological level as the nature discussed in the introduction of the *In Tim*., since that nature is expressly characterized as divisible and descending (see II.3).[107]

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[104] See for a similar view Beutler in RE sv Proklos.

[105] *Theol.Plat*. VI 15 74.21 ff.

[106] For the hypercosmic-and-encosmic gods see *Theol.Plat*. VI 15–24.

[107] Cf. Russi (2009: 156 and n. 22) who follows Siorvanes and Rosán in assuming a Henad of nature, but points out that, since nature does not revert, it cannot belong to the order of hypercosmic-and-encosmic gods.

Secondly, the activities of this hypercosmic-and-encosmic Nature would have to be, as Siorvanes calls it, "touch and go".[108] This qualification is indeed applicable to the hypercosmic-and-encosmic gods, but it also applies to the World Soul, which is therefore ranged with the unfettered gods.[109] Combine this with the fact that nature is on a lower ontological stratum than soul—including the World Soul (see II.3.1), and we have to conclude that nature cannot be found on the level of the hypercosmic-and-encosmic god, unless it belongs to a lower level within the order. We will return to this below.

Finally, Siorvanes (1996: 138) also argues that, since Proclus mentions that the Demiurge uses Nature and Necessity in creating, which comes down to identifying them, and since Necessity is ranged with the unfettered gods, Nature should be ranged with the unfettered gods. We will not here go into the highly complicated relation between Nature and Necessity (treated by Proclus at *De prov*. 11–13 and elsewhere; see below). Suffice it to say that this argument is a *non sequitur* as long as the identity of the two is not proved: that Nature and Necessity are both used by the Demiurge is no reason in itself to put them in the same order of divinity. And as Linguiti has recently shown, Nature and Fate (sometimes called Necessity) are closely related, but not identical.[110]

An argument in favour of locating Nature with the hypercosmic-and-encosmic gods is the fact that Proclus ascribes to some gods of the dodecad of hypercosmic-and-encosmic gods functions which he also ascribes to universal Nature. Hephaestus, the third god in the demiurgic triad, inspires the corporeal with natures, Ares, the third god in the guardian triad, gives corporeal natures strength, power and solidity, and Artemis, the third god in the vivific triad, activates the physical principles

[108] Siorvanes does not give a reference, but I am quite certain that the quotation he presents in support of this qualification of touching and not touching (ἁφὴ καὶ μὴ ἁφή) does not stem directly from Proclus, but rather from Rosán (1949: 171), "touching (ἁφή) and not touching (μὴ ἁφή)". Rosán, in turn, refers to a passage in the *Platonic Theology* (VI 24 109.19–114.22, re. *Parm*. 149d5–6, ἅπτεταί τε καὶ οὐχ ἅπτεται, i.e. also from the discussion of the hypercosmic-and-encosmic gods.

[109] See previous note and *In Tim*. II 296.19 ff., esp. 297.2–4, cf. *In Parm*. 1221.25–31 (32–39 Cousin), where "the one divine Soul" is said to be intermediate between the encosmic and the hypercosmic.

[110] See for a nuanced discussion of this topic Linguiti (2009: 175–184), who concludes that Nature and Fate are different aspects of the same reality. Russi (2009: 157–158) prefers to identify them (but see her n. 26). See also Phillips (2007: 187–188).

(παντὰς κινοῦσα τοὺς φυσικοὺς λόγους εἰς ἐνέργειαν).[111] Perhaps the solution to the question whether or not Nature belongs to the order of hypercosmic-and-encosmic gods can be found in the fact that the gods that perform the "natural" activities are always the third and lowest in the triad. If we allow for a hierarchy within the unfettered order, such that not every god in the dodecad is both hypercosmic and encosmic, but in which the lowest gods of the triads are always encosmic, Nature could be found at the bottom, so to speak, of the order of the hypercosmic-and-encosmic gods. This will have to remain a tentative solution, however. We will see that nature is indeed encosmic yet transcending its products. We will not, however, further study Proclus' views on the relation between nature and the hypercosmic-and-encosmic gods.

In short, Nature is certainly not to be identified with the whole realm of unfettered or absolute order of gods described in book VI of the *Platonic Theology*, and if it can be identified with a part of the order, then not with the hypercosmic part. There are no reasons to exclude Nature's belonging to the order of the encosmic gods. For now, however, arguments in favour of this will have to remain primarily negative. If Nature indeed fits in the order of unfettered gods, it belongs to its lower, i.e. encosmic aspect. If it does not, it has to belong to a lower order, and there is only one order below that of the unfettered gods, namely that of the encosmic gods themselves, which splits into the heavenly and sublunary gods.[112] Since the lowest end of the chain of divinity is the encosmic gods, it is clear from this description that gods need not be non-immanent in order to be transcendent. Likewise, and this is where the solution to the problem of imparticipable Nature lies: the question whether there is an imparticipable Nature cannot be rephrased as "is nature immanent or transcendent?"[113]

Little is known about the order of encosmic gods. As Opsomer argues, it consists of a monad followed by a triad. What we do know, and which provides us with a potential argument for locating Nature in this order, is

[111] *Theol.Plat*. VI 22 98.9–10. Note also that there are no activities in the fourth, anagogic, triad that are in any way related to the activities of φύσις. This can be explained from the fact that the fourth triad concerns *epistrophê*, which is something nature does not have. See also Opsomer (2000b: 121). On the working of nature see II.5.

[112] Cf. *In Tim*. III 162.15, on what Proclus calls the 'golden chain' of levels of gods. The sublunary gods manage genesis in an ungenerated manner, and nature in a supernatural manner. On the divinity of Nature, see also II.5.1.

[113] This was pointed out to me by J. Opsomer, during the ESF Workshop 'Physics and philosophy of nature in Greek Neoplatonism', Castelvecchio Pascoli, June 2006.

that the monad of the order, Dionysus, can be identified with the World Soul, as "an essentially hypercosmic god in an encosmic environment".[114] Nature being ranged ontologically lower than the World Soul (see II.3.1), it would have to belong to the encosmic gods, unless the order of the hypercosmic-and-encosmic gods partly overlaps with the order of the encosmic gods in such a way that the monad of the encosmic gods is ontologically prior to the lowest gods of the hypercosmic-and-encosmic order. This issue will have to be left unresolved. We can, however, come to a conclusion on the ontological status of Nature without having pinpointed its divinity.

II.4.2. *Chain of Nature—Proclus' solution*

In this section I will argue that for Proclus the existence of an imparticipable monad of Nature is beyond dispute, and that he dissolves the paradox of the imparticipable monad simply by not calling it a nature. This may not sound like a solution at all, and in a sense it is not. I maintain that in the case of Nature Proclus has to bend the rules of his own metaphysics in order to allow for a lowest transitional hypostasis (after Soul) between the intelligible realm and the realm of the sensible.

As said above, and as is fitting to his metaphysics, Proclus does not distinguish one Nature, but a whole gamut of natures. So far we have spoken mainly about the nature that is the subject of the treatise in the introduction to the *In Tim*. As is to be expected, Proclus there has in mind the hypostasis of Nature, which, I will argue, is in fact universal Nature.[115] This universal Nature is present also elsewhere in Proclus' work, and is sometimes called "one Nature" (μία φύσις).[116]

In order to get a clear picture of the place of the different kinds of nature within the intricate configuration of Proclus' metaphysics, and to understand why an ontologically paradoxical imparticipable *Nature* is not needed, let us first look into the whole "chain of nature", before determining in more detail the characteristics of universal Nature.

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[114] Opsomer (2000b: 121–122).

[115] Cf. *In Tim*. I 12.3, ἡ ὅλη φύσις.

[116] ἡ μία φύσις: *El.Th*. prop. 21.23; *In Tim* II 72.26, 86.26, III 197.31. ἡ ὅλη φύσις: *El.Th*. prop. 21.24–25 and 32; prop. 109.27; *In Crat*. LXXXVIII, 44.5–8; *In Tim*. I 51.27, II 24.7, 53.27, III 115.26, 273.6. We should be aware of the risk of over-interpreting these latter passages, since the expression ἡ ὅλη φύσις—as opposed to ἡ μία φύσις—may simply refer to the aggregate of everything natural.

A comprehensive overview of the chain of nature is to be found in the commentary on the *Parmenides*, in Proclus' fourth argument for the existence of the Forms.[117] In this argument, we find the following levels of nature in ascending order of productive power, generality, etc.:

(1) individual (maternal) natures, i.e. particular natures that are passed on through the mother.[118] Among these particular natures as on every level of Proclus' ontology, we read in *El.Th.*, a progression can be distinguished, in this case from natures that are somehow presided over by souls, to natures that are just that (φύσεις μόνον, *El.Th.* prop. 111).
(2) first level universal nature = the nature of the earth, containing the principles of all individual natures. Presumably, there are individual natures and universal natures also in each of the other three spheres of elements, but they are not mentioned in the fourth argument for the existence of Forms.[119]
(3) second level universal nature = the nature of the moon, containing the species of the natures of all four spheres of the elements.[120] After this follows "an ascent through (all?) the spheres" (διὰ τῶν σφαιρῶν ποιησάμενοι τὴν ἄνοδον), which suggests that after the earth and the moon follow the spheres of the other planets, again presumably each with its own nature, containing the principles of all the lower natures.
(4) the ascent ultimately leads to the third level universal nature = the nature of the universe (ἡ φύσις τοῦ παντός).[121]

This last nature is also the Nature of the *In Tim.*, as is clear from its description (*In Parm.* 793.15–794.4 (793.22–795.5 Cousin)): this most universal Nature contains the rational principles of everything, but it descends into bodies (δύνασα κατὰ τῶν σωμάτων, *In Parm.* 794.2–3 (3–4 Cousin)), and is thus "of others, not of herself" (ἄλλων ἐστὶ καὶ

[117] *In Parm.* 791.21–795.6 (791.29–795.8 Cousin). D'Hoine (2006a: 49) points out that the entire argument is structured as a fictitious dialogue with a peripatetic philosopher.
[118] See D'Hoine (2006a: 52–53).
[119] See, however, *Theol.Plat.* III 2 8.19.
[120] Cf. *Theol.Plat.* III 2 8.12–20, where Proclus explains how the natures of (the) earth, fire and the moon owe their being and activity to universal nature. On the connexion between moon and nature, which Proclus ascribes to Iamblichus, see *In Tim.* I 34.13 f., III 65.17–20, 69.15 f., 355.16.
[121] This is the "world nature" Siorvanes (1996: 145) says ought to exist as intermediary between the World Soul and the world body.

οὐχ ἑαυτῆς, *In Parm*. 794.12–13 (17–18 Cousin)). We can thus conclude that ἡ φύσις τοῦ παντός, ἡ μία φύσις, and ἡ ὅλη φύσις are all terms for universal Nature which is *also* the nature of the universe.[122]

i. Universal Nature

The existence of this immanent, irrational yet λόγοι-possessing Nature, is required for two reasons:[123] on the one hand, the proximate cause of the information of the corporeal has to be an irrational cause, in order to prevent it from withdrawing from the objects it informs, which would leave the corporeal world bereft of a rational structure. On the other hand, this same cause has to be rational in the sense of possessing λόγοι, in order to ensure the maintenance of proper (i.e. rational) boundaries and motions, which is something the corporeal, being ἑτεροκίνητος, cannot do itself.[124] So against the Peripatetics, Proclus maintains that nature can be irrational without thereby loosing its rational efficient power.[125] This is an important issue for him, which he introduces also in the very first pages of the *In Tim*: the Peripatetics, he complains, may well define nature as the source of motion, but they consequently deprive it of the efficient power it should have according to this definition, by denying nature the possession of the λόγοι of its products.[126] The very criticism Aristotle addresses to Plato, namely that he does not distinguish an efficient cause of natural things, is here turned against the Peripatetic philosophers.[127] And in the wake of this criticism follows Proclus' explanation of spontaneous generation (αὐτομάτως γίγνεσθαι, *In Tim*. I 2.23–24): what Aristotle would call spontaneous generation, is in fact Nature at work.[128]

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[122] At the same time, "the nature of everything" (ἡ φύσις τοῦ παντός) keeps the meaning it seems to have in the *Timaeus*, namely of "character of the universe". Cf. *Tim*. 27a4 (Proclus does not comment on the phrase there), 41e2 (see below (ii)), 47a7. Cf. *In Tim*. I 217.23–24 (re. *Tim*. 27c4) and *In Tim*. I 338.23–24, where we find ἡ ὅλη φύσις (re. *Tim*. 29b3). Likewise *In Tim*. I 13.13–14, 340.1, *De prov*. 11 36.18 "una mundi natura".

[123] *In Parm*. 794.8–16 (11–23 Cousin), see also below, II.5. On φύσις as containing creative reason-principles see also Syrianus *In Met*. 137.17 ff. and Simpl. *In Phys*. 298.18 ff.

[124] Cf. Phillips (2007: 167).

[125] Cf. Dörrie and Baltes (1998: 232).

[126] *In Tim*. I 2.20–26; 268.13–22; 389.8–9. The irrationality of nature is illustrated with the myth of the *Statesman*, in which nature is incapable of guiding the universe the moment the Demiurge abandons it. See below, II.5.2.

[127] Arist. *Met*. I 6 988a8–11, cf. 9 992a24–32 and XIII 5 1079b12–1080a11.

[128] He may be following his teacher: Syr. *In Met*. 186.3–5, cf. *In Met*. 12.5 ff. On Aristotle's account of spontaneous generation see Lennox (2001).

Although immanent irrational Nature is necessary for the information of the material world, it is not sufficient. A true cause (ἡ κυριωτάτη αἰτία), Proclus continues, has to be transcendent to its effects,[129] and thus cannot reside in them as does the Nature of the universe. Moreover, Nature is irrational, and therefore the λόγοι, rational principles, in the world of sense perception cannot have their *ultimate* source in Nature.[130] It would be truly irrational and incorrect, Proclus tells us, to turn over the universe to irrational ratios (ἀλόγοις γάρ, οἶμαι, λόγοις ἐπιτρέψαι τὸ πᾶν μὴ τῷ ὄντι ἄλογον ᾖ καὶ οὐκ ὀρθόν, 794.18–19 (26–27 Cousin)).[131] Considering the οἶμαι, I think what we have here is a moment of Proclean pride at his own play with words. In any case, Proclus' purpose is clear, as he underlines the point made, which is that there must be a higher, transcendent and rational cause that contains the Forms as source of the λόγοι of Nature.[132] This cause is the Demiurge:

> T II.7 It is then necessary to put the reason-principles in some other being that will know what is within him and whose action will be knowing as well as creative. It would be absurd that we should know the All and the causes of what comes to be, and the maker himself be ignorant both of himself and of the things he makes. A knowledge, then, greater than our own will reside in the cause of the cosmos, inasmuch as it not only knows but gives reality to all things, where we only know them. And if the demiurgic cause of the All knows all things but looks to the outside, again he will be ignorant of himself and be inferior to a particular soul. But if it is to himself that he looks, all the Ideas are in him, intellectual and knowing, not outside in phenomena only. (trans. Morrow and Dillon)

One might object at this point that in his argumentation for the ontological separation between Nature and its products (see above II.3.2), Proclus took recourse to the transcendence of causes, and that hence he is now contradicting himself when he claims that we need a cause of Nature just because Nature itself is *not* transcendent. Fortunately, Proclus' statements, if properly understood, turn out to be congruent, due to the different contexts of the two cases (natural vs. Nature and Nature vs. cause of Nature). In the first case, of the natural vs. Nature, the context of the

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[129] *El.Th.* prop. 75. Here transcendence is taken in the strong sense of non-immanence.

[130] A true cause has to be rational (and divine): *In Parm.* 795.24–25 (35–36 Cousin).

[131] Thus Schneider's (1996: 439, n. 4) claim that the fact that nature has λόγοι "ne signifie pas que ces raisons sont rationelles" is unjustified.

[132] *In Parm.* 794.16–795.6 (794.23–795.8 Cousin). This is the actual motivation for Proclus' discussion of the notion of nature in the *In Parm.*: coupled with the Neoplatonic principles of causation it allows him to build a case for the existence of transcendent Forms.

argument is that of production. All Proclus is maintaining there, is that any producer is ontologically superior to its products and in that sense transcends it.[133] In the second case, of Nature vs. the cause of Nature, Proclus is instead speaking of a more limited domain, namely that of the true cause (ἡ κυριωτάτη αἰτία), discussed in *El.Th.* prop. 75 (τὸ κυρίως αἴτιον λεγόμενον), as opposed to subsidiary causes (αἱ συναιτίαι). It is in this context that the technical term for transcendence (ἐξῃρῆται) comes in. Nature, as we will see, is not a real cause but a *subsidiary cause* (see II.5.1) and as such only *partly* transcends its effects. Transcendence in Proclus' system is a property that comes in kinds and degrees, as is clear from his remark "the more a cause transcends its effects, the more pure and perfect its activity".[134] Nature transcends the corporeal to the extent that it is incorporeal, contains some rationality, has more causal power, and more unity.

The above argument from the *In Parm.* reveals that, and why, universal Nature is immanent, namely in order to ensure an internal cause of movement and order of what is not capable of moving and ordering itself. This immanence of Nature is beautifully illustrated by Proclus with an image, inspired on Aristotle:

> T II.8 For Nature, when she *descends* into bodies, acts *in them* as you might imagine an artificer *descending* into his pieces of wood and hollowing them out *from inside*, straightening, drilling, and shaping them. Something like this is the case with Nature, which *infuses* itself into bodies, *inhabits* their mass, and, together with them, breathes the reason principles and motion *from inside*.[135]

This image is clearly concerned primarily with portraying the immanence of Nature, but is imprecise in that it suggests a rationality Nature does not have. Tracing the image of the carpenter back to its Aristotelian

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[133] That Proclus does not have in mind strict transcendence is clear from the opposition ὑπερέχουσαν—ὑφειμένην at *In Tim.* I 10.18–19. Cf. prop. 7 of the *El.Th.*

[134] *In Parm.* 794.13–15 (20–22 Cousin).

[135] *In Parm.* 794.2–8 (3–11 Cousin): ἡ μὲν γὰρ φύσις δύνασα κατὰ τῶν σωμάτων οὕτως ἐν αὐτοῖς ποιεῖ οἷον εἰ τὸν τεχνίτην νοήσειας δύναντα κατὰ τῶν ξύλων, καὶ ἔνδοθεν αὐτὰ κοιλαίνοντα, εὐθύνοντα, τετραίνοντα, σχηματίζοντα. Τοιοῦτον γάρ τι πέπονθεν ἡ φύσις, συνδιαβαπτιζομένη τοῖς σώμασι, καὶ ἐνοικοῦσα τοῖς ὄγκοις αὐτῶν, καὶ ἔνδοθεν συμπνέουσα τοὺς λόγους αὐτοῖς καὶ τὴν κίνησιν. Translation Morrow and Dillon (1987), modified. The workings of nature described in this passage are reminiscent of Hephaestus, the artificer (*In Tim.* I 142.23) who is said to breathe nature into (ἐμπνεῖ) bodies and create all the seats of the encosmic gods (*Theol.Plat.* VI 22, 97.15–17 Saffrey-Westerink).

source helps explain Proclus' intentions. The Stagirite also uses the image of the craftsman working from inside his product, although his point is rather different. Aristotle imagines that the art of shipbuilding would work just like nature, were it inside the wood.[136] Aristotle's aim here is to illustrate that teleology has a place in the works of nature even though nature does not deliberate. Likewise, Proclus' carpenter should be read, not so much as a deliberating agent, but rather as an immanent active principle that displays (a derived) rationality.

Let us return to the argument for the existence of Forms through the irrational rationality of Nature. Apart from showing why universal Nature is necessarily immanent, it also suggests that there is no *imparticipable* Nature as such, merely an imparticipable *cause* of universal yet participated Nature. If this is indeed the case, then discussions of the monads would have to reflect this difference between Nature and other hypostases. And in fact they do. In the corollary to proposition 21 of the *Elements of Theology* (the proposition that states that every order of reality is proceeded by a monad and from there evolves into plurality) we encounter universal Nature again when Proclus identifies "the nature of the whole" as the monad on which all other natures depend (αἱ πολλαὶ φύσεις ἐκ μιᾶς εἰσι τῆς τοῦ ὅλου φύσεως, 24–25).[137] A few lines later, this "nature of the whole" is called "whole nature" (μετὰ τὴν ὅλην φύσιν αἱ πολλαὶ φύσεις, 32–33). This phrase, which we now know we should understand to mean "universal Nature", occurs in the summary of the corollary, and is significant for its divergence from the other formulations used:

> **T II.9** Thus there are henads consequent upon the primal (πρῶτον) One, intelligences consequent on the primal (πρῶτον) Intelligence, souls consequent on the primal (πρώτην) Soul, and a plurality of natures consequent on universal (ὅλην) Nature. (*El. Th.* 21.30–33, trans. Dodds)

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[136] *Phys*. II 8, 199b28–29. The same Aristotelian image seems to be behind *In Parm*. 841.7–11 (8–14 Cousin), where Proclus criticizes the simile of wax impressions for the Forms by pointing out that Forms, and nature, have an internal activity, as opposed to the external activity of craft (I owe this reference to prof. C. Steel).

[137] Proclus in first instance introduces ἡ φύσις τοῦ σώματος, which might lead one to believe that he is speaking about the essence of body, rather than about nature which is immanent in body. Considering the fact that body does not recur in any way in the remainder of prop. 21 and corollary, I take it Proclus adds τοῦ σώματος as an explanatory genitive, to limit the discussion to Nature as immanent principle. Cf. *In Parm*. 703.13–14 (18–19 Cousin) καὶ ἐπὶ τῶν φύσεων ἡ μία καὶ ὅλη φύσις πρὸ τῶν πολλῶν ὑφέστηκε.

The One, Intelligence and Soul all receive the adjective "primal" (πρῶτον/πρώτην), but Nature is credited only with "universal" (ὅλην), *because there is no primal Nature*. Here, as in the *In Parm*. and *In Tim*., the realm of Nature does not ascend higher than the "nature of the whole", i.e. universal Nature (ἡ τοῦ ὅλου/παντὸς φύσις).

It has become clear by now that for Proclus ἡ φύσις (ἁπλῶς, as it were) is identical to the nature of the universe, which in turn is the most universal Nature, which is participated and immanent.[138] We also know that there must be a physically transcendent cause of Nature. The following section will deal with that demiurgic cause of Nature. This will lead us to a yet higher source of Nature, namely the life-giving Goddess Rhea/Hecate.

ii. Demiurgic Nature

Proclus finds evidence for a Platonic theory of a cause of universal Nature existing in the Demiurge in *Timaeus* 41e. Unfortunately, his exegesis of this passage is not very consistent.

> **T II.10** He mounted each soul in a carriage, as it were, showed them the nature of the universe, and described to them the laws of fate.
> (*Tim*. 41e1–3, trans. Zeyl, slightly modified)

In first instance, when refuting the thesis (ascribed to Theodorus of Asine) that the nature of the universe which the Demiurge shows to the souls is identical to the vehicle the souls are mounted onto, our commentator assumes that the nature of the cosmos here referred to is ontologically posterior to the souls:

> **T II.11** As [the souls] contemplate nature (τὴν φύσιν) they see the entire cosmic order (πᾶσαν τὴν κοσμικὴν τάξιν), while they themselves are ordered (τεταγμένας) above the nature of the cosmos (ὑπὲρ τὴν φύσιν τοῦ κόσμου), despite having obtained the encosmic sphere that is suitable to them. For first they were constituted, then they were distributed over the

[138] Rosán argues for the physical transcendence of Nature with respect to the material world by referring to *In Parm*. 1045, where we find λέγω δὲ φύσιν τὴν μίαν ζωὴν τοῦ κόσμου παντὸς ὑπερέχουσαν, καὶ μετασχοῦσαν μετὰ νοῦν καὶ ψυχήν, διὰ νοῦ καὶ ψυχῆς, γενέσεως (32–35 Cousin). Considering the immediately foregoing sentence, however, (… τὴν φύσιν … ἐν αὐτοῖς ἡδρασμένην τοῖς κινουμένοις καὶ ἠρεμοῦσι) I think we should accept Taylor's conjecture ὑπάρχουσαν for ὑπερέχουσαν, in which case the text does not support Rosán's argument anymore. Moerbeke has 'existentem', which supports Taylor's reading. The editors of the OCT vol. III have also adopted it (1045.26). The other passage Rosán refers to (*In Tim*. II 11) is completely irrelevant in this context.

> divine hegemonies, and then in the third place they entered their vehicles, contemplated nature (τὴν φύσιν), and heard the laws of fate.[139]

The nature of the cosmos is clearly put on an ontological level below that of the souls, assuming, that is, that the φύσιν that is the object of their contemplation is identical to the φύσιν τοῦ κόσμου that they supersede. There seems to be no reason in the above passage to assume otherwise—quite the contrary, identity is suggested by the parallel between φύσιν … πᾶσαν τὴν κοσμικὴν τάξιν and τὴν φύσιν τοῦ κόσμου. A little further, however, in the discussion of the same lemma, our commentator realizes that for the Demiurge to show the nature of the universe to the souls, the nature in question cannot be ontologically posterior to him:

> T II.12 So how does the Demiurge show them the nature of the universe (τὴν τοῦ παντὸς φύσιν)? Did he maybe turn them towards the cosmos and equip them to contemplate the λόγοι in nature (ἐν τῇ φύσει)?[140]

This option is rejected for two reasons. First of all, it would result in diverting the souls from λόγοι that are separable from the perceptible to those that are inseparable, thereby demoting the souls and excluding their reversion.[141] So instead the Demiurge leads the souls up to the intelligible, makes them revert to himself (ἐπιστρέφει πρὸς ἑαυτὸν),[142] separates them from matter (sic), and fills them with divine powers and demiurgic ideas.[143] Secondly, the Demiurge himself cannot turn to something posterior: whoever shows something to someone else also looks at the object shown; the Demiurge shows the souls nature; therefore the Demiurge looks at the nature shown to the souls; the Demiurge looks only at himself or at that which is prior to himself, since looking to something "outside", and to the world of phenomena, would make the Demiurge inferior even to individual souls;[144] therefore the Demiurge has within himself the unitary principles (ἑνιαῖαι ἀρχαί) of everything, and he has pre-established within himself the powers (δυνάμεις) of the generation of everything, including Nature.[145] Note that this is not the conclusion

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[139] *In Tim.* III 266.9–14.

[140] *In Tim.* III 270.16–19.

[141] *In Tim.* III 270.19–21.

[142] Cf. the Demiurge's address to the lower gods, and especially the words θεοί θεῶν at *Tim.* 41a6, as a means of making them revert to him, see *In Tim.* III 199.13 ff.

[143] *In Tim.* III 270.21–23.

[144] *In Parm.* 795.2–6 (-8 Cousin).

[145] *In Tim.* III 270.25–31. For this argument see also *Theol.Plat.* V 32, esp. 118.3–9; cf. *In Parm.* 821.1–22 (820.38–821.33 Cousin), where the argument functions in the proof for the existence of a Form of Nature.

one expects, as this would rather be "therefore the nature of the universe shown to the souls is prior to or in the Demiurge". Instead, an extra argument is somewhat surreptitiously introduced, namely that the Demiurge possesses the principles of everything and hence, it is implied, also of Nature. This allows Proclus to avoid the logically necessary conclusion that the nature of the universe itself is pre-established in the Demiurge, by replacing it with the ἀρχαί and δυνάμεις of the creation of Nature. So the "nature" of the universe shown to the souls is not really (a) nature, but rather the paradigm, the source, and the cause, of (the) Nature (of everything), that exists within the Demiurge.[146] It is nature only κατ' αἰτίαν, and in a supernatural manner (ὑπερφυῶς).[147]

iii. The source of Nature

According to the Chaldaean Oracles, there is an ultimate source of nature even above the Demiurge. In the context of the *Parmenides*, Proclus casually brushes aside this cause of nature as it is identified by the theologians, as he there prefers what he calls the philosophical (or Platonic) explanation of the cause of nature, i.e. that it is in the Demiurge.[148] In the *In Tim.*, however, our commentator adds the theological explanation, and for this reason, after introducing the paradigm of universal Nature in the Demiurge, he brings in an even higher cause of nature:

> **T II.13** We should also speak after another manner, not just by philosophically placing an idea only in the Demiurge, but we should also, as the theologians teach, contemplate nature primarily as it intellectually pre-exists in the lifegiving goddess. … So nature is primarily 'on the back of the lifegiving goddess', as the Oracle says: 'Immense Nature is suspended on the back of the goddess.' And from there it also proceeds to the demiurgic mind …[149]

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[146] *In Tim.* III 270.24–25. Note that the fact that φύσις is shown (ἔδειξεν) whereas the laws are told (εἶπεν) is given metaphysical significance by Proclus, in that nature is something separate from the souls, whereas the laws are somehow embedded in them (καὶ γὰρ τὴν μὲν φύσιν "ἔδειξεν" αὐταῖς, ὡς ἑτέραν αὐτῶν οὖσαν, τοὺς δὲ νόμους "εἶπεν", ὡς ἐγγράφων ἐν αὐταῖς, *In Tim.* III 275.18–19). This is another indication of the essential difference between nature and soul (or in this case, souls).

[147] *In Tim.* III 270.32.

[148] *In Parm.* 821.4 ff. (821.5 ff. Cousin). The reason for the rejection of the theological reading in the *In Parm.* is probably that there Proclus is not inquiring about the ultimate source of nature, but about a paradigm, an Idea of Nature, which he finds in the paradigm the Demiurge reveals to the lesser gods at *Tim.* 41a ff. (see esp. *In Parm.* 821.10–14 (14–20 Cousin)).

[149] *In Tim.* III 271.1–12. The same oracle (29 Kroll = fr. 54 (Des Places)) at *In Tim.*

The added theological approach to nature reveals that the nature in the Demiurge is only a secondary source, and that the primary source of nature is "the life-giving goddess" as referred to in the Chaldaean oracles.[150] This life-giving goddess is Rhea/Hecate. Hecate, in the Chaldaean Oracles, is in charge of the material world.[151] Her position in the Proclean pantheon is in between pure Intellect (Kronos) and demiurgic Intellect (Zeus).[152] She corresponds with Rhea in the Orphic tradition. As is clear from several passages, for Proclus the two goddesses merge into one as the divinity that imparts life to the universe.[153]

The fact that "Nature is suspended on the back" of this goddess can be explained as referring to Nature's being diverted "backwards" (ὄπισθεν) to an external object, i.e. body, and is hence an illustration of Nature's irrationality and immanence (cf. Nature's being 'of another').[154]

We can now adjust the account of the nature that is shown to the souls by the Demiurge: he shows them the cause of nature that he has within himself, but as this nature has proceeded from the life-giving goddess he actually shows them *that* nature:

> T II.14 So the nature that [the Demiurge] shows the souls is that source-like (πηγαία) nature, that pre-exists in the entire life-giving goddess …[155]

I 11.21; *In Remp*. II 150.21–22; *Theol.Plat*. V 32 (see below). Cf. Damascius *In Parm*. 156.31–157.28, who calls nature the third life of the lifegiving goddess.

[150] Phillips (2007: 170) proposes that it is the double source of nature (Demiurge and Paradigm) which explains the duality of nature (primordial motion and tool of the Demiurge, see below II.5). This is certainly a tempting view, but the evidence is thin—as Phillips himself indicates, Proclus does not focus on the relation between Paradigm and primordial motion.

[151] On Rhea/Hecate and *Or.Chald*. fr. 54, see Des Places (1971: 134, n. 5), Lewy (1956: 84 n. 65). On Hecate, the *Timaeus* and Proclus, see Brisson (2000a: 139–143), Brisson (2003: esp. 118–119, 122–123). On Hecate in Proclus as intermediate between the paternal Intellect and the demiurgic Intellect, see Brisson (2004b: esp. 203–204). On Hecate in general, see Johnston (1990). Festugière (1966–1968: vol. I, 38, n. 1) rightly rejects Lewy's identification of Hecate with Nature. See also Van den Berg (2003: 193–195). Tarrant (2007: 97, n. 28; cf. 105, n. 66) points out the difficulties in pinning down this life-giving goddess and naming her, among others due to Proclus' seeming disinterest in the latter. Tarrant also proposes Hera as a possible candidate. On the place of the theological texts in Iamblichus and Proclus see further Brisson (1995, 2002).

[152] On the relation between Hecate and the World Soul in the Chaldaean Oracles see Johnston (1990).

[153] See e.g. *Theol.Plat*. V 32, where fragment 54 recurs in a context devoted to Rhea, and *In Tim*. III 249.12–20, which echoes it.

[154] *In Remp*. II 150.19–23.

[155] *In Tim*. III 271.22–24.

Proclus can still maintain that the nature shown is the one that is within the Demiurge, as the ultimate source of nature (ἡ πηγαία φύσις) proceeds from the life-giving goddess to the demiurgic mind,[156] and is hence shown to the souls *as it exists in his mind*.

The πηγαία φύσις is not Nature in the primary sense, but the source or cause of nature, and the phrase ἡ πηγαία φύσις is the equivalent of ἡ τῆς φύσεως πηγή (see below).[157] If this is not already obvious from the fact that this 'nature' *transcends* the demiurgic source of nature, it also shows from Proclus' terminology in his explanation of the oracle in the *Platonic Theology* (V 32 117–120). What is "suspended on the back of the life-giving goddess" as one of the three monads that depend on her (the other two being Soul and Virtue), is the source of nature (ἡ τῆς φύσεως πηγή, 118.1), and the primordial cause of nature (ἡ τῆς φύσεως πρωτουργὸν αἰτία, 119.26), not Nature itself.

At one point, Proclus states that Rhea "in the end also gives birth to Nature".[158] As Festugière (1966–1968: vol. V, 117 n. 1) points out, this myth is not to be found in Hesiod. In Greek mythology, Rhea's last child is not Nature, but Zeus. A tentative interpretation of this puzzling claim that Rhea in the end gives birth to Nature could be the following. As Zeus, in his demiurgic function, possesses a blueprint of the nature of the universe, of which he is the creator, Rhea, by "in the end" giving birth to Zeus, gives birth also to paradigmatic Nature.

For the sake of clarity, let me present the natures we have encountered so far, as well as the transcendent causes of nature, in a table:

Table 1—The Chain of Nature

"*Location*"	*Kind of Nature*
Suspended from the back of the Life-giving Goddess (Rhea/Hecate)	Primary source and cause of nature
In the mind of the Demiurge	Demiurgic paradigm, the ἑνιαῖαι ἀρχαί and δυνάμεις of everything natural (the child of Rhea?)

[156] *In Tim*. III 271.12.
[157] Compare the adjective replacing the substantive apposition (Kühner Gerth I 264).
[158] ἐπὶ τέλει καὶ αὐτὴν ἀποτίκτουσα τὴν Φύσιν, *In Tim*. III 249.19–20.

"*Location*"	*Kind of Nature*
(In) the universe	**Immanent universal Nature, the nature of the universe, world nature, in which are pre-contained all subordinate natures, both heavenly and sublunary**
In the planets?	Universal planetary natures, containing all subordinate natures?
In the moon	Universal lunar nature, comprising the species of all sublunary natures
In the spheres of each of the elements?	Universal elementary natures, containing the natures of whatever lives in that element?
In the earth	Universal nature, containing all individual natures (that live in/on the earth?)
In bodies	Particular natures – presided over by souls – just natures

Let us briefly return at this point to our initial question in this section II.4, namely whether there is an imparticipable monad of Nature. We know now that there is no imparticipable Nature, although there are sources, or causes, of the immanent hypostasis Nature. In terms of Lowry's table (see the appendix to this chapter), one question mark will have to remain, namely that of the hypercosmic-and-encosmic imparticipable monad below Soul. That Lowry's riddle cannot be solved entirely is due also to a paradox inherent in the table: crossing the progression of henads there is the progression of imparticipables ((one), being, life, intellect, soul), yet the progression ends in the 'henad' divine body (θεῖον σῶμα), which is neither participated nor imparticipable, but material. In between imparticipable soul and divine material body, then, one would expect a transitional layer of reality, e.g. something participated.

The second question mark, regarding the encosmic participated in between Soul and body, can now be replaced with—to use Lowry's terminology—"θεία φύσις μεθεκτή",[159] divine participated nature, or universal Nature.

[159] Note that *El. Th.* 128, which discusses degrees of divinity, is not reflected in Lowry's table.

II.5. *Nature's working*

Now that the ontological position of Nature has been established, let us return to the treatise on nature in the introduction to the *In Tim*. We know that nature is not a kind or a part of soul, that it is not identical to the sum of everything natural, and that its monad is not imparticipable. Time to move on to a positive assessment. What sort of thing is nature and what does it do? This is also the subject of the second half of the treatise on nature in the introduction to the *In Tim*.[160] Two things are crucial in the account of what nature is and does. First of all, there is the fact that nature is required as an internal source of motion and unity to those things that do not have their own source of motion (the ἑτεροκίνητα). Secondly, there is the one description of nature Proclus did not immediately reject in his doxography, namely that nature is a τεχνὴ θεοῦ.[161]

II.5.1. *Nature and the Demiurge*

Let us begin with the latter. Nature, Proclus tells us, is "the last of the causes that create (δημιουργούντων αἰτίων) this corporeal and sensible world", "full of creative principles and powers, through which it guides the encosmic".[162] It is itself a god, but only in a derivative sense, through being inspired by the gods, and in the sense we call a statue divine.[163]

To meet those who want nature to be a Demiurge halfway,[164] Proclus suggests that nature could be called the lowest Demiurge, but in the sense that it is a demiurgic τέχνη.

The notion of nature as a τέχνη θεοῦ, we have seen, has been traced back to the Stoic πῦρ τεχνικόν by Festugière.[165] I propose, however, that this is one of the instances where Proclus manages to glean a positive theory of nature from Plato's dialogues. The sources, in this case, are the discussion of *Laws* X 891b–892c and the following remark of the Athenian stranger in the *Sophist*:

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[160] *In Tim*. I 11.9 ff.
[161] See above II.3.
[162] *In Tim*. I 11.9–13; cf. 261.26–27.
[163] *In Tim*. I 8.5–8; 11.13–15.
[164] Proclus may be thinking of Numenius and Harpocration, whom he reports to have assumed the created world (ποίημα, κόσμος) as a third Demiurge (I 303.27 ff., 304.22 ff.). More generally he may have in mind the Peripatetic notion of demiurgic nature, see Arist. *PA* I 5 645a9, cf. *IA* 12 711a18, *PA* II 1 647b5–6.
[165] See above II.3.

T II.15 I maintain that everything that is called "natural" (τὰ φύσει λεγόμενα) is made by a divine craft (θείᾳ τέχνῃ). (*Sophist* 265e3)

Although the Athenian stranger is here in fact probably replacing nature as efficient agent with divine craft, this passage made its way into overviews of definitions of *nature* as the Platonic view.[166] I propose that the above passage from the *Sophist*, together with the notion of a craftsman of the natural world from the *Timaeus*[167] and the discussion in *Laws* X on, among other things, the existence of the gods and the primacy of τέχνη over φύσις,[168] gave rise to various Neoplatonic concepts of divine craft, θεία τέχνη, or, as it is at times referred to, τέχνη (τοῦ) θεοῦ.[169] Thus the phrase τέχνη θεοῦ in Proclus' doxography may well refer to the development of that Platonic phrase θεία τέχνη.[170] In that case, Proclus like earlier Platonists reads the *Sophist* passage as an identity statement given for the sake of clarifying the notion of nature: "Nature", he understands, *is* "a divine craft".

So what does that mean, that nature is a divine craft? Not, as it did for the Stoics, that nature is a god and a craftsman,[171] because for Proclus nature is not itself a god. Instead, it can be called a divine craft in the sense that it is a non-reverting emanation from the Demiurge, and an instrument of the gods that has an effective power of its own.[172] Alexander of Aphrodisias also discusses and accepts the notion of nature as a divine craft, probably with the same passages from *Sophist* and *Laws* in mind,[173] but the interpretation he has of 'divine craft' is of course rather different. He rejects the claim that nature is a divine craft, in the sense that nature is rational and creates teleologically by using a paradigm, and argues instead for nature's utter irrationality. He does not

[166] E.g. Pseudo-Galen. *defin. medicae* 371.4–6, where it is opposed to the Stoic πῦρ τεχνικόν. For Alexander's discussion of the Platonic notion of nature as divine craft at *In Met*. 104.3 ff. see below.

[167] Esp. *Tim*. 30b ff. On this topic see Brisson (1994: chapter 1).

[168] Cf. *Laws* X 889c5–6 οὐ δὲ διὰ νοῦν, φασίν, οὐδὲ διά τινα θεὸν οὐδὲ διὰ τέχνην ἀλλά, ὃ λέγομεν, φύσει καὶ τύχῃ [πασῶν γενομένων], and, of the refutation, esp. 892b3–8.

[169] E.g. in Philo *Quis heres* 156.2 ἡ τοῦ θεοῦ τέχνη, about the craft with which the Demiurge created (ἐδημιούργει) the universe, cf. *Aet. mundi* 41.6. For a discussion of the development of the theme of "nature as craftsman" in Greek philosophy, see Solmsen (1963).

[170] Proclus' formulation is certainly closer to Plato's than the Stoic πῦρ τεχνικόν.

[171] Festugière (1966–1968: vol. I, 36 n. 3) mentions Zeno's πῦρ τεχνικόν, and the fact that nature is a god. That does not make nature the τέχνη *of* a god. Rather, it makes it a τέχνη *and* a god. See e.g. Aetius *Plac*. I 7 33 (306.1, *SVF* II 1027), Diog. Laert. VII 156.

[172] *In Tim*. I 12.10–25, cf. 143.19–22, on Hephaestus and nature.

[173] *In Met*. 104.3–10, re. *Met*. I 9 991a23.

object to calling nature a divine craft, however, as long as that refers to a non-rational power ultimately stemming from the gods, as opposed to a craft employed by the gods.[174] Proclus seems to follow Alexander to a great extent, but does not agree with his conclusion: that nature is non-rational does *not* mean that, because it does not contemplate it herself, it cannot *apply* the paradigm, or a weaker version thereof. This non-rational rationality is possible exactly due to the fact that nature is always dependent on and in fact utilized by the Demiurge.[175]

It is also in this dependent sense that nature can be called the third Demiurge. Proclus is herewith refuting the Stoics and those who supposed that there are three Demiurges above Soul, as well as opposing the Peripatetic notion of demiurgic nature.[176] When Aristotle calls the work of nature demiurgic, he has in mind nature as an autonomous efficient cause, but for Proclus there must always be a source of nature's efficient power (see also above, II.4.2).

The instrumental function of nature is beautifully illustrated in the *In Parm.*, where Proclus compares nature with "the signet ring that descends upon objects", and soul with the hand (belonging to intellect) that wields the signet ring:

> T II.16 What, then, is the proximate cause of the imposition of this seal? For matter corresponds to the wax, and individual man to the impression. And whatever shall we have correspond to that ring that descends onto the objects, if not nature which pervades matter and thus shapes the perceptible with its own λόγοι? And corresponding to the hand that uses the ring, is soul, that guides nature (universal soul guiding universal nature, and individual soul individual nature), and corresponding to that soul, which makes an impression through the hand and the ring, is intellect, which fills the perceptible with forms through soul and nature.[177]

We here find our commentator taking on board a simile well-known from different contexts: the simile of the signet ring is an amalgam of passages from Plato's *Timaeus* (50b5–51b6) and *Theaetetus* (191c8–e1), Aristotle's *de Anima* (II 12 424a17–24), and a Plotinian passage (*Enn.* IV 4 [28]

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[174] Cf. Alex. *In APr.* 3.19–20.

[175] Cf. *In Tim.* I 298.23–27, where Proclus discusses the subordination of soul, nature and auxiliary causes to the demiurgic intellect.

[176] Cf. above n. 164.

[177] *In Parm.* 884.9–18 (12–25 Cousin). At *In Tim.* I 298.23–27 the two functions are distinguished by their functional relation to intellect, and soul is said to "work with" (συνεργεῖν), nature to "work under" (ὑπουργεῖν) intellect. The auxiliary causes are slaves (δουλεύειν).

13).[178] The metaphysical aspect of the comparison, of impressions of forms in matter, is to be found in the *Timaeus*, although there is no mention there of a signet ring, but only of impressions (τυπωθέντα, 50c5) made in a substance (ἐκμαγεῖον, 50c2).[179] The argument in which the *signet ring* figures is found instead in the discussion of issues from epistemology and philosophy of mind in Plato's *Theaetetus* and Aristotle's *de Anima*, more precisely in the context of the origin of memories, and the nature of sense impressions.

That Proclus nonetheless uses the simile of the signet-ring in this ontological context is probably due to a third source, Plotinus, and the use he makes of the very same image. Plotinus applies the image in the discussion of what we might call the epistemology of nature, when arguing that nature possesses no reflection, but merely an efficient power.[180] He illustrates this by comparing the rationality seeping from intellect to nature with an imprint in a layer of wax: the imprint will show only vaguely at the lower side of the wax, and likewise nature has a derived and weak form of rationality. Nature's efficient power lies in its passing on unintentionally (ἀπροαιρέτως) that which it receives from higher ontological levels.[181]

In Proclus' version, quoted above as **T II.16**, the epistemological origin of the simile has made way entirely for ontology.[182] Moreover, by adjusting the simile to *Timaeus* 50c, he makes room for some kind of matter (the wax) as an affected, rather than impassive (ἀπαθής), receiver of impressions.[183] Proclus' metaphysics contains a highly complicated stratification of 'matters', but considering the example in the quoted passage

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[178] Cf. also the epistemological use by the Stoics, Diog.Laert. VII 45–46 (=*SVF* II 53, Chrysippus), Sext.Emp. *adv.math*. VII 227–229 (=56, Cleanthes), Aetius *Plac*. IV, 20.2 (=387). See also below n. 182.

[179] Note that the passage in the *Timaeus* is riddled with different forms of the noun φύσις (50b6, c2, d4, e2, 51b3), but in reference to the third kind, which is the receptive element, and hence, transported to Proclus' analogy, corresponds to the wax, or matter.

[180] *Enn*. IV 4 [28] 13.5–7. Nature does contemplate, however, with a contemplation that is not its own. See on this topic Wildberg (2009).

[181] Cf. Simplicius (*In Phys*. 230.36–231.5), who ascribes to Plato four hypostases, the lowest of which is the natural world as a receptacle of imprints of Forms. Cf. Dillon (1996: 346–349).

[182] Morrow/Dillon also refer to Plutarch (*De Is*. 373A, ἐν κηρῷ σφραγῖδες), Arius Didymus (*ap*. Euseb. *PE* XI, 23.2–6 fr. 1 Diels, σφραγῖδος μιᾶς ἐκμαγεῖα γίνεσθαι πολλὰ, 9–10), and Alcinous (*Didask*. 12, idem). They also use the simile in this ontological sense, but more generally in the context of the Forms (as in the *Timaeus*). The point they are making, that a λόγος or Form remains unaffected by participation, is also made by Proclus. Cf. n. 184. Plotinus seems to be the first to relate the simile to nature.

[183] Cf. *In Parm*. 837.29–840.7 (839.37–840.9 Cousin).

of the individual man (ὁ τῇδε ἄνθρωπος, *In Parm*. 884.11 (14 Cousin)), the 'matter' relevant in the analogy is something like the substrate of particular bodies informed by nature.[184]

According to Proclus the above image of the signet ring is imprecise in one important respect, which brings him to express a general criticism of images like this as mere 'aids to the less advanced students' (εἰς τὴν τῶν ἀτελεστέρων βοήθειαν, *In Parm*. 841.25–26 (32–33 Cousin)). Adequate as it may be to picture the dependency of nature on the Demiurge and the chain of efficient causality, the image fails to capture the nature of nature: a signet ring is never actually inside the object (the wax) that it forms, whereas nature descends into that which it informs.[185] This adjustment reveals a crucial distinction between Proclus' and Plotinus' view, since according to Plotinus nature does not operate from within the informed objects.[186]

The simile of the signet ring also illustrates another point with regard to nature as demiurgic τέχνη, namely that it is *external to its user*, the Demiurge. Proclus distinguishes three kinds of demiurgic τέχνη, one that remains in its owner, the Demiurge, one that proceeds from and returns to him, i.e. intellectual Soul, and one that merely proceeds from him, or in fact "has already proceeded from him".[187] And this last τέχνη is nature. In this proceeding τεχνή we recognize the τεχνή in act (ἡ ἐνέργεια τῆς τέχνης), which Aristotle, in his explanation of the working of the vegetative soul, compares to the motions of the tools used by an artificer.[188] Likewise, Proclus states that it is due to the fact that nature is an external demiurgic τέχνη (external, that is, to the demiurge) that it can be called a tool of the gods. Because it is a divine tool, rather than a simple human one, it is not life-less and motionless, but instead has 'a kind of self-motion' (ἔχουσα πῶς τὸ αὐτοκίνητον) due to being an

[184] Cf. the preceding passage, where Proclus speaks of 'one identical seal impressed upon many *pieces of wax*' (884.7–8 (9–10 Cousin) οἷον σφραγὶς ἡ αὐτὴ πολλοῖς ἐντεθειμένη κηροῖς). On the many different kinds of matter in Proclus see De Haas (1997) and Van Riel (2009).

[185] *In Parm*. 841.2–10 (1–14 Cousin). See II.4.2 for a simile focusing on the immanence of Nature.

[186] See Plotinus' description of nature working *on* matter (*Enn*. III 8 [30] 2.3 ἐφ' ἧς), his distinction between the *logos* of nature and the *logos* operative in the visible shapes (2.30 f.), while nature stays within itself (3.4–5). Cf. above II.3.1.

[187] *In Tim*. I 12.13 προϊουσαν, 12.16 ἤδη προελθοῦσαν καὶ ἐν ἄλλῳ γενομένην, cf. 12.21.

[188] Cf. Arist. *GA* II 4 740b25–34.

agent in its own right.[189] The adverbial modification is crucial, as we have seen above that Nature does not have self-motion. Its self-motion, then, is a derived kind, comparable to that of ensouled bodies which have self-motion due to the presence of soul.[190] Instruments of the gods, unlike our instruments, have an essence consisting in efficacious λόγοι, are endowed with life, and their activities coincide with those of the gods.[191]

In short, nature is an external, irrational tool of the Demiurge, that in some way has efficacious and motive power of its own.[192] One could say that it is both an instrumental cause and the proximate efficient cause, although it is never a *real* efficient cause, due to its non-rationality, its lack of divinity, and its immanence.[193] Thus by creating a connexion between the real efficient cause of the Demiurge, and nature, Proclus takes Aristotle's criticism of the neglect of efficient causality in Platonic philosophy of nature,[194] and turns it against him, while maintaining the transcendence of the Demiurge.

II.5.2. *Nature as the source of life, motion, body, and unity*

Proclus' account of the *functions* of nature, and the question how in that account he reacts to problems he encountered in the theories of his predecessors, supply enough material for at least an entire chapter. In this context, however, we will merely give an overview of the main tasks nature has in the constitution of the world of sense perception. A number of these we have already encountered in the previous sections.

Nature's function could be summarized as follows. It is (1) the source of motion and life of bodies, (2) their proximate cause, and (3) the source of their containment.[195]

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[189] *In Tim*. I 12.21–23. That nature has 'a kind of self-motion' may suggest that it is a kind of soul, an irrational one to be precise, but this is not the case. As I proposed above, following Opsomer, irrational souls are not in fact souls, but natures. See II.3.1.

[190] See *ET* 20.4–6 on body having a kind of self-motion and cf. Hermias *In Phdr*. 111.24–112.1 and Simpl. *In Cael*. 585.4–5 (reporting Alexander's position).

[191] *In Tim*. I 12.23–25.

[192] Cf. Plotinus, for whom nature is the 'handmaiden' of soul (Opsomer (2005: 86 ff.)).

[193] *In Tim*. I 263.23–27: the instrumental cause is the proximate mover of the composite consisting of matter and form; *In Parm*. 795.23–25 (34–36 Cousin).

[194] Cf. above n. 127.

[195] *In Tim*. I 11.15–30, *De prov*. 11.

(1) We have seen that nature for Proclus has the Aristotelian function of being the internal source of motion and rest.[196] In this respect it is important especially for the ἑτεροκίνητα, things that do not have their own source of motion (which suggests the paradoxical situation that nature, which pervades everything corporeal, never belongs to anything essentially). Nature is what gives something similar to soul to "even the most soulless of things".[197] Being soulless is associated with not being alive, i.e. with not having an internal source of motion.[198] This, then, is the prime function of nature: to impart a very low, physical kind of life, and thus motion, to that which does not have a soul: stones, or pieces of wood, for example.[199] Of course the motion in question is natural, both in the sense of not psychical, and in the sense of not accidental.[200] For example, by giving the primordial chaos its proper motions, nature also decides on the appropriate order of the elements.[201]

Thus, Proclus can maintain against Plutarch and Atticus that the primordial motion of *Tim.* 30a is natural, rather than the working of an evil soul.[202] The main argument of Plutarch and Atticus was that where there is motion, there is soul, which becomes false if the existence of other sources of motion can be proven. The myth of the *Statesman* (esp. 272e) provides Proclus with the authoritative argument for his view of primordial motion. In first instance (not to be understood in a temporal sense, of course) only some nature is present to the universe, and it is capable of imposing motion without assistance, but not order. For that the Demiurge is required, as is clear from the myth in the *Statesman* where the

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[196] Cf. *In Parm.* 1045.22–24 (29–31 Cousin).

[197] Discussed above, **T II.4**.

[198] *Laws* X 889b1–5. In Plato ἄψυχος is used for natural, non-living things (e.g. *Soph.* 265c2, *Laws* XI 931a2, e1, XII 967a7–d2), that have no internal source of motion (*Phdr.* 245e4–5, *Laws* X 896b4–8). Aristotle: *dA* I 2 403b26–28 (the soulless lacks movement and sensation); *Met.* I 1 981b2–4 (the soulless moves by nature, without consciousness), cf. *HA* VIII 1 588b4–6.

[199] Cf. *In Tim.* II 146.5, where this life is associated with Artemis, III 249.12–20. Cf. *In Parm.* 1045.25–26 (32–33 Cousin). Cf. Beutler (1957: 231): Nature as manifestation of Life (of the triad Being, Life, Intellect). The connection with Rhea/Hecate, the life-giving goddess, is clear.

[200] *In Tim.* III 119.11–126.5, esp. 119.24–26 (re. *Tim.* 40a7–b4) and II 96.10–11 (re. *Tim.* 34a3–8), where it functions as an axiom in an argument for the motion of the universe, being a physical body. Cf. Aristotle, *Phys.* II 1 192b20 f.; cf. VIII 4.

[201] *In Tim.* II 38.22–29. The description of how nature does this suggests some kind of rationality on its part (esp. κατιδοῦσα). I take it Proclus is merely allowing himself some literary imagery here.

[202] *In Tim.* I 381.26 ff., esp. ὑπὸ φύσεως, 383.7, φύσει, 383.11.

universe, abandoned by the Demiurge, lapses into a disordered motion 'due to a kind of fate and a natural desire' (ὑπὸ δή τινος εἱμαρμένης καὶ συμφύτου καθ' αὑτὸν ἐπιθυμίας).[203] Note that this argument is problematic, as it introduces a second kind of nature, the irrational primordial essence, as it were, of the universe, which is *not* the nature we have discussed so far. The two should be distinguished, since the primordial nature/essence is the source of the irregularity of the motion imposed by Nature, whereas Nature is inserted in the universe by the Demiurge precisely to make it receptive to soul.[204]

(2) Nature fashions all bodies (ποιητικόν), even the heavenly bodies.[205] They are, as it were, nature's progeny (ὡς ἔκγονα φύσεως).[206] This fashioning of bodies is an information of the corporeal, with the use of physical λόγοι. Some of those bodies nature equips with a receptivity for soul.[207] This task is like the theurgic activities of the initiator into the mysteries, who attaches symbols to statues to render them receptive of certain divinities. Likewise, nature furnishes bodies, like statues of the souls, with those specific physical λόγοι that accommodate a specific kind of soul.[208] This fashioning of bodies is the creation of particular natures, some more and some less excellent, matching the qualities of the souls (if any) that will enter them. This seems to imply that nature's work is prior

[203] *In Tim*. I 389.5–15. The intricate relation between fate and nature will here be left aside. Cf. *In Remp*. II 13.1–3; ib. II 356.6–8; *Theol.Plat*. V 32, esp. 119.16–19; *De prov*. 11–12, *In Tim*. III 271.28–275.24, *In Remp*. II 357.26–27. Cf. also Hermias *In Phdr*. 200.29, who ascribes the equation of Fate and universal Nature to Iamblichus. On fate and nature in Proclus see further Linguiti (2009). Romano (1991) gives an inventory of passages concerning the relation between Fate and Nature in Plotinus, Porphyry, Iamblichus and Proclus.

[204] Cf. *In Tim*. I 401.26–28 and Festugière (1966–1968: vol. 2, 273, n. 1). Elsewhere, there seems to be a distinction even between primordial motion and the disorder of that motion: nature imposes motion, but it is the absence of intellect and soul (not the natural motion as such!) due to which the corporeal moves in a disorderly fashion (I 383.5–12). Phillips (2007: 163) does distinguish the two natures (one, stemming from the Demiurge, the principle of all good in body and the other, primordial nature, the source of evil). Unfortunately, possibly due to the overall theme of his book (evil), he seems to reduce these two natures to the latter (most clearly at his pp. 203–205), thereby minimizing the rational aspects of it.

[205] *In Tim*. I 261.26–27, I 2.15–29.

[206] *In Tim*. I 429.6, cf. *De prov*. 11 36.20.

[207] A similar theory is formulated by Simplicius, *In Cael*. 380.25 ff. and 387.12 ff., who in his treatment of the question how nature and soul can both be sources of motion of the heavenly bodies, takes nature to be a kind of life that makes bodies suitable to being moved by soul.

[208] *In Tim*. I 51.25–52.1.

to that of soul, despite the fact that the former is ontologically inferior and therefore posterior to the latter. As Brisson (forthcoming) remarks in his discussion of Plotinus' φύσις, we need not suppose that Nature is prior to Soul in this respect since Soul perfects the particular souls 'before' Nature perfects the particular natures, whereas it is the working of the particular (embodied) souls that is indeed posterior to that of universal Nature.

The sensible universe is characterized by a "war" of contraries, and one of the main results of the activities of the Demiurge is the establishing of a regular order between those contraries, keeping them at peace with each other.[209] And here lies an important task for nature as his tool, and as the mother, so to speak, of all things.[210] The creation and preparation of bodies by nature consists in the establishing of a bond (i.e. a life) which has the capacity of uniting and harmonizing things that are each other's contraries[211]—or, as he puts it in the *In Parm*., in the creation of the corporeal antitheses as such.[212] Nature does this both on a cosmic scale, "holding together the heaven by its (Nature's) summit" (*In Tim*. I 11.16–17), as the "war" of contrary properties is to be found in the cosmos as a whole (*In Tim*. I 78.1 ff.), and by creating individual natures.

Universal Nature establishes the bond in particular natures through the insertion of formative reason principles,[213] which it possesses of everything natural.[214] Through the bond universal Nature is in charge of all nurture, reproduction and growth.[215] It is in this respect very similar to the Peripatetic vegetative or nutritive aspect of the soul (see Arist. *dA*

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[209] Cf. *In Tim*. I 205.16 ff. The description of this συστοιχία is one of the three main themes of the *In Tim*. Gersh (2003: 152). For a relation with Hecate see Brisson (2000a: 141).

[210] *In Parm*. 793.21–22 (31–32 Cousin).

[211] *In Tim*. II 53.27–28; *In Parm*. 703.13–16 (18–22 Cousin); *In Tim*. II 24.6–11, exegesis of *Timaeus* 31c4–32a7. Cf. II 15.12–25 where the three kinds of bond (δεσμός) that guarantee the unity of a (one) thing are illustrated by the way they are exemplified in a living being. Nature is the 'intermediate bond', i.e. not the first cause, not the bound elements (nerves and tendons), but the λόγος φυσικός which issues from the cause and uses the corporeal elements in constituting things. On the notion of bond in Proclus' account of the elements, see Lernould (2000: 137). See also chapter IV.

[212] *In Parm*. 1077.3–4.

[213] φυσικοὶ λόγοι, e.g. *In Tim*. III 197.30–31, *Theol.Plat*. V 18, 66.2–4.

[214] *In Tim*. I 11.12, quoted above. Cf. *Theol.Plat*. V 18, 64.3–20 and the discussion in Linguiti (2009: 185–187).

[215] *Theol.Plat*. I 15 75.22–23: ἀλλ' οὐδὲ πρὸ τῶν σωμάτων ταῖς φύσεσι τὸ τρέφειν ἢ γεννᾶν ἢ αὔξειν [sc. ἐπίπονον ἐστι] (ταῦτα γὰρ ἔργα τῶν φύσεων).

II 3 etc.),[216] although Proclean Nature may be more extensive in that it seems to be responsible also for the unity of natural things that are not ensouled at all.[217]

The formative reason principles, which Nature possesses in act, are subsequently activated in the recipient,[218] and may manifest themselves as σπερματικοὶ λόγοι in particular natures.[219] The Stoic notion of σπερματικοὶ λόγοι is both used and criticized by Proclus. The Stoics should not have assumed, according to Proclus, that the σπερματικοὶ λόγοι by themselves were a sufficient explanation for the information of objects. Real causes are needed, namely the Forms, transmitted by the φυσικοὶ λόγοι. Most of the time, Proclus does not commit to any position regarding the relation (be it identity or something else) between the φυσικοὶ λόγοι and the σπερματικοὶ λόγοι,[220] but when he does take position, he puts the latter below the former.[221]

(3) Describing the task of nature as "creating bodies" suggests that it is functional only at some temporal beginning of the cosmos. Since there is no such temporal beginning, but only a conceptual and metaphysical one, a more precise rendering of nature's everlasting creation of bodies is that it sustains them (συνεκτική τῆς τούτων συστάσεως).[222] Within living beings nature, or more precisely 'their (particular) natures', guarantee the unity and persistence of their bodies and body parts.[223] In this respect nature resembles the Stoic sustaining or cohesive cause (συνεκτικόν).[224]

In providing this unity and permanence to bodies, nature is active both horizontally and vertically, so to speak. Nature's horizontal activity

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[216] Cf. Proclus *De prov.* 11 36.8, where nature is called "quod plantativum".

[217] See above **T II.4**.

[218] *In Parm.* 792.16 ff. (20 ff. Cousin).

[219] For φυσικοὶ λόγοι (as reason principles, not as 'a treatise on nature') see I 27.27; 49.17; 51.28; 148.4–5, 6; 301.10; II 15.21; 139.19; 146.7–8; 254.12; III 188.7; 188.28; 194.3; 323.9.

[220] *In Tim.* I 143.17–18, III 188.5–11, *In Parm.* 731.22–732.5 (731.30–732.6 Cousin).

[221] Most clearly at *In Parm.* 889.18–21 (24–27 Cousin), but also at *In Tim.* III 191.7, *In Parm.* 883.22–23 (–29 Cousin). Cf. Steel (1984: 24).

[222] *De prov.* 112.18–19 (Isaac), cf. 11 36.18.

[223] *De prov.* 11, *In Tim.* II 15.17–25, *In Parm.* 893.9–21 (11–27 Cousin).

[224] On the cohesive cause see e.g. Chrysippus apud Clement *Stromata* III, vol. II p. 929 Pott, 346.2 ff. Whereas Simplicius alters the Stoic theory of the συνεκτική, to the extent that nature is not the containing cause but triggers it, acts προηγουμένως (*In Ph.* 2, 370.15; 326.15–16), Proclus takes universal Nature itself to be συνεκτική. On the Neoplatonic use of the Stoic συνεκτικόν, see Steel (2002). For nature's unifying power in Plotinus see Wagner (2002: 307 ff.).

takes place within the world of sense perception, and consists in uniting the opposites within that world (e.g. earth with fire). Its vertical activity, on the other hand, is what ensures the connection between higher and lower levels of reality, "everywhere weaving together the particulars with the universals" (*In Tim.* I 11.18–19): it connects the enmattered with the immaterial λόγοι, corporeal motion with primary motion, and encosmic order with intellectual arrangement (εὐταξία).[225] Thus in being both Becoming and Being (see II.3.1) nature functions as a bridge between the intelligible and the sensible.

II.6. *Conclusion*

> **T II.17** … we have now said, what nature is according to Plato, that it is an incorporeal essence, inseparable from bodies, in possession of their λόγοι, incapable of contemplating itself …[226]

Proclus, who has so often been accused of utter lack of originality, has in this chapter been shown to have a concept of φύσις that is sophisticated, not for the sake of dialectical sophistication, but because it is a careful attempt at solving several problems, by making the most of Plato's scarce references to φύσις.

Proclus never goes so far as to explicitly state that nature is not soul in any sense, because the properties he ascribes to it are very close to those of soul. Nevertheless, he clearly extricates nature from soul and hypostasizes it in order to explain the existence of unity and motion in entities that are not animated by soul.

Moreover, Proclus' concept of nature is the ultimate justification of the efficiency of a transcendent cause, which is capable of informing the material world through nature as its immanent tool. At the same time, the rationality of the processes taking place in this world is guaranteed due to the dependence of nature on its demiurgic origin.

In order to obtain this subtle nature, Proclus has to adjust his metaphysics and allow for a hypostasis that does not have an imparticipable monad, but instead has a participated monad, universal Nature, or the nature of the universe, which is metaphysically transcendent, but physically immanent, and an imparticipable cause, the Demiurge, who is also physically transcendent.

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[225] *In Tim.* III 271.1–8.
[226] *In Tim.* I 12.26–30.

II.6.1. *Appendix: Lowry's Table II and the riddle of imparticipable nature*

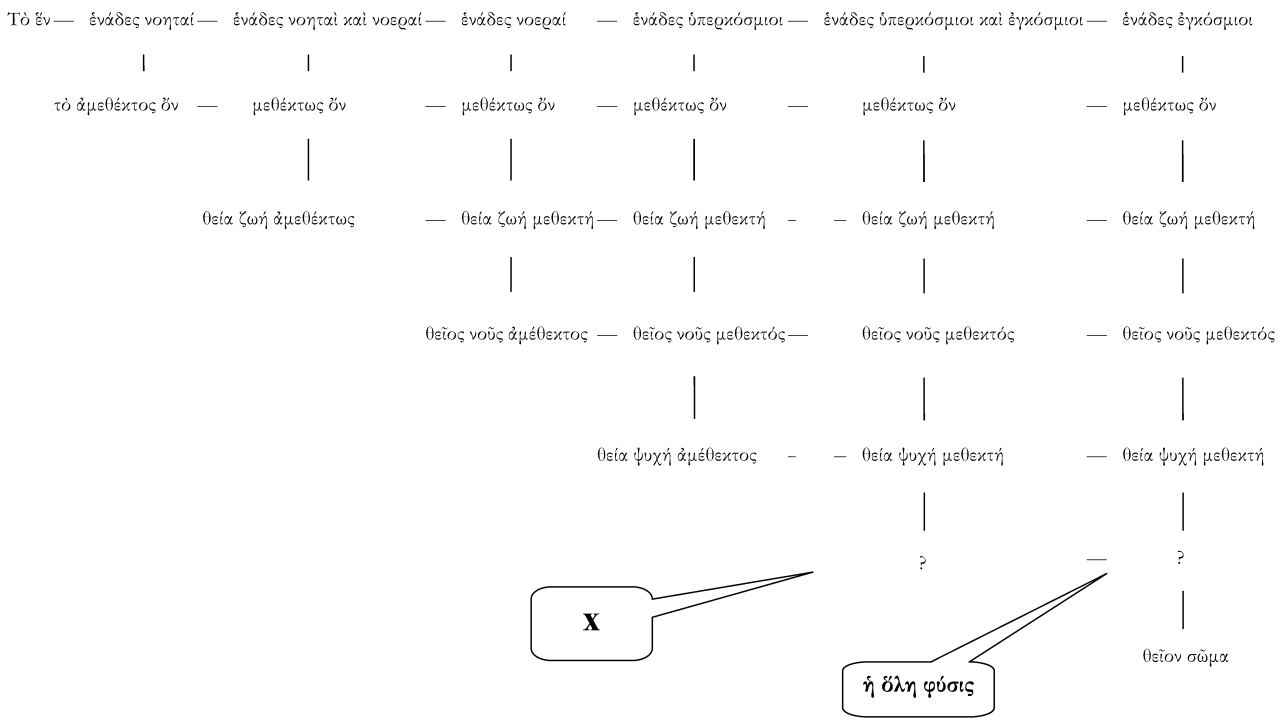

Table 2. This table is taken from Lowry (1980: 103). It is here reproduced with kind permission of Rodopi. The callouts are my additions.

CHAPTER THREE

THE PROOEMIUM: THE GEOMETRICAL METHOD OF PHYSIOLOGIA

III.1. *Introduction—φυσιολογία, θεολογία, and the geometrical method of the* Timaeus

In his introduction to the *Commentary on the Timaeus*, Proclus emphatically states that the skopos of the entire dialogue is "all of φυσιολογία."[1] Consequently, its subject is φύσις. In the passage we turn to now, however, Proclus' most emphatic and extensive elaboration of the notion of philosophy of nature and its methods, we find a different statement as to the subject matter of Timaeus' exposition. In the commentary on the prooemium, i.e. the methodological introduction to Timaeus' cosmological account (*Tim*. 27c1–29d3, *In Tim*. I 204–355) to which we now turn, we read that "the enterprise (ὑπόθεσις)[2] covers the entire demiurgy".[3] This shift of focus from nature to the Demiurge can be explained from the context, but also gives crucial insight in the manner in which Platonic philosophy of nature is theology. In the introduction to the commentary Proclus is clearly painting a picture of Platonic physics in Aristotelian colours, in order to reveal the superiority of the former over Aristotle's. By the time we reach the prooemium, such polemics are no longer relevant, and the core of the *Timaeus* can be identified as "the entire demiurgy", or more precisely "the study (θεωρία) of the all insofar as it proceeds from the gods … according to its corporeality, insofar as it participates in particular and universal soul, insofar as it is intelligent, but especially according to the emanation from the Demiurge".[4] This enterprise has its unique starting point in the question whether or not the universe has

[1] *In Tim*. I 1.4–5, see chapter I.

[2] Note that in the *schema isagogicum* the description of the subject matter is called πρόθεσις rather than ὑπόθεσις, which is instead the term used for the dramatic setting. See chapter I.

[3] *In Tim*. I 214.19–20.

[4] *In Tim*. I 217.18–25.

come into being (πότερον γέγονε τὸ πᾶν ἢ ἀγενές ἐστι).[5] Everything else, says Proclus, will follow from that.[6]

In his discussion of the starting point and what follows from it, Proclus repeatedly draws a parallel between Plato's procedure and that of a geometer.[7] The very first occurrence of the comparison is a statement saying that in introducing the starting points of philosophy of nature, Plato works "as if from geometrical hypotheses".[8] Later instances, likewise, refer to Plato's method as similar to what a geometer does, and compare parts of the prooemium to constituents of a geometrical method. Plato posits certain undemonstrated starting points,[9] namely definitions, hypotheses, axioms, and common notions,[10] and defines ('names') the subject matter of the treatise.[11] He consequently demonstrates all of philosophy of nature from the starting points,[12] and the conclusions of those demonstrations have geometrical necessity.[13]

This choice for the method of geometry is not an obvious one. True, geometry plays an important role in this most Pythagorean of Plato's dialogues, most notably in the description of the geometrical proportions

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[5] The *Timaeus*-lemma as we find it in Diehl (*Tim*. 27c4–5 "We, who are about to somehow (πῃ) converse about the universe (περὶ παντὸς), whether (ἢ) it is generated or (ἢ) is instead ungenerated") differs from Burnet's reading of Plato (which has τοῦ παντὸς and ᾗ … ἢ). See Diehl and Festugière (1966–1968: 40, n. 1) for an overview of the different readings. Considering the attestation of both παντὸς and τοῦ παντὸς in the Proclus mss., and the predomination of τοῦ παντὸς elsewhere in the commentary (already 10 lines further down we find ἔσται οὖν αὐτῷ περὶ τοῦ παντὸς ἡ θεωρία, *In Tim*. I 217.18–19), I propose we read τοῦ παντὸς in the lemma as well. To the second difference (concerning the aspiration of the η) many exegetical problems are related, and quite a lot turns on it with regard to the ultimate interpretation of the entire dialogue, most notably regarding the question whether Plato describes a creation in time or not. We will not go into this. See Baltes (1978: 1–3, 1996), Lernould (2001: 129 ff.) for extensive discussions.

[6] *In Tim*. I 219.21 ff.

[7] *In Tim*. I 226.22–227.3; 228.25–229.11; 236.8–237.9; 258.12–23; 272.10–17; cf. 263.19–264.3; 265.3–9; 283.11–19; 332.6–9; 344.28–345.7; 348.13 ff.; 355.24–25; II 7.18–31. Cf. Festugière (1966–1968: vol. II, 7–10) and O'Meara (1989: 182).

[8] *In Tim*. I 226.22–227.3.

[9] *In Tim*. I 228.25–229.11, cf. 265.3–9 and 344.28–345.7. Proclus suggests, at least, that they are undemonstrated and indemonstrable, and that all starting points are equal, but at the same time in a number of passages he tries to establish a logical connection of some kind, to the extent that all starting points follow from the first two (e.g. I 226.26 ff., 236.11, see below, III.3).

[10] *In Tim*. I 258.12–23.

[11] *In Tim*. I 272.10–17.

[12] *In Tim*. I 236.8–237.9; cf. 263.19–264.3, 283.11–19, 348.13 ff., 355.24–25.

[13] *In Tim*. I 332.6–9; cf. I 346.31–347.1.

of the World Soul, and the exposition on the geometrical character of the solids, i.e. what Proclus calls the mathematical images used in the iconic mode of discourse.[14] But in those contexts it is the subject matter of geometry, continuous magnitude and its properties, that is relevant, not the *method* of geometry.[15] The method of geometry, instead, was famously criticized by Plato: Socrates speaks harsh words of criticism of geometers for assuming unfounded starting points (*Rep*. VI, esp. 510c1–d3). Yet, as we have seen above, our commentator repeatedly draws a parallel between the method of geometry and the presentation of the starting points of the cosmological account in the prooemium.[16]

That choice is even more puzzling if we consider that Proclus had an alternative, namely dialectic. As our Neoplatonic commentator points out from the outset, he takes the central aim of the *Timaeus* to be explaining the sensible world from its true and divine causes, and of these primarily the efficient cause, i.e. the Demiurge.[17] According to Proclus it is Plato's methodology that, through a conceptual analysis, allows that ascent to the transcendent causes of the universe.[18] It has therefore been argued that 'geometrical' in the context of Proclus' remarks on scientific method in this and other work equals 'scientific'/'demonstrative',[19] or 'rigorously syllogistic'.[20] If this is all Proclus has in mind, however, dialectic could have fulfilled the role of methodological paradigm, and would in

[14] *Theol.Plat*. I 4. For the iconic mode, see chapter V and Martijn (2006a, 2006b).

[15] There are numerous references to geometry in the third book of the *In Tim*., but these all concern the actual geometry present in the *Timaeus*, such as geometrical proportions, and are never introduced by way of a comparison of disciplines. For the role of geometry and mathematics in general in the discussion of the proportionality of the elements (*Tim*. 31b–34a; with esp. *In Tim*. II 13.15–56.11) and the World Soul (*Tim*. 34a–40d; *In Tim*. II 102.4–316.4, esp. 166.15–211.30), see chapter IV. See also the introduction in Baltzly (2007).

[16] By comparison with other prooemia of works in the περὶ φύσεως tradition, these starting points of the cosmological account are the only non-traditional element in the prooemium of the *Timaeus*. On Proclus' strong focus on precisely this non-traditional element of the prooemium, see I.3.

[17] *In Tim*. I 217.18–27. Cf. 2.1–4.5. See also ch. I.

[18] On this topic see Steel (2003), O'Meara (1989), Lernould (2001). For the conceptual analysis see below, III.3.

[19] Lernould (2001: 11–13).

[20] The latter is proposed by O'Meara (1989: 182), and it is in this sense that we find the comparison on occasion in the *In Parm*. That the method is called geometrical can, in these readings, be explained from the simple fact that geometry was the first discipline that actually followed what has been called the Classical Model of Science. See De Jong and Betti (2008). On the issue of axiomatic deductivity and the method of geometry, see Mueller (1974).

fact have been more appropriate to the context. After all, dialectic in the Neoplatonic sense of the word is both science *par excellence*, and as such the source and paradigm of the scientific method of the other sciences (including geometry), and the science of the transcendent causes.[21]

The aim of this chapter is to lay bare Proclus' reasons for choosing geometry rather than dialectic in his discussion of Plato's methodology.[22] I will scrutinize how Proclus elaborates the comparison, and show that he chose geometry not just to grant philosophy of nature a scientific status, but assign to it the *proper* scientific status. Thus the main theses to be defended in this chapter are that for Proclus philosophy of nature has a scientific status, and that this scientific status is one that is appropriate to its subject matter, the natural world. The main issues brought forward are

(1) the hypothetical foundation of philosophy of nature and the relation between philosophy of nature and theology,
(2) δόξα as the main faculty of cognition of philosophy of nature.

(1) We have seen in chapter 1 that philosophy of nature is a kind of theology, in the sense that it is a theological study of the physical universe. It does not study the gods as such, but how divinities, and especially the Demiurge, are responsible for the ordering of that universe. In this chapter we will see how the method of philosophy of nature relates to that of theology, i.e. to dialectic. A conceptual analysis in the prooemium of the *Timaeus* leads to knowledge of the efficient cause and the paradigmatic cause of the universe, but not to an unhypothetical first principle. Hence it is geometry, rather than dialectic, that is chosen by Proclus as the method of comparison, not just because 'geometrical' equals 'scientific', but because, like philosophy of nature, but other than dialectic, geometry remains a hypothetical science in the strong sense that it does not reach an unhypothetical starting point.[23] (2) This is due to the subject matter of philosophy of nature, the world of sense perception, as well as to the

[21] Cf. Lernould (2001: 301).

[22] Festugière (1966–1968: vol. II, 7–9) already pays some attention to the theme of the geometrical method in a summary of the passage, and (1963: 565–567) by analyzing one of Proclus' exegetical techniques, namely the indication of logical connection between lemmas. O'Meara's lucid monograph on Pythagoreanism in Late Antiquity contains a chapter on mathematics and physics in Proclus, (1989: part II, chapter 9, esp. 179 ff.). The most extensive treatment of the procœmium as a whole is the study of Lernould (2001).

[23] *Pace* Lernould (2001), see chapter 1.

epistemic access we have to it. Epistemologically speaking the world of sense perception is a combination of the perceptible and the intelligible. Consequently, the cognitive level on which philosophy of nature works is that which combines sense perception and reasoning. Since these two faculties cannot cooperate as such, a crucial role is played by the intermediate faculty of cognitive judgment (δόξα).[24] To argue for this position Proclus presents a highly sophisticated reading of the starting points of the prooemium, invoking the geometrical procedure of conversion.

The order of this chapter is dictated by the structure of the prooemium: we will follow Proclus in his analysis of the prooemium into different kinds of starting points.[25] After a short introduction to the prooemium as a whole (III.2), follows the analysis of the definitions (III.2.1–5), axioms/hypotheses/common notions (III.2.6–11), and demonstrations (III.3). Along the way, we will distil the geometrical method as it appears in Proclus' commentary and, where needed, explain how it can be reconciled with what he has to say about that same method as it occurs in his paradigm of geometry, Euclid's *Elements*.

III.2. *The constituents of the geometrical method in the prooemium*

Proclus takes the prooemium as laying the foundation of φυσιολογία as a discipline in its own right:

> **T III.1** … Plato seems to lay down beforehand (προκαταβάλλεσθαι) the foundations of the entire philosophy of nature: for just as there are different starting points of poetry, of medicine, of arithmetic and of mechanics, so too are there certain starting points of the entire philosophy of nature. (…) From these everything that follows proceeds.[26]

We here see how what was identified as the σκοπός of the dialogue, φυσιολογία, is treated as a particular, autonomous discipline[27] that will be

[24] For δόξα as faculty of cognitive judgment see below III.3.1.

[25] The εἶδος of the text (i.e. a likely story), which Proclus is willing to include in the demonstrations (ἐν τοῖς δεικνυμένοις ἄν τις θεῖτο, *In Tim*. I 355.25–26) is left out of consideration here. For this topic see chapter V.

[26] Cf. *In Tim*. I 236.15–28. Note that Proclus mentions both disciplines that are ἐπιστῆμαι, and τέχναι.

[27] I will here assume that there is such a thing as autonomous disciplines in Neoplatonic philosophy, although I think that considering the essential continuity of Neo-

unfolded in the *Timaeus* in all its aspects, to start with the proper starting points.[28] The starting points Proclus recognizes will be discussed in further detail below, but to facilitate the understanding of the parts I will provide a brief outline of the whole. Out of the lemmata of the prooemium Proclus distils five starting points and three demonstrations:[29]

A. Five starting points
Two definitions (*Tim*. 27d6–28a4), on occasion also called hypotheses, axioms, common notions,[30] namely

1. the definition of Being;[31]
2. the definition of Becoming;

And three other starting points (likewise called hypotheses, axioms, and common notions), concerning

3. the efficient cause (consisting of the couple a. everything becoming has a cause; b. without cause there is no becoming, *Tim*. 28a4–6);
4. the paradigmatic cause (consisting of the couple a. if the paradigm is eternal (Being), then the product is beautiful; b. if the paradigm is not eternal (Becoming), then the product is not beautiful, *Tim*. 28a6–b2);[32]
5. The determination of the subject matter (*Tim*. 28b2–4).

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platonic reality that notion should encounter serious difficulties. This issue will not be discussed here.

[28] On the *skopos* of the *Timaeus* see chapter I. As Lernould (2001: 343) points out, *pace* Festugière, the hypotheses and demonstrations of the prooemium are not the only ones introduced in Timaeus' exposition. For example, Proclus himself at the beginning of book III mentions a number of starting points (axioms), none of which belongs to the five starting points of the prooemium (*In Tim*. II 7.18–31).

[29] For an overview see the appendix. For the division of the starting points see Festugière (1966–1968: vol. II, 8–9), *In Tim*. I 236.21–27 and 348.13–15.

[30] On the use of this terminology see III.2.7.

[31] Strictly speaking, of 'the always Being' (τὸ ἀεὶ ὄν). In the commentary on the prooemium our commentator uses 'Being' and 'the always Being' interchangeably, although he takes the text to deal with the whole range of eternal Being(s), including Being ἁπλῶς (*In Tim*. I 229.11 ff.). The addition of ἀεί is explained as an emphasis of the fact that the distinction between Becoming and Being is primarily related to the distinction time-eternity (I 238.5 ff., esp. 239.17–20). In book IV, however, Proclus does distinguish between unqualified (ἁπλῶς) Being and eternal Being (III 15.22 ff.).

[32] For the emphasis on pairs (two definitions, twice two axioms), see *In Tim*. I 265.3 ff.

B. and three demonstrations

1. 'The essence of the universe is Becoming' (*Tim.* 28b7–c2)
2. 'The universe has an efficient cause' (*Tim.* 28c2–5)
3. 'The universe has an eternal paradigmatic cause' (*Tim.* 28c5–29b1)

As has been shown,[33] Proclus does not strictly separate the discussion of the starting points from that of the demonstrations. Already in his exegesis of (A), which should strictly speaking concern only the general principles, Proclus is immediately applying them to the universe—following the example, of course, of Plato who at *Tim.* 28a6, i.e. after the introduction of the efficient cause, without warning switches to "the Demiurge".[34] This blending of starting points and demonstrations shows in the content of the exegesis, but does not affect the formal structure imposed.

Let us turn to the analysis of the starting points of φυσιολογία as discerned by Proclus.

III.2.1. *Three aporiai concerning two definitions*

As said above, the enterprise of the demiurgy has its unique starting point in the question whether or not the universe has come into being:

> T III.2 For this will be looked into before everything else: and in fact in the whole of philosophy of nature this provides the greatest achievement, if the being generated or ungenerated of the universe is supposed correctly or incorrectly (ὀρθῶς ὑποτεθέν ἢ μή). For from this hypothesis we will be able to discover of what kind its essence and its powers are, as will be clear to us a little further. So for the sake of education the λόγοι about the universe will proceed, taking their start from that beginning, whether the cosmos is generated or ungenerated, and compose from this everything else according to its consequences.[35]

This passage calls to mind the *Cratylus*, where Socrates compares the namegiver to a geometer to emphasize the importance of correct start-

[33] Lernould (2001: 166).

[34] As pointed out by Runia (2000: 115).

[35] *In Tim.* I 219.23–31. Strictly speaking the ἢ μή is superfluous, but it may have been added to prevent a reading whereby the hypothesis in question would be the disjunction as a whole. Cf. *Parm.* 137b for a similar construction (where, however, the question is not strictly dependent on ὑποθέμενος). As Baltes points out, in the passage quoted above it is hard to decide where Proclus is reporting Porphyry's (and Iamblichus') interpretation and where he is adding his own. I follow Baltes (1978: 2–3) in assuming that Proclus takes the floor at "So for the sake of education …" (ἔσονται ἄρα etc.), but quote the whole passage, as Proclus clearly agrees with Porphyry.

ing points: "The first step of geometrical constructions at times contains a small and indiscernible mistake, and yet the consequences, a great number as they may be, may still be consistent with one another. In every beginning, everyone should make a great effort and a thorough investigation to see if it is assumed correctly or not. When that has been investigated adequately, the other steps will turn out to follow from it" (*Crat.* 436d2–7). Proclus, like Socrates in the *Cratylus*, is aware of the importance of a proper beginning of the process of reasoning and emphasizes it on two more occasions in the exegesis of the prooemium. At crucial transitions, from what he calls the starting points to the demonstrations, and at the end of the prooemium, in the exegesis of Timaeus' own statement regarding the proper beginning (*Tim.* 29a2 f., Μέγιστον δὴ παντὸς ἄρξασθαι κατὰ φύσιν ἀρχήν), Proclus points to the order of reasoning and the importance of the choice of one's starting points.[36] In the latter, he seems to be referring to the *Cratylus* passage again: "because even the smallest oversight in the beginning is multiplied in the process," as well as to a common dictum ascribed to Pythagoras: "the beginning is half of the whole".[37]

The didactic exposition that is the *Timaeus* will present a reconstruction of the universe[38] starting from its being generated or not, which is further specified as the question whether it belongs to the realm of Being or to that of Becoming. This question, the first προβλημα concerning the universe, dictates the consequent question what it is to be generated (or not):

> T III.3 That it was necessary for Plato to have made the definitions of that which always is and that which is becoming before all the other fundamental principles can easily be ascertained if we consider that the very first of the problems concerning the universe is 'whether it has come into being or is ungenerated,' as was stated a little earlier (*Tim.* 27c5), and that he himself will state further on: 'we should therefore first examine concerning [the universe] what it is laid down that we must examine for every subject at the outset, whether it has always existed, having no beginning of its becoming, or has come into being' (28b3–6). If this is the

[36] *In Tim.* I 275–276.7 and 337.8–338.19.

[37] *In Tim.* I 338.8–9. Proclus' source is probably Iamb. *VP* 29.162.2 Klein. Variations of the proverb, in which the beginning is *more* than half of the whole, are found in Plato, *Rep.* V 466c2 f. (where it is ascribed to Hesiod), *Laws* VI 753e6 and Aristotle, *EN* I 7 1098b7.

[38] For Proclus' interpretation of the *Timaeus* as a didactic exposition (διδασκαλίας ἕνεκα), the deduction or construction of the whole λόγος regarding the universe from this first question, and the text as image of creation see chapter V.

> very first of the subjects to be investigated, it is suitable for it to have the first position among the fundamental principles, namely what is that which is generated and what is that which is eternal. The other principles follow these, just as the other problems follow on the problem concerning the coming into being.[39] (*In Tim.* I 235.32–236.13, trans. Runia, modified)

The answer to that fundamental problem of φυσιολογία, which requires the determination of the εἶδος or nature[40] of the universe, will be reached through a prior analysis of the two relevant realms of reality, Being and Becoming.[41] The present sections, III.2.1–5, contain a discussion of that analysis, concentrated around three aporiai Proclus encounters. The three aporiai summoned by the first two starting points of the prooemium serve Proclus as vehicles for methodological discussions regarding different issues all related to the proper presentation of scientific knowledge. In these discussions, geometry is always the explicit paradigm.

III.2.2. *First aporia: the διάκρισις of Being and Becoming*

At 27d5, after the prayer and the exhortation of both himself and his audience, Timaeus starts his actual account of the universe with the words:

> **T III.4** Well then, in my opinion first the following division should be made (διαιρετέον τάδε):[42]

The division to be made, we find out in the following sentence, is

> **T III.5** … what is that which always is, but does not have generation, and what is that which is (always) becoming, but never really is?[43]

Both Plotinus and Proclus indicate that this passage presented a challenge for interpreters.[44] The main cause of exegetical difficulty was the word

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[39] Cf. the division of speeches into πρόβλημα and ἀπόδειξις, Arist. *Rhet.* III 13 1414a30 ff. For the (logical) relation between the different principles, see III.2.6-III.3.

[40] αὐτοῦ [τοῦ κόσμου] τὸ εἶδος: I 276.20; ἡ τοῦ παντὸς φύσις: 226.27–28.

[41] The analysis of these two genera, and the following subsumption of something under one of these genera occurs also at *Phd.* 78b ff., in the analysis of the composite/sensible and the incomposite/intelligible, and the assignment of soul to the latter.

[42] *Tim.* 27d5 as quoted in *In Tim.*: ἔστιν οὖν δὴ κατὰ γε ἐμὴν δόξαν πρῶτον διαιρετέον τάδε. Burnet has κατ' ἐμὴν. Proclus adds γε, perhaps to emphasize Timaeus' habit of presenting his own opinion, as opposed to that of others, which would be Socrates' choice (*In Tim.* I 223.5 ff.). On prayer, exhortation and this Pythagorean aspect of the account see chapter V.

[43] *Tim.* 27d6–28a1: τί τὸ ὂν ἀεὶ, γένεσιν δὲ οὐκ ἔχον, καὶ τί τὸ γενόμενον μέν, ὂν δὲ οὐδέποτε; Proclus does not have a second ἀεὶ, Burnet does.

[44] For Plotinus see below.

διαιρετέον in the first lemma, since it suggests that the method applied in the *Timaeus* is Platonic διαίρεσις, the method of dividing a genus into its species.[45] Since the consequent sentence shows which two species would constitute the division: in short "Being" and "Becoming", the questions arose what kind of division Timaeus has in mind,[46] and what genus it is that consists of Being and Becoming?

Proclus, who at first avoids the use of the word διαίρεσις and instead applies the more neutral term διάκρισις in order not to bias his discussion,[47] extensively reports the quandaries surrounding this suggestive formulation,[48] by scholastically spelling out all five possible kinds of division—a cut (τομή) of some whole into parts; a diaeresis of a genus into species; of one word into a number of meanings (σημαινόμενα); of a substance (οὐσία) into accidents; the inverse, an accident into substances—and rejecting each one of them.[49] That Proclus goes out of his way to distinguish and explain five different kinds of division despite the fact that he consequently rejects them all, has two reasons. First of all, it allows him to show his erudition and awareness of scholastic discussions. Secondly, and more importantly, starting the exegesis of the starting points with a division—even if it turns out not to be a real division—fits in with Proclus' desire to see all the dialectical methods, division, definition, demonstration, and analysis, applied in philosophy of nature, as befits a true Platonic science.[50] Of the first three of these methods, which in his view are all synthetic, division is the most august, and is to be applied first because it provides the principles of definition, which in turn is the basis of demonstration.[51]

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[45] *Phaedrus* (265c–266d), *Sophist* (216a–232a) and *Statesman* (258b–268d; 274e-end).

[46] Contemporary commentators Brisson (1992), Cornford (1937), Taylor (1928), Zeyl (2000) see no reference to a technical term here, and unanimously translate "distinction".

[47] *In Tim.* I 224.10: ἡ διάκρισις τῶν ὄντων καὶ γιγνομένων; 224.12–13: τῶν δύο τούτων γενῶν ἡ τοῦ ὄντος καὶ τῆς γενέσεως … διάκρισις. There is no real difference (e.g. of classes and their members) between the plural in the first case (τῶν ὄντων καὶ γιγνομένων) and the singular in the second (ἡ τοῦ ὄντος καὶ τῆς γενέσεως): they occur in one and the same sentence, and both refer to the distinction between ὄν and γιγνομένον.

[48] *In Tim.* I 224.17–227.3.

[49] Proclus' discussion of the different types of division, which opens up all kinds of interesting questions concerning the Neoplatonic interpretation of the method of diaeresis, will not be discussed here. On the types of division see also Dillon (1993: 73–74).

[50] On philosophy of nature being aided by dialectic, see Plot. *Enn.* I 3 [20] 6.2–5.

[51] *In Parm.* 982.9–12 (11–15 Cousin), *Theol.Plat.* I 9 40.10–12. On definition as ἀρχὴ τῆς ἀποδείξεως see *In Parm.* 980.25 ff., 981.2–3, 18 (980.33 ff., 981.3, 24–25 Cousin),

After rejecting all five kinds of division, Proclus proposes an alternative, namely that, instead of a division, Plato is only making a διάκρισις ἀφοριστική, a "delimiting distinction" in which we find out what Being and Becoming are.[52] A Platonic diaeresis (of any type) is a division of similar entities, qualities etc. in that they are on equal level, be it ontological, semantic or otherwise and can be grouped under the same higher level entity, quality etc.[53] Since Being and Becoming are *essentially* different, with many contrary properties (such as eternal vs. temporal), but are moreover ontologically ordered according to priority and posteriority, a διαίρεσις of these two is impossible: there is no genus over an ordered series.[54] Rather than bringing them together under a higher level, Being and Becoming have to be conceptually separated. This is exactly what is emphasized by explaining "di-vision" as an elucidation of the chasm gaping between the two *genera* through their respective definitions.[55] Proclus sees a parallel in this context with the *Philebus*, where Plato distinguishes three genera (τὸ πέρας, τὸ ἄπειρον, τὸ μικτόν, 23cd). They, too, are highest genera, that can not in turn be brought together under a higher genus.[56]

In order to highlight the nature of the "di-vision", Proclus in the next 7 lines after introducing the notion "delimiting distinction" (διάκρισις ἀφοριστική), Proclus says "we must carefully distinguish" (διευκρινη-

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In Eucl. 206.13. See also below, III.2.3. Analysis is not included in these hierarchies of dialectical methods, because from a directional point of view it is considered the opposite to all three other methods: analysis constitutes the upward, anagogic method and is as such more valuable than the synthetic methods. Cf. Beierwaltes (1979: 248–253).

[52] Note that διάκρισις and διαίρεσις are sometimes equivalents, as at *Theol.Plat.* IV 31 92.4 ff. and *In Tim.* III 249.21 ff. Cf. the use of διάκρισις in Plato *Sophist* 226d and *Laws* X 908b.

[53] Following Aristotle's notion of synonymy: items falling under a single genus share not only the name of that genus but also the corresponding definition (*Cat.* 1, 5).

[54] Cf. Plot. *Enn.* VI 1 [42] 1–2, and the lucid reading of De Haas (2001: 503 ff.). On the more general issue of Neoplatonic genera see Lloyd, A.C. (1962, 1990: 76 ff.).

[55] According to Porphyry (apud Simplicius *In Phys.* 135.9 ff., 134F Smith), Plato is making a logical distinction of two opposites (ἀντιδιαιρούμενος). Ἀντιδιαιρεῖν (used at *In Tim.* I 384.19 f. of matter and the Demiurge) is "to distinguish logically" (cf. Iamb. *Comm.Math.* 4) and (pass.) "to be opposed as the members of a natural classification", Arist. *Cat.* 13 14b34, *Top.* VI 6 143a36, cf. Iamb. *Myst.* 9.7.

[56] *In Tim.* I 226.2–7. Proclus does not speak of the fourth genus, which may have been problematic for him as it is said to "demiurge" (τὸ δὲ δὴ πάντα ταῦτα δημιουργοῦν, *Phil.* 27b1). Perhaps his mention of the gods as source of limit and the unlimited is a reference to that divine fourth genus (*In Tim.* I 226.7 ff.).

τέον),[57] followed by a repeated "separate" (χωρίς twice), and phrases such as "in order that we don't confuse" (ἵνα … μὴ συγχέωμεν), but "distinguish from one another" (διακρίνωμεν αὐτὰς ἀπ' ἀλλήλων).[58]

As Proclus concludes:

> **T III.6** … this is not a division of one entity, but the present investigation needs the distinction (ἀφορισμός) of these two genera (τῶν διττῶν τούτων γενῶν) before everything else, in order for the exposition to proceed as from geometrical hypotheses to the examination of the consequents (τῶν ἀκολούθων) and discover the nature of the universe and its paternal and paradigmatic causes.[59]

This solution is very similar to that of Plotinus, who criticizes Severus' interpretation of the diaeresis.[60] The Platonist Severus had interpreted the diaeresis of the prooemium as a division of the semantic genus τι (inspired by the Stoic category) into Being and Becoming.[61] Plotinus explicitly rejects the Severian insertion of that genus above Being and Becoming as ridiculous and compares it to equating Socrates with his image. He moreover makes clear that the reason Plato distinguishes Being and Becoming, and sets them apart (τὸ ἀφορίσαι καὶ χωρὶς θεῖναι) in the first place, is in order to warn those who mistakenly call Being that which is actually Becoming.

For Proclus the distinction is crucial not only as a warning, but furthermore as providing Timaeus with the means to "discover the nature and efficient and paradigmatic causes of everything" as if from geometrical hypotheses and their consequences (cf. **T III.6**). Distinguishing between

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[57] This expression occurs at Plato *Parm*. 135b3. The only other time the verb is to be found in Proclus is in his commentary on that text (*In Parm*. 976.21–31 (26–38 Cousin)), where almost identical vocabulary is used as here in the *In Tim*.: "you should carefully examine (διευκρινήσασθαι) the *genera* (!) of beings … the distinct causes (τὰς διωρισμένας αἰτίας) … we have divided (διειλόμεθα) … the words "that which is carefully examined" ("διευκρινησάμενον") indicate the unmixed and pure intellectual apprehension (τὴν ἀσύγχυτον καὶ καθαρὰν νοερὰν ἐπιβολήν) … for clear distinction is a kind of delimiting clarification of the particularity of each thing (ἡ γὰρ εὐκρίνεια σαφήνειά τίς ἐστι τῆς ἑκάστων ἰδιότητος ἀφοριστική)."

[58] *In Tim*. I 225.24–226.2.

[59] *In Tim*. I 226.23–29.

[60] Plot. *Enn*. VI 2 [43] 1, esp. 21–28.

[61] Cf. *In Tim*. I 224.25–29, where Proclus refers to that same interpretation. On the Platonist Severus and his use of the Stoic category τι, see Gioè (1993). On the Stoic category see Long and Sedley (1987: 27); Seneca *Ep*.58.13–15; Alex. *In Ar.Top*. 301.19–25; ibid. 359.12–16.

the different genera relevant to a science is part and parcel of the task of a good scientist. As Proclus remarks in an Aristotelian vein the *In Eucl.*, it belongs to the qualities of the good μαθηματικός to be able to distinguish between the different genera, and choose the proper demonstration accordingly, where the proper demonstration is the one that uses the principles fitting to the subject matter, and that has the appropriate epistemological status and degree of certainty.[62] That μαθηματικός can here be taken in the broad sense of scientist, including the philosopher of nature, is clear from the fact that the *Timaeus* is subsequently mentioned as the clear example of a text in which the subject matter influences the degree of certainty.[63]

The importance of distinguishing between different kinds of subject matter of a demonstration is similar to the importance attached to division as the method of providing a neat organization of the constituent terms or concepts of a science,[64] and of eliminating what is irrelevant to the task at hand.[65] As we have seen above, a proper beginning is more than half the work: not distinguishing the fundamental concepts properly leads to a multiplication of mistakes later on.[66] Translated to the context of the *In Tim.*, where as we have seen there is no division, the distinction of the two genera allows us to eliminate the genus that is least relevant to the task at hand, a crucial step in determining the nature of the universe. In this sense, of preventing confusion by accurately distinguishing the main concepts relevant within a science, the διάκρισις is no less significant than a diaeresis would have been.

Some thirty pages after the discussion of the alleged division, Proclus presents another, far less problematizing, but also less interesting discussion of the διάκρισις.[67] He emphasizes again that it is not really a division (τὸ διαιρετέον οὐκ ἐδήλου διαιρετικὴν ὁδόν), and this time reinforces this claim by subsuming some of the other starting points (see the outline in III.2) under the object of the verbal adjective "διαιρετέον" as well. Only now is it made explicit that the verbal adjective should not be read as a technical term, since it signifies rather:

[62] *In Eucl.* 32.21 ff. Cf. e.g. Arist. *EN* I 3.
[63] *In Eucl.* 34.4–7.
[64] Cf. Barnes (2003: 129–130).
[65] *In Eucl.* 211.23–212.1.
[66] Cf. Barnes (2003: 129–130).
[67] *In Tim.* I 258.12 ff.

> **T III.7** … that one should distinguish the hypotheses.[68] For "that everything becoming by necessity becomes through a cause", and "that it is impossible to have becoming without a cause", and after these "that that which becomes with regard to an eternal paradigm is beautiful",[69] all these have been presented with reference to "must be distinguished" (διοριστέον),[70] and they are axioms, not parts (μόρια)[71] of a division.[72]

This reading of the *Timaeus*, where the first four starting points are presented as objects of διαιρετέον, is possible, and in fact not at all unlikely, since διαιρετέον is the only verb that can govern their accusative/infinitive constructions. The Platonic text should then be read as "First we need to distinguish Being and Becoming, (…), that all Becoming has an efficient cause, that it is impossible to have becoming without a cause, etc …" Note that Proclus is here presenting yet another argument against reading a diaeresis in *Tim*. 27d5. Up to now, the main question was whether it is at all possible to present a Platonic diaeresis the μόρια of which are Being and Becoming. Now, however, Proclus is thinking of a diaeresis as a chain of divisions, in the manner of Plato's *Sophist*, and states that the starting points concerning the efficient and paradigmatic causes of the universe (#3 and #4 in the overview) are not μόρια of such a chain.

III.2.3. *Second aporia: the definitions*

The distinction of Being and Becoming is initially introduced as a "division", and commences with the phrase "what is …" (see **T III.5**). Commentators had thereby been led to assume that, following the division, Timaeus is laying out definitions (ὁρισμοί). In Platonic philosophy, the method of division is traditionally the method related to definition,[73] and

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[68] There is a switch from the ontological to the logical level here, since before the distinction made was between genera of reality.

[69] Proclus here names both the affirmative and the negative clause of the lemma concerning the efficient cause, yet only the affirmative clause of that concerning the paradigm. The latter is primarily due to the fact that the negative clause about the paradigm does not contain an explicit accusative/infinite construction and therefore (like the fifth starting point, by the way, where the verb is a third person imperative) is not clearly an object with διοριστέον.

[70] Note that the word διοριστέον is not used at *Timaeus* 27d5. It does occur later, at 29b4.

[71] Μόρια are the constituent parts, also of a genus. Cf. Plato *Soph*. 229b7, Arist. *Met*. V 15 1023b19.

[72] *In Tim*. I 258.18–23.

[73] *In Parm*. 982.9–10 (12–13 Cousin). Cf. *In Eucl*. 57.18–26, 69.9 ff. where definition is

the formula "what is …" is the standard question to which a definition provides the reply.[74] The function of divisions, however, is generally to provide the genus that together with the specific *differentia* will constitute a definition, whereas in the *Timaeus* it is the genera themselves that are defined. The mere fact that, as we saw, Being and Becoming cannot be brought under any of the five kinds of division already bodes ill for the definitions, because of that which cannot be part of a division there cannot be a definition.[75]

And indeed, the commentators referred to by Proclus (he does not reveal who they are, but Plotinus and Porphyry are likely candidates, see below, n. 81) criticised the definitions they supposed were given, since the two questions ("what is Being?" and "what is Becoming?") are answered as follows: "eternal Being is what is known through intellect and reasoning," and "Becoming is what is judged through opinion and sense perception" (*Tim*. 28a).[76] These descriptions, Proclus tells us, have been criticised for two reasons. First of all, they do not obey the rules of definitions (οἱ τῶν ὅρων κανόνες), because they do not supply a genus. Secondly, they do not clarify what the nature of the *definiendum* is, but instead describe it by our modes of cognition. One should, however, study the things themselves as such, before moving on to our epistemological relation to them.[77]

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coupled with division as the methods concerning first principles and essential properties. Cf. Buzzetti (1997: esp. 332–336). Alcinous says that definition, which aims at knowledge of 'what each thing is in itself in virtue of its essence,' arises (γεννᾶται) from division (Alc. *Didask*. 157.1–10 Whittaker)).

[74] *In Tim*. I 227.13–18 "First of all, then, the 'what' is intended to be definitory: for it is common usage in definitions to put 'what is' first." This is followed by a criticism of Severus, the Platonist mentioned above who apparently was an adherent of the Stoic theory of categories, according to which the repeated word τί introduces only one question, namely 'what is that which includes both the existing and the subsisting?' On Severus' reading see Gioè (1993).

[75] *In Parm*. 980.23 ff. (29 ff. Cousin). Cf. Steel (2004).

[76] The issues here discussed regarding the definitions are to be found at *In Tim*. I 240.13–243.2. For discussions of Proclus' exegesis of the definitions themselves, and his reaction to Aristotle's criticism thereof (I 243.26–258.8), see Lernould (2001: 153 ff.) and Baltes (1978: 3 ff.); for Proclus' views on opinion (δόξα), see also below III.3.1.iii.

[77] *In Tim*. I 241.31–242.2; cf. *In Tim*. III 254.27–31, where Proclus calls a genuine (ὀντῶς) definition one that 1. conveys a character that is applicable to all the genera falling under the definition, 2. expounds the essence of the definiendum, 3. does not include the definiendum in the definiens.

i. The answer to the first objection

Proclus responds to this criticism with rhetorical indignation, stating that he will demonstrate "the very opposite", namely that the anonymous objectors "are completely mistaken," after which he agrees to the gist of their objections, and subsequently explains them away. As to the first: Timaeus indeed does not appeal to a genus for the definienda, and he is right in not doing so, since there is no genus above Being. Proclus does not reveal whether Timaeus could have provided a genus for Becoming.[78] Although the answer to that question would be interesting, Proclus chooses to deal only with the issue that plays an important role in ancient metaphysics: Being as the highest genus. His defence of Plato's definition concerning Being comes down to the following:[79] 1) There is no genus above Being, "for what kind of genus is appropriate to Being, which encompasses the entire intelligible substance (οὐσία)? If there is no genus above substance, nor a definition of substance, since it is most generic (γενικώτατον), what would you say in the case of Being, which encompasses all substance, all potentialities, and all actualities?" Proclus is here playing on the distinction between τὸ ὄν and ἡ οὐσία, and combining the Peripatetic notion of substance as highest genus and the Platonic one of Being as highest genus. Since Being encompasses not only substance, but also the ontologically different actualities and potentialities, of which 'Being' cannot be predicated synonymously,[80] and since there is not even a genus above substance, there is a fortiori no genus above Being;[81] 2) Proclus goes on to show with a *reductio ad impossibile* that there is no genus of Being, because if there were, it would be either Being or not Being. Being is not the genus of Being, because this would reduce the second Being to a particular kind of Being, rather than Being

[78] The notion of genus in this context is an Aristotelian one, and for a discussion of a genus above Becoming a Platonic genus is required, which allows the species of a genus to be an ordered series. On such Platonic genera, see Lloyd, A.C. (1990: 76 ff.).

[79] *In Tim*. I 242.3 ff.

[80] Cf. Arist. *Top*. II 2 109b6, where it is said that all genera are predicated *synonymously* of their species. See also *Cat*. 5 3a33–b9.

[81] *In Tim*. I 242.5–10. Porph. *Isag*. 5. On Being as a highest genus, cf. Plato *Soph*. 254e ff. For Plotinus οὐσία is not a genus as it is not predicated synonymously (*Enn*. VI 1 [42] 3), and τὸ ὄν is one of the five highest genera (VI 2 [43] 8.44–45), although the other four are its constituent actualities. Cf. De Haas (2001: 514–515) and Chiaradonna (2002: 80–81 and ch. 3, 227 ff.). Proclus seems to follow Porphyry (*Isag*. 5.1–2), who in turn follows Arist. *Met*. VI 1. As in the case of the 'division', Proclus focuses exclusively on Being, because his discussion is part of a more general defence of Plato's theory of Forms.

simpliciter; 3) On the other hand, the genus of Being cannot *not* be Being (or be non-Being), since the negation would have to be predicated of the species,[82] i.e. of Being, which would thereby become self-contradictory (assuming self-predication).

This hardly seems adequate or convincing by way of justification of the definition of Being, but it is not intended as such a justification. As in the case of the division discussed above, Proclus brings in the scholastic discussion of a technical term, and rejects the technical meaning of the term as unsuitable in the context. He does not see any harm in the definition not being a real definition. What he really wants to argue here is that Being is the highest possible genus, that for this reason no genus can be given in the definition, and that therefore no proper definition can be given. So in a roundabout way, he is defending Plato, not by refuting the criticism itself, but by showing that Plato had no other choice.

That this is what Proclus has in mind shows from the terminology he uses. To indicate that he is merely using the term "definition" in a derivative sense, and that the two answers to the questions "what is Being" and "what is Becoming?" are (merely) similar to definitions, he calls the "what" (τί) in these questions ὁρικόν ("akin to definition"), rather than ὁριστικόν ("belonging to definition"), the more common expression.[83] The rare term ὁρικόν is used by Aristotle to designate something that is not a standard definition, but is similar to it in that it does express the identity of two things.[84] "Τὰ ὁρικά" are described by the Stagirite as "everything that falls under the same method as definitions"—they may not reveal the essence (τὸ τί ἦν εἶναι), but they are interchangeable with what they "define".[85] In this sense, the two descriptions, or cogni-

[82] The genus is predicated of all the species, *In Tim*. I 242.12–13. The phrase echoes Arist. *Top*. II 2 109b6 (see also n. 80), although the word συνωνύμως is absent (as in Syrianus, *In Met*. 29.35; 46.12).

[83] *In Tim*. I 227.13; cf. 309.8–13, where Plato is said to have "secured" (κατεδήσατο) eternal Being through the definitory explanation (ὁρικῆς ἀποδόσεως, ὁρικῶς ἀποδοθέντος). Note that Festugière's translation "la nature de l'Être Éternel" (at 309.9) is incorrect, for the very reason that the "definition" of Being does not reveal its nature. In the passage in question Proclus argues why the Demiurge cannot be identical to Being. The argument is *not* (as is suggested by F.'s translation) 1. the Demiurge is hard to find (*Tim*. 28c), 2. we have found the nature of Being (from the definition), hence 3. Being and the Demiurge are not identical. Instead, the second premise is rather 2. we already know how Being is to be found (from the definition, namely through intellect and reasoning).

[84] Arist. *Top*. I 5, 101b37 ff.

[85] Aristotle's main point in the *Topics* chapter is that a definition should always be a proposition (λόγος), rather than a word (ὄνομα), but this does not undermine our case. This narrower sense of ὁρικόν, for those descriptions that are abbreviations of definitions,

tive pilots as we may call them, from the prooemium are indeed akin to definition. They provide criteria that will identify (only) Being and (only) Becoming respectively, as the metaphysical distinction between Being and Becoming is "expressly equated" or "correlated"[86] with that between the intelligible and the sensible, just as in the simile of the divided line in the *Republic* (VI 509d ff.).[87] That this extensional identity is supposed by Proclus, and, in fact, by Plato himself, to exist between definiendum and definiens is clear also from the fact that the converse of the definition of Becoming (i.e. "everything perceptible is Becoming") is later used in the first demonstration, concerning the nature of the universe.[88] And extensional identity is a necessary condition for this kind of conversion. That demonstration will also show that, in order to serve as *criteria*, the 'definitions' are necessarily related primarily to the subjective discrimination by the knower.

ii. The answer to the second objection

The second objection brought forward against the definitions was that they do not reveal the essence of the definienda. Where the first objection gave Proclus occasion to show that Plato did not have any other choice than to present non-technical definitions, in response to this second objection he takes the opportunity to show that Plato made the best choice under the circumstances. Proclus agrees that the definitions themselves do not reveal the essence of the definienda, but adds that this is justified by the didactic purpose of Timaeus' exposition, as well as the anagogic function of the dialogue as a whole for the reader. The definitions

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is found in Hermias (*In Phdr.* 120.6 ff.), who says that soul can be defined by a ὁριϰὸν ὄνομα, and shows that such an ὄνομα is in fact an abbreviation of a proposition.

[86] Taylor (1928: 61), Zeyl (2000: xxviii).

[87] Thus it is not the case that we do not find a criterion with which to distinguish Being from Becoming until I 255, as is maintained by Lernould (2001: 162–164). Lernould takes Proclus' introduction of his own addition to the description of the two genera at I 255.29–256.5, namely the (not) having an existence in time in all respects (οὐσία, δύναμις, ἐνεργεία), to be a first criterion for distinguishing Being from Becoming. Apart from the fact that there is another addition (that of (not) having self-subsistence) that is at least as important, a *criterion* should primarily be related to the subjective discrimination by the knower, and only secondarily to objective properties of the object as the ultimate grounds of that discrimination. The 'definitions', as descriptions of our cognitive access to Being and Becoming, are the first occasion where such a yardstick is offered.

[88] *Tim.* 28b7–c2. *In Tim* I 283.12–19; 292.19 ff.; II 4.4 ff. For a discussion of the role of the conversion in the foundation of philosophy of nature, see III.3.1.

(ἀποδόσεις), he points out, will later be used as axioms and hypotheses of the demonstrations, and as such they have to be known and evident to us (γνωρίμους [...] καὶ ἐναργεῖς ἡμῖν).[89] This formulation harks back to Aristotle's distinction between "what is prior and better known (γνωριμώτερον) to us" and "what is prior and better known by nature", a distinction the Stagirite makes in the context of listing the requirements of the starting points of demonstrations.[90] By adopting this distinction, Proclus makes the rules of defining subordinate to the rules of demonstration, in the light of the didactic aim of the text. This aim demands that the learning audience be familiar with the subject matter, as we also read in the very first lines of the *Posterior Analytics*: "All teaching and all intellectual learning develop from pre-existing knowledge" (I 1 71a1–2). And since "Timaeus wants to make Being and Becoming familiar through the use of the definitions, in order for the demonstrations that are to follow to proceed from hypotheses that are familiar and known to the audience",[91] it is only reasonable that Plato presents the peculiar nature of Being and Becoming by describing the epistemic access we have to them, which will subsequently result in *anamnesis*, our awakening (ἀνεγείραντες) to a clearer grasp of their natures.[92] The setting out of the starting points is a preparatory phase before the actual unfolding of science.

In order for this second defence of Plato's definitions to hold water, Proclus expands Aristotle's notion of "what is prior and better known to us", to include not only "that which is closer to perception", and "the particulars" (as at *APo* I 2 71b33 ff.), but also the (mental) object of our intellect and reasoning (as objects of intellect and reasoning, not *per se*). One might think that there is an alternative reading of the phrase "prior and better known to us", namely as cognitive priority *due to* the positing, rather than *prior to* the positing. The definitions of Being and

[89] *In Tim*. I 242.16–19. Cf. I 345.6 ff., II 27.1 ff. Diehl and Festugière have the "as we said before" refer to 228.25 ff., where Proclus speaks of the hypothesis "that Being exists". It is both grammatically and with regard to content unlikely that the plural τούτοις at 242.17 refers to the singular ὑπόθεσις (the gender is irrelevant here), which, moreover, is no mention of either definition, but an assumption that is already implicit in them (on which see below, III.2.4). More suitable are *In Tim*. I 226.22 ff., the first mention of the use of hypotheses and demonstrations, but in the context of the 'division'; I 229.1 ff., on philosophy of nature being a hypothetical science; or 235.32 ff., on the definitions as first starting points.

[90] *APo* I 2, 71b33 ff., cf. *Phys*. I 1, 184a16 ff. See Barnes (1994: 96–97), Mignucci (1975: 30–31) for more reff.

[91] *In Tim*. I 242.21–24.

[92] *In Tim*. I 242.26–27.

Becoming would then be prior and better known due to the mere fact that Timaeus starts his exposition on the universe with them. In such a reading, however, the point of the necessity of epistemological priority of the definitions to the demonstrations would indeed be an argument in favour of *beginning* with definitions of Being and Becoming, but of course it would entirely lose its argumentative force in the defence of the *particular choice* of the definitions: any definition would do. Since it is the particular choice of the definitions that Proclus is here concerned with, we have to read the "prior and better known" as indicating cognitive priority *prior to* the positing.[93]

Starting from what is known *simpliciter*, or by nature, rather than from knowledge that the interlocutors already possess, would be a didactical mistake:

> **T III.8** If [Plato] had encouraged us to try and apprehend the actual nature as such of things, he would have inadvertently filled the entire teaching with unclarity.[94]

First the students have to be led from what they already knew to those starting points that are "the beginning by nature, but the end with respect to us",[95] i.e. the causes of the universe. Once that is accomplished, the exposition can, and should, follow the natural order of things. A didactic text, Proclus tells us elsewhere, is an exteriorization of the inner scientific discourse of the teacher, and it should therefore run parallel to it. And since (scientific) knowledge has the same structure as its (external) object, a didactic text should ultimately also have the same structure as its object.[96]

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[93] The epistemological priority of the definitions *prior* to positing lies minimally in the audience's already knowing 1) that it has sense perception and opinion, and that they have a proper object, as well as 2) that it has an intellect and reasoning, and that they again have a proper object. That the proper objects in question are Becoming and Being respectively need only have priority *due* to positing. On the distinction prior and better known to us and *per se* see also De Haas (2002).

[94] *In Tim*. I 242.19–21, note the opposition of "hunt" (θηρᾶν) and "teaching" (διδασκαλία). Making one's students chase after knowledge, rather then showing them the way, is didactically ineffective. Cf. below, III.3.1, III.3.2. The expression is perhaps a variation of *Phd*. 66c2, ἡ τοῦ ὄντος θήρα and of course recalls one of the themes of Plato's *Sophist*.

[95] *In Tim*. I 338.22–23, cf. Arist. *APo* I 2.

[96] *In Tim*. I 337.29–338.5 in paraphrase: as the universe naturally begins from, i.e. is caused by, the gods and the source of beings, so the scientific discourse starts from a natural beginning. Scientific knowledge follows the order of things, and the didactic account in turn follows science. Proclus is not very clear on where we find the actual start of the didactic account: he mentions the starting points (337.29–338.4, cf. 338.27–28), the final cause as the proper beginning of the universe (338.27), but therefore also of the

The two ways in which the definitions, and especially that of Becoming, contribute to the actual carrying out of the *anamnesis* aimed at by this didactic scheme will be discussed in III.3.1.

In the end, one gets the impression that Proclus wants to have it both ways: he admits that the definitions are not really definitions, yet at the same time maintains the designation "definitions" for the phrases in question,[97] something I will do as well. That Proclus still calls the descriptions definitions every now and then may have several reasons, such as a wish to distinguish these two first starting points from the others as more fundamental to the whole exposition, or a custom in the exegetical tradition to speak of definitions, or because in this manner at least at first sight, as in the case of the division, the correct order of the synthetic dialectical methods is safeguarded: first division, then definition, then demonstration.[98] But the most important reason at this stage is no doubt that Proclus thus maintains the parallel with geometry as we find it in Euclid's *Elements*, which starts off with the formulation of definitions. This parallel is important not just for rhetorical reasons: as we will see, in Proclus' idiosyncratic notion of definition in geometry we find an important clue as to the status of philosophy of nature as a hypothetical science.

III.2.4. *Third aporia: the hypothesis of Being*

Proclus' third aporia concerning the starting points of the prooemium may in first instance come as a surprise:

> **T III.9** Now why has Plato not discussed the "if" before the "what"?[99]

Why would Proclus, besides discussing whether the label 'definitions' is applied correctly to the definitions, also raise the aporia why Plato does not discuss existence (the "if") before essence (the "what")? That this question comes up at all can be understood only if we assume that the definitions of philosophy of nature presuppose the existence of their definienda. The easiest way to dispel the aporia, in that case,

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didactic account, and the distinction concerning the iconic status of the account (οἱ λόγοι 338.28–339.2). On the parallel between text and creation see chapter V.

[97] After the discussion here summarized, at *In Tim*. I 243.13; 254.16; 258.12; 320.27–28; II 4.4–16.

[98] *In Parm*. 982.9–12 (11–15 Cousin), *Theol.Plat*. I 9 40.10–12.

[99] *In Tim*. I 227.19–20.

is to show that philosophy of nature is a hypothetical science. As we will see, this is indeed the main argument Proclus has recourse to: in philosophy of nature, as in geometry, the existence of certain entities is presupposed, and therefore the constituent concepts of that science are defined without proving their existence.[100] It is in this respect that the parallel between Plato's method and that of a geometer is most significant, and for a proper understanding of the sense in which philosophy of nature is a hypothetical science, we will make an excursion into geometry (III.2.4.ii).

First, however, we will discuss some of the other arguments Proclus offers to resolve the aporia. Anonymous predecessors of our commentator (τοῖς πρὸ ἡμῶν, I 227.19) formulated this aporia, provoked by the interrogative "τί" that introduces the definitions of Being and Becoming, and that was taken to suggest that Plato had in the back of his mind the four *problêmata* (as later distinguished by Aristotle) εἰ ἐστι, τί ἐστιν, ὁποίον ἐστι, διὰ τί ἐστιν.[101] The practice of treating the "what" before the "whether" was considered incorrect, since it contravenes the rules of scientific demonstration (ὁ τῶν ἀποδεικτικῶν νόμος), which say that one should first ascertain the existence of the subject matter, before defining it.[102] This need becomes all the more urgent in the case of entities the existence of which is disputed, such as the Platonic Forms, i.e. Being: "for what proof does [Plato] have that eternal Being exists?"[103]

Proclus' formulation of the aporia, the great pains he takes to solve it, the solutions he comes up with, but especially the exclusive focus on the existence of Being in the resolution of the aporia (see below), reveal that he interprets it as more than a methodological issue, namely as an attack on the theory of Forms.[104] The existence of Becoming is not discussed in

[100] This point of similarity between geometry and the philosophy of nature of the *Timaeus* is noted also by Finkelberg (1996: 403–404).

[101] Arist. *APo* II 1 89b24–35.

[102] *In Tim*. I 227.21–22. Note that Elias (*In Isag*. 37.9–16), who matches each of the four (Aristotelian) dialectical questions to a (Platonic) dialectical method, has the question "if it is" correspond with the method of division, which would also solve the aporia: the presence of the division is thereby an answer to the question 'if it is'.

[103] *In Tim*. I 227.20–21: πόθεν γάρ, ὅτι ἐστὶ τὸ ἀεὶ ὄν; Cf. Arist. *APo* II 1, 89b31–34, on "if it is *simpliciter*", concerning centaurs and gods. Cf. similar discussions on the order "if it is, what it is" concerning infinity (*Phys*. IV 1 208a28) and the void (IV 6 213a13).

[104] If the aporia had been no more than a methodological issue, Proclus could have sufficed with an argument *ad auctoritatem*, by referring to Plato's *Phdr*. 237bc, where Socrates says that one should in the investigation of any subject first look into *what* it is (τὸ τί ἐστιν). Cf. *In Tim*. I 275.14–20, where Proclus does use this argument to explain

any explicit way.[105] Moreover, Proclus explains both why Timaeus does not discuss the existence of Being *before* defining it, which is the actual aporia, and why there is *in general* no need for him to present a proof of the existence of Being, although he does not separate these questions explicitly.

i. The answers to the third aporia, part I

Proclus' first answer to the aporia is that Timaeus' negligence of the rules of demonstration is not that grave, since he may have had reason to believe that he did not need a proof of the existence of Being.[106] The fact that this suggestion is subsequently buttressed with a grand total of seven arguments, including a forthright rejection of the *aporia*, reveals that Proclus still felt the *aporia* had to be dispelled. In summary, the arguments rely on

1) the contents of the *Republic*;
2) the existence of the gods;
3) our common notions;
4) the methodological parallel between philosophy of nature and geometry;
5) a rejection of the aporia: Plato does prove the existence of Being;
6) the existence of the Demiurge;
7) the existence of the paradigmatic cause of the universe.[107]

As will become clear, of these arguments 1, 2 and 3 defend the thesis "we don't need proof of the existence of Being because we already have it", 5, 6, and 7 the thesis "we don't need proof of the existence of Being because we will get it later", and 4, which is called "the most true" explanation,[108] defends the thesis "we should not get any proof of the existence of Being in this context".

These arguments will here be reviewed in their proper order, with a special focus on the fourth and "most true" argument, which concerns the geometrical method. The first two arguments can be dealt with briefly.

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that the proper beginning of Timaeus' account is the fundamental question concerning the εἶδος of the cosmos (i.e. whether the cosmos is Becoming or Being).

[105] See below, III.2.4.iv.

[106] *In Tim*. I 227.23–24.

[107] *In Tim*. I 227.24–229.11.

[108] *In Tim*. I 228.25–26.

They are 1) Timaeus does not need an argument for the existence of the Forms, since a proof has been given by Socrates "the day before", i.e. during the conversations described in the *Republic*;[109] 2) Perhaps (τάχα δέ) also the fact that the prooemium is preceded by a prayer can be considered proof that Being exists: if there are gods, then Being, which is related (ἡνωμένον) to them, must also exist.[110] In Proclus' metaphysical system the gods properly speaking are prior to Being,[111] whereas Being is the first hypostasis to participate in divinity.[112] Here, however, Proclus is apparently referring to the more simple fact that the gods are eternal, i.e. not generated or perishable, and that therefore through the gods we have a guarantee of the existence of eternal being.[113] What is curious about this second argument, of course, is that the existence of the gods is supposed to be proved by the mere fact that we pray.

(3) The third and more important argument,[114] is what could be called an ontological argument. The existence of Being is a metaphysical necessity according to Proclus, and therefore knowledge of it is part of our common, *a priori* intuitions (κοιναὶ ἔννοιαι, see also III.2.7). Those intuitions tell us that there has to be such a thing as the always Being, in the sense of the uncreated and uncaused, since otherwise causation of what is Becoming would be impossible. Using an argumentative sequence well known from *El.Th.* prop. 11, plus the assumption that there is no Becoming *ex nihilo*, Proclus argues that denying the existence of Being as cause of Becoming leads to infinite regress or circularity.[115] Since neither is acceptable, Being has to exist.

(4) It is not until the fourth argument that Proclus introduces what he considers the "most true explanation" (τὸ ἀληθέστατον), which we will here discuss at greater length.[116] The argument runs as follows. Plato's method is like that of the geometer, who "mentioned (ὑπέμνησεν) what

[109] Proclus (*In Tim.* I 227.24–228.7) mentions several issues discussed in the *Republic* from which the existence of Being can be surmised: the immortality of the soul (*Rep.* X 611d7–612a4), the distinction of the object of reason and the object of opinion (V 476e6–478e6), the divided line (VI 509e6–511e5) and the simile of the sun (VI 508e1–509d5). Cf. Diehl ad loc. and see Festugière (1966–1968: vol. II, 53–54).

[110] *In Tim.* I 228.7–11; the prayer referred to is *Tim.* 27c1–d1.

[111] *El.Th.* prop. 115 with the comments of Dodds (1963: 261–262).

[112] *El.Th.* prop. 138.

[113] Thus more in the vein of Plotinus *Enn.* V 1 [10], esp. 4.11–12.

[114] *In Tim.* I 228.11: μᾶλλον δὲ καὶ πρὸ τούτων.

[115] *In Tim.* I 228.11–25.

[116] *In Tim.* I 228.25–28, 228.30–229.3. In the following discussion the repetition of the same argument at *In Tim.* I 236–237 is also taken into account.

the point is, and the line",[117] while assuming their existence. Likewise, Plato has Timaeus define Being, assuming *as a hypothesis* that it exists.[118] This argument is consequently explained by pointing out that like geometry,

> **T III.10** [philosophy of nature] is also a hypothetical science (ἐξ ὑποθέσεως ἐπιστήμη), and therefore before the demonstrations hypotheses need to be assumed.[119]

Before moving on to a further assessment of this fourth argument, and the remaining arguments in resolution of the third aporia, it is worth our while to find out what it means to say that a science is hypothetical. For an answer to this question we turn to Proclus' *Commentary on Euclid's Elements I*. An excursus on the sense in which geometry is a hypothetical science will allow us to better analyze the scientific status of philosophy of nature. It will moreover give us an opportunity to dismiss unjust charges of conceptual sloppiness brought against Proclus.

ii. Excursus: Proclus on the hypothetical nature of geometry

The very first occurrence of the geometrical method in the prooemium, mentioned also above, gives us the details of the parallel in a nutshell:

> **T III.11** The present investigation needs the distinction of these two genera before everything else, in order for the exposition to proceed as from geometrical hypotheses to the examination of the consequents (τῶν ἀκολούθων) and discover the nature of the universe and its paternal and paradigmatic causes.[120]

This passage, from which we can surmise that the comparison with geometry pertains to the division of two genera, the use of hypotheses and the examination of their consequents, raises numerous questions. For example, how can examining the consequents of definitions or hypotheses lead to the discovery of the nature and causes of the universe? And when he speaks of the consequents of the hypotheses, does

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[117] *In Tim.* I 237.30–31. The aorist ὑπέμνησεν tells us that Proclus is here thinking not of geometers in general, but of the concrete example of Euclid.

[118] *In Tim.* I 228.26–27: ὡς μὲν ὑπόθεσιν λαβὼν εἶναι τὸ ἀεὶ ὂν ὡρίσατο.

[119] *In Tim.* I 229.1–3. Note that there is a textual problem in this passage: ἔστι γὰρ ἐξ ὑποθέσεως ἐπιστήμη † καὶ αὕτη. καὶ αὕτη makes no sense, but the general meaning of the sentence is clear ("it is a hypothetical science"). Kroll suggested καὶ αὐτὴ and καὶ ταύτῃ (app.), the former of which renders the expected meaning. Another option would be τοιαύτη, which would render "that is what a hypothetical science is like".

[120] *In Tim.* I 226.24–29, quoted above as part of **T III.6**.

Proclus have in mind logical consequence? The answer to these questions will become clear in due time. For now, we will concentrate on another question, namely what exactly is referred to by "geometrical hypotheses".

As suggested above (III.2.3), by maintaining the term 'definitions' throughout, while acknowledging the fact that the descriptions of Being and Becoming are no technical definitions, Proclus reinforces the methodological parallel between philosophy of nature and geometry. In **T III.11**, however, the distinction of the two genera Being and Becoming is said to allow a beginning of reasoning from geometrical *hypotheses* rather than definitions. Interestingly, in what for Proclus is the paradigm of the geometrical method, Euclid's *Elements*, the starting points that are distinguished are definitions, axioms and postulates, but not hypotheses. So what does Proclus mean by "geometrical hypotheses"? In his commentary on the *Elements*, at times Proclus refers to Euclid's definitions in the customary manner, i.e. as ὅροι, but he also calls them hypotheses on several occasions.[121] This fact has led Heath and others to accuse Proclus of confusing hypotheses and definitions.[122] As a first response to this accusation, it is worth noting that it is not at all clear that Euclid himself called his starting points definitions.[123] Still, the starting points of Euclid's *Elements* are commonly considered to be definitions. A second answer to the accusation is that Proclus here merges the conceptual apparatus of Aristotle with that of Euclid. Szabó (1965: 361–362) argues against such a suggestion that the apparent confusion in Proclus cannot be reduced to a blending of Aristotelian *terminology* into that of Euclid, given that Aristotle expressly points out that definitions and hypotheses are not the same (*APo* I 2 72a18–21). To this we reply that this does not prevent Proclus from consciously merging the different *concepts*. More-

[121] *In Eucl.* 75.27, 178.1–8, 354.8, 388.14, 398.25.

[122] Heath (1956 [1926]: vol. I, 122), Von Fritz (1955: 46–47). It seems odd that Hartmann (1909: 47–48) accuses Proclus of the exact opposite, namely "daß ein grundsätzlicher Platoniker wie Proklus diesen hypothetischen Character der Definition übersehen konnte." The hypothetical character Hartmann has in mind is different from the one here discussed: as the endpoint of a process of delimitation started by induction, the definition will always have a hypothetical nature—"Um [die] Allgemeinheit [der] Definition zu leisten, mußte dan freilich zuvor eine Grundlegung gemacht werden .... Freilich darf man dann auch nicht vor der Konsequenz zurückschrecken, die Definition selbst zur ὑπόθεσις zu rechnen ...". Cf. Beierwaltes (1979: 263).

[123] Szabó (1969: 243–452, esp. 310–328 and 341–346), who claims that mathematicians call their starting points definitions, and Waschkies (1995: 103–104, 109 ff.), who argues that they do not.

over, we will see that Proclus' notion of hypothesis, Aristotelian as it may be, does not include the distinction made in *APo* I 2.

Proclus' use of terms for the constituents of a science does indeed first of all suggest an attempt to reconcile different sets of terms, mainly those of Aristotle and Euclid. We will see, however, that it is foremost determined by his Platonic background. Aristotle distinguishes axioms, theses, hypotheses and definitions as the starting points of a science (*APo* I 2), but Euclid's preliminaries are traditionally divided into definitions (ὅροι), postulates (αἰτήματα) and common notions (κοιναὶ ἔννοιαι).[124] Proclus merges these two groups into one, consisting of hypotheses/definitions, axioms/common notions,[125] and postulates. Apart from the practical point of harmonizing, Proclus has two more interesting reasons for calling the definitions hypotheses. First of all, the definitions, as well as the axioms and the theorems, are hypotheses in that they function as premises in geometrical demonstrations.[126] How this pertains to the hypotheses of the *Timaeus* will be discussed in further detail below (III.2.7). More interesting for our present purposes is the second reason, which is a Platonization of Euclid.

The two passages to which modern authors refer in their disapproval of Proclus' use of the term "hypothesis" for Euclid' definitions (i.e. *In Eucl.* 72.27 ff. and 131.9 ff.), both bear heavy marks of the famous criticism of geometry in Plato's *Republic*.[127] Socrates' criticism comes down to the following. Geometers, when defining terms, introduce entities—that is, they hypothetically assume the existence of certain entities, without giving account of them. This is where, for Proclus, definition and hypothesis come together. This is also why geometry is a hypothetical science:[128] geometers start from definitions that are posited, but for which no justification is given.[129] The hypothetical nature of geometry, and, as

[124] These three kinds of starting points are found at the beginning of book I, in the given order. Definitions are also found in other books (II–VII, X–XI). See also above and previous note.

[125] On axioms and common notions see III.2.7.

[126] Morrow (1992: lxi, 62, n. 62; 131, n. 98; 140, n. 1).

[127] Plato *Rep*. VI 510c2–d3 and 533b6–c5. In the *Meno* mathematics is also portrayed as a science that uses hypothesis, but as Szabó (1978: 233–234) points out, the role of hypotheses is different there, as it refers to any *ad hoc* assumption.

[128] *In Eucl.* 11.22, 31.20, 57.19, 75.7.

[129] Cf. Heath (1956 [1926]: 122). Lloyd, G.E.R. (1991b: 339) argues that it cannot be decided if in the passage in the *Rep*. Plato had in mind definitions, existence assumptions, or "assumptions concerning the possibility of carrying out certain constructions", as the different kinds of starting points of geometry had not been clearly distinguished

we will see, of philosophy of nature, is no reason for Proclus to reject or criticize these sciences, as the good scientist would be able to present a justification for the starting points, but within a superordinate science.[130]

Let us go over the two relevant passages in more detail. As we will see, Proclus' use of the famous passage from the *Republic* in his Commentary on Euclid's *Elements* holds the key to his understanding of definitions.

(a) The first instance of identification of hypothesis and definition is to be found in Proclus' enumeration of the different kinds of starting points of Euclidean geometry as "hypotheses, postulates, and axioms" (*In Eucl.* 75.27 ff.). Definitions are not even mentioned here, and the hypotheses seem to have taken their place.[131] Proclus' subsequent description of the characteristics of hypotheses says "whenever the listener does not have a self-evident conception concerning an assertion, but he still posits it and agrees with the speaker who assumes it, such an assertion is a hypothesis".[132] This is a very Aristotelian description: it is an almost exact match with one of Aristotle's descriptions of hypothesis, namely the one where the latter compares hypotheses and axioms.[133] Proclus' choice for this particular description is easy to explain, as he too is comparing the two. Moreover, this definition of hypotheses, which we could call the didactic or dialectical one, as it concerns statements that are hypothetical *relative to the student*,[134] fits the didactic context in which the hypotheses are delivered.[135]

More interesting, however, is the fact that the other two properties Aristotle ascribes to hypotheses, in *APo* I 2 (72a14–24), show up nowhere in Proclus' *In Eucl.* These properties are the hypotheses' being indemon-

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in his time. It is clear, however, that Proclus took Socrates to refer to the second, i.e. existence assumptions. See also below. On Proclus' defence of mathematicians against 'the disparagers of mathematics', i.e. those who read the *Rep.* passage as a rejection of mathematics, see Mueller (1987).

[130] See below and chapter IV.

[131] Cf. *In Eucl.* 178.7–8: τὰς [...] ὑποθέσεις καὶ τοὺς καλουμένους ὅρους. The καὶ is epexegetic.

[132] *In Eucl.* 76.12–15.

[133] *APo* I 10 76b27–30.

[134] Cf. Von Fritz (1955: 47, 42), who calls it hypothesis "im uneigentlichen, d.h. im dialektischen Sinne", and Mignucci (1975: 207–209), who brings forward the suggestion that Aristotle is here polemizing against Plato by indicating the difference between real presuppositions of demonstration (ἁπλῶς ὑπόθεσις), and the Platonic ones, that are only hypothesis for pedagogic purposes (πρὸς ἐκεῖνον μόνον). Cf. Breton (1969: 41, n. 8), "relative hypotheses", and Leszl (1981: 305), "hypotheses *ad hominem*".

[135] See also V.7.

strable, and the fact that they are propositions that assume either part of a contradictory pair. We can be brief about the first: the indemonstrability of hypotheses is rejected by Proclus, since it is incompatible with the Platonic view of hypotheses mentioned above, as starting points that should be justified.

The second property is mentioned by Aristotle in his comparison of hypotheses and *definitions*: a thesis that assumes either part of a contradiction, e.g. says that something is or is not, is a hypothesis; one that does not do this is a definition (*APo* I 2 72a18–21).[136] It is generally assumed that, as in Aristotle, so in Euclid definitions are not propositions, do not assert anything about anything, and therefore do not involve any claims as to the existence of their subjects.[137] So if anything should prevent Proclus from reducing definitions to hypotheses, it is this difference between them, i.e. that the latter are but the former are not assertions. Nowhere in Proclus' description of hypotheses, however, do we find mention of this particular property. Nor does he ever point to a non-propositional character of definitions. These are indications that he did not subscribe to Aristotle's distinction between hypotheses and definitions.[138] As a consequence, the main objection to equating hypotheses and definitions disappears.

The next question to be answered is of course why Proclus would relinquish the non-propositional character of definitions. Proclus' referring to the definitions as hypotheses at *In Eucl.* 75 f. in itself seems inexplicable, but a closer look at the context reveals the rationale behind this choice: only briefly before his enumeration of the three kinds of starting points of geometry, Proclus had been discussing the hypothetical nature

[136] Note that Narbonne (1987: 540, n. 19) explains this Aristotelian passage not as an exclusive dichotomy, but as a division of kinds of definition: "L'hypothèse est pour Aristote une définition posant l'existence".

[137] Mueller (1991: 63). Netz (1999: 94–95) states that a mathematician who gives a definition merely states what he is doing. He cites Mueller (1991), but Mueller's point is that early Greek mathematical definitions can be *either* formally usable abbreviations *or* explanations of what one is talking about (1991: 63–64). For an emphatic arguing of the thesis that Euclid's definitions do *not* say anything about the existence of the things defined, see Heath (1956 [1926]: 143 ff.). Cf. however Kullmann (1974: 119), who claims, on the basis of Arist. *APo*, that in geometry, besides the definitions, the existence of some primary items has to be assumed.

[138] As is clear also from the fact that he sees definitions as possible premises, e.g. *In Tim.* I 242.21 ff. Cf. however *In Eucl.* 206.12–16 where definitions are taken as terms (middle terms in demonstrations, as in Arist. *APo* II 17 99a21).

of geometry, explaining that a geometer assumes certain starting points that themselves are not proved (75.5 ff.):[139]

> T III.12 We say that this science, geometry, is based on hypothesis (ἐξ ὑποθέσεως), and demonstrates the consequents from definite starting points (ἀπὸ ἀρχῶν ὡρισμένων).[140]

This sentence clearly suggests that the definite starting points of geometry, i.e. the definitions, are hypotheses.

(b) The second instance of supposed confusion regards Euclid's *Deff.* 10–12, the definitions of the right, the blunt and the sharp angle. In Euclid's definition of the three kinds of angles there is no mention of their existence. Proclus, however, comments on these definitions by stating that these are the three kinds of angles, which Socrates complains about in the *Republic* (VI 510c) that they are assumed as hypotheses (ἐξ ὑποθέσεως) by the geometers. Proclus' next remark is crucial: most geometers are incapable of presenting a justification of that division, he says, but use the hypothesis *that there are three kinds of angles*.[141] Again, he is not confusing definition and hypothesis, he is merely pointing out that the definitions of geometry are at the same time implicit hypotheses concerning the existence of the definienda. Note that the lack of justification of the starting points is not due to the subject matter, but to the geometers in question: Pythagoreans, according to Proclus, would have no problem giving account of the three kinds of angle by relating them to their causes.[142]

Proclus expands his statement about the hypothetical nature of geometry to all other sciences except dialectic, and uses philosophy of nature as an example. The philosopher of nature, he states, proceeds from the definite starting point *that motion exists*.[143] This Aristotelian approach to physics comes as a surprise, since it does not cohere with the identification of Being and Becoming as the starting points of φυσιολογία in the *In Tim.* The explanation for the discrepancy is that Proclus discerns different kinds of philosophy of nature, concerning different ontological

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[139] Note that Aristotle, too, mentions that mathematicians start from hypotheses: *EN* VII 8 1151a16 f.

[140] *In Eucl.* 75.6–8.

[141] *In Eucl.* 131.9–19. This complaint concerns primarily the *division* of all angles into three kinds ("that there are *three* kinds of angles" rather than "that there *are* three kinds of angles"), but the criterion for success of the division is whether it accurately represents all real angles, and the existence of these angles is presupposed.

[142] *In Eucl.* 131.21 ff.

[143] *In Eucl.* 75.19–20. Cf. Arist. *Phys.* I 2 185a12–13.

levels and using different methods. When he speaks of φυσιολογία in the *In Eucl*., Proclus has in mind a lower, Aristotelian kind of philosophy of nature, as it is to be found also in Proclus' *Elements of Physics*.[144] And of this lower Aristotelian physics the unique starting point is the hypothesis that motion exists—a starting point, incidentally, which Proclus puts down as an Aristotelian attempt at imitating Plato.[145]

To return to Proclus' formulation, Proclus here juxtaposes a "definite starting point" (ἀρχῆς ὡρισμένης) with "the hypothesis that motion exists" (ὑποθέμενος εἶναι κίνησιν)—as in the case of the first instance of supposed confusion discussed above, we find a combination of definition and hypothesis. Motion is a definite, i.e. defined, starting point, and its definition is taken to imply a hypothesis of existence.

Three things are clear from the above. (a) First of all, Proclus' conception of 'the method of geometry' is a blend of Euclidean, Aristotelian, and Platonic elements.[146] (b) Secondly, and far more importantly, for Proclus definitions are intricately interwoven with existence claims. Proclus is well aware of the difference between hypothesis and definition, but he does take every definition to involve a hypothesis, namely concerning the existence of the definiendum. Proclus would agree with Aristotle that "τὸ γὰρ τί ἐστι μονὰς καὶ τὸ εἶναι μονάδα οὐ ταὐτόν" (*APo* I 2 72a23–24), but would add that "τὸ εἶναι μονάδα" is part of "τὸ τί ἐστι μονὰς".[147] In other words, the relation between the two kinds of starting points (definitions and hypotheses) is asymmetrical, and a relation of inclusion, not of identity. All definitions are hypotheses, but the inverse does not hold: there are plenty of hypotheses that are not definitions. (c) And thirdly, since, as we have seen, philosophy of nature is a hypothetical science, like geometry, and is said to use definitions in order to start "as it were, from geometrical hypotheses", we can conclude that philosophy of nature also assumes the existence of its subject matter. In the following, we return to the *In Tim*. to find further confirmation for this thesis.

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[144] On the *Elements of Physics* see the appendix of chapter IV. Note that Nikulin (2003: 199) mentions that definitions II 1–6 of the *El.Ph*. are considered ὑποθέσεις in Valdanius' translation.

[145] *In Tim*. I 237.17 ff.

[146] For the role of Stoic logic in Proclus' conception of the geometrical method, see III.3.1.

[147] This is of course also the case for Aristotle to the extent that one should inquire whether a thing is before asking what it is (see above), in other words, the possibility of a definition presupposes existence, but this is not the same as maintaining that a definition is itself an existence claim.

iii. The answers to the third aporia, part II

Let us return to the fourth argument in Proclus' response to the third aporia, "why has Plato not discussed the 'if' before the 'what'?" Since philosophy of nature is a hypothetical science, like geometry, according to Proclus Plato is justified in not proving the existence of Being: Plato is merely observing what befits philosophy of nature (τὰ καθήκοντα τῇ φυσιολογίᾳ τηρῶν) by proceeding from hypothesis, and not proving the starting points of his science.[148] He would be exceeding the boundaries of his science, and not be a philosopher of nature anymore, as the geometer would not be a geometer, if he started discussing the proper starting points of his science.[149] Any science other than dialectic receives its proper starting points from a higher science.[150]

As is well known, Proclus, like Plato, distinguished two kinds of science that *start from hypotheses*, namely one (dialectic) that starts from hypotheses and moves 'up' towards an unhypothetical principle that grounds its starting points, and one (e.g. geometry) which instead proceeds from the hypothetical starting points to their conclusions, but never reaches the unhypothetical. Proclus tends to call only the latter *hypothetical sciences*.[151] We know now that philosophy of nature is comparable to geometry in that it is one of those hypothetical sciences. So the point Proclus is making with this fourth argument is that the starting points of philosophy of nature will not be proved and therefore will not rise above their initial hypothetical status. Since further on Proclus seems to maintain the opposite, however, by claiming that one of the starting points, namely the existence of Being, will in fact be demonstrated (see below, on arguments 5–7), this solution turns out to be too simple.

Closer scrutiny of the texts in question brings out a possible weaker reading of the hypothetical nature of philosophy of nature, that avoids this problem, but runs into another:

> **T III.13** (partly quoted above as **T III.10**) Observing what befits philosophy of nature [Plato] proceeds from this hypothesis [i.e. that Being exists] and demonstrates what follows it. For philosophy of nature, like geometry,

[148] *In Tim.* I 228.30 f.
[149] *In Tim.* I 236.32–237.3.
[150] *In Eucl.* 9.25 ff.
[151] *In Remp.* I 283.2 ff., on the hypothetical sciences and the one unhypothetical science, dialectic/theology. Cf. *In Eucl.* 75.6–10. See Lernould (1987, 2001: 115 ff.) on Proclus on dialectic as first science.

> is a hypothetical science, and its hypotheses should be assumed *before the demonstrations* (προειλῆφθαι τῶν ἀποδείξεων).[152]

> **T III.14** … the geometer mentioned what the point is, and the line, *before the demonstrations* (πρὸ τῶν ἀποδείξεων) … According to the same principle, the philosopher of nature will say what eternal Being is, for the sake of the coming demonstrations, but will in no way prove that it is.[153]

In both these passages, Proclus emphasizes the moment at which the hypotheses are introduced, namely *before the demonstrations*. The statement concerning the existence of Being could be understood in the same way: proving the existence of Being does not belong to the *starting points* of φυσιολογία. This need not imply, however, that some kind of proof of the existence of Being cannot ensue at a later point from the demonstrations. This reading would correspond to the accusation made against Plato, and in answer to which Proclus presents the seven point defence: the accusation was that Plato did not "discuss the 'if' *before* the 'what'", i.e. that he does not *start* with a proof of the existence of Being. It is in the light of this accusation that we could understand Proclus' argument in a weaker sense. However, this weaker sense cripples the comparison with geometry: philosophy of nature would instead be a hypothetical science in the style of dialectic. And this, in turn, does not cohere with Proclus' arguments for the thesis that we do not need any proof of the existence of Being, as in the statement that "Timaeus would not be a philosopher of nature anymore were he to discuss the starting points of his own science".[154] I will therefore maintain the stronger reading of the fourth argument, and return to this issue after the discussion of arguments 5–7.

On the basis of the fourth argument, concerning scientific methodology, we now know why Plato should not argue for the existence of Being, namely because he observes the limitations of the hypothetical science he is concerned with: philosophy of nature.

The last three arguments to the aporia, then, come as something of a surprise, because in opposition to the fourth argument, which states that Plato should not prove the existence of Being, these arguments say that he *does* prove it.[155] Let us consider these arguments in order and

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[152] *In Tim*. I 228.30–229.3.
[153] *In Tim*. I 236.30–237.3.
[154] *In Tim*. I 236.32–237, see above.
[155] The arguments saying that Plato does prove the existence of Being are taken by

subsequently address the question whether Proclus weakens his own arguments by overkill.

(5) In the fifth Proclus states that "after the κοσμοποιία … in the discussion of matter" Plato will prove the existence not only of matter, but also of Being.[156] The passage referred to is the beginning of the account concerning Necessity, where Timaeus revises his starting points, and in the process provides an argument for the existence of Being that is based on our cognition.[157] The argument there presented by Plato can be summarized as follows. If understanding and true opinion are distinct, they must have different objects, namely the Forms and the objects of sense perception respectively. True opinion and understanding are in fact distinct. Therefore, there have to be Forms, i.e. Being, as objects of understanding.[158] We have no way of finding out what Proclus' comments on this very passage are, because that part of the commentary is not extant, but a similar optimistic epistemological argument, from the superiority of the objects of understanding to those of perception, occurs in Proclus' *Parmenides Commentary*, with reference to *Parm*. 135bc.[159]

The last two arguments for the existence of Being, which have the same foundation as the third argument, i.e. our common notions, are somewhat less strong than the fifth: (6) From the third hypothesis, which Proclus here summarizes as "that there is a Demiurge of the cosmos", we obtain also that there is some eternal being before the generated;[160] likewise, (7) the fourth hypothesis shows that the Demiurge used an eternal being, namely the paradigm, in manufacturing the universe.[161] So from the applications of the third and fourth hypotheses to the universe we obtain knowledge of the fact that there is something that has eternal existence (and hence is eternal Being), namely the Demiurge and the

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Lernould (2001: 344 and n. 13) as one of the signs that we find a "dépassement" of the geometrical method in favour of theology in Proclus' commentary. Cf. chapter 1.

[156] *In Tim*. I 228.28–30, ἀποδείκνυσιν; 229.1–5, ἀποδείξει; 9–11. Cf. 237.3–8, κατασκευάσει.

[157] *Tim*. 47e3 ff., with the epistemological argument for the Forms at 51b6–52b5.

[158] A similar argument is found in *Rep*. V 477d ff., mentioned also above under argument (1). For the *Tim*. passage and the so-called Object of Thought Argument, i.e. the Aristotelian ascription to Plato of a particular kind of epistemological argument for the existence of the Forms see Fine (1993: 136 f. and 295 n. 8).

[159] *In Parm*. 978.16–983.14 (978.23–983.18 Cousin). See Steel (1984: esp. 6–17) on different epistemological arguments for the existence of the Forms in Proclus. Cf. Alc. *Didask*. 164.1–6, with Dörrie and Baltes (1998: 6–15, 226–232).

[160] *In Tim*. I 229.5–7.

[161] *In Tim*. I 229.7–9.

paradigm. In turn, the necessity of an efficient and a paradigmatic cause of the universe is itself inferred from the very "existence" of Becoming (see III.2.8 and III.2.9).

Argument (6) is in fact no more than an application of argument (3). Whereas the third or metaphysical argument concerned the possibility of the existence of Becoming in general, and the ensuing necessity of the existence of eternal Being as (efficient) cause of that Becoming, the sixth argument instead revolves around the specific case of the universe as something generated, and its efficient cause, the Demiurge. The choice of words is very careful: words related to demonstration do not occur. Through the necessity of the existence of that Demiurge Plato *obtains* (ἔχει) that at least one eternal Being exists prior to the generated.[162] Likewise, in argument (7) he says that Plato *shows* (ἀποφαίνει) that there is an eternal entity, namely the paradigm.[163] Immediately after argument (7) Proclus reinforces the impression that the careful choice of words is deliberate by stating emphatically "but the existence of eternal Being itself by itself prior to generated things he will *demonstrate* (ἀποδείξει) in the passage mentioned before (i.e. *Tim*. 51b6–52b5, around which argument (5) revolves)."[164]

Near the end of his discussion of *Tim*. 27d6, which gave rise to the aporia "why does Plato not discuss the 'if' before the 'what'?", Proclus returns to the matter of proving the principles of philosophy of nature, and thereby exceeding the limitations of that science.[165] He there explains it as fitting the exceptional character of both Timaeus and Plato: in a quite divine manner (πάνυ δαιμονιῶς) a demonstrative proof is presented for the existence of Being, because neither Timaeus nor Plato is an ordinary φυσιολόγος. Timaeus has a Pythagorean background, and Plato "displays the summit of knowledge" (ἐπιστήμην ἀκροτάτην … ἐπιδεικνύμενος). This ἀκροτάτη ἐπιστήμη may refer either to the science of dialectic or to Plato's own intellect. In the former sense, the expression occurs only in

[162] On the argument for the inclusion of the Demiurge among eternal Being, see *In Tim*. I 229.11 ff., esp. 229.26–230.4.

[163] Cf. Syrianus, who may have in mind the same *Tim*. passage, when stating that the Pythagorean Timaeus proves (κατασκευάζων) both that the Forms exist and that they are causes of the physical world (*In Met*. 105.12–14). The slightly stronger terminology can be explained from the context: Syrianus defends the theory of Forms against Aristotle's criticism at *Met*. XII 4 1078b12–37 by tracing its origins back to Pythagoras and Parmenides.

[164] *In Tim*. I 229.9–11.

[165] *In Tim*. I 237.3–8.

Proclus.[166] Considering the middle voice ἐπιδεικνυμένος, in this context the latter reading should be preferred, i.e. that it is Plato's νοῦς that shows in the proving of principles.[167] As to Timaeus' Pythagorean background, we have seen above (III.2.4.ii) that Proclus ascribes to the Pythagoreans the capacity of giving account of the starting points of geometry, in this case tracing the three kinds of triangles that are hypothesized back to their causes. Likewise, in philosophy of nature, the Pythagorean Timaeus exceeds the boundaries of philosophy of nature by proving the existence of Being. It is this Pythagorean feature of Timaeus' exposition on the universe, which is revealed especially in the tracing back of the physical to its real divine causes, that makes Platonic philosophy of nature superior to Aristotle's physics.[168]

The fourth argument on the one hand ("as in geometry, so in philosophy of nature one should not prove the starting points"), and the general point of arguments 5–7 on the other hand ("Plato will later prove one of the starting points, namely the existence of Being"), seem mutually exclusive. We know, however, that argument (5) concerns a later stage of the dialogue, and even a different 'treatise', namely the 'treatise on matter' as opposed to the κοσμοποιία. In that later treatise, the starting points of philosophy of nature are revised and apparently, for reasons unknown to us, the limitations holding for the first set of starting points are no longer valid there. Arguments (6) and (7), on the other hand, are not considered proof but *indications* of the existence of Being. Thus we can maintain the stronger reading of argument (4), according to which the presentation of the hypothetical starting points of φυσιολογία cannot contain any proof thereof. We can now give a partial answer to the question whether φυσιολογία can still be considered a hypothetical science in the sense that geometry is, i.e. moving from hypothetical starting points to their conclusions. The comparison of philosophy of nature with geometry, as said before, suggests a downward direction of demonstration from starting points, but proof of a starting point instead suggests an upward direction, towards an unhypothetical principle. In that

[166] Cf. *In Eucl.*, where we find the expression twice, once in the sense of dialectic (32.4) and once as referring to the faculty of νοῦς (4.9).

[167] On the function Proclus ascribes to νοῦς in the *Timaeus* see III.3.1 and V.7.

[168] Cf. *In Tim.* I 7.26–31, where Proclus presents a list of properties of the *Timaeus* that are associated with the speaker's being a Pythagorean. One of those properties is "relating everything to the intelligible" (τὸ ἀπὸ τῶν νοητῶν πάντα ἐξάπτον), 203.15–204.16. See also Steel (2003).

case, φυσιολογία would become dialectic. It is clear by now that Proclus has in a sense two readings of the *Timaeus*, which will be shown to correspond to the distinction between the knowledge of Timaeus and the presentation thereof to his audience. Whereas Proclus clearly takes Platonic philosophy of nature to surpass especially Aristotelian physics, and emphasizes the extent to which it relates the physical world to its transcendental causes, at the same time he is very careful to maintain the boundaries of what he considers to be an autonomous science. Φυσιολογία is not dialectic, because it is subject to certain methodological and epistemological limitations.

At a later stage, after a more extensive treatment of the other starting points involved, we will see that although φυσιολογία displays both a downward and an upward direction, that does not imply that it will reach an unhypothetical principle and become dialectic.[169]

iv. Being and Becoming

Proclus' customary method of commenting is highly scholastic: no options are left unventured. It is therefore meaningful when instead an option is left unprobed. In the discussion of the three aporiai concerning the first starting points the amount of attention spent on Becoming is negligible. It does not figure in any way in the entire third aporia, regarding the proof of the existence of the definiendum. Before turning to the remaining starting points, let us briefly look into why Proclus gives such a large amount of attention to Being, and why so little to Becoming. Both questions have fairly straightforward answers, but they are worth mentioning nonetheless.

Let us start with Being. The issue of the existence of Being is closely related to the existence of the Forms, because although the Forms and Being are not identical,[170] "Being" in the narrowest sense refers to the Forms. The question of the existence of the Forms is a debate that runs through all of antiquity, starting from the discussions in the Old Academy,[171] and still very much alive in Proclus' day. As is well known, in the *Commentary on the Parmenides* Proclus himself points out that the theory of the Forms is replete with all kinds of very complicated

[169] See III.3.

[170] *El.Th.* prop. 74, corr. and the discussion at *In Tim.* I 229.11 ff.

[171] Plato *Phd.* 74a9 ff., *Parm.* 135b5–c3, *Tim.* 51b6–52a7, Arist. *Met.* I 9, 990b8–22, *De Id.* 79.3–85.13.

aporiai, first and foremost the question whether one should accept the hypothesis of the Forms at all, brought up by countless philosophers after Plato.[172] This question is also the first of the four questions to be broached in the scholastic discussion on the doctrine of the Forms, as discerned by Proclus (following his master Syrianus).[173] In the *In Parm.*, as in the *In Tim.*, Proclus needs to explain the fact that the question whether we should accept the hypothesis of the existence of the Forms is not elaborated by Plato himself in the dialogue under consideration. In the case of the *Parmenides*, the summit of theology, where the methodological limitations valid for φυσιολογία no longer obtain and thus cannot be an argument, Proclus' explanation is that Plato may be challenging us to find the answer for ourselves—a challenge that Proclus consequently takes up with fervour, by developing no less than six arguments in favour of the theory of Forms.[174]

Turning to the issue of the existence of Becoming, we observe that neither the *reasons why* it is not necessary to discuss the existence of Becoming nor the *fact that* this is not necessary are made explicit. Only later in the commentary does Proclus reveal in a roundabout way that he chose not to make the existence of Becoming an issue. At *In Tim.* I 236.28 ff. the question whether proof of the existence of Being is needed is brought up once more, and the argument from the autonomy of the sciences is repeated.[175] On this occasion, Proclus has ample opportunity to add the issue of Becoming, but he does not. He creates the illusion, however—perhaps unconsciously—that he does:

> T III.15 And I think that for that reason [i.e. that he is presenting the starting points of his science, just like a geometer] Timaeus says *what* eternal Being is and *what* Becoming, but does not say of one of them (θάτερον αὐτῶν) *that* it is. For the geometer also recalled *what* the point and the line are, before the demonstrations, but in no way taught (ἐδίδαξε) *that* both of them (τούτων ἑκάτερον) are.[176]

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[172] *In Parm.* 919.28–31 (36–40 Cousin).

[173] On the Neoplatonic debate on the doctrine of Forms, see Steel (1984) and more recently D'Hoine (2006a: 27 ff.).

[174] *In Parm.* 784.20 (27–28 Cousin) ἴσως ἡμῖν αὐτὸ ζητεῖν ἀφέντος τοῦ Πλάτωνος, with the six arguments at *In Parm.* 785.4–797.2 (.3 Cousin). For a detailed analysis of each of these arguments see D'Hoine (2006a: 27 ff.).

[175] In part this repetition has already been treated above, in the context of arguments (4) and (5).

[176] *In Tim.* I 236.28–32. On ἕτερός with article as '(a definite) one of two' (der Bestimmten von zweien), see Kühner and Gerth (1955: vol. I, 635). The phrases "does not

The example of two fundamental concepts from geometry (point and line), easily tricks one into thinking that Proclus is here presenting an exact parallel between that science and philosophy of nature, and that for the latter, too, the existence of two fundamental concepts is at play.[177] But in fact, there is no such parallel. The "*that* one of them is" should be interpreted as just that, the proof of the existence of *one* of the two fundamental starting points, and not either one, but *only Being*. That this is what Proclus has in mind is clear from the sequel:

> **T III.16 = T III.14** For how could [a geometer] still be a geometer if he started discussing (διαλεγόμενος) the proper starting points [of his science]? According to the same principle, the philosopher of nature will say what eternal Being is, for the sake of the coming demonstrations, but will in no way prove that it is.[178]

Proclus seems to be aware, then, of the fact that he is dodging the issue of the existence of Becoming.

There are fairly obvious (albeit implicit) reasons for not discussing the existence of Becoming. First of all, there is the more general point that Proclus, unlike for example Augustine, sees no reason to doubt the presence of the world we perceive. He is a realist in the sense that he takes its existence independently of that perception to be evident. Secondly, since Proclus takes the definition of Becoming, i.e. the description of an epistemological criterion ("that which is grasped by opinion combined with sense perception", cf. the outline in III.2), to be correct, the mere fact that we perceive is evidence enough for the existence of Becoming: it is a "given".[179] To put it in Aristotle's terms, the assumption of the existence of the scientific genus (i.e. what a science is about) does not have to be made explicit, if that existence is evident:

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say … *that* it is" and "in no way taught *that* both of them are" seem to sit ill with my interpretation of the definitions of geometry as involving an implicit hypothesis of existence. We can safely assume, however, that "saying that something is" and "teaching about existence" are considered to come to more than just a tacit assumption, and rather to involve explicit argumentation, which indeed we do not find in Euclid or the prooemium of the *Timaeus*. Cf. in the next sentence (see **T III.16**) διαλεγόμενος picking up ἐδίδαξε.

[177] As shows from the fact that Festugière (1966–1968: vol. II, 67) translates "que d'aucun des deux, il ne démontre qu'il existe", or Runia and Share (2009: 78) "that each of them exists".

[178] *In Tim*. I 236.32–237.3.

[179] As, by the way, Being is supposed to be a given due to the mere fact that we think. See above n. 158. "Given" is here used in the sense criticized by Sellars (1956) in his "myth of the given".

> T III.17 Of course, in some branches of knowledge there is nothing to prevent you from not supposing that the genus exists, namely when it is evident (φανερόν) that it does (for it is not equally clear that number exists and that hot and cold exist).[180]

An example of a science in which according to Aristotle it is evident that the genus exists is philosophy of nature: it is evident (φανερόν) that nature exists.[181] Likewise, Proclus will have assumed that at least the existence of Becoming is evident to the senses, and that there is therefore no need to broach the issue.

A different, ontological, reason for not bringing up the question whether there is such a thing as Becoming is that strictly speaking it is impossible to give a proof thereof, since being is incompatible with the essence of Becoming. Becoming, "always becoming, but never being,"[182] *is* not.

Emphasizing this 'not being' of Becoming, in turn, would be rhetorically unwise, as that would involve focusing on the cognition we have of it. And it is as yet too early for Proclus to reveal to what extent the deduction of the causes of the universe ultimately depends on "opinion combined with sense perception". We will come back to this in III.3.1.iii.

III.2.5. *Intermediate conclusion on the three aporiai*

Generally speaking, the geometrical aspect of Plato's method as we have encountered it so far, lies in the application of certain dialectical methods, namely division and definition, but always with modifications due to the context: the division is no real division, but a delimiting distinction, and the definitions are no definitions, but cognitive pilots, so to speak. The main reason why geometry, rather than dialectic, is the methodological

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[180] Arist. *APo* I 10, 76b16–18. I take it by "supposing" (ὑποτίθεσθαι) Aristotle means "explicitly hypothesizing". Barnes (1994: 139) takes Aristotle to refer to individual demonstrations, and hence to enthymemes in which one may leave out one of the three elements of demonstration mentioned at *APo* I 7. This does not make sense for the genus, however, as first of all it is unlikely that Aristotle expected every (or at least most) demonstrations to show that its genus exists, and secondly in I 10 Aristotle speaks of the elements of *sciences*, not of demonstrations. Cf. *Met*. VI 1 1025b16–18: some sciences suppose the existence of their subject matter, some 'make it clear to perception.'

[181] Arist. *Phys*. II 1 193a3–9. The context is not so much supposing as proving the existence of nature: it would be ridiculous to try and do that—an attempt at providing a proof would be a logical mistake, since that would involve supplying something less evident to prove something evident. Cf. Arist. *Top*. I 11 105a3–7.

[182] Plato *Tim*. 27d6–28a1: τὸ γιγνόμενον μὲν ἀεί, ὂν δὲ οὐδέποτε.

paradigm, is that geometry, like philosophy of nature, is a hypothetical science.

More specifically, the function of the 'definitions' of Being and Becoming is to describe the criteria of our cognitive access to (the) two 'genera', Being and Becoming, as the central concepts of philosophy of nature. They thereby enable us, before we have obtained actual knowledge of those concepts, to follow the reasoning of the prooemium and hence, in Platonic terms, awaken[183] our innate knowledge of those concepts. At least the definition of Being, and in all likelihood also that of Becoming, at the same time involve a hypothesis of existence. This combination of defining the subject matter of one's science, and thereby supposing its existence, is one that has been shown to belong to geometry as understood in the idiosyncratic Platonized form that we find in Proclus. In the context of the exegesis of the *Timaeus*, the characteristic of definitions of always presupposing a hypothesis of existence of their subject holds *a fortiori*, because the definitions of the *Timaeus* cannot but entail an existence claim. Being and Becoming are defined from our modes of cognition, and since one cannot have cognitive access to what does not exist,[184] such definitions presuppose the assumption of existence of their subjects.[185]

The definitions, then, are read by Proclus as shorthand for "there is such a thing as eternal Being (or Becoming) and it is apprehensible by intellect and reasoning (or perception with opinion)". But apart from presupposing a hypothesis, the definitions themselves also function as hypotheses:

> T III.18 ... he wants to use these definitions as axioms and hypotheses of the demonstrations that will be pronounced.[186]

As in the case of geometry, so too in philosophy of nature definitions are hypotheses in multiple ways: they are necessarily hypotheses in that they are always an implicit assumption of existence, but they are moreover

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[183] *In Tim* I 242.26.

[184] This holds also for the definition of Becoming (if we understand existence in a wide sense) because Proclus takes the sources of cognition of Becoming (i.e. αἴσθησις and δόξα) to be capable of delivering reliable cognition. Cf. *In Tim*. II 310.3–10 and below III.3.1.

[185] This need not be the case for definitions in general, as they may be stipulative, *pace* Nikulin (2003: 199).

[186] *In Tim*. I 242.16–19. The definitions themselves are called hypotheses at 226.22; 242.21–24; the starting points in general, including the definitions, are called hypotheses at 283.15–19; 292.19 ff.; 320.26–29.

potentially hypotheses in that they can be used as premises in demonstrations. This meaning of hypothesis will be treated in the next section, which is devoted to the three remaining starting points and the sense in which Proclus uses the terms "hypothesis", "axiom" and "common notion" to describe both them and the definitions.

III.2.6. *The remaining three starting points*

After the definitions of Being and Becoming, Proclus recognizes three more starting points.

First of all,

3. the efficient cause[187] (III.2.8)
    a. everything becoming has a cause;
    b. without cause no becoming;
4. and the paradigmatic cause (III.2.9)
    a. if the paradigm is eternal (Being), then the result will be beautiful;
    b. if the paradigm is non-eternal (Becoming), then the result will not be beautiful.

After these two Plato introduces a fifth starting point, according to Proclus, namely

5. the 'naming of the universe' (III.2.11)

Three issues are of importance with regard to these starting points. First of all, the apparently confused terminology Proclus uses in identifying certain features of what he calls the geometrical method in the prooemium: the starting points, including the definitions, are dubbed hypotheses, axioms *and* common notions.[188] Secondly, the logical relation Proclus sees between starting points 3–5 and the definitions. He takes two different positions on this relation, by suggesting both that starting points 3–5 are adopted independently of the definitions, and that they are logical consequents of those definitions. And third, the role of the fifth starting point in the reasoning of the prooemium. After a general proposal concerning how to understand Proclus' terminology (III.2.7), we will treat the three remaining starting points in order.

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[187] Following the overview of the starting points, see above III.2.

[188] For a first analysis of Proclus' prooemium-interpretation from the perspective of the logical structure, see Festugière (1963: 565–567) and Lernould (1990).

III.2.7. *Terminology: hypothesis, axiom, common notion*

The terminology Proclus uses in his exegesis of the prooemium to summon the geometrical method at first sight seems erratic, as he apparently applies the technical terms "axiom" and "hypothesis" arbitrarily to all the starting points, including the definitions, and on top of that calls the third and fourth starting points "common notions."[189] The clearest example of apparent confusion is the following passage on the introduction of the paradigmatic cause (4. above), in which all five starting points are called both hypotheses, axioms, and common notions within one and the same paragraph:

> **T III.19** And as in the case of the first set of *axioms* there were two *hypotheses*, 'what is that which always is' and 'what is that which is becoming', and in the case of the second set there are two others, 'all that which is becoming has a cause' and 'that which does not have a cause is not generated', so too in the case of these axioms there are two *common notions*, 'that which comes into being with regard to an intelligible model is beautiful' and 'that which comes into being with regard to a generated (model) is not beautiful'.[190]

Passages such as these suggest that Proclus' use of the names of different kinds of principles is indiscriminate, and that he applies them to suggest a technical context, rather than as proper technical terms. Nonetheless, elsewhere Proclus does discuss the difference between them, and indeed mentions people who disregard it and call everything "axiom"—with the Stoics as prime example—or "hypothesis".[191] This does not imply that the people in question use both terms at random, but instead that they systematically choose one over the other. Proclus, however, does not choose, and his mingling of terminology cannot, then, be put down as a mere adherence to either one of the "common" practices he describes.[192] Instead, I propose that the mixture is, if not purposeful, at least meaningful (which is not to say that the common practices could not be meaningful, but that adherence to them just because they are common is not). Moreover, I propose that the mixing does not render the terms equivalent.[193]

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[189] Festugière (1966–1968: vol. II, 7–8, cf. 66 n. 1) and Lernould (2001: 115–117).

[190] *In Tim* I 265.3–9.

[191] *In Eucl.* 76.24–77.6. Cf. *In Eucl.* 193.20–194.2. On the Stoic custom to call any assertion axiom see Diog. Laertius VII 65.

[192] *Pace* Festugière (1966–1968: vol. II, 7–8). Cf. Hartmann (54), who concludes "in beiden Fällen sind dann alle Prinzipien ὑποθέσεις".

[193] Again, *pace* Festugière (1966–1968: vol. II, 7).

Accordingly, I will argue that it is possible to recognize certain principles of discrimination which Proclus, oft implicitly, applies when employing one term rather than another, or, as above, a combination of different terms. These principles do not distinguish different kinds of starting points, but different aspects of the same starting point. The different aspects that are highlighted in this way are (a) the role of the starting point within the argumentative context; (b) the universality of the starting point; (c) its epistemological status. The first aspect is underlined by the term 'hypothesis', the second by 'axiom', and the third by 'common notion'.[194]

Let us look into the former two first. Proclus clearly wants us to understand these terms from the role they play in geometry. We can safely say, however, that the meaning Proclus gives to the terms in the *Timaeus commentary* only approximates the definitions he presents of them in the *In Eucl.* In his commentary on the *Elements*, Proclus defines *axiom* as an assertion of inherent attributes that is both indemonstrable and immediately understood.[195] He further describes axioms as known to the student, and credible in themselves, whereas hypotheses are assumptions, propositions of which the student does not have a notion that is credible in itself, but which he will concede to the teacher nonetheless.[196]

In the *In Tim.*, the same starting points are called both axiom and hypothesis.[197] If we accepted the definitions he gives of those terms in the *In Eucl.*, that would imply, among other things, that the same propositions have to be both known and unknown, and both self-evident and not, to the same student at the same time. At least one of the terms, therefore, must be used in a watered down sense. I propose that the

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[194] Lernould's explanation of the terms (2001: 115–117) is similar to mine, but Lernould equates the terms "axiom" and "common notion" and takes both to refer to the self-evidence of the starting points.

[195] τὸ δὲ ἀξίωμα συμβεβηκός τι καθ' αὑτὸ λέγει γνώριμον αὐτόθεν τοῖς ἀκούουσιν, *In Eucl.* 181.8–9. Proclus presents a number of examples, inspired on Aristotle's description of problemata and theses that do not need inquiry: "such as that fire is hot, or some other quite evident truth about which we say that they who are in doubt need either perception or punishment" (ὥσπερ καὶ τὸ θερμὸν εἶναι τὸ πῦρ ἢ ἄλλο τι τῶν περιφανεστάτων, ἐφ' ὧν τοὺς ἀποροῦντας ἢ αἰσθήσεως ἢ κολάσεως δεῖσθαι λέγομεν)—and not, as Morrow/Dillon: "must be prodded to use them,": the κολάσις refers to the measure taken against people doubting obvious moral truths, in Arist. *Top.* I 11 105a3–7. Note, however, that Elias makes a similar mistake (*In Cat.* 122.22 ff. Reimer).

[196] *In Eucl.* 76.9–15, discussed above (III.2.4.ii), see also *In Eucl.* 195.17 ff.

[197] *In Tim.* I 229.2–3, 236.14, 242.16–18, 242.21–24, 274.21–24, 275.3–15, 283.15–19, 292.19 ff., 296.15 ff., 320.26–321.2, 328.16–329.17, 338.2–4, 338.27–28, 348.13–15, 355.24 ff.

term that is diluted the most in the context of the *In Tim*. is 'axiom'. Proclus seems to use this term in the sense of 'a credible universal statement of inherent properties that functions as starting point and does not receive a demonstration': what is an undemonstrated starting point within philosophy of nature can still be an assumption in the broader context of all knowledge. Or, from a didactical point of view: what is a hypothesis to the as yet ignorant audience, can be an axiom to Timaeus.[198]

i. Axiom

The term "axiom", then, has a wider application in the prooemium of the *In Tim*. than in the *In Eucl*., where it is reserved specifically for the self-evident geometrical starting points that are nowadays called "axioms" as well. In the *In Tim*., however, it is used for all the starting points of the prooemium, when they are considered in themselves and separate from their argumentative context. Thus the use of the term approximates the Stoic one as reported by Proclus, with the difference that Proclus includes negative propositions, while on the other hand limiting the use of the term to universal statements.[199] All starting points except the last (the naming of the subject matter) consist of a pair of axioms, one affirmative and one negative, which is the obverse of the affirmative. The negative axiom is always felt to be a complement to the former, which is clear from the fact that on the rare occasion that Proclus uses the singular "axiom", he refers to the affirmative proposition.[200] One of every pair of those universal axioms will subsequently, in the demonstrations, be shown to apply to a particular, namely the universe. The last starting point, which introduces the name of the universe (*Tim*. 28b2–4, see below) is an exception. It is not a universal statement, but an imperative clause expressing a proposal, and does not have a negative counterpart. It is nonetheless reckoned among the axioms.[201]

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[198] Cf. Arist. *APo* I 2, 72a14–17. Proclus' definitions differ from those of Aristotle, mainly in that Aristotle speaks about what *should* be known prior to learning, Proclus of what *is* known.

[199] Thus also in the *In Remp*., e.g. I 27.13, 33.19, 36.13, II 9.26, 11.12.

[200] E.g. *In Tim*. I 262.2, 29.

[201] *In Tim*. I 272.10.

ii. Hypothesis

Proclus uses the term "axiom" less frequently than he does "hypothesis" to indicate the principles assumed in 27d5–28b5.[202] This is no coincidence. The difference between axiom and hypothesis is a *functional* one: the term 'axiom' is used to indicate a fundamental and general proposition, regardless of context. 'Hypothesis' on the other hand is a term used to indicate the function of a proposition as the foundation of a demonstration: when distinguishing the two parts of the prooemium, Proclus uses the terms "hypothesis" and "demonstration" respectively to indicate that the first half lays the foundation for the second half.[203] Thus the definitions are also called hypotheses on occasion because, apart from including a hypothesis of existence, they, too, will function as premisses in the demonstrations to come. This function is closely related to the didactic nature of Timaeus' exposition: the hypotheses are not 'hypothetical' for the speaker, but only for his student, as was stated in Proclus' definition of hypotheses.[204]

In the case of the third and fourth starting points, Proclus' reformulation of the Platonic text into conditionals (see below) gives an extra semantic shade to the term "hypothesis" as the premise of a *hypothetical* syllogism, and as such the basis of a demonstration.[205]

iii. Common notion

The term "common notions", finally, is reserved for the third and fourth starting points, and is used to accentuate, not their role in reasoning, but their epistemological status.[206] "Our common notions" in general

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[202] Lernould (2001: 116).

[203] As remarked by Lernould (2001: 123 n. 6). Cf. Festugière (1966–1968: vol. II, 66, n. 2): "Ensemble de données à partir duquel on essaie de démontrer par voie logique une proposition nouvelle."

[204] See above on the second definition of hypothesis, based on Arist. *APo* I 10 76b27–30.

[205] As shows from his list of conditionals (see III.2.9), our author considers those starting points to be universal conditional statements, a combination, as it were, of a Stoic conditional and a Peripatetic universal premise, that allows an inference concerning particulars, eliminating the quantification. Cf. Mueller (1974: 41): the most common form of inference in the *Elements* is stating a general rule, a common notion, and applying it to a particular case (of course in geometry the conclusions concerning particular cases are then generalized).

[206] For the Stoic origin of this concept, see *SVF* II 83 (Aetius *Placita* IV 11), II 473 (Alexander Aphr. *de mixt*. 216.14 Bruns.) and Chiaradonna (2007). The Stoics distinguish

are moreover considered the store-room in which we find justification for Plato's implicit presupposition "that there is such a thing as eternal Being".[207] Common notions (κοιναὶ ἔννοιαι or προλήψεις), in Proclus' epistemological vocabulary, are innate,[208] they are uncorrupted,[209] self-evident,[210] and receive neither demonstration nor explanation,[211] although they do require awakening.[212] Moreover, they are primarily mental contents, and only secondarily assertions,[213] although by derivation the term is used for the assertion expressing that content, which can be used as major premise in a syllogism,[214] and must in general precede any demonstration, as in geometry.[215] As such, they are close relatives of axioms, in that they are what lies at the foundation of an axiom. In the *In Eucl.*, Proclus seems to follow the Aristotelian/geometrical custom which holds axiom and common notion to be identical,[216] but elsewhere, including, as we have seen, in the *In Tim.*, axiom is a less restricted term, which moreover refers to propositions rather than mental contents. Note that in the *In Tim.* the term "common notion" is never used without the accompaniment of at least one other term, be it "definition", "hypothesis", "axiom", or a combination of these, because "common notion" is an epistemological term, rather than one describing the elements of a science.

The being common of the notions has two senses, namely a primary cognitive one (ὁμολογία, they are common in the sense that they are shared by all or most people, since all partake in a common reason,

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between natural and taught conceptions, the former of which, the preconceptions, are the ones adopted in Neoplatonism as common notions, with, of course, the adjustment that their being untaught does not mean that they just arise from sense perception, but that they are innate. An important paper on the Stoic common notions is Todd (1973), although his argument loses some of its force because at times Todd confuses ontology and epistemology.

[207] *In Tim.* I 228.12, see above III.2.4.

[208] ἀδίδακτοι, *In Eucl.* 76.16; *De prov.* 7 32.1–2 (or *indubitanter*).

[209] ἀδιάστροφοι, *In Tim.* I 168.26 etc., cf. Segonds (1985: 86, n. 4 (on p. 180)).

[210] *In Eucl.* 255.16, καὶ is taken epexegetically.

[211] *In Parm.* 1092.15–19 (19–24 Cousin), *In Eucl.* 266.11 ff., cf. *In Alc.* 104.8–9, but cf. *In Parm.* 1092.26 f. (34 f. Cousin), where Proclus does present an explanation for a common notion.

[212] *In Parm.* 1092.18 (23 Cousin).

[213] As is clear from e.g. *In Eucl.* 76.16 and *In Tim.* I 228.12, ἀπόκειται.

[214] *In Alc.* 175.19 ff., *In Parm.* 1091.19 ff. (24 ff. Cousin). In the *In Alc.*, κοινὴ ἔννοια seems to be closer to the Aristotelian common notions, as opinions shared by many if not all, rather than to a Platonic innate idea. Note the strange singular, almost like a mass term.

[215] *In Parm.* 1092.21 ff. (27ff. Cousin).

[216] *In Eucl.* 194.8.

λόγος),[217] and a secondary scientific one (κοινωνία, the common notions are common in the sense that they are shared by several sciences, cf. τὰ κοινὰ).[218]

By describing the propositions introducing the efficient and paradigmatic causes not only as hypotheses and axioms, but also as common notions,[219] Proclus refines their functional description (universal propositions that serve as the starting point for the coming demonstrations), with an epistemological justification: these two starting points are assumed without demonstration, because they are self-evident, just as the axioms (in the narrow sense) in geometry. The "commonness" of these two common notions is the psychological rather than the scientific one. With this in mind, let us turn to the actual passages in which the three remaining starting points are introduced, in order to see how Proclus interprets them, especially from the point of view of the structure of his reasoning and the logical relation he supposes to exist between starting points 3–5 and the definitions.

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[217] Cf. *In Alc*. 104.18 ff. As O'Meara (2000: 290) points out, this sense of commonness is a presupposition of the anagogic function of the Proclean science of metaphysics. I think this statement can be expanded to hold for all sciences, insofar as they are taught.

[218] On the role of common notions in science according to Proclus and Neoplatonists in general, see Saffrey and Westerink (1968–1997: 110, n. 4 (on p. 159 ff.)), who give an extensive description with many useful references. They distinguish several common notions proper to particular sciences, to wit theology, mathematics, physics, ethics, and logic. By incorrectly treating logic as an independent science, this list obscures an important aspect of the last group of common notions, namely that they are common not only in the psychological sense, but also in the sense that they are valid and used in several (or all) sciences—these logical principles are more properly common in that they are not limited to a particular content. Cf. *Theol.Plat*. I 10 45.20–22: Τὰ μὲν γὰρ πρῶτα τῶν συμπερασμάτων δι' ἐλαχίστων ὡς οἷόν τε καὶ ἁπλουστάτων καὶ γνωριμωτάτων καὶ οἷον κοινῶν ἐννοιῶν εὐθὺς κατάδηλα γίνεται. On the double meaning of κοινός in the Aristotelian and Stoic theories of common notions/opinions see Todd (1973: 54, 61). Cf. Von Fritz (1955: 43 ff. and n. 60).

[219] *In Tim*. I 258.14, "other common notions stating the efficient cause are added (προστίθησι)". The fact that Proclus here speaks of "other common notions", which might imply that he also considers the definitions to be common notions, does not detract from our point, as he never actually calls the definitions common notions. Moreover, ἄλλος can be read as introducing something different (e.g. Plato *Gorg*. 473d1, τῶν πολιτῶν καὶ τῶν ἄλλων ξένων, cf. Kuhner-Gerth I 274 A. 1, b). Thus the term "common notion" is not applied to all starting points, *pace* Lernould (2001: 122, n. 3). Cf. I 265.7, on the paradigmatic cause.

III.2.8. *The efficient cause*

> **T III.20** Everything becoming by necessity becomes through a cause; for it is impossible for anything to come into being without a cause.[220]

The introduction of this starting point, presenting the efficient cause, is sketchily embedded in the geometrical method.[221] Proclus presents it as consisting of two common notions that Plato adds (παραλαμβάνει, προστίθησι) "in a truly geometrical fashion" in order to facilitate the consequent demonstrations of the efficient cause of Becoming.[222] The formulation so far suggests that this starting point is primitive in the sense that it does not have any logical relation (e.g. of consequence) to the previously introduced starting points, and is merely invoked in aid of the proof, as is customary also in geometry.[223] We will return to this issue at the end of this section.

Proclus reformulates the lemma as a syllogism which he takes to be behind the Platonic text.[224] He does this to explain the presence of the second half of the lemma ("it is impossible for anything to come into being without a cause") as the major premise (the μέσον) of a categorical syllogism in the first figure, that has the first half of the lemma ("everything becoming necessarily becomes through a cause") as its conclusion. The whole "categorical syllogism in the first figure" that Proclus proposes is:

> **T III.21** It is impossible that the becoming becomes without cause;
> Everything of which it is impossible to become without cause, by necessity becomes through a cause;[225]

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[220] *Tim.* 28b, *In Tim.* I 258.9–264.3. In his earlier summary of the principles on I 236 Proclus changes the second half from an impossibility regarding Becoming (namely that Becoming is not possible without cause) to an inverse statement, saying that that which exists without (efficient) cause is not Becoming (I 236.23–24); likewise in a later summary (265.6–7). At 258.15 ff. instead he formulates it as "the becoming absolutely becomes through a cause, and what does not become through a cause cannot possibly have generation." Since the latter reformulation is given right after the lemma and is closer to Plato's original, any significance to the differences between Proclus' two formulations should be sought primarily in the former, rather than the latter (*pace* Lernould (2001: 174–175)).

[221] For the structure of Proclus' own analysis of the passage, see Lernould (2001: 173–174).

[222] *In Tim.* 258.12–16; 237.12–13.

[223] Cf. *In Eucl.* 196.18–19 ὁ γεωμέτρης πολλαχοῦ καὶ τοῦτο [i.e. "that the whole is more than the part"] παραλαμβάνει πρὸς τὰς ἀποδείξεις.

[224] *In Tim.* I 258.23–259.4.

[225] This minor premise relies on the equivalence of the impossibility of *p* and the necessity of non-*p*.

> Therefore everything becoming by necessity becomes through a cause.[226]

The modal phrases can be disregarded, as Proclus himself considers the syllogism to be categorical. Modality in categorical syllogistic is an alethic qualification, i.e. a property of premises, but since the modal phrases added here by Proclus are *de re*, they are part of the predicate. We can therefore reformulate the syllogism as follows:

> All Becoming is ⟨incapable of becoming without cause⟩;[227]
> All ⟨that is incapable of becoming without cause⟩ is ⟨necessarily becoming through a cause⟩;
> Therefore all Becoming is ⟨necessarily becoming through a cause⟩.

The syllogism is explained as a didactic measure, informing us through the more clear (ἐναργέστερον) about the less known and clear (ἧττον γνώριμον καὶ σαφές). The two statements (i.e. the major premise and the conclusion) look the same, Proclus says, because it is clear (δῆλον) "that it is necessary that the impossible is not, and that it is impossible that the necessary is not", that is, the minor premise is evident.[228] Despite the interdefinability of necessity and possibility, however, the statement of (im)possibility is better known than the statement of necessity.[229] Proclus presents a nice series of illustrations of this point, that gives the impression of being copied from a handbook.[230] A physician will convince his patient to eat, not by telling him that it is necessary to eat, but by pointing out that it is impossible not to eat—and live.[231] Secondly,[232] it

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[226] This categorical syllogism is said to be preferable to a hypothetical one (I 259.2–4). Lernould's suggestion (2001: 175 and n. 8) that Proclus is "destoicizing" Plato in response to Middle-Platonists such as Plutarch of Chaironea is rendered implausible by the later formulation of a series of conditionals (see below, III.2.9).

[227] I use the brackets '⟨' and '⟩' to set apart the phrases that function as terms in the syllogism.

[228] *In Tim*. I 259.5–6, τὸ γὰρ ἀδύνατον μὴ εἶναι δῆλον, ὡς ἀναγκαῖον εἶναι, καὶ τὸ ἀναγκαῖον εἶναι ἀδύνατον μὴ εἶναι. Cf. Arist. *dI 13* 22b5–7 εἰ γὰρ ἀδύνατον εἶναι, ἀναγκαῖον τοῦτο οὐχὶ εἶναι ἀλλὰ μὴ εἶναι· εἰ δὲ ἀδύνατον μὴ εἶναι, τοῦτο ἀνάγκη εἶναι. Proclus inverts the second clause, to match his Platonic example in which the first clause concerns necessity, and the second possibility.

[229] As a consequence, the common notion expressing impossibility is more of a common notion, so to speak, than the one expressing necessity, as the former is self-evident, whereas the evidence of the latter depends on that of the former (see below).

[230] *In Tim*. I 259.8–14.

[231] Cf. Arist. *Met*. V 5 1015a20 ff.

[232] καὶ πάλιν should not be translated "and the inverse" ("à l'inverse", Festugière), as the inversion already takes place before the example of the physician.

is clear that it is necessary to die from something (διά τινα αἰτίαν), from the impossibility not to die.[233] Thirdly, it is necessary to pay the tyrant what you are due to him because it is impossible not to. The first example is most illuminating: Just as it is impossible not to eat *and still live*, so too is it impossible not to have an efficient cause *and still have genesis* (not having an efficient cause is in itself very well possible in Proclus' metaphysics—one need only think of the One).[234]

As is clear also from these illustrations, Proclus explains the functionality of concluding something's necessity from the impossibility of its negation by pointing out that the negation is a kind of imaginary separation (χωρίς etc.) of, in our case, genesis from its efficient cause.[235] The method recalls an element of Parmenidean dialectic, namely the investigating of non-existence (or the not-being-the-case) of something in order to discover its causal role and hence its essence in full detail.[236] In our case, the logical analogue of the ontological separation makes visible to the mind's eye what aspects of genesis are the responsibility of the efficient cause: its preservation (τὸ σῴζεσθαι), its maintenance (τὸ συνέχεσθαι) and hence its not sliding into non-being: "… it is easy to understand how that which comes into being, when separated from the cause, is powerless (ἀδυνατόν) and weak (ἀσθενές)."[237] Proclus here makes clever use of the polysemy of ἀδυνατόν to sketch a "powerless" and hence "impossible" Becoming without cause. As it turns out, genesis owes its very existence (if one can call it that) to the efficient cause. In a sense, this is also a justification of the two common notions themselves, as we now know that the concept of Becoming necessarily involves a concept of external causation.[238]

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[233] The example seems to be Stoic rather than Platonic. Cf. Epict. *Diss*. I 27.7 Ὅταν θάνατος φαίνηται κακόν, πρόχειρον ἔχειν ὅτι τὰ κακὰ ἐκκλίνειν καθήκει καὶ ἀναγκαῖον ὁ θάνατος.

[234] Frans de Haas suggested to me that the case of the tyrant might be parallel to that of the doctor: it is impossible not to pay the tyrant one's dues and still live. For the example of death, of course, such a parallel can not be drawn ("it is impossible not to die (from something) and still live" does not make sense). Considering the context and the addition of διά τινα αἰτίαν we should read this example as illustrating efficient causality: "it is impossible to die and not to die through some cause".

[235] *In Tim*. I 259.16–27.

[236] *In Parm*. 998.6 ff. (7 ff. Cousin).

[237] *In Tim*. I 259.19–20, trans. Runia.

[238] A similar argument for the axiom stating the necessity of an efficient cause, from the incapacity of Becoming to preserve and maintain itself, is given in the second half of the prooemium, the application of the starting points to the universe. The axiom is

So although these common notions were merely "invoked" (παραλαμβάνει, see above), Proclus shows how their formulation at the same time comes down to a justification. This brings us back to the logical relation between the definitions and this third starting point. In the exegesis of the definitions Proclus had carefully established a connection between the definitions and the other axioms. He stated that the latter follow (ἕπεται) the former, as the "other problems" (i.e. the questions which the axioms intend to answer) follow (συνακολουθεῖ) the first problem: the question whether the universe has become or not.[239] Words like ἕπεσθαι and συνακολουθεῖν by no means necessarily imply that the axiom of the efficient cause is a logical consequence of the definition of Becoming, as they may refer to no more than a fitting sequel, or even just the absence of contradiction among the different starting points.[240] They may be a justification of its being chosen, rather than of its truth. Combined, however, with the repeated conceptual analysis of Becoming as what cannot maintain its own existence (and hence needs an efficient cause) they reveal Proclus' desire to see the axiom of the efficient cause as the result of an analytic approach. The axiom of the efficient cause is introduced both as an extra assumption next to the definitions, and as a necessary consequence, possibly as resulting from a conceptual analysis, of the nature of Becoming. It is not, of course, a necessary consequence of the definition of Becoming, as that definition did not already include Becoming's incapacity of self-maintenance.

III.2.9. *The paradigmatic cause*

> **T III.22** Anything of which the Demiurge makes the form and the character, by looking at eternal Being which is always the same, and using that as a model, is thus necessarily made beautiful. But that of which he [makes the form and the character by looking at] something that has become and using that as a created paradigm, is not [made] beautiful.[241]

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there restated (*Tim.* 28c2–3; *In Tim.* I 296.13 ff.), and explained once more, this time with emphasis on the fact that Becoming is imperfect (ἀτελές), cf. *El.Th.* 45. For a detailed analysis see Lernould (2001: 179 ff.)

[239] *In Tim.* I 236.8–13, quoted above.

[240] See Hintikka and Remes (1974: 89–91).

[241] *Tim.* 28ab, *In Tim.* I 264.4–272.6. Note that Zeyl's translation of this *Timaeus* passage is incorrect, as he takes the paradigm to be the object of ἀπεργάζεται, which leaves ὅτου untranslated.

After the efficient cause, says Proclus, Plato presents another starting point consisting of these two opposite axioms, as he calls them, that together deliver the paradigmatic cause. This is the first starting point that receives no explicit mention of the geometrical method whatsoever, although its explanation is still couched in the technical terms associated with that method. There are several points of similarity between the discussions of this starting point and the previous one.

As before, Proclus emphasizes the continuity between previous starting points and this one: the introduction of the paradigmatic cause is in line with the foregoing (συνεχές τοῖς εἰρημένοις, 264.10).[242] One might think that there is no such continuity, since, as Proclus points out, Plato does not investigate the *existence* of the paradigmatic cause, which he assumes, but rather its *character*.[243] In this sense the fourth starting point differs from the third. The existence of a paradigmatic cause, however, follows (ἕπεται, 264.15, 20, a somewhat stronger expression than συνεχής) from the existence of the efficient cause, since everything that creates something uses a pre-existing form—pre-existing to the product, that is, not necessarily to the creator—that it wants to insert in its creation.[244] Without a paradigm the result of creation would be deprived of all order.

Apparently Proclus understands the concept of a paradigmatic cause to be included in that of the efficient cause—i.e. he assumes that no efficient cause works without a paradigm—and read ἕπεται in a stronger, logical sense. This is reinforced by the repetition of the argument in the exegesis of the demonstrations:[245] Plato, according to Proclus, realizes that the order of the universe is a clear indication of an intelligent creator and hence also of a paradigmatic cause. Aristotle, on the other hand, denies the universe a paradigmatic cause—i.e. he rejects the theory of Forms—and thereby also deprives it of an efficient cause.[246] What Proclus wants to point out here is that there is a strong relation of consequence between efficient and paradigmatic cause: deny the "consequent" and the "antecedent" is obliterated as well. This relation can be explained from the

[242] On the function of logic in revealing or reflecting the continuity (συνέχεια) of the layers of reality, see Gritti (2003: 296 ff.).

[243] Cf. *In Tim*. I 320.26: θέμενος οὖν ὁ Πλάτων εἶναι παράδειγμα.

[244] *In Tim*. I 264.15–20.

[245] *In Tim*. I 266.30–267.1.

[246] Cf. *In Tim*. I 320.25–26. Romano (1993) tries to connect the passage to a concrete Aristotelian text, but I think the point is just that rejection of the Forms as a paradigmatic cause of the universe has as a necessary consequence the non-existence of a rational efficient cause. Cf. however *In Tim*. I 404.7–21.

very nature of intelligent creation.[247] As with the efficient cause, so here too Proclus assumes that conceptual analysis reveals one of the causes of the universe.

Furthermore, just as in the explanation of the previous lemma, concerning the efficient cause, so too in this case Proclus presents a syllogism, this time to point to the consistency of the reasoning so far.[248] He first formulates a list of conditionals (that in itself does not yet constitute a syllogism),[249] thereby creating an association with Parmenidean dialectic:[250]

> T III.23 "If [something] is becoming, it has a Demiurge;
> if there is a Demiurge of the universe, there is also a paradigm;
> and if the becoming is beautiful, it has become with regard to eternal being;
> but if [the becoming] is not beautiful, with regard to a created paradigm."[251]

Note that from the first conditional onward, which speaks of a Demiurge rather than an efficient cause in general, Proclus starts to introduce particular conditionals, about the universe, as opposed to universal ones about causation.[252] He returns to generality in the conditional concerning the paradigmatic cause, probably because this list is presented when we are still in the middle of the exegesis of the relevant lemma of the *Timaeus*.

The list of conditionals is consequently turned into a syllogism. Proclus does not choose the obvious next step, namely *modus ponens*—starting by affirming the first antecedent, "it is becoming", which is what Plato does at *Tim*. 28b7, and concluding the consequents "therefore it has an efficient cause", etc. Instead, he formulates what is on the face of it a categorical polysyllogism in Darii, rather than a hypothetical syllogism:

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[247] *In Tim*. I 321.2–24.

[248] Cf. *In Tim*. I 264.23–24 ὁ λόγος … πρὸς ἑαυτὸν ἀκόλουθος; 264.27–28 συνεχῆ … τοιοῦτον συλλογισμόν.

[249] *Pace* Lernould (2001: 190–192). Strictly speaking, they are also not conditionals. See Barnes (1983: 313 and n. 3) on the ancient custom of counting propositions of the form "If anything is F, it is G" among the conditionals.

[250] See the illustration of the method at *In Parm*. 1000.26 ff. (34 ff. Cousin). Parmenidean dialectic is superior to Aristotelian syllogistic, according to Proclus, because it is more complete. Its hypotheses result from divisions and hence exhaust all logical possibilities (1007.7–26 (10–34 Cousin)). For an assessment of the comparison see Lloyd, A.C. (1990: 13–17) and Steel (2006).

[251] *In Tim*. I 264.24–27.

[252] Cf. Lernould (2001: 190–191).

T III.24 "And so we get a coherent syllogism such as this:
The cosmos has become
Everything that has become has a demiurgic cause
Everything that has a demiurgic cause also has a paradigmatic cause
Therefore, the cosmos has a demiurgic and a paradigmatic cause."[253]

Proclus here switches from conditional to predicate logic, identifying premises in the former with premises in the latter. This is not common in ancient logic, but on occasion it is explicitly allowed.[254] The switch is possible due to the fact that propositions in the particular kind of "conditionals" we find above are reducible to predicates:[255] "If Becoming, then caused" etc. becomes "All Becoming is caused" etc. Proclus does not consider hypothetical syllogisms to be as valuable as categorical ones (see III.2.8), but he does apparently sometimes take them to be interchangeable from a technical point of view.

The obvious difference between the conditionals and this "syllogism" is that the axiom about the *character* of the paradigmatic cause plays no part in the latter. Instead, an axiomatic premise is added concerning the *existence* of that paradigmatic cause. A straightforward explanation for this is again that when the syllogism is presented we are still in the middle of the exegesis of the paradigmatic cause, and Proclus gives us the status quo, as it were. The place of the syllogism—at this point, rather than after the exegesis of the character of the paradigmatic cause—and the fact that on no other occasion in Proclus' commentary we encounter such a syllogistic rendering of the starting points of the prooemium have a more interesting reason:[256] the conclusion of the above "syllogism", that the generated cosmos has a demiurgic and a paradigmatic cause, is for Proclus the harvest of the starting points.[257] Thus the summary of the logical structure emphasizes a climactic point of the prooemium, and even of Platonic φυσιολογία.

That Proclus wants to highlight the superiority of Platonic philosophy of nature over that of others shows also from the justification he offers for

[253] *In Tim*. I 264.27–265.3. Note that, since the subject of the major premise is a particular, strictly speaking this is not even a syllogism.

[254] Lloyd (1990: 14 and n. 22). Cf. Barnes (1983: 312).

[255] Cf. Barnes (1983: 312–313). On the relation between categorical and hypothetical syllogistic in the commentators see Sorabji (2004b: 250 ff.).

[256] Cf. Lernould (2001: 192).

[257] Cf. Proclus' preference for Plato's φυσιολογία over others because only Plato identifies the proper causes of the universe, *In Tim*. I 2.1–4.5. See Steel (2003).

the fourth axiom, as it consists in part in a polemical demonstration of the incorrectness of the Peripatetic, Stoic and Epicurean view of the cosmos.[258] The justification Proclus presents for the fourth axiom is slightly different from that for the third (see III.2.8), to the extent that concerning the fourth Proclus is more explicit about its truth and self-evidence. He starts out by summoning the association with geometrical methodology—without explicitly mentioning geometry—in a rather ostentatious manner, referring to all technical denotations of the starting points at once, followed by a blunt truth claim:

> T III.25 (cf. T III.19) And as in the case of the first set of axioms there were two hypotheses, 'what is that which always is' and 'what is that which is becoming', and in the case of the second [set of axioms] there are two others, 'all that which is becoming has a cause' and 'that which does not have a cause is not generated', so too in the case of these axioms there are two common notions, 'that which comes into being with regard to an intelligible [model] is beautiful', and 'that which comes into being with regard to a generated [model] is not beautiful'. And both of them are absolutely true (πανάληθες).[259]

With respect to the axiom concerning the *existence* of the efficient cause, as well as the implicit *existence* of the paradigmatic cause, Proclus justified the starting points by appealing to the concepts involved in the preceding axioms, i.e. the definition of Becoming and the axiom of the efficient cause respectively. In his justification of the axiom concerning the *character* of the paradigmatic cause, he takes a different angle. The argument he presents is hardly an actual argument, but rather an elaborate and roundabout way of restating the lemma in phrases which highlight its truth and self-evidence.[260] Apart from the label "common notion", which is used to underline the innateness and self-evidence of the starting points (see III.2.7), and the emphatic "absolutely true" (πανάληθες) in the quotation above, we find several more indications of their obviousness (δῆλον,[261] δηλονότι)[262] and truth (ὅτι μὲν οὖν ἀληθῆ ταῦτά ἐστι τὰ ἀξιώματα, διὰ τούτων ὑπομνηστέον).[263] The only hint of a real argument is the explanation of beauty as deriving from the stability of the

[258] Esp. *In Tim*. I 266.25–30, see also below, at n. 265.
[259] *In Tim*. I 265.3–9.
[260] *In Tim*. I 265.9–266.21.
[261] *In Tim*. I 265.15.
[262] *In Tim*. I 265.21.
[263] *In Tim*. I 266.20–21.

eternal paradigm, as opposed to lack of beauty caused by the change and motion of the generated paradigm.[264]

Finally, after defending the choice of axiom, Proclus devotes quite some attention to the above-mentioned polemic against Peripatetic, Stoic and Epicurean theories which deny the existence of the Demiurge or the paradigm of the universe,[265] by summarizing the views of his opponents and consequently arguing for the need of both transcendent causes. We will not go into that here.

III.2.10. *Intermediate conclusion—the starting points concerning the efficient and paradigmatic causes*

In the foregoing, we have seen how Proclus analyses the passages of the prooemium introducing the efficient and paradigmatic causes on the one hand as self-evident assumptions beside the definitions of Being and Becoming, comparable to the axioms of geometry, and on the other hand as the necessary consequents of a conceptual analysis of Becoming. The role of the geometrical method is less articulate than it was in the exegesis of the first two starting points, and consists in identifying the epistemological status of—and thereby justifying—the axioms concerning the causes of Becoming.

Proclus' summary of the argumentative structure of the prooemium so far (see III.2.9)—and in fact the only specimen thereof—shows that for him the fundamental issue of the prooemium and of Platonic philosophy of nature is establishing the necessary existence of an efficient and paradigmatic cause of the universe. We will return to this below.[266]

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[264] *In Tim.* I 266.7–9. The main other points made in the context of the argument for the truth of the axiom are that the product of an eternal paradigm is always beautiful because it would not be a real imitation of the eternal if it were not beautiful (which is begging the question); that a paradigm that is itself created is filled with dissimilitude with respect to what is primarily beautiful (again); that the maker is responsible for similitude, and the paradigm for beauty; and that there are three kinds of paradigm: eternal of eternal products, eternal of generated products, and generated of generated products (which is inconclusive).

[265] *In Tim.* I 266.21–268.24. For an analysis of the whole exegesis of the lemma, see Lernould (2001: chapter 10, 187 ff.). Lernould rightly argues that Proclus is especially interested in the existence of the paradigm of the universe, its ontological rank and its being external to the Demiurge. He underestimates, however, the role of the doxography as in fact it establishes, not only the necessity of the existence of the model, but also of the Demiurge.

[266] See below III.2.11.iii.

In the introduction to his commentary, however, Proclus' praise of Plato's φυσιολογία involves the proper identification of all three true causes (κυρίως αἰτίαι), including the final cause.[267] This brings us to the fifth starting point, which is in several ways the odd one out. The main question to be answered with respect to this last starting point is whether Proclus sees it as the introduction of the final cause.

III.2.11. *The fifth axiom—the final cause*

In what modern readers consider to be the transition from the starting points to the demonstrations, Proclus reads the introduction of a fifth axiom, thereby establishing an elegant parallel between the *Timaeus* and the five axioms of Euclid's *Elements*. This last axiom (τελευταῖον τῶν ἀξιωμάτων, I 272.10) in the prooemium consists in the following lemma, which is in fact half a sentence of Plato's text:

> **T III.26** Ὁ δὴ πᾶς οὐρανὸς ἢ κόσμος ἢ καὶ ἄλλο ὅτι ποτὲ ὀνομαζόμενος μάλιστ᾽ ἂν δέχοιτο, τοῦθ᾽ ἡμῖν ὠνομάσθω.[268]

In modern editions of the *Timaeus* the sentence does not stop here.[269] Moreover, to the modern reader the partial sentence on the different terms for the universe does not qualify as a starting point in its own right, but merely as an aside in the transition to the demonstrations, introducing the universe as the subject matter of the *Timaeus* (e.g. "Now as to the whole heaven, or world order—let's just call it by whatever name is most acceptable in a given context—there is a question etc.", trans. Zeyl).[270] Our commentator, however, reads it as a full sentence, that can

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[267] *In Tim.* I 2.1–4.5, cf. above at n. 257 and chapter I.

[268] *Tim.* 28b; exegesis at *In Tim* I 272.7–274.32. Proclus uses a slightly different text: he does not have καὶ ἄλλο, reads μάλιστα instead of μάλιστ᾽ ἄν, τοῦτο instead of τοῦθ᾽. On the meaning of this textual variation see below. Furthermore, Proclus seems to read οὐρανός both as subject with attribute πᾶς, which the Greek suggests, and as a predicate of the nominalized ὁ πᾶς (apparently equivalent of τὸ πᾶν), which suits his interpretation better. Lernould (2001: 208 n. 2) takes Proclus to choose the latter reading, but it is clear especially from 272.27–28 that Proclus wants to have it both ways: "he calls τὸ πᾶν heaven and cosmos and says that ὁ πᾶς οὐρανός (…) should be called cosmos etc." (also at 273.3–4).

[269] Burnet, Rivaud (1963 [1925]) and Bury (1929). Rivaud does separate the two clauses in his translation.

[270] Cf. Lernould (2001: 205). Translators Cornford (1937: 22), Taylor (1928: 65–66) and Zeyl (2000: 14) read the remark on the third name as a parenthesis. Brisson (1992: 116), however, does have a full stop at this point. Note that in later Neoplatonists this same half-sentence is quoted. Simpl. *In Cael.* 280ff., on *Cael.* I 9 278b11, see below;

be rendered as "Let us call the universe heaven or cosmos, or the name that, would it ever be called just that, suits it best." He moreover considers this to be an axiom in the geometrical fashion (κατὰ τοὺς γεωμέτρας), that "imposes a name on the subject matter" (*In Tim*. I 272.10–11).

What kind of starting point is this imposition of a name, and why is it considered a starting point in the first place? A first answer to the latter question is of course that by merely dubbing this phrase an axiom, Proclus creates the parallel with the five axioms of Euclid's *Elements*. But there is more. Proclus explains and justifies his claim with a reference to a particular instance of the geometrical practice of imposing a name on the subject (ὑποκείμενον), namely the definition of the *gnomon*. Just as geometers say about the *gnomon* in parallelograms: "let whichever one (i.e. of the 4 smaller parallelograms into which a parallelogram can be divided) together with the two complements (i.e. adjacent smaller parallelograms) be called a *gnomon*,"[271] so Plato imposes names on the universe. The parallel drawn by Proclus is suggested, or supported, by the similar formulations: ὠνομάσθω here and καλείσθω in Euclidean demonstrations.[272]

The passage quoted from Euclid's *Elements* is part of a definition (see n. 271), which suggests that Proclus considers the 'naming of the universe' to be comparable, at least in its formulation, to a (nominal) definition. Readers would be hard put to believe him if he actually made this explicit, so instead he speaks of an axiom, and counts the phrase among

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Philop. *In GC* 1.19 ff., referring to the same passage, and Philop. *Aet.Mund*. 509.11 ff. In these cases, there are no indications that the cutting up of the original sentence is done in the assumption that the phrase itself constitutes a full sentence. On the contrary, the quotation is often accompanied by another half-sentence (Plato *Polit*. 269d7 f.). Like Proclus, Cicero (*Timaeus* 2.4–5) separates the first half of the Platonic anacoluthon off into a separate sentence.

[271] ἓν ὁποιονοῦν σὺν τοῖς δυσὶ παραπληρώμασι γνώμων καλείσθω, *In Tim*. I 272.13–14, which is a quote of the second half of def. 2 from book 2 of the *Elements*: Παντὸς δὲ παραλληλογράμμου χωρίου τῶν περὶ τὴν διάμετρον αὐτοῦ παραλληλογράμμων ἓν ὁποιονοῦν σὺν τοῖς δυσὶ παραπληρώμασι γνώμων καλείσθω. In Heath's translation 'And in any parallelogrammic area let any one whatever of the parallelograms about its diameter with the two complements be called a gnomon.' Cf. Festugière (1966–1968: vol. II, 115), who quotes the entire definition in his translation. That Proclus does not quote the entire definition, but only the second half, has two reasons: 1. the beginning of Euclid's definition (i.e. παντὸς δὲ παραλληλογράμμου χωρίου) may be said to have been replaced by what Proclus says just before the quote ('in parallelograms'); 2. starting the quote from 'ἓν ὁποιονοῦν' results in a nice match—both with respect to the indefinite pronoun and as regards rhythm, with the 'definition' starting 'ὅτι ποτὲ'. It is not so much the meaning, as the ring of the definition that is relevant here.

[272] Cf. also Eucl. *El*. I, def. 22; II, def. 2; V, def. 6, etc.

the hypotheses.[273] Nonetheless, the suggestion is present that the parallel goes beyond mere formulaic similarity between Plato's utterance and Euclid's definition: Plato "makes a definition beforehand" (προδιορίζεται τι, I 272.17; ἀφορίζεται … ὑπὲρ, 272.26–27) concerning the names, in order to prevent confusion. If we compare this practice, as understood by Proclus, to the descriptions of definitions as they are used in Greek geometry, namely as presenting formally usable abbreviations, or giving an explanation of what one is talking about,[274] it comes close to fitting the picture. It would go too far to suppose that Proclus interprets the *Timaeus* passage as presenting formally usable abbreviations, but he does take it to inform us on the fact that Plato will use both the terms 'heaven' and 'cosmos', and on what we should understand him to mean every time he uses either word.

This clarification was necessary, Proclus continues, as the words οὐρανός and κόσμος were considered to be ambiguous even in antiquity (*In Tim*. I 272.17 ff.). Sometimes οὐρανός, 'heaven' was taken to refer to everything supralunar, as *opposed* to the sublunary cosmos, or instead heaven was seen as a *part* of the cosmos. Again, some people saw heaven as extending down to the moon, others even called the "summits of creation" heaven.[275] In Proclus' view, Plato's aim in explicitly equating the names "the cosmos" and "the whole heaven" is to prevent people from thinking that he is conceptually sloppy when using both words in the sequel, or that he is incorrectly assuming an extensional identity of the whole universe with the "divine body" (as does Aristotle).[276]

Although the names will be used indifferently in the *Timaeus*, there is an intensional difference between "heaven" and "cosmos", in that the two names express different aspects of the universe, namely the ἐπιστροφή to and the πρόοδος from the intelligible respectively.[277] And this brings us to another reason for Proclus to separate the phrase quoted in **T III.26** off

[273] Proclus refers specifically to this principle only once, and he then calls it an axiom (I 272.10); when he mentions it as one of five starting points, he calls it either an axiom (236.10–27) or a hypothesis (274.21 ff., 237.9–16, cf. 348.13).

[274] See above, n. 137.

[275] E.g. Arist. *Cael*. II 1, 283b26, on uncreated heaven, and ibid. I 9 278b9 ff. on three different uses of οὐρανός (not in relation to κόσμος): (1) as the (body at the) circumference of the universe, the abode of the divine; (2) as the region of the heavenly bodies; (3) as everything included in the circumference, i.e. the world.

[276] *In Tim*. I 272.28–29. Aristotle presents three different meanings of οὐρανός (see previous note) and without warning switches between them. Proclus is thinking especially of Aristotle's reference to the aether as 'divine body' at II 3 286a11–12.

[277] *In Tim*. I 273.2 ff. Proclus adds a subtle extra semantic layer by setting "heaven" down

as a fifth axiom: that phrase contains a disjunction with three members, describing the three names of the universe. The last member of the disjunction, "ἢ καὶ … δέχοιτο", is read by Proclus as a reference to the third, unspoken and ineffable name of the universe, which is known only to the gods, and is a sign of its remaining in its efficient cause, the Demiurge. This reading is possible due to a textual variation: the potential optative we find in Plato's text, "or there may also be some other name which would suit the universe best, in the actual case that it is called just that (μάλιστ' ἄν δέχοιτο)", changes into an irreal optative in Proclus' reading, "or the name that, would it ever be called just that—but it won't—(μάλιστα δέχοιτο), would suit it best".[278] And with this reading the triad of emanation from, reversion to, and remaining in the Demiurge is complete.

By way of conclusion and summary of the whole section on the axioms, Proclus states:

> **T III.27** … through these things, as hypotheses, are delivered the kind to which the cosmos belongs (τό … εἶδος τὸ κοσμικόν, i.e. Becoming) and the demiurgic cause and the paradigm and the apparent and the concealed names of the universe …[279]

i. The axiom of the final cause within the *prooemium*

From here, however, Proclus moves on to explaining that through the three names (διὰ δὲ τῶν τριῶν sc. ὀνομάτων), representing the metaphysical triad of the universe,

> **T III.28** … you could obtain (ἔχοις ἄν) the final cause, through which [the universe] is full of the Good, remaining in the Good in an unspeakable manner, proceeding from it in a perfecting manner, and returning to it as to an object of desire.[280]

Proclus here replaces the Demiurge, as the source and end of the triadic process expressed in the names of the universe, with the Good. By this ingenious move, he introduces into the axioms of the prooemium

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as the common name, and "cosmos" as the more specifically Platonic one, that indicates the demiurgic activity.

[278] We cannot judge on the basis of the textual evidence whether the irreal optative is a cause or a consequence of the reading Proclus provides, but considering his interpretation and his general tendency to see the triad of emanation, reversion and remaining wherever he can, I find the latter more probable.

[279] *In Tim.* I 274.21–23.

[280] *In Tim.* I 274.25–31.

something that is not there: a mention of the final cause of the universe.[281] That Proclus wants the final cause to be mentioned among the starting points already shows in his introduction to the entire commentary, where he suggests in the οἰκονομία (division of the text) that the prooemium delivers all the true causes, i.e. efficient, paradigmatic *and* final.[282] If this were indeed the case, analogy with the efficient and the paradigmatic cause would require the presence of a—universal—teleological axiom such as 'every maker has an aim', or 'every becoming has an end', the application of which would in turn be found in the second half of the prooemium. Unfortunately for Proclus, neither such an axiom nor its application is anywhere to be found in Plato's text. Plato's actual treatment of the final cause follows immediately *after* the prooemium at *Tim*. 29d–e: "Well then, let us say for what reason (δι' ἥντινα αἰτίαν) he who assembled Becoming (γένεσις) and this universe assembled them." And this, one could say, is the application of an axiom that has remained implicit, to the universe as the subject matter of the exposition. Proclus does not mention such an axiom, but he does in a sense argue for its absence by pointing out its superfluity: just as in the case of the paradigmatic cause, so too with respect to the final cause is there no reason for Plato to justify the assumption that there is such a thing as a final cause: It is agreed on by everyone[283] that where there is νοῦς, there is τὸ οὗ ἕνεκα.[284] In other words, the existence of a final cause of Becoming is treated by Proclus as a common notion, and is supposed to be another implicit consequence of the conceptual analysis of Becoming.

Our commentator is clearly aware of this ambiguity concerning the final cause—its being both present and not present in the prooemium. The final cause is not actually one of the starting points in the prooemium, and it is thus not an explicit part of its results. This shows in the caution with which he introduces the final cause, first of all by not

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[281] Festugière explicitly denies that Proclus has this in mind (1966–1968: 8, 'Ceci ne corresponds plus à l'une des Causes …'). See however Lernould (2001: chapter 11, 205 ff.).

[282] When describing the parts of the dialogue in the οἰκονομία Proclus says (I 4.26–29): "after these (Atlantis myth and *Republic* 'summary') he provides the efficient cause of the all, and the exemplary and final cause: these having been established beforehand (ὧν προϋπαρχόντων) the universe is created as a whole and in parts." Both the context and the phrase ὧν προϋπαρχόντων suggest that the three causes are treated in the same section, i.e. the prooemium.

[283] *In Tim*. I 356.28–29 ὡς τούτου παρὰ πᾶσιν ὁμολογουμένου.

[284] This is shored up with a common argument for teleology from analogy, namely that an intelligent human being does everything "for the best", *In Tim*. I 356.16–357.2.

mentioning it directly as one of the hypotheses, but rather as a result of them (διὰ δὲ τῶν τριῶν), and secondly by his use of the potential optative ἔχοις ἄν in **T III.28**. It shows even more clearly on other occasions, which are discussed in the next section.

ii. The axiom of the final cause after the *prooemium*

Proclus presents several overviews of the starting points of the philosophy of nature of the *Timaeus*, without ever including any mention of the final cause. We have already seen examples of that above.[285] Likewise, already at *In Tim*. I 236.26–27 Proclus summarizes the fifth axiom as "let the universe be called heaven or cosmos". No sign here of the reference to the secret name, not to mention the final cause. Again, only a few pages after carefully introducing the final cause, Proclus signals the transition from starting points to demonstrations by describing the different aspects of the first half of the prooemium as corresponding to different dialectical methods.[286] He includes among those methods the analysis of Becoming into its causes, but subsequently mentions only the efficient and paradigmatic cause. The lemma on the imposition of the names of the universe is instead characterized as name-giving in a Pythagorean vein.[287] In other words, the final cause is not considered to be part of the analysis in the prooemium.

In the exegesis of the efficient cause, Proclus had already mentioned that the final cause would be displayed "later (ὕστερον), when it clearly emerges (ἀναφαινόμενον) from the λόγος and the demonstrations".[288] This remark is unclear in itself, as the "later" is not specified, and the λόγος could refer to a number of parts of the dialogue. Since it has to

[285] *In Tim*. I 264.27–265.3 (**T III.24**). *In Tim*. I 274.21–23 (**T III.27**).

[286] *In Tim*. I 276.10–19, see also III.3.

[287] Proclus refers to the Pythagorean ἄκουσμα that "number is the wisest of things, and after that he who gives names", *In Tim*. I 276.14 ff. Cf. Iamb. *VP* 18.82.14–15; Proclus *In Alc*. 259.13 ff., *In Crat*. XVI 5.27–6.2. In this ἄκουσμα, Proclus tells us, number stands for intellect, and namegiving for the discursive soul, that contains images and discursive essential λόγοι (εἰκόνας καὶ λόγους οὐσιώδεις διεξοδικούς). At *Cratylus* 436d2–7 the namegiver is compared to a geometer, but more importantly, the legislator of the *Cratylus* (389a) is identified with the Demiurge as the primary namegiver (*In Crat*. LI 19.22). By connecting Timaeus' namegiving to the Pythagorean ἄκουσμα, Proclus identifies Timaeus with the Demiurge. On the relation between Timaeus and the Demiurge see v.7.1. On ἀκούσματα in the τί μάλιστα format, and the question whether the second best is original or goes back only to the *Cratylus*, see Burkert (1972: 166 ff., esp. 169, n. 22).

[288] *In Tim*. I 263.21–23.

refer to a passage either in or after the demonstrations, the most likely candidate is the very first lemma of the κοσμοποιία, immediately after Socrates' comments on the prooemium (*Tim.* 29d7). In the context of this passage Proclus argues for the evident existence of a final cause of the universe (see above).[289] This much is clear, at least, that the final cause is again not considered part of the starting points, as it "emerges" from the demonstrations following them.

Finally, in his interpretation of *Tim.* 29b, where Plato vaguely points to the importance of the natural beginning (κατὰ φύσιν ἀρχή), Proclus interprets the notion of ἀρχή primarily in an ontological and a textual sense, to mean that the *true* beginning, i.e. the origin of the universe is the final cause, and the *right* beginning, i.e. the place to start unfolding the text about the κοσμοποιία, is with a discussion of the final cause.[290] The right place for the final cause, then, is immediately after the prooemium (*Tim.* 29d):[291]

> **T III.29** He was good (ἀγαθὸς ἦν), and no one who is good ever experiences any envy towards anyone.[292]

With that emphatic statement we have reached the summit of the philosopher's ascent to the causes of the universe, its final cause.[293] Proclus hastens to point out that one should carefully distinguish between the ultimate final cause, i.e. the Good, and the final cause as it exists in the demiurgic mind (*In Tim.* I 359.22 ff.). He does take the ἀγαθὸς ἦν, which actually expresses the demiurgic goodness, to contain a reference to its source, Goodness ἁπλῶς.[294] He does not, however, take Plato's account to ascend all the way to the Good *itself* as an unhypothetical principle.[295] This coheres with the fact that Proclus does not include the final cause into the results of the conceptual analysis he detects in the prooemium.

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[289] Festugière (1966–1968: vol. II, 104) suggests 46c7 ff., but this passage is no more than a criticism of those who regard secondary causes as real causes, and the description of a particular final cause, namely of eyesight.

[290] *In Tim.* I 337.10 ff.

[291] Cf. I 285.21 ff.: of the different ἀρχαί of the world (Proclus mentions temporal, efficient, final, material, formal), the "some ἀρχή" of *Tim.* 27b6 (ἢ γέγονεν ἀπ' ἀρχῆς τινος ἀρξάμενος) is the final ἀρχή, the most souvereign (κυριωτάτην) as Plato calls it (*Tim.* 29e4).

[292] *Tim.* 29e1.

[293] *In Tim.* I 357.11–12: καὶ μέχρι τούτου τοῖς φιλοθεάμοσιν ἡ ἄνοδος. Cf. Plato *Rep.* V 475e4, Τοὺς τῆς ἀληθείας … φιλοθεάμονας, i.e. philosophers.

[294] *In Tim.* I 360.15–26.

[295] See below, III.3.

As Steel points out, in the *Timaeus* the notion of causality is fairly narrow, because the main aim of this dialogue is to find the Demiurge as the cause of the sensible world. As a result of the vast influence of the *Timaeus* on Neoplatonic philosophy, "the efficient cause (if understood in the strong sense of 'productive' or 'creative', not just moving) has for the Neoplatonists primacy over the other types of causality. For matter, form and instrument are not really causes, but subservient to the causes, and the paradigmatic and the final cause are not directly causes of the effects, but are so only through the mediation of the producer-maker."[296] This primacy of the efficient cause can be observed everywhere in Proclus' reading of the prooemium, in its being an ascent primarily to the Demiurge, the paradigm in him, and his goodness as the final cause of creation. The goodness of the Demiurge bestows goodness on the universe, makes it good.[297] Goodness itself is portrayed not so much as a final cause in the sense of that to which the universe strives, its end, but rather as its ultimate beginning and the source of the goodness of the universe.

iii. Intermediate conclusion on the fifth axiom

Both the fifth axiom and the final cause are eccentric elements of the prooemium in Proclus' reading. The fifth axiom is the only starting point that, although it is called an axiom and a hypothesis, neither introduces a general rule expressed in a pair of opposite propositions, which is consequently applied to the subject matter, nor is a proposition that will function as a premise in the coming demonstrations. Thus its being called an axiom and a hypothesis does not match the sense in which the other starting points are axioms and hypotheses. The fifth starting point does, however, present a particular rule to be applied to the *text*, namely that the universe can also be called "heaven" and "cosmos". The function of the fifth starting point in the reasoning of the prooemium, then, is that it constitutes the transition from the general rules to their application, i.e. the demonstrations, through the introduction of the subject matter.

The final cause, on the other hand, is never credited with an axiom, but occurs only in the applied form, i.e. the Good as the final cause of the universe. With its indirect and cautious introduction in the fifth axiom, the final cause is something of an outsider. It is not part of the

[296] Steel (2003: 182).
[297] *In Tim*. I 359 ff. (on *Tim*. 29e1).

argumentative structure of the prooemium in which the starting points of philosophy of nature are set out, and the reader's knowledge of it is no more than a possible result (cf. the potential optative ἔχοις ἄν, I 274.25) of the fifth starting point, the imposition of the names of the universe.

Taking stock, we can now formulate the intermediate conclusion that for our commentator the first half of the prooemium of the *Timaeus* offers an analysis of the universe into its transcendent causes, but of those causes only the efficient and the paradigmatic, and especially the former. The final cause is implicated for those who are in the know, but is not part of the analysis.

III.3. *After the starting points—Proclus takes stock*

By way of transition from the axioms to their application, or to what he calls "the demonstrations", Proclus summarizes the prooemium with special attention for the methodology used therein. This time he does not have recourse to geometry, however, but more generally to the dialectical methods, i.e. those methods, or powers (δυνάμεις) as he also calls them, that belong primarily to the sphere of the science of dialectic, and are used derivatively in all other sciences: division, definition, analysis, and synthesis/demonstration:[298]

> **T III.30** [Plato] has used all the procedures of dialectic in [dealing with] the hypotheses. He distinguished (διεστείλατο) Being from that which has come into being and presented the nature of each of them by means of a definition (ὁριστικῶς ἀποδέδωκε), as well as by analysis (ἀναλυτικῶς): for (γάρ) he reverted (ἀνέδραμε) from the things that have come into being to their causes, both efficient and paradigmatic. Furthermore with regard to both ineffable and spoken names he revealed his thought as truly in accordance with the doctrine of Pythagoreans, which states that 'number is the wisest of all, but second to that is the one who places names on things.' So [now] he turns to the demonstrations (ἀποδείξεις) required for the problems raised by the cosmos.[299]

This summary is somewhat untidily formulated, as not all methods are used in the hypotheses: the method of demonstration does not come into play until after the hypotheses, in, obviously, the demonstrations. But that need not bother us. Two issues are interesting in this passage. First of

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[298] *In Parm.* 1003.16 ff. (21 ff. Cousin). See Beierwaltes (1979: 245, 248 ff.), Lernould (1987: 515–516, 523).

[299] *In Tim.* I 276.10–19, trans. Runia, slightly modified.

all, the addition of the method of analysis as describing the delivery of the causes of the universe. And secondly, the emphasis on the dialectical methods in general rather than on those of geometry.

(1) Proclus gives very little insight, both in this passage and in general, into what he takes the method of analysis to consist in. It is introduced here as "reverting" (ἀναδρομεῖν) to the causes of the universe, as a way of showing *what* the universe is, i.e. what it is essentially—something the definitions of Being and Becoming could never reveal, as they merely describe our cognitive access to both (see III.2.3)—and hence a reverting to the universe as Becoming.[300] What the "reverting" amounts to, how it is accomplished, we are not told.

Proclus' general notion of the "Epimetheus of dialectic",[301] the method of analysis (accepting some oversimplification in speaking of one method), can be somewhat uninformatively summarized as a notion of an "upward" method—as opposed to downward synthesis/demonstration and division, in the sense that it proceeds towards principles in a wide sense, from the complex to the simple, from the particular to the universal, from the caused to its causes.[302]

The analysis in the context of the prooemium is a reversion to causes,[303] and hence one would expect it also to be the reverse of demon-

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[300] It is not necessary to read ἀναλυτικῶς in **T III.30** as a clause in itself, *pace* Festugière (1966–1968: vol. II), Lernould (2001: 229). Quite the contrary, it makes more sense to take it as a second adverb with ἀποδέδωκε τί ἐστιν. This reading requires no assumption of an implicit verb, and explains why Proclus does not hesitate to say that the definitions give the 'what it is', despite the fact that this is exactly what was denied of the definitions earlier (see III.2.3). It is very interesting that Proclus here distinguishes different manners of revealing the 'what it is'. This issue deserves more attention than mere mention in a footnote, e.g. a comparison with Aristotle's different ways of showing τὸ τί ἐστι (*APo* II, esp. 9 93b21–28). Now is not the time for that, however. For a discussion of the issue in Aristotle see Byrne (1997: ch. 6, 128 ff.).

[301] Cf. Damasc. *In Phil.* 57 and 59, and Ritacco de Gayoso (1998).

[302] For the method of analysis in Proclus see *In Parm.* 1003.12–22 (16–29 Cousin), 980.13–982.24 (980.17–982.30 Cousin), *In Eucl.* 18.17 ff., *Theol.Plat.* I 9 40.6–8 (on analysis as ἐπιστροφή), *In Eucl.* 69.17–19 (idem, and "from the sought to the principles"). Discussions of Proclean analysis are found in Hintikka and Remes (1974), focusing on geometrical analysis; Beierwaltes (1979: esp. 250–251, n. 20)—note that Beierwaltes' choice of passages shows that he almost identifies analysis and recollection; Hartmann (1909: 46 ff.); Bechtle (2000), whose explanation of the relation of the four dialectical methods to one another in Iamblichus, dividing them according to the dichotomies up-down and static-dynamic, is remarkably similar to Hartmann's on Proclus; Lloyd, A.C. (1990: 8–11); Gritti (2008: esp. 189–254). Cf. the summary of Alc. *Didask.* 5, and Dillon's commentary (1993).

[303] Cf. *In Parm.* 982.20–21 (24–25 Cousin): ὡς ἀπὸ τῶν αἰτιατῶν ἀναλύουσα εἰς τὰ αἴτια.

stration, i.e. an analysis in which the logically prior is the ontologically posterior. In fact, however, the ascent to the causes in the prooemium is no more than the result of a conceptual analysis of the notion of Becoming, a breaking down of the concept of Becoming into its essential (causal) components. This presentation of the concept of Becoming is capable of awakening in the interlocutors, and us readers, the knowledge of the causes of Becoming.[304]

(2) This brings us to the second issue mentioned above: the introduction of dialectic. Opposite to what has been suggested by others,[305] the reference to the dialectical methods is no indication that Proclus sees dialectic, rather than geometry, as the paradigmatic science for the prooemium—that is, no more than to the extent that dialectic is the paradigm for all sciences. Proclus accepts the distinction made in the *Republic* (VI 510) between the two kinds of science, from the point of view of their use of hypotheses. As mentioned earlier, geometry starts from hypotheses and from there moves 'downward' to their conclusions, without bothering with discussing the truth of the hypotheses.[306] The starting points are merely posited—as are the starting points in the prooemium of the *Timaeus*. It is the dialectician, instead, who starts from hypotheses and moves upwards to principles (*Rep*. VII 533c7 ff.).[307] The fact that Proclus speaks of an analysis of Becoming consisting in a delivery of its causes, seems to point to a dialectical and theological, rather than a geometrical treatment of starting points in the sense just described. Thus we would have the following two structures of the prooemium:

	Geometry	Dialectic
Posited starting points	1–5	1 and 2 (the definitions)
Analysis	–	i) 3–5 (the causes) ii) the demonstrations (application to universe)
Demonstration	The demonstrations	After the prooemium, starting from the final cause

[304] Cf. *In Tim*. I 242.26.
[305] Lernould (2001), see chapter 1.
[306] See above III.2.4.ii.
[307] On the question of the direction of Plato's hypothetical method, see Robinson, R. (1941: 136–137) and Rosenmeyer (1971).

On the basis of what we know about the details of the analysis, we can conclude that neither is in itself a correct reading of Proclus' understanding of the prooemium: the "geometrical" reading misses the aspect of analysis, whereas the "dialectical" reading does not fit the terminology applied by Proclus to the elements of the prooemium.

The solution, very appropriately, lies in the middle. Within the scope of the entire prooemium, the method applied remains comparable to that of geometry, presenting demonstrations on the basis of hypotheses/axioms. And these demonstrations have all five hypotheses/axioms as their starting points in the given order,[308] but do not start from the endpoint of the analysis (as would be the case in a methodological "circle" consisting of analysis and its reverse, synthesis).[309] That leaves the element of analysis within the very starting points to be explained. Although Proclus does adopt Plato's two opposed directions of geometry (downward) and dialectic (upward), his overall view of the sciences is more sophisticated: in every science we also find analysis, albeit not reaching an unhypothetical principle. The dialectical methods are applied in all sciences, with degrees of precision appropriate to the subject matter of the science in question.[310] Moreover, Proclus has a double approach to the method of φυσιολογία, a superficial reading and an in-depth reading[311]—or a student's reading and a teacher's reading. Methodologically following geometry, the philosopher of nature posits starting points and demonstrates facts concerning the subject matter of the science from them. The starting points may have been reached and chosen as the result of a prior dialectical exercise,[312] but in the context of the prooemium they are merely posited (cf. ἀποδέδωκε in **T III.30**). On the other hand, the teacher and advanced philosophers are capable of recognizing, *within* the very starting points, a short analysis comparable to the analysis in the *Parmenides* and in the first four propositions of the *Elements of Theology*.[313] There is an important difference, however, between the dialectic of the latter two and the "dialectic" of the *Timaeus*: the analysis in the *Timaeus* does not lead all the way up to the unhypothetical One. Instead, as the result

[308] Although the fifth starting point does not actually function as such in the demonstrations.

[309] For the circular progress discernible in Proclus' reading of both halves of the prooemium see Lernould (2001). See also I.2.

[310] Cf. Lernould (1987).

[311] Lernould (2001: 323).

[312] As suggested by Runia (1997: 113).

[313] See O'Meara (2000: 282 ff.).

of a conceptual analysis of Becoming, a "conceptual introspection",[314] we ascend to the Demiurge, and to the paradigmatic and final causes as they are present in the Demiurge.[315] Indirectly, we also ascend to the paradigmatic and final causes themselves, i.e. to the Forms and the Good—but not to the One as unhypothetical principle of thought.[316]

III.3.1. *The first demonstration: philosophy of nature as science*

After the starting points, according to Proclus, the next step is to present what follows them.[317] In summary, the *Timaeus* text (*Tim*. 28b4–29b1) contains the application of what we called the first four starting points to the subject matter introduced in the fifth: the universe belongs to the realm of Becoming, therefore there is a Father/Demiurge of the universe (who is hard to find) and, in the light of the goodness of this Demiurge and the beauty of the universe, an eternal paradigm.[318] Proclus states that the starting points (definitions/hypotheses/axioms) form the basis for the consequent demonstrations of the nature and all the causes of the universe.[319] An efficient, a paradigmatic, a final, a material, a formal *and* an instrumental cause are thus demonstrated to belong to the universe.[320] That the universe has all these causes is an immediate consequence of its being generated: if the universe is Becoming, it is a form participated by matter, and hence has a formal cause, a material cause, and a proximate cause of its motion, i.e. an instrumental cause. In short, the Demiurge (the efficient cause) imposes the form of Becoming (this is what Proclus calls the εἶδος), imaged after eternal Being (the paradigmatic cause) upon the receptacle (material cause) using Nature as a tool (instrumental cause, see ch. II), in order that everything share in (his) goodness (final cause). In the following, we will leave the causes themselves aside and concentrate instead on matters related to Proclus' view on the method of demonstration.

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[314] O'Meara (2000: 290).

[315] Cf. *In Remp*. I 164.13–21. On the reversion within the *Timaeus* see chapter V.

[316] *Theol.Plat*. II 12 66.1–9: the One is the ultimate unhypothetical principle of thought, being the most knowable and most simple. *In Remp*. I 283.11–12.

[317] *In Tim*. I 274.30–32; 275.3–6.

[318] Exegesis at *In Tim*. I 275.1–334.27.

[319] *In Tim*. I 236.8 ff. The fact that they follow from the necessarily true hypotheses, ensure that the demonstrations are irrefutable and certain: *In Tim*. I 337.3–7, 337.15–17.

[320] *In Tim*. I 237.9–16, 263.19–264.3. Cf. 348.13 ff.; 355.24–25. In neither of these passages does Proclus distinguish between the demonstration *that* the universe has all these causes and the demonstration *of* these causes, i.e. of *what* they are.

In his exegesis of "what follows the starting points", Proclus returns to the comparison of Plato's method to that of a geometer, but far less frequently than in the first half of the prooemium. In addition, we find that Proclus gradually introduces a shift of focus: whereas earlier Timaeus' exposition took its starting point from "what is known to us", now Proclus signals an order of exposition in the dialogue that parallels the order of reality—albeit in the opposite direction. This change of focus, we will see, prepares us for Proclus' interpretation of the "likely story" (*Tim*. 29b3–d3).[321]

When Proclus does appeal to geometry, he has special attention for the structure of reasoning in the presentation of the consequences of the starting points, and uses a number of technical terms and logico-geometrical methods to emphasize that structure. The emphasis is not just a rhetorical manoeuvre to suggest a scientific character of philosophy of nature. As we will see, in the exegesis of the first demonstration a geometrical method, namely conversion, plays a crucial role. Proclus appeals to conversion there in order to solve an epistemological paradox that lies at the heart of the *Timaeus*, and thereby obtain a scientific status for philosophy of nature.

i. The paradox of the Timaeus

It is a paradox of the *Timaeus* that certain far reaching consequences which the definition of Becoming should have had for the whole account on the universe apparently go unnoticed. The division of the two genera Being and Becoming is made in order to answer the first and most fundamental question of φυσιολογία, namely what is the εἶδος, the character of the universe. In order to facilitate an answer to that question, Being and Becoming are consequently 'defined' using a description of the appropriate modes of cognitive access: summarily speaking, rational and empirical respectively. Subsequently, in the first demonstration (see **T III.31** below) the subject matter of the dialogue is determined as belonging to one of the genera, the spatio-temporal Becoming. At this point in the dialogue, an immediate application of its content to itself would have implied the following conclusion: that the cognitive access, and therefore the 'scientific' method appropriate to the universe is that of a combination of perception and opinion, rather than science. To a

[321] In this chapter, we will merely touch upon the change of focus. Its role in Proclus' exegesis of the likely story is treated in further detail in chapter v.

certain extent this is indeed what happens, since the allocation of the universe to one of the genera is based on sensory data:

> **T III.31** It has come to be. For it is visible and tangible and it has a body—and all such things are perceptible. And, as we have seen, perceptible things, which are apprehended by opinion with the use of sense perception, are things that come to be, things that are generated.[322]

This point is not developed further, however, with regard to all of φυσιολογία. That is, the conclusion that Timaeus' account will not be more than a representation of opinions or judgments based on sense perception is not drawn. The intrinsic relative truth[323] of the text that according to Timaeus is due to the relation between the text and its subject matter is brought up as a result, *not* of the universe's *epistemic* accessibility, but of its *ontological* iconic status, i.e. as another result of its having become, *plus* the ensuing necessity of a paradigmatic cause:[324] the universe has become, therefore it has a paradigm, therefore it is itself an image and known only as image. This does not mean that epistemological considerations are not involved in Plato's likely story, as they clearly are (*Tim.* 29c3 ff.), but that the primary and direct cause of the likeliness of the account is the *ontological* status of its subject matter.

Plato seems not to be aware of the fact that already as a consequence of the definition of Becoming plus the fact that the universe is shown to belong to Becoming he should have concluded to the "opinable" status of the universe, but, as we will see, his commentator Proclus is.[325] The question therefore arises how in that case Proclus, who interprets the *Timaeus* as a scientific treatise and φυσιολογία as an ἐπιστήμη,[326] reconciles that scientific status with the fact that all Becoming (and therefore the cosmos as belonging to that realm) is said to be graspable through opinion (δόξα) with perception (αἴσθησις)—and that hence philosophy of nature is apparently no ἐπιστήμη?

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[322] *Tim.* 28b7–c2.

[323] See v.5.2.i, v.6.

[324] See v.4.1 on the topic of the iconic status of the universe.

[325] I have not found the paradox in today's commentators. Cornford (1937: 24, 29), e.g., clearly misses it, as he takes the remarks on the "likely story" to be a repetition of the conclusion that the visible world is an object of perception and of judgments based on perception. Johansen (2004: 161–162), who rightly refutes Cornford's reading, nonetheless does not signal the paradox (he does come very close when he points out that "[Timaeus] is not just saying that the physical world has come to be, [but] that it has come to be as an εἰκών of an intelligible reality"). Cf. Lloyd, G.E.R. (1991b: 346).

[326] See chapter I. See also chapter V for Proclus' explaining of the likely story in such a way that it does not detract from the scientific status of Plato's cosmology.

Proclus obtains this reconciliation through an elegant analysis of what he calls the first demonstration. That analysis, which contains two at first sight rather puzzling remarks, makes a highly ingenious use of the concept of geometrical conversion, of the Neoplatonic concept of δόξα, and of the fundamental continuity that characterizes Proclean reality and knowledge.

ii. Geometrical conversion of the definition of Becoming

The demonstrations take their start with the following lemma of the *Timaeus*:

> **T III.32** γέγονεν· ὁρατὸς γὰρ ἁπτός τέ ἐστιν καὶ σῶμα ἔχων, πάντα δὲ τὰ τοιαῦτα αἰσθητά, τὰ δ' αἰσθητά, δόξῃ περιληπτὰ μετ' αἰσθήσεως, γιγνόμενα καὶ γεννητὰ ἐφάνη.[327]

With the word γέγονεν Timaeus "reverts to νοῦς" and anticipates in an intuitive grasp the conclusion of what he will consequently elaborate in discursive reasoned exposition.[328] This unfolding of what is implicitly present in the conclusion is necessary because, as opposed to Timaeus who already has an intuitive grasp of the entire cosmos, his interlocutors—like ourselves—are in a less advanced epistemological state, and need assistance in their ascent to knowledge. This is the first instance of the gradual shift of the order of presentation, which leads up to Proclus' reading of the 'likely story': the anticipation of the conclusion, and the consequent elaboration of the reasoning that leads up to that conclusion, follow the structure of reality rather than starting from "what is known to us".[329]

In the discursive and demonstrative phase of establishing that the world is generated,[330] we find a last comparison of Plato's method with the methods of the geometer.[331] In order to conclude that the universe has become (is Becoming), the speaker Timaeus applies, according to Proclus, the geometrical technique of conversion. Whereas in the hypotheses

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[327] *Tim.* 28b7–c2, quoted in translation as **T III.31**.

[328] *In Tim.* I 282.27–283.9. On anticipating the conclusion and its analogue in creation, see v.7.2.

[329] Note that the change of direction is not complete, but only occurs with respect to each separate demonstration. The three demonstrations together follow the same order as the starting points.

[330] *In Tim.* I 283.9 ff.

[331] The inverted analogy at *Tim.* 29c3 is called geometrical as well, but the reference there falls outside the scope of the whole comparison. See v.5.2.

the order of the definition was "Becoming is what is grasped through perception and opinion", now Timaeus converts the definition and rephrases it as "the perceptible which is grasped through perception and opinion, is Becoming". This, supplemented with the premise that the universe is visible and tangible, allows him to conclude that the universe has become (is Becoming):

> T III.33 So it is shown demonstratively (ἀποδεικτικῶς … δεδειγμένος) that the cosmos has become from the definition (ἐκ τοῦ ὅρου), according to the conversion of the definition (κατὰ τὴν ἐπιστροφὴν τοῦ ὅρου): for (ἐπεί) geometers also use such proofs (δείξεσι).[332]

There is something odd about the expression in the manuscript, κατὰ τὴν ἐπιστροφὴν τοῦ ὅρου. As Festugière points out, Proclus does not discuss ἐπιστροφή in the *In Eucl.*[333] What Proclus has in mind in the quoted passage is the so-called geometrical conversion of theorems, ἀντιστροφή.[334] The phrase he uses echoes an expression from syllogistic, namely ἡ ἀντιστροφὴ ἡ κατὰ τοὺς ὅρους, or conversion by switching terms of a proposition, which was a topic of discussion in the commentaries on the *Organon*.[335] That the term used in the *In Tim*. is ἐπιστροφή, not ἀντιστροφή, is not a serious objection. This is the only place in Proclus or elsewhere where we find the expression ἐπιστροφὴ τοῦ ὅρου, and when Proclus returns to the issue of the converted definition of Becoming later in the *In Tim*. he does use the verb ἀντιστρέφειν.[336] I therefore propose to emend the very common ἐπιστροφή at I 283 to the both more rare and more apposite ἀντιστροφή.

Despite the echo in the formulation, Proclus does not have in mind syllogistic conversion, but geometrical conversion of theorems as discussed in the commentary on Euclid's *Elements*. That is, the creation of new theorems by changing the order of clauses of existing theorems. Strict and primary (προηγουμένως καὶ κυρίως) conversion is the creation of a new

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[332] *In Tim*. I 283.15–18.

[333] Festugière (1966–1968: vol. II, 130 n. 6).

[334] *In Eucl*. 251.23–254.22, cf. Heath (1956 [1926]: 256–257).

[335] Alex. *In APr*. 159.14–15, 173.23, Themist. *In APr*. 23.31, Anon. *In Cat*. 32.27. On this kind of conversion (also called ἀντιστροφὴ τῶν ὅρων) see Lee (1984: ch. V, esp. 80), who mistakenly describes its meaning in Alexander as exchanging predicate and subject while retaining quality *and quantity*. Lee gives no references, but in his description of *conversio simplex* Alexander speaks only of retaining *quality* (*In APr*. 29.24–29). On syllogistic conversion see Arist. *APr*. I 2.

[336] *In Tim*. II 4.4 ff., ad *Tim*. 31b. Cf. *In Tim*. I 292.19–21: ἀλλὰ μὴν καὶ τὴν ἀπόδειξιν θαυμάζειν ἄξιον, ὅπως ἐπιστημονικῶς ἀπὸ τοῦ ὅρου προελήλυθε· διὸ καὶ ἀντέστρεψε τὴν τάξιν.

theorem B by exchanging the so-called hypothesis (the if-clause) of a theorem A with its conclusion.[337] For example, "if a triangle is an isosceles, it has its base angles equal" can be converted to "if a triangle has two angles equal (it also has the subtending sides equal) and is isosceles".[338] By analogy, the definition of Becoming, with the definiendum Becoming in the hypothesis and the definiens "perceptible and opinable" in the conclusion, can be converted to "Everything that is apprehended by δόξα with the use of sense perception is Becoming and generated" (*Tim.* 27c1–2).

The reference to geometrical practice above in **T III.33** is intended as a justification of the use of conversion, as is suggested by the conjunction ἐπεί. This justification does not seem to be the most appropriate, perhaps, as geometrical conversion pertains to theorems, not definitions. Instead, one would rather expect Stoic or Aristotelian conversion. Neither of these, however, fits Proclus' reading of the first demonstration. Stoic conversion of definitions, also called ἀντιστροφή,[339] is a topic in logical theory of the Aristotelian commentators.[340] According to Antipater a definition should be an identity statement, and hence convertible. Proclus is not too forthcoming in acknowledging Stoic influences, but we can safely assume that the requirement of convertibility of definitions is implicit in Proclus' discussion of the definition of Becoming, as an identity statement is also what Proclus is here assuming.

A reason for preferring geometrical conversion to Stoic conversion, in addition of course to the fact that the former fits into the overall project of Proclus' interpretation of the prooemium, is that the context of the definition of Becoming requires an operation (i.e. converting), not a relation (i.e. convertibility). Stoic conversion of definitions concerns equivalence relations between definiendum and definiens, but not the actual operation of swapping them in reasoning.[341] And the latter is what Timaeus does in the prooemium.

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[337] *In Eucl.* 252.5–10.

[338] Eucl. *El.* props. I 5 and I 6, which are actually both universal propositions, not conditionals. On the equivalence of a conditional and a universal premise, see above III.2.9. The first (I 5) is called the leading (προηγούμενον) theorem, because the genus is in the hypothesis and the property in the conclusion, the second (I 6), with the inverse order, is called the converse theorem (ἀντίστροφον), *In Eucl.* 254.6–20.

[339] *SVF* II 226.

[340] Starting with Alex. Aphr. (e.g. *In Met.* 531, *In Top.* 241 etc.). Porph. *In Cat.* 63.20–24. Aristotle himself was aware of the convertibility of definitions as well, see below n. 342.

[341] On the intransitive and transitive use of ἀντιστρέφειν by the Commentators see also Lee (1984: 89).

We do find conversion as a tool of inference in Aristotelian syllogistics, but this kind of conversion is even less adequate for Proclus' purposes. Plato in the prooemium assumes equivalence between definiens and definiendum, and converts a universal affirmative proposition into a universal affirmative proposition. In logical conversion, however, the converse is never a universal affirmative proposition. Therefore Proclus needs the strong conversion of geometry.[342]

Proclus understood very well that the success of Plato's reasoning in the prooemium depends to a large extent on the convertibility of some of the starting points: in the case at hand, if the definition were not an identity statement, the conversion would be invalid. He may seem to be vulnerable, however, to the accusation that he wants to have his cake and eat it: he wants to maintain that there are also things that are Becoming, but not perceptible (Soul, Time, Nature, and immanent forms).[343] This is in itself of no consequence to the conversion, but it would disqualify the definition as such since it is no longer an identity statement. Proclus has an answer to this objection, however: first of all, the expression "Becoming" in the definition refers to what is becoming in the strict sense,[344] i.e. composite, non self-sustaining, and subject to everlasting generation.[345] Secondly, all incorporeal aspects of the universe which are not themselves perceptible are indirectly included because any composite consisting of the perceptible and the imperceptible is as a whole perceptible.[346]

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[342] For ἀντιστροφή in Aristotle in a sense closer to the geometrical conversion, see *GC* II 11 337b23 and *APo* II 12 95b38–96a7, on necessary or natural reciprocation, discussed in Barnes (1976). Note that Philoponus, when explaining the conversion of syllogisms, gives an example which is invalid, unless one specifies that one of the premises is in fact an identity statement (*In APr.* 40.15 ff.). Lee (1984: 82–83). The passage in Aristotle is *APo* I 12 78a6–13, where he says that in mathematics things convert more often because mathematicians assume nothing accidental but only definitions, plays a part in an ongoing debate on the extent to which geometrical analysis presupposes convertibility of theorems, see Byrne (1997: 5–9). It is interesting to note in this context that Proclus does not claim that conversion is *always* possible in geometry, as there is such a thing as fallacious conversion, where equivalence is wrongly presupposed (*In Eucl.* 253.16 ff.). Correct conversion is possible if a property inheres in something primarily and per se (*In Eucl.* 254.2–3).

[343] *In Tim.* I 256.30 ff. and II 4.16 ff.

[344] As defined at *In Tim.* I 280–282.

[345] *In Tim.* II 4.17–20.

[346] *In Tim.* II 4.20–5.17.

The "problem of convertibility" in the *Timaeus* has been noted by recent scholarship, and has led to the accusation that the reasoning of the prooemium is fallacious.[347]

Strictly speaking the reader of the *Timaeus* has no guarantee that the starting points are indeed convertible. Since in Proclus' reading, however, the Pythagorean Timaeus presents us a didactic exposition based on his intuitive knowledge[348]—i.e. a well-informed speaker whose specific aim is teaching, not e.g. persuading his audience—Proclus has strong external indications that the fact that the definition *is* converted means that it *can* be converted. Thus Proclus' solution of the problem of convertibility, drawing a parallel with geometry in which extensional identity between things and their primary and per se properties is commonly used as a tool of inference, and thereby invoking Timaeus' Pythagorean background, is both to the point and effective.

iii. The role of δόξα

Plato's use of conversion is praised highly by Proclus, who remarks how "admirably" (θαυμάζειν ἄξιον) Plato proceeds in a scientific manner (ἐπιστημονικῶς) from the definition: through the conversion, Plato gives the definition the function of a middle term, "as one should do in demonstrations". Now the way Proclus illustrates this is the following:

> T III.34 For in the hypotheses he defined the generated as δοξαστόν,[349] but for the demonstration of the being generated [of the world] he assumed the converse (i.e. "the δοξαστόν is generated"), so that he made a middle term of the definiens.[350]

The definiens of the original definition, δοξαστόν, is a middle term in the syllogism "all that is δοξαστόν is generated; the world is δοξαστόν; therefore the world is generated".[351] Thus from a purely formal point of

[347] Ebert (1991: 46–47, 49). See also below n. 408. The argument offered by Runia (2000: 107–109) in Timaeus' defence, reading the definition the other way round (everything that is sensible, is Becoming), does not solve the problem, to the extent that it either presupposes the convertibility or disqualifies the definition (since there might be Becoming other than the sensible).

[348] More on this topic in chapter v.

[349] For the time being I will leave the term δοξαστόν untranslated. The reason for this is that there is an important difference between Plato's and Proclus' notions of δόξα that is relevant to Proclus' solution of the paradox. This difference will become clear later.

[350] *In Tim.* I 292.22–24.

[351] Cf. *In Tim.* I 296.20–21.

view one could say that the term "δοξαστόν" enables the drawing of the conclusion. But Proclus does not credit only the formal role of the definiens in arriving at the knowledge that the world is generated. If that had been the case, his exuberant praise of the conversion would have been exaggerated, but more importantly, he should have included also the second term of the definiens, "αἰσθητόν", in his analysis of the converted definition. The fact that perception is not mentioned in this analysis is not due to coincidence or sloppiness, but is instead a deliberate choice. Proclus continues as follows:

> T III.35 Because δόξα possesses the rational principles (λόγοι) of things that are generated, it obtains the position of the cause with respect to them (τὴν αἰτίας ἀποφέρεται πρὸς αὐτὰ τάξιν). That is why, I think, Plato is not satisfied with "being perceptible" in order to designate the generated, but adds that it is also δοξαστόν, since perception knows the *activities* of the objects of perception because it is affected by them, but δόξα also recognizes their *essences*, because it has obtained their λόγοι beforehand (προείληφε); so in order to reveal the proper generated essence of the objects of sense perception, he built the argument from the [term] δοξαστόν.[352]

In this important passage especially the awkward phrase "it obtains the position of the cause with respect to them" is puzzling. Festugière (1966–1968: vol. II, 143, n. 3) therefore takes the first sentence of this passage to be a repetition of the earlier point, that the δοξαστόν becomes the middle term, and in that sense the cause, of the demonstration that the universe is generated, and he sees δόξα here as a slip for δοξαστόν.[353] But there is more to it than that. What we have here is no mere repetition concerning the formal role of the term δοξαστόν, but a statement regarding the epistemological role of the faculty of δόξα in the process of obtaining scientific knowledge of the world of sense perception. Proclus is drawing a parallel between the hierarchy of forms of cognition and the ontological hierarchy. When Proclus says that "δόξα … obtains the position of the cause with respect to [the things that are generated]", he means that in the cognitive hierarchy δόξα is the faculty that is on the level parallel to that which the proximate cause of the things that are generated, i.e. φύσις, has in the ontological hierarchy:[354]

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[352] *In Tim.* I 292.26–293.5.

[353] On middle term as cause in a syllogism, see Arist. *APo* I 2 71b22. See also Leunissen (2007).

[354] Cf. *El.Th.* prop. 195.10–11, κατ' αἰτίαν. On the position of φύσις in the ontological hierarchy see chapter II.

> **T III.36** Whence, then, do rational souls produce these general notions (τὰ καθόλου) and make the progression from perceptible objects to the formation of opinions (ἀνατρέχουσιν ἀπὸ τῶν αἰσθητῶν ἐπὶ τὸ δοξαστόν), if they do not possess in their essence the reason-principles of things? For even as Nature posesses the power of creation of things of sense by having reason-principles inside, and thus moulds and holds together the objects of sense—by the power of the inner eye the outer eye, and the finger likewise and all other parts of the body—so also that which possesses the power of knowing them on the general level (κοινῶς),[355] by possessing beforehand the appropriate reason-principles contemplates their common properties.[356]

Just as φύσις possesses creative rational principles of the objects of sense that it generates, so too does the faculty of δόξα have a prior conception (προειληφέναι) of the principles of those generated objects, but in a cognitive sense.[357] From **T III.35** and **T III.36** the reader may already divine the direction Proclus' solution to the paradox of φυσιολογία will take: his notion of δόξα is quite some distance removed from Plato's at times negative view of 'opinion'.

In order to properly assess the role assigned to δοξαστόν "in the position of the cause", let us take a closer look at that notion of δόξα. Quite a lot of the information we have concerning Proclus' notion of δόξα is to be found in the exegesis of the definition of Becoming, *In Tim*. I 248.7 ff.[358] As a preliminary point, it is clear from the outset of Proclus' discussion, which starts with the remark that δόξα "is the limit of all rational life" that his δόξα is a particular faculty, rather than the result of an act of that faculty (a belief or judgment).[359]

In the Platonic use the word δόξα traditionally has a negative ring, associated as it is with error, relativity, and the realm of generation, not being. The most notable exception, of course, is the *Theaetetus*, in which

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[355] Cf. Plato *Tht*. 185–187.

[356] *In Parm*. 893.7–14 (7–17 Cousin), trans. Morrow and Dillon. On Nature moulding and holding together the objects of sense see II.5.

[357] Lautner (2002: 262–263). Cf. *In Tim*. II 298.29–31. This view of δόξα is closely connected to Proclus' general view of the soul, of course, which is in turn indebted to *Tim*. 36b–d (*In Tim*. II 237.8–279.18). Note that δόξα's λόγοι are not derived from sense data (e.g. by abstraction), as is clear from προειληφέναι. Cf. *In Alc*. 250.5–18. On this topic see Helmig (forthcoming).

[358] See Lautner (2002) for an analysis of that passage. For a more recent discussion of δόξα in Proclus and a refutation of part of Lautners analysis see Helmig (2007: 231–253).

[359] Proclus does speak of ὀρθὴ δόξα (*In Tim*. I 248.20), which does not, however, refer to the *result* of a judgment, as he immediately ascribes an *act* of cognition to that ὀρθὴ δόξα: γινώσκει (248.21).

we find a more optimistic notion of δόξα. Proclus' concept of δόξα follows that optimistic line and owes a lot to the role δόξα plays in the definition of knowledge as justified true belief given in the *Theaetetus*.[360] Moreover, Proclus focuses on the role of δόξα in acquiring access to knowledge of the Forms.[361] For a Neoplatonist, as for Plato, all knowledge is ultimately innate, based on the soul's essential composition by the Demiurge from the Same and the Other.[362] The knowledge resulting from this composition has the shape of λόγοι, rational principles, in the soul, which are dormant until they are awoken by some stimulus. In first instance, that stimulus comes from outside the soul, and reminiscence is triggered by the perception of λόγοι, or rational structures, in the material world that are similar to the λόγοι inherent in the soul. According to Proclus, and this is where his view differs from that of Plato, δόξα, the lowest rational capacity of the soul, which touches the summit of the irrational ones,[363] is the faculty in which the two meet.[364]

Δόξα possesses innate rational principles (λόγοι) and is thereby enabled to identify λόγοι in sense impressions by comparing them with its own λόγοι.[365] Thus it knows the essence (οὐσία) of the objects of sense perception.[366] This should not only be understood in the sense that δόξα "entitle[s] us to say that the apple on the desk is the one I left in the basket yesterday",[367] i.e. that δόξα is that which informs us merely regarding unity and identity through time. In that case we would still not know that the object in question is an apple. Δόξα judges the information of sense perception to identify what an object is: it is τὸ κρῖνον ἐν ἡμῖν.[368] On the other hand, δόξα is incapable of knowing the true nature of the individual as this would involve giving a definition, knowledge of the 'why':

[360] See below.
[361] Lautner (2002: 258 ff.).
[362] Cf. above n. 357.
[363] *In Tim.* I 248.8–10, cf. III 286.30.
[364] *In Tim.* II 241.22–242.1.
[365] It is in this sense superior to the *sensus communis*, as the latter "merely distinguishes the differences between the affections of the senses, but does not know that the whole has a certain essence" (*In Tim.* I 249.21–22 αὕτη γὰρ διακρίνει μόνον τὰς διαφορὰς τῶν παθῶν, ὅτι δὲ τοιάνδε ἔχον ἐστὶν οὐσίαν τὸ ὅλον, οὐκ οἶδε). On the *sensus communis* see Arist. *dA* III 1, *De memoria* 1, 450a10 ff.
[366] *In Tim.* I 248.11–13: ὅτι τοὺς τῶν αἰσθητῶν λόγους τὸ δοξαστικὸν περιέχει καὶ τοῦτό ἐστι τὸ τὰς οὐσίας αὐτῶν γινῶσκον, cf. 251.28. Δόξα and δοξαστικόν are used synonymously in this context. *In Tim.* I 248.18–19; 249.9–10; 251.5 ff.; 293.3. For the argument why δόξα can know essences without knowing causes see Helmig (2007: 238).
[367] Lautner (2002: 258).
[368] *In Tim.* I 249.29.

there is no such knowledge of individuals,[369] and the knowledge δόξα has of universals does not involve knowledge of causes.[370] Δόξα is able to subsume an individual under a universal, without really knowing the universal, since that is the territory of ἐπιστήμη.[371] It exerts its function by forming a so-called "later-born concept" (τὸ ὑστερογενές), an image of its innate λόγος, triggered by an impression (φάντασμα) derived from sense-perception, in its turn an image of the *universale in re*.[372]

Considering the task of the faculty of δόξα in Proclus' epistemology, then, the standard Platonic translation 'opinion' is no longer appropriate. Instead, it is better translated '(faculty of) judgment'. The traditional translations of δόξα, 'belief', 'opinion', and the like, can be maintained in the context of Plato's philosophy. In a Proclean context, however, 'belief' has too subjective a ring.[373] For Proclus δόξα stands primarily for a faculty of the soul that compares and matches sense impressions with innate λόγοι. Although 'faculty of judgment' has its own disadvantages as translation, as it suggests a Kantian *Urteilskraft*, and obscures the fact that Platonic notion does lie at the source of Proclus' concept, it is preferable to 'belief' and 'opinion' in expressing an aspect of critique as opposed to mere conviction.[374]

So what is the role of this faculty of judgment in philosophy of nature? As it turns out, δόξα figures in ensuring the possibility of acquiring scientific knowledge of the realm of Becoming, by acting as a mediator. If the definition of Becoming had consisted only in "the generated is perceptible", that is, if Becoming would have been accessible only to perception, we would not have been able to actually use that definition

[369] *In Remp*. I 263.19–20.

[370] Cf. Lautner (2002: 258–260), Helmig (2007: 237).

[371] See e.g. *In Remp*. I 263.15 ff. On δόξα's reflection on conflicting propositions see *In Parm*. 994.5–7 (6–9 Cousin). Cf. Philop. *In DA* 4.6–7: δόξα "knows the universal in the sensibles, as well as the conclusions of discursive [arguments] (*dianoêta*)", trans. De Haas, as quoted in Sorabji (2004b: 263). Cf. Plato *Phdr*. 249b–c on reminiscence and induction.

[372] *In Parm*. 892.15–895.1, esp. 893.14–19 and 893.30–894.2 (892.17–895.1, esp. 893.17–24 and 893.39–894.4 Cousin). Cf. 894.14–18 (19–23 Cousin) and Steel (1997). For an extensive treatment of the 'later-born concept' see Helmig (forthcoming).

[373] The root of δόξα (δοκ-) is indeed related to subjective experience of 'being appeared to', and δόξα stands both for the resulting conviction and for the faculty of the soul capable of developing such a conviction.

[374] Cf. above, δόξα is τό κρῖνον ἐν ἡμῖν, and the exegesis of *Tim*. 37b6–c1, esp. *In Tim*. II 310.3–10, where ἡ ὀρθοδοξία is explained as a permanent and unchangeable judgment (ἡ μόνιμος καὶ ἀμετάπτωτος τῆς δόξης κρίσις) resulting from perception combined with "illumination" (ἐλλαμψάσης) from νοῦς.

in any demonstration,[375] as no cognitive capacity would tell us anything about the perceptible, and we would merely experience it. It is Becoming's added accessibility to δόξα, i.e. the fact that Becoming is δοξαστόν, that provides us with the possibility of correctly judging the sensory data, and hence knowing the essence (οὐσία, εἶδος) of the perceptible as perceptible, and therefore as generated.

We now understand the true significance of Proclus' reading of the definition of Becoming: everything generated can be apprehended by judgment combined with sense perception, because we experience it with our senses and identify the impression of the sensory data with our faculty of judgment. Thus δόξα is indispensible for answering the fundamental question of the prooemium, on which the entire cosmology depends: "what is the εἶδος of the universe?"[376] It is clear, then, that Proclus' remark "in order to reveal the proper generated essence of the objects of sense perception, [Plato] built the argument from the δοξαστόν"[377] should be taken quite literally.[378]

Δόξα alone, however, cannot do more than identify essences. And this brings us to the second, at first sight puzzling, remark involving δόξα. It concerns what seems a case of scholastic completeness. After having discussed the definition of Being as "known through intellect and reasoning", and of Becoming as "grasped through perception and unreasoning opinion", Proclus introduces a class of things that is known through a combination of λόγος and δόξα, that together delimit "the whole level of rational being".[379] Just as definitions of Being and of Becoming were given by describing our cognitive access to them, so too is it possible to give a definition of the "intermediate" (τὸ μέσον) between pure eternal Being and pure Becoming, from the point of view of cognition:

> **T III.37** If, after setting aside that which is always Being only and that which is generated only, you should wish to define what is intermediate as well, i.e. what is in a certain sense being and in a certain sense

[375] In fact, we could not even have formed the definition.

[376] *In Tim.* I 235.32–236.13 (quoted above, **T III.3**).

[377] *In Tim.* I 293.5, quoted above in **T III.35**. Cf. *In Remp.* I 287.24, where "what is in the cave" is called τὰ δοξαστὰ as opposed to τὰ γνωστὰ outside the cave, and *In Eucl.* 27.8.

[378] We now also understand why, in order to serve as *criteria*, the 'definitions' of Being and Becoming are necessarily related primarily to the subjective discrimination by the knower (see above III.2.3): a technical definition of Becoming would not have allowed the determination of the essence of the universe, since we need αἴσθησις and δόξα for that task.

[379] *In Tim.* I 251.17–18, cf. Lautner (2002: 260).

> generated, by removing intellect from the one of the two definitions and sense-perception from the other, you will produce the definition of the intermediate. This, in fact, is what is knowable by reason and judgment. Reason knows itself and judgment, while judgment knows itself and reason, the former knowing both together with the cause, the latter knowing both without the cause, for this is the difference between reason and judgment.[380]

We obtain this cognition of the intermediate, or intermediate cognition, by coupling the lower faculty of cognition associated with the higher realm with the higher faculty associated with the lower realm. That is, by coupling λόγος, the lower faculty involved in knowledge of Being, to δόξα, the higher faculty concerned with Becoming. So the "intermediate" realm is known or knowable (γνωστόν) with λόγος and δόξα.

On the face of it, this description is a scholastic filling out of the gap between two extremes, in which case it is trivial. I propose, however, that Proclus is here introducing an actual new level of cognition, and one that is crucial to the scientific status of philosophy of nature. Two questions need to be addressed in order to bring out the significance of Proclus' remark. First of all, what is the intermediate realm to which we have cognitive access through λόγος and δόξα? And secondly and more importantly, what is the epistemological result of the combination of these two cognitive capacities, λόγος and δόξα?

As to the first question, that is easily answered, since we have already encountered that intermediate realm in chapter II. In the passage preceding the mention of the intermediate level of cognition (quoted in **T III.37**), Proclus had already brought up the intermediate in the context of the division of Being and Becoming, but from an ontological, rather than an epistemological perspective.[381] After discussing the extremes of the intelligible/intellectual and perceptible οὐσία, he states, "that which is in the middle" (τὴν ἐν μέσῳ φύσιν) should be studied. This consists of everything that in some way or other belongs to both realms, to wit, Time, Soul, Nature, and immanent forms.[382] Proclus here recalls Porphyry's view on the matter:

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[380] *In Tim*. I 257.14–22, trans. Runia modified. We will not go into the intriguing aspect of self-knowledge that seems to be hinted at in this description of intermediate cognition.

[381] *In Tim*. I 256.30 ff.

[382] Cf. *In Tim*. I 256.30–257.2, II 4.16 ff. on everything that belongs to Becoming but is not perceptible. Cf. Syr. *In Met*. 4.37–5.2.

> T III.38 So Porphyry correctly stated that in the present context Plato defines the extremes, i.e. the always Being in a primary sense and that which is Becoming only, but passes over the intermediates, such as that which is being and at the same time becoming and that which is becoming and also being. Of these the former, i.e. that which is being and becoming, is proper to the level of the souls (τῷ πλάτει τῶν ψυχῶν), whereas the latter, i.e. becoming and being, is proper to what is highest in the realm of the generated. Of such a kind is also the Nature of the universe (ἡ τοῦ παντὸς φύσις) that gives it life. Indeed, because she is divisible throughout bodies, she is certainly generated, yet because she is completely incorporeal, she is ungenerated.[383]

The Nature of the universe, or universal Nature (see chapter II), which is the initial topic of Platonic φυσιολογία, together with the immanent forms and Soul and Time, which also figure largely in the *Timaeus*, forms the intermediate realm of reality, that is known through λόγος and δόξα.

The next question to be addressed is what form of cognition it is that combines δόξα and λόγος, the intellect which knows the Forms.[384] The combination in itself recalls the highly influential definition of ἐπιστήμη as justified true belief, presented by Theaetetus in the dialogue carrying his name, and rejected by Socrates: "I had forgotten a definition I have once heard someone give, but now it's coming back to me: he said that it is a true judgment accompanied by an account that constitutes knowledge" (τὴν μὲν μετὰ λόγου ἀληθῆ δόξαν ἐπιστήμην εἶναι, *Tht.* 201c8 ff.). This definition may very well be the source of Proclus' definition of the intermediate form of cognition. Its definiens, ἐπιστήμη (taken now in the sense of (a) *science*), points to the intermediate cognitive faculty Proclus has in mind: the faculty that is involved in obtaining and processing scientific knowledge is of course διάνοια. And this faculty of discursive thought, which, incidentally, is nowhere to be found in the definitions Plato presents in the prooemium,[385] is in fact described by Proclus as

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[383] *In Tim.* I 257.2–11 (fr. 31 Sodano, trans. Runia, slightly modified), also quoted in chapter II. As usual, it is not clear where exactly the transition to Proclus' own opinions takes place. Cf. e.g. above, n. 35. Sodano ends his quote at 257.8, and apparently does not consider the reference to Nature to be Porphyrian.

[384] This is how Proclus reads the λόγος of the definition of Being. *In Tim.* I 246.10–248.6, esp. 247.3 ff. On this passage see also Gritti (2008: 114–118). On Proclus' view of this λόγος as cooperating with the different cognitive faculties and as criterion see Blumenthal (1989: 268–271).

[385] Cf. *In Tim.* I 249.4–8, where, after listing the four (hierarchically ordered) cognitive faculties found in the definitions, Proclus introduces διάνοια with an elliptic γάρ to emphasize just that. See Runia and Share (2009: part I n. 275).

the knowledge of the intermediate between the intelligible and the sensible.[386] Moreover, it is said to know both the essences (as does δόξα) and the causes (as does λόγος).[387]

I propose that our commentator takes the procedure applied in the *Timaeus*, and especially in the prooemium, to be an instance of just this combination of δόξα and λόγος—albeit in a sense quite different from what Plato had in mind in the *Theaetetus*. To summarize: the δόξα is no longer an (in itself unreasoned) conviction that something is true, but a capacity of identifying something's essence; the λόγος is no longer a reasoned foundation for the conviction, but a capacity of thinking about the Forms. According to Proclus the activities of δόξα, which primarily establishes the εἶδος of the universe but in general recognizes the impressions of sense perception on the basis of her innate λόγοι, are combined with those of λόγος, resulting in discursive thought which builds arguments on the essences and causes of the λόγοι present in the objects of perception. Thus the conclusion regarding the εἶδος of the world rests on the (true) *judgment* that the world is perceptible, but the discursive rational method inspired on the method of geometry develops that conclusion into scientific knowledge.

This procedure, in which the data of sense perception are subjected to the faculty of judgment, and the resulting universals are in turn used in discursive reasoning, may sound like Aristotelian abstraction or inductive reasoning. It is important to distinguish two things, however. (1) First of all, the universals are not abstracted from the sensory data, but are innate. That is, δόξα does not produce λόγοι, but singles out that universal among its supply of innate λόγοι that is relevant to a particular empirical context.[388] (2) Δόξα's identification of universals applies to the universals present in objects of sense perception,[389] but any reasoning that is consequently exercised uses the universals in the soul.[390] In the case of a syllogism containing a premise in which a particular figures (i.e. 'the universe'), the conclusion holds if the allocation of that particular to

[386] *In Tim*. I 247.1–2: διάνοιαν τὴν τῶν μέσων γνῶσιν νοητῶν καὶ δοξαστῶν, referring to Plato *Rep*. VI 511d–e. Cf. *In Tim*. I 249.4–5. Cf. MacIsaac (2001: 176).

[387] *In Tim*. I 248.14–15. On the relation between διάνοια and ἐπιστήμη Proclus is not very forthcoming. On διάνοια as the source of the mathematical sciences: *In Eucl*. 17.22 ff.

[388] On abstraction in Neoplatonic epistemology see Helmig (2007: chapter 4).

[389] On δόξα's proper object, see *In Remp*. I 263.19 referring to Arist. *APo* I 33, 88b30 ff., and Plato *Rep*. V 479d7–9. Proclus does say that δόξα by itself examines its innate λόγοι (*In Tim*. I 251.22–23), but this means no more than that in the absence of concrete perceptions, δόξα still possesses its λόγοι.

[390] *In Parm*. 978.21–22 (29–31 Cousin), cf. Syrianus *In Met*. 161.15 ff.

a universal (i.e. Becoming) is correct. That allocation is the result of what one might call abductive reasoning.

iv. Intermediate conclusion—the first demonstration

In conclusion, Proclus explains the first demonstration, of the essence of the universe as Becoming, as deductive reasoning that finds its ultimate foundation both in sense impressions and in innate λόγοι. Through this reading, Proclus obtains a guarantee for the scientific status of philosophy of nature: it is possible to acquire scientific knowledge of the objects of sense perception to the extent that they can be correctly identified as falling under some universal.[391] Moreover, the cooperation of δόξα and λόγος, apart from guaranteeing the continuity of the hierarchy of cognition, reveals that scientific knowledge is knowledge of an intermediate realm of reality, namely of those entities that share in eternal transcendent *and* temporal immanent being: Soul, Time, Nature and immanent forms.

This is, then, how Proclus solves the paradox of the *Timaeus*, and ensures the possibility of a *science* of nature that is nonetheless based on αἴσθησις and δόξα.[392] The story he tells, however, seems to be at odds with another important element of his exegesis, namely the emphasis on the didactic nature of the dialogue. Timaeus does not take his audience outdoors to observe the universe and let δόξα do its work. Instead, he offers them his account which is ultimately based on 'divine intuition'. That this second mode of acquiring knowledge of the universe, through teaching, is not incompatible with the empirically instigated mode, is further elaborated on in chapter v.

III.3.2. *The second and third demonstrations: a further shift of focus*

After the first demonstration, in which the universe is established to belong to Becoming, follow the demonstrations concerning the efficient cause of the universe (*In Tim*. I 296.15–319.25) and the nature of its paradigmatic cause (*In Tim*. I 319.23–334.27). We can be very brief here about those two, as they have relatively little to offer regarding method-

[391] This justification of physics is similar to Proclus' justification of what Mueller (1987: esp. 317–318) calls 'ordinary mathematics' through projectionism.

[392] Thus according to Proclus φυσιολογία is no "connaissance conjecturale", *pace* Lernould (1987: 514 ff.). See also Martijn (2009).

ology and instead focus on resolving issues regarding the Demiurge and the Model of the universe that are summoned by the exegetical tradition, rather than by the Platonic text as such.[393] The content of Proclus' exegesis of the two demonstrations has been sufficiently discussed elsewhere.[394] The purpose of the following discussion is to introduce some methodological issues concerning the second and third demonstrations, which point forward to Proclus' interpretation of the fourth demonstration, the theme of the 'likely story' (*Tim*. 29b3–d3): one of the main aspects of that interpretation is that there is a structural analogy between Timaeus' account and the demiurgy. This explanation is prepared through the shift of focus mentioned already in the context of the first demonstration, from geometry to the analogy between text and subject matter.

i. The second demonstration

The twenty pages of commentary on the second demonstration consist for the most part of a treatise in its own right on the nature of the Demiurge.[395] It offers a wealth of information on different Middle and Neoplatonic interpretations of the figure of the Demiurge, and ends in the Syrianic-Proclean theory of a single Demiurge,[396] Zeus, who is the summit of the intellective gods, and both creates the form of the universe and endows it with life.[397] Methodological remarks come in at the outset only, to emphasize that the order of the demonstrations follows the order of reality:

> **T III.39** The argument proceeds in conjunction with the basic principles, or rather with the order of the realities from which the basic principles have been taken. For just as everywhere the form (τὸ εἶδος) is dependent on the efficient cause, so the primary basic principles are continuous with the secondary and in relation to the demonstrations they form a starting-point for those that follow them.[398]

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[393] Cf. Lernould (2001: 265, 288).

[394] For reff. see below under the discussion of the respective demonstrations.

[395] *In Tim*. I 303.24–319.21.

[396] Rather than the threefold Demiurge of Amelius, that is.

[397] *In Tim*. I 310.3 ff. and 299.21–300.13. For a detailed analysis of the doxography of this passage see Lernould (2001: chapter 14, 247 ff.). For lucid and thorough analyses of the place of the Demiurge(s) in the Proclean pantheon, and of demiurgy as procession see Opsomer (2000b, 2001b). Dillon (2000) discusses the function of the Demiurge in Proclean metaphysics. Ritacco de Gayoso (1992). On the Demiurge and theurgy see Van den Berg (2000).

[398] *In Tim*. I 296.15–20, trans. Runia.

What Proclus explains here in a rather oblique manner is that the structure of reasoning in the prooemium corresponds to the structure of reality. The reason for putting the point in this oblique way is to obscure the fact that actually the order in which the account proceeds is the *inverse* compared to the structure of reality. Proclus sees a parallel between text and reality on two levels. First, the hypotheses are a principle of the demonstrations, just as the efficient cause is a principle of the form. And second, the first pair of hypotheses (i.e. the definitions) is continuous with the second pair (i.e. the efficient cause). In both cases, however, the ontologically prior is treated last. In reality, an εἶδος is dependent on an efficient cause, but the demonstration of the efficient cause of the universe is dependent on the demonstration of its εἶδος.

Regardless of how convincing we find this little bit of methodology, it does show a second step, after the remark on the anticipated conclusion in the first demonstration, in the switch from the geometrical method to what I will call "assimilation" (cf. chapter v), i.e. the analogy between a text and its subject matter. That tendency is continued in the third demonstration.

ii. The third demonstration

Proclus' exegesis of the third demonstration, in which we find out what the nature is of the paradigmatic cause of the universe, as that of the second, consists mainly in a discussion of issues central to the exegetical tradition.[399] But after establishing that the universe was indeed created after an intelligible paradigm, and introducing his teacher Syrianus' explanation of this paradigm as existing both prior to and within the Demiurge,[400] Proclus does return to the logical progression of the reasoning of the prooemium. But Proclus' own theory of the paradigmatic cause is clearly at the center of attention here, as his analysis of Plato's argumentation is almost casual.[401]

The *Timaeus* passage concerning the demonstration of the paradigmatic cause is split up by Proclus into four lemmas, which (1) phrase the question to be answered ("is the universe created after an eternal or

[399] *In Tim.* I 319.26–334.27, doxography: 321.24–325.12.

[400] Esp. *In Tim.* I 322.18–323.22. For a somewhat repetitive analysis see Lernould (2001: chapter 15, 279–289).

[401] *In Tim.* I 320.26–321.2, esp. "καὶ πῶς μὲν αὐτὸς ποιήσεται τὴν εὕρεσιν καὶ δι' οἵας ἀποδείξεως, θεασόμεθα μικρὸν ὕστερον. ἡμῖν δὲ πρῶτον αὐτὸ τοῦτο δεικτέον …"

a becoming paradigm?"),[402] (2) rephrase the hypotheses of the first half of the prooemium,[403] (3) present the conclusion ("the universe is created after an eternal paradigm"), followed by an argumentation, and (4) summarize the relations between Demiurge, Model and the universe as image.[404] The second and third of these lemmas provide Proclus with an occasion for some methodological remarks, and as in the case of the first demonstration, those remarks in part aim at defending Plato against possible charges of committing a fallacy, but also, as in the case of both the earlier demonstrations, at preparing the reader for Proclus' interpretation of the theme of the likely story.

We are offered another instance of conversion, Proclus points out, in the second lemma:

> T III.40 Well, if this world of ours is beautiful and its craftman good, then clearly he looked at the eternal model (πρὸς τὸ ἀίδιον). But if what it's blasphemous to even say is the case, then he looked at one that has come to be (πρὸς τὸ γεγονός).[405]

The fourth starting point (see III.2.9) said that everything which is generated with an eternal paradigm is beautiful, and that everything which is generated after a generated paradigm is not beautiful. In the here quoted lemma, however, Plato presents us with inverse statements (ἀντιστρέφοντα), formulating two conditionals that start from the beauty (and its unsayable opposite) of the product, rather than the paradigm.[406] Nonetheless, Proclus is convinced that Plato is not liable to the accusation of committing a fallacy. Proclus does not make mention of fallacies, but he is generally preoccupied with the logical progression of the *Timaeus*, as shows in our context from the fact that his very first remarks on the lemma concern the convertibility of the axioms.[407] In the exegesis

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[402] *Tim.* 28c5–29a2.

[403] *Tim.* 29a2–4.

[404] *Tim.* 29b1–2.

[405] *Tim.* 29a2–4 εἰ μὲν δὲ καλός ἐστιν ὅδε ὁ κόσμος ὅ τε δημιουργὸς ἀγαθός, δῆλον ὡς πρὸς τὸ ἀίδιον ἔβλεπεν· εἰ δὲ ὃ μηδὲ εἰπεῖν τινι θέμις, πρὸς τὸ γεγονός, trans. Zeyl.

[406] *In Tim.* I 328.16–329.13. Proclus' explanation of the conversion is somewhat problematic, due to the transition from universal starting points to a particular application to the universe and due to the mixture of Peripatetic, Stoic, and geometrical logic. In the following the role of universality vs. particularity will be left aside, as in the context of the conversion Proclus involves only the universal axioms that are presupposed in the particular propositions. He switches to the particular statements at *In Tim.* I 329.13–15: τέτταρα δὴ ταῦτα ἀξιώματα θέμενος διορίζεται περὶ τοῦ παντὸς εἰκοτῶς.

[407] See also Festugière (1963).

of the passage he seems to be responding to existing criticism, consisting in three objections: (1) Plato's conversion of the starting points (response at *In Tim.* I 328.16–329.1), (2) his not using the converted propositions as starting points in the first place (329.1–13), and (3) the introduction of the extra condition "and if the Demiurge is good" (329.18–27).[408] We will concentrate on (1).

The first conversion, of the definition of Becoming, received an external justification, provided by the analogy with geometry, but this second conversion is fully self-justified:

> T III.41 For whenever (ἐὰν γὰρ) (a) the opposite of the consequent (τὸ ἀντικείμενον τοῦ ἑπομένου) follows from the opposite of the antecedent (τῷ ἀντικειμένῳ τοῦ ἡγουμένου), (b) they are converse to each other, and (c) to the starting point (ἀντιστρέφει πρὸς ἄλληλα καὶ τὸ ἐξ ἀρχῆς), as can be shown with a *reductio ad impossibile*.[409]

In parts (a) and (b) Proclus echoes the formulation of what Alexander calls "conversion by opposition",[410] i.e. a kind of categorical version of modus tollens, which is found in Aristotelian commentators. As Alexander phrases it, "[a proposition] converts, because the opposite of the consequent follows from the opposite of the antecedent."[411] Proclus, however, has an idiosyncratic use of ἀντιστροφή, and changes the order of antecedent and consequent: "what is beautiful is created with an eternal paradigm" converts with "what is not beautiful is created with a non-eternal paradigm". This would be a fallacy of denying the antecedent, if Proclus had had in mind the conversion of the Aristotelian commentators. Rather than accuse him of burdening himself with the fallacy he is trying to exonerate Plato from, however, we should consider Proclus' notion of conversion in the light of his earlier use of this tool of inference: as before, he is echoing Peripatetic phrasing but describing a geometrical practice[412] in which biconditionals are

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[408] Interestingly, these are three of the four points of criticism brought forward by Ebert (1991: 49–51), who concludes on the basis of this passage that Timaeus is "alles andere als ein guter Logiker". Again, Runia (2000: 114–116) responds to these criticisms, mainly by maintaining that the prooemium should not be read as a logically strict exposition.

[409] *In Tim.* I 328.22–24.

[410] ἡ σὺν ἀντιθέσει ἀντιστροφὴ, Alex. *In APr.* 29.10. Cf. for a clear description Simpl. *In Cael.* 29.4 ff.

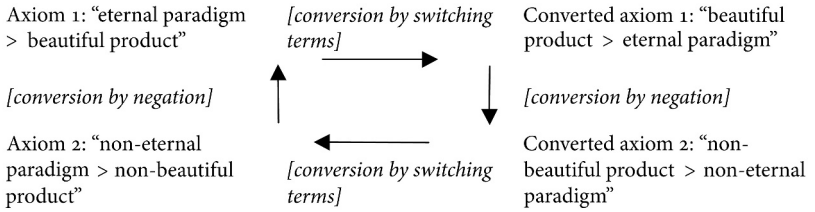
[411] Alex. *In Met.* 319.1–3. The conversion is supposed to be applicable both in categorical and in hypothetical propositions. Cf. Alex. *In Top.* 191.15–19.

[412] Cf. Galen. *Inst.Log.* vi 4, who speaks of ἀναστροφή (conversion of terms or propositions) and ἀντιστροφή (conversion into opposite).

presupposed.[413] In Proclus' defence we can moreover point to the conditionality of his statement. He does not claim that the opposite of the consequent *necessarily* follows from the opposite of the antecedent,[414] but that *whenever* (ἐάν) the opposite of the consequent does follow from the opposite of the antecedent, the two convert.[415] Clearly, the verb ἀντιστρέφειν applied to propositions in this context means converting in the sense of "being each other's complement" rather than in the syllogistical sense.

The point of (a) and (b) in **T III.41** is that the converted versions of the fourth pair of axioms are two parts of an exhaustive dichotomy: each of them is a biconditional that is the other's complement, and they can be converted without resulting in a fallacy. In order for there to be such an exhaustive dichotomy in Plato's text, Proclus has to equate the terms τὸ ἀίδιον and the opposite of τὸ γενητόν, i.e. τὸ ἀγένητον.[416] By adding (c) "and to the starting point", Proclus extends the conversion: since the two phrases constitute an exhaustive dichotomy, they convert not only with each other, but each of them converts—this time in the sense of switching terms—with one of the original axioms of the fourth starting point as well.

Thus we come full circle as follows:



The conversion as such receives its explanation through an adjustment of logical vocabulary to the context, but Proclus feels that a justification is in order also for why Plato uses the conversion in the first place:

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[413] Cf. *In Eucl.* 254.2–3 and above n. 342. Note that Proclus does know the proper use of the "conversion from opposition": *In Alc.* 262.16, 265.12, *In Parm.* 1170.11–12 (15–16 Cousin) and especially *In Remp.* I 29.26 and the use of ἀντιστρέφειν at 30.8.

[414] As e.g. in Simpl. *In Cael.* 29.4: ἀναγκαιῶς ἕπεται.

[415] This is hardly an argument in defence of the reformulations, of course, because it works only if the rephrased axioms are indeed true.

[416] See **T III.40**. Note that this equation was also assumed in Proclus' exegesis of the starting points, *In Tim.* I 265.30–266.1.

> T III.42 For what reason, then, did he not adopt these principles directly among the starting points, i.e. "that which is beautiful came into being in relation to the eternal model", and "that which is not beautiful did so in relation to the model that was not eternal", but rather he adopted those of which these principles are the converse, even though for the demonstration he needed to use the former and not the latter? To this we should reply that the former, which start from the causes, are more akin to the starting points, whereas the latter, which start from what is caused, are more akin to what follows from the starting points.[417]

This justification relies on two principles, namely that of the priority of cause over effect, and of the analogy between the structure of reality and that of the textual reflection of our knowledge thereof: in the starting point "τὸ πρὸς ἀίδιον γεγονὸς καλόν ἐστιν", the cause (ἀίδιον) is in the antecedent, as Proclus calls it, and the caused (καλόν) in the consequent. In the demonstrations, however, we find the inverse, and the caused is in the antecedent, but the cause in the consequent: "τὸ καλὸν πρὸς ἀίδιον γέγονε", because "the caused is more akin to what follows from the starting points."[418] Thus in the starting points logical priority follows ontological priority, but in the context of "what *follows* from the starting points," i.e. the demonstrations, that which *follows* from the causes, i.e. the caused, has logical priority. This explanation of *Tim*. 29a2–4 seems rather *ad hoc*, especially as it contradicts Proclus' earlier adoption of the Aristotelian dictum concerning the didactical order of presentation of knowledge, starting from that which is known to us, rather than from that which is known simpliciter. Here Proclus advocates the opposite, namely a one-on-one correspondence between textual order and order of reality. This change fits, however, in the overall adjustment of focus that can be seen to take place in Proclus' exegesis of the demonstrations.

The increasing role of the relation between text and reality shows from another point Proclus makes as well, namely the fact that as in the first demonstration, so here too Plato presents an anticipated conclusion. The third lemma of the demonstration regarding the paradigmatic cause, which starts "παντὶ δὴ σαφὲς ὅτι πρὸς τὸ ἀίδιον" (*Tim*. 29a4–5) is an anticipated conclusion, through which "reasoning takes its starting point from intellect",[419] a practice that by now is introduced by Proclus as

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[417] *In Tim*. I 329.1–7, trans. Runia modified. Cf. *In Tim*. I 329.11–13.

[418] *In Tim*. I 329.7–11.

[419] Festugières translation "irrationnel" for ἀπὸ νοῦ is in a sense correct, to the extent that Proclus aims at a supra-rational beginning, but a literal translation does more justice

customary (ὥσπερ εἴωθεν, *In Tim.* I 330.13).[420] We will return to these anticipated conclusions in chapter V.

III.4. *In conclusion*

The main topic in this chapter was Proclus' comparison of Plato's method in setting out the starting points of his cosmology with the method of a geometer, and the function of that comparison in establishing a theological philosophy of nature. Proclus identifies the starting points presented in the prooemium of the *Timaeus* as definitions, axioms, hypotheses, and demonstrations, and analyzes their introduction in terms of geometrical practices, most notably hypothesizing and conversion, and the so-called dialectical methods, division, definition, analysis and demonstration. The technical terms are often used in a not entirely strict sense, adapted to the context.

Proclus works on a number of parallel tracks within the exegesis of the prooemium of the *Timaeus*. First of all, he analyzes Plato's procedure within that passage of the dialogue as comparable to geometry in the sense that certain starting points are assumed, on the basis of which the nature and causes of the universe can be found. On the other hand, however, Proclus suggests that the starting points are related in such a way that from one of them, the concept of Becoming, through a conceptual analysis, we climb up to the efficient and paradigmatic causes of the universe. The delivery of these causes, but especially of the demiurgic cause, is considered the summit of Platonic φυσιολογία. At yet another level, Proclus suggests that the information presented by Plato contains hidden references to even the final cause. And finally, towards the end of the prooemium Proclus shifts the scene from the *didactic* order of presentation necessitated by the anagogic function of the text to the *natural* order of presentation, fitting the analogy between a text and its subject matter.[421]

This stratification in Proclus' interpretation of the *Timaeus* is related to the cognitive diversity of the participants of this dialogue.[422] The speaker,

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to the role of νοῦς in Proclus' exegesis of the *Timaeus*. More on the topic of anticipated conclusions in chapter V.

[420] For the earlier occurence at *In Tim.* I 282.27–283.9, see above III.3.1.ii.

[421] On this topic see chapter V.

[422] Cf. Lernould (2001: 323), who speaks of a "lecture en profondeur" and a "lecture en surface".

Timaeus, possesses not only scientific knowledge of the universe, but even intuitive insight. His interlocutors, however, as well as the students of the Academy in general, need guidance in order to awaken that insight. Due to his intuitive insight the speaker can anticipate the conclusion of a syllogism construed on the basis of the starting points, and can fathom how the starting points contain a dialectical analysis to the causes of the universe. For the sake of his students, however, he has to posit starting points and spell out the syllogism.[423]

Let us return to our original question as to the role of the comparison with geometrical methodology that in first instance dominates the exegesis of the prooemium. At first sight, its significance lies primarily in the atmosphere of science that is summoned. Thus Plato's treatment of the realm of Becoming, a realm in itself lacking in permancency and stability, is provided with an air of scientific certainty. As we have seen, however, on a deeper level the comparison is crucial to our understanding of Proclean philosophy of nature in two ways. First of all, the comparison is employed to set the methodological boundaries of φυσιολογία by showing the ultimately hypothetical nature of philosophy of nature, that comes to the fore in the assumption of the existence of its fundamental "genera", Being and Becoming. Secondly, Proclus' ingenious explanation of the first demonstration as a geometrical conversion, coupled to an original view of δόξα, allows him to nonetheless maintain that scientific knowledge of the natural world can be obtained. And as a third, minor benefit of geometry we could mention the fact that the use of geometrical as opposed to logical conversion allows Proclus to maintain the validity of the reasoning of the prooemium.

The δόξα mentioned in the definition of Becoming is explained as the faculty of the soul that possesses innate images, λόγοι, of the transcendent Forms. It is this faculty that provides epistemic access to the transcendent aspect of the natural world, namely the immanent forms (λόγοι): the faculty of δόξα uses sense impressions by forming a universal from them with the use of the innate λόγοι of the soul, and thereby identifying the immanent λόγοι in the world. Δόξα consequently cooperates with reason to form discursive thought, which construes arguments providing knowledge of the causes of the natural. Since together, δόξα and λόγος constitute ἐπιστήμη in a broad sense of the term, philosophy of nature is a science despite its generated, unstable subject matter.[424]

[423] See on this topic v.7.
[424] We will return to the question in what sense φυσιολογία is a science in chapter v.

Combining this with the hypothetical nature of the starting points, and the analysis of Becoming into its transcendent causes, we can conclude that book II of Proclus' commentary describes philosophy of nature in what is according to Proclus the most Platonic and most proper sense: reaching up and touching theology, becoming a kind of theology, even, while maintaining the boundaries imposed by its subject matter.[425]

III.4.1. *Appendix: Argumentative structure*

By way of summary of this third chapter the table below contains an overview of the argumentative structure of the prooemium of the *Timaeus* as read by Proclus.

0		"Division" (διάκρισις)
1	Being is knowable with understanding and reason	Definition, hypothesis (presupposing existence), should not be demonstrated/will be demonstrated after the κοσμοποιία
2	Becoming is graspable with perception and opinion	Definition, hypothesis (presupposing 'existence'), cannot be demonstrated?
3a	Becoming has an efficient cause	Indemonstrable axiom, common notion, hypothesis (proposition in demonstration), assumed (παραλαμβάνει, I 258.13; προστίθησι, 258.14), and shown to be implied by the nature of Becoming
3b	No becoming without efficient cause	The complement of 3a
	(Becoming has a paradigmatic cause)	Implicit consequence of 3a (ἕπεται, I 264.15, 20)
4a	Paradigmatic cause is either eternal (beautiful product) …	Indemonstrable axiom, common notion
4b	… or becoming (non beautiful product)	The complement of 4a
5	Universe = kosmos, heaven, or [unsayable] (final cause?)	Geometrical imposition of name on subject matter (definition)

[425] *In Tim.* I 204.4, 8, 217.25, 219.23, 228.30, 236.17, 20, 237.3–9, 289.15, 347.12–16.

1’	The world has become	Demonstration from first hypothesis; anticipated conclusion; argued on the basis of (geometrically) converted definition + αἴσθησις and δόξα
3’	Efficient cause	Demonstration from second hypothesis
4’	Eternal paradigmatic cause	Demonstration from conversion of third hypothesis (I 328); anticipated conclusion

CHAPTER FOUR

AFTER THE PROOEMIUM: MATHEMATICS, THE SENSES, AND LIFE

IV.1. *Introduction*

In chapter III we have seen that philosophy of nature in Proclus' reading is an exposition concerning the divine causes of the universe that starts from hypothetical starting points, uses dialectical methods, like geometry, and that nonetheless has its epistemological foundation in the activities of αἴσθησις and δόξα. Thus book II of Proclus' commentary describes philosophy of nature in its most Platonic sense, namely theological philosophy of nature. Once the transcendent causes of the universe have been treated, however, we find that Proclus emphasizes other aspects of the nature of φυσιολογία, each time in accordance with the exegetical context, to the extent that in every single book of Proclus' commentary we find another characterization of φυσιολογία. The changes have two reasons, one heuristic and one epistemological.

(1) To state the obvious, Proclus presents his philosophy of nature within the confines of a commentary, so to a large extent he is bound to the text of the *Timaeus*. Moreover, in his exegetical practice Proclus adheres to Iamblichus' heuristic principle which says that the interpretation of every element of a Platonic text should fit the general subject matter of that text, even when such a reading is not immediately evident.[1] In the latter case one should neither ignore the passage in question as irrelevant to the σκοπός of the dialogue, nor apply a mere superficial reading without connecting the passage to the whole. This principle gives commentators the freedom to reject earlier interpretations that to their minds do not obey that principle, but it also obliges them to always give eccentric passages both the superficial and the so-called appropriate reading. In our context, Proclus always has to study the *Timaeus* passages φυσικῶς.

[1] On Iamblichus' principle see I.2, n. 35.

(2) The second reason is more interesting from a philosophical point of view. Just as Nature, the subject of philosophy of nature, is present in different manners on different levels of Proclean reality, so φυσιολογία, which discusses them all, has different characters when covering different aspects of its subject matter.[2] The theological/dialectical approach is suitable for giving an account of the transcendent causes of the natural world, but other ways of access to and modes of presentation of knowledge of nature have to be available for the ontological levels below the transcendent causes.

This fourth chapter concentrates on Proclean philosophy of nature (φυσιολογία) as pertaining to those lower levels of the natural world, taking our cue from Proclus' own characterizations of φυσιολογία after the second book. That is, I am interested especially in what *Proclus* thinks *Plato* is and should be doing. If anything, Proclus is extremely sensitive to fine distinctions, be it ontological, methodological or other. With regard to his conception of philosophy of nature this shows in his acute awareness of possible shades of the science and in explicit discussions concerning its limitations. For example, from the moment we embark on the exposition of what Proclus calls the second hypostasis of the universe,[3] the perceptibility of the realm of generation is highlighted, following the first lemma discussed:

> T IV.1 That which comes into being must be corporeal, and visible and tangible … (*Tim.* 31b4)

Since the corporeal nature of 'the becoming', and hence the perceptibility of the body of the world here comes to the centre of attention, it is not surprising that Proclus' conception of philosophy of nature changes accordingly. Thus in the first pages of book III "concerning ourselves with φυσιολογία" is considered to be synonymous with "inquiring into the perceptible".[4] In the same breath, however, this φυσιολογία in the sense of inquiring only into the perceptible is rejected as being too narrow if it involves excluding certain aspects of Plato's text.[5]

In summary, apart from the theological/dialectical philosophy of nature of the second book of the commentary, in the remaining books we encounter the following other characterizations:

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[2] *In Tim.* I 2.29–4.5. For φύσις see chapter II.

[3] Or 'the creation of aggregate wholes' (τὴν τῶν ὅλων ποίησιν μερῶν) at *Tim.* 31b ff.

[4] *In Tim.* II 23.9 ff.: esp. τὸ πρὸς αἴσθησιν μόνον ἐπιζητοῦντας … φυσιολογίας μόνης φροντίζειν … τὸ αἰσθητόν.

[5] Ibid. This passage is discussed in further detail below, under IV.2.2.

Book III: philosophy of nature starting from mathematics
Book IV: philosophy of nature concerning the perceptible
Book V: philosophy of nature concerning the biological[6]

Relative to what can be called the summit of φυσιολογία, i.e. theological philosophy of nature, mathematical philosophy of nature is intermediate, and the latter two are lower branches of philosophy of nature. Proclus does not identify them as such, in fact, he does not explicitly acknowledge any shift in his use of the concept of 'philosophy of nature'. Considering his characterization of the different ontological aspects of the natural world studied in different parts of the *Timaeus*, however, (and, consequently, the different epistemological levels of that study,) the hierarchy sketched above should be assumed to be implicit.

That hierarchy is visible also in the role ascribed to the perceptible: in theological philosophy we saw that the universe's being perceptible is a starting point of philosophy of nature, but that the ultimate aim of the discipline is finding the transcendent causes of the universe. In the context of what I call intermediate philosophy of nature, which concentrates around the mathematical description of the Body and Soul of the world (book III), we will see that Proclus distinguishes different kinds of explanation given for properties of the natural world. He there emphasizes that φυσιολογία is more than (but also) concentrating on the perceptible aspect of the universe. In 'lower philosophy of nature', in book IV, Proclus sets the boundaries of philosophy of nature as a purely empirical discipline; and in book V, as a discipline involved with corporeal life.

Intermediate philosophy of nature, which brings along with it interesting questions regarding the mathematization of physics, will be discussed most extensively, in section IV.2. Lower philosophy of nature and its appendix are discussed in IV.3. The question how the three different levels of philosophy of nature can be reconciled with each other and with

[6] The first book of the commentary falls outside the scope of the discussion here proposed. In a sense, the prooemia of the *Timaeus* (17a–27b) do not belong to φυσιολογία, and in a sense they do. The *Timaeus* is a Pythagorean dialogue, and it starts out in a Pythagorean fashion, in order to stimulate the reader's soul and purify his eye. As the Pythagoreans would place an iconic and a symbolic exposition of the subject matter at hand before its scientific treatment, so Timaeus presents a summary of the *Republic* and the Atlantis story before moving on to φυσιολογία, in the narrow sense of the scientific treatment of the universe (*In Tim.* I 30.2–15). Thus the preparatory sections are not proper parts of philosophy of nature, but they do contain τὸ φυσιολογικόν, as they are a particular presentation of the universe (*In Tim.* I 30.15–18). Cf. *In Tim.* I 4.7–26 (esp. 25–26), I 13.26–28, I 19.25, etc. See also Dillon (1976: 248–249).

the fact that Proclus apparently sees philosophy of nature as a unity is briefly addressed in the general conclusion, IV.4.

IV.2. *Book III: Intermediate Philosophy of Nature and mathematics*

IV.2.1. *Introduction*

Intermediate philosophy of nature is found in the treatment of the Body and Soul of the world (book III),[7] where Proclus' ideas on what φυσιολογία is are inspired by the need to find the proper reading of the mathematical passages of the *Timaeus*. He argues that one should deliver the explanations that are fitting to the subject matter, i.e. the elements and the World Soul, rather than the literal mathematical explanation, while at the same time doing justice to the mathematics of the text.[8]

Mathematical descriptions are offered by Plato in three contexts, namely (1) *Tim*. 31b5 ff., on the body of the world, (2) the passages on the construction of the World Soul (*Tim*. 34b ff.), and finally (3) what has probably been his most influential passage in the history of philosophy of nature: the description of matter in terms of the regular polyhedra (*Tim*. 53b5 ff.). The latter will not be discussed in this chapter, as we do not possess enough relevant evidence of Proclus' views of the matter within the confines of the commentary on the *Timaeus*.[9]

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[7] *Tim*. 31b5–37c5, *In Tim*. II.

[8] "Fitting to the subject matter", in the case of the body of the world, comes down to giving explanations φυσικῶς (II 20.20; 27.2; 39.16–17 etc.), but in the case of the World Soul he speaks in more general terms of exegesis that is "appropriate to the subject": οἰκείως τοῖς ὑποκειμένοις (II 174.22) etc. See also below, n. 131. Note that the distinction between the literal and the appropriate explanation of the World Soul is matched onto the division between λέξις and θεωρία, where the λέξις is the explanation of the mathematical details, and the θεωρία the fitting exegesis.

[9] Those views are transmitted to us in a few passages of *In Tim*. (see De Haas (1997)), remarks in the *Platonic Theology* (I 4 19.14–17, on this passage see below and Martijn (2006b)) and *In Eucl*. 23, 82 (and 68.21–23), 166, 68.7–9. See Siorvanes (1996: chapter 4, 207 ff.). We have indirect evidence in Philoponus' *Aet.Mund*., and in Simplicius' report in his *In Cael*. of another lost work, namely Proclus' "Investigations of Aristotle's refutations of the *Timaeus*" (mentioned at *In Tim*. II 279.3–4). See Cherniss (1944: 148–163), Sambursky (1962: 50–59), Siorvanes (1996: 215 ff.) and esp. Steel (2005). Siorvanes (215–216) points out that "Proclus, and the later Neoplatonists, following Iamblichus' programme of the mathematization of all fields of knowledge, fully subscribed to the mathematical view of matter. However, they had also inherited Aristotle's penetrating criticisms." He subsequently formulates the concrete answers to those criticisms, but

Proclus' commentary on the mathematics in the first two passages is interesting for its contribution to our understanding of his views on the relation between different sciences, and more specifically in the light of the age-old debate regarding the so-called mathematization of nature. The question central in this context is what according to Proclus is the explanatory power of mathematics, as the science of what is intermediate between the intelligible and the sensible, both for the perceptible elements and for the World Soul. A related question that will also be addressed, is what Proclus takes the ontological location of the mathematics involved in physical explanations to be.

After a short presentation of some modern and ancient views on mathematization in the *Timaeus* (IV.2.1.i and IV.2.1.ii), I will focus on Proclus' outlook on the role of mathematical explanations in the *Timaeus*, building especially on the more general account on mathematics and Pythagoreanism given by O'Meara in his astute *Pythagoras revived* (1989).[10] In the last subsection, I will draw some conclusions regarding Proclus' position on the mathematization of the natural world (IV.2.4). As part of those conclusions, I will further elaborate one of O'Meara's main theses, namely that the mathematics 'transposed' to philosophy of nature concerns the projections in the human mind (IV.2.2 and IV.2.3),[11] by arguing that a distinction should be made between the mathematics transposed in the context of the body of the world and that in the context of the World Soul.

Since the main aim of this chapter is to show Proclus' development of the notion of philosophy of nature, the mathematical practice displayed in Proclus' exegesis of the passages in question will be all but left aside.[12] An issue that will also not be addressed in this chapter is the role of mathematics in *Tim*. 36b–d, on the planetary circles. Although the relation between mathematics and astronomy is a topic worthy of attention in its

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does not discuss the overall consequences of Proclus' awareness of that criticism for his notion of mathematization. Steel (2005: esp. 185 ff.) does address the question whether Proclus gave a literal reading of the geometrical figures. On Proclus' theory of matter and its influence in the seventeenth century mathematization of nature, see Stewart (2000).

[10] See also Charles-Saget (1982), whose work is less accessible and less precise due to her love of metaphor, scholastic symmetry, and convolution. For an interpretation similar to mine see MacIsaac (2001: chapter IV).

[11] O'Meara (1989: 176, 193).

[12] See Baltzly (2007: 8–21), Festugière (1966–1968: notes ad loc.), Lernould (2000), MacIsaac (2001: chapter IV) for some mathematical detail.

own right, it falls outside the scope of this chapter, since Proclus himself does not connect it with the limitations of φυσιολογία.[13]

i. Mathematization in the *Timaeus* according to modern readers

Readers of the *Timaeus* throughout the centuries, including well-known physicists such as Heisenberg, have considered Plato's cosmology to be one of the first examples of the mathematization of nature, since in it for the first time mathematical models are presented as explanations of the structure of certain parts of the universe.[14] The notion of 'mathematization' in this context is ambiguous. In philosophy of science, it is associated with two rather different positions, namely the instrumentalist and the realist attitude towards the explanatory power of mathematics.[15] By realism and instrumentalism I here understand the following: the scientific realist holds that scientific explanations should be and are about the world as it is, whereas the instrumentalist claims no more than that her scientific explanations have a certain power of explanation and allow the prediction of phenomena.[16]

The nature of the mathematical explanations in the *Timaeus* is not often discussed explicitly in today's literature, and when it is, the context is usually Timaeus' theory of matter. Readers tend to be somewhat

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[13] For references on this topic see note 38. The later passages on the planets (*Tim.* 39–40) belong to lower philosophy of nature. For some astronomy see v.5.2.ii, on *In Tim.* I 349.6–350.8, where Proclus states that celestial phenomena cannot be adequately described using mathematics.

[14] Heisenberg (1953), Koyré (1968: 35–36) For a challenge see Girill (1970); already in 12th century *Timaeus* exegesis: see Speer (2005: 221) and Kobusch (2005: 239–240), although the latter points out that Bernhard of Chartres saw the mathematization of nature as a contribution of his own. In today's literature on the mechanical revolution of the Seventeenth Century, Plato is still considered the ancient paradigm of mathematization, see e.g. Bertoloni-Meli (2006: 10, cf. 135–136). Among exegetes of Plato a strong proponent of this position is Brisson (1992, 2000c), Brisson and Meyerstein (1995). Cf. Lloyd, G.E.R. (1991a: 349–350), who holds that mathematization of physics in the *Timaeus* is present in no more than an embryonic form, as Plato does not explicitly state that physics *should* be mathematized (cf. Vlastos (1975: xiii), Sambursky (1962: 32)). His primary interest is in teleology, not mathematics. Brisson (2000c: 306) disagrees and gives mathematics the primary position. Gregory (2000: 14–15 and passim) takes an intermediate position by maintaining that Plato 'geometrises' matter but does not aim at a quantified physics; where mathematics does not provide satisfactory answers teleology does.

[15] On realism and instrumentalism in antiquity, see below, IV.2.1.ii.

[16] Of scientific instrumentalism only the aspect of explanation is relevant to our context.

unclear on the sense in which they understand the mathematization they ascribe to Plato. Crudely speaking, two positions can be distilled that can then be mapped onto the concepts 'instrumentalism' and 'realism': the mathematical explanations are taken either to somehow represent certain *physical qualities*, or to lay bare a *mathematical, quantitative structure* of the perceptible universe. I will maintain the terms 'instrumentalist' and 'realist' for these respective readings.[17] Within the exegesis of the *Timaeus* in general, these two views can in turn be related to the metaphorical and the literal reading of the dialogue in the following way:[18] those who maintain a literal reading of the dialogue are held to a realist mathematization,[19] whereas those who see the *Timaeus* as a metaphor or as riddled with metaphors have the liberty of 'translating' the mathematical passages.[20] Some readers confuse what I call realism and instrumentalism, and speak of mathematics as an *instrument*, a *language* of quantities *symbolizing* physical *qualities*, while at the same time having this language describe physical *quantities*.[21] In part such confusion can be explained from the differences between the occasions on which Plato uses mathematics in the *Timaeus*. The proportional relations between the elements, for example, can be explained as quantitative distributions, i.e. in a realist vein.[22] These quantitative distributions can in turn still be distributions

[17] Brisson (2000c: 300–301) (see also n. 14), who does explicitly discuss the nature of the role of mathematics, uses other notions, namely those of a descriptive and a prescriptive use of mathematics in philosophy of nature, which he finds in Plato and modern science respectively. In the former, mathematical explanations function as metaphors, while in the latter, they serve to suggest and verify hypotheses. Brisson makes the distinction in the context of the debate concerning the question whether teleology or mathematization is the central issue in the *Timaeus*. I will not use Brisson's distinction since the prescriptive use of mathematics, which involves verification of hypotheses, is alien to our context.

[18] On the literal and the metaphorical reading see chapter v.

[19] Cf. however Burnyeat (2000: esp. 55), who maintains that his reading of the harmonics of the soul as presenting abstract structures is a literal one.

[20] The passage in the *Timaeus* that most clearly suggests a connection between the theme of the 'likely story' and mathematics is *Tim.* 53d4–7, where the triangles are assumed as ἀρχαί, "as we pursue our likely account in terms of Necessity" (κατὰ τὸν μετ᾽ ἀνάγκης εἰκότα λόγον πορευόμενοι, trans. Zeyl). See also chapter v.

[21] Sambursky (1962: 46, 32–34, 57, 1965: 2). Cf. Wright (2000: 17–19), whose reading is realist ("the mathematical structure of the universe"). She regards the role of the mathematics of *Tim.* 52 ff. as the endpoint of a description of scientific advance within the *Timaeus*.

[22] As by Cornford (1937: 51) and Zeyl (2000: xxxix). Cf. Burnyeat (2000). Note that Zeyl, apart from this realist reading, tentatively proposes one remarkably like Proclus' in a note (2000: n. 71), according to which the distribution would be qualitative.

of physical qualities. As a consequence, this case is less problematic than a realist reading of the elementary triangles, as in the latter the physical *qualities* are reduced to geometrical quantitative properties.[23]

Brisson distinguishes between the roles mathematics has concerning the Body of the world and the World Soul. He takes the theory of the elements as an example of what we called instrumentalism, and specifies that mathematics is used as a metaphor or expression of causality, stability and symmetry.[24] With respect to the World Soul, he has a more realist position, and maintains that it actually exhibits a mathematical structure.[25] This reading, we will see, is very close to Proclus'.

ii. Mathematization in the *Timaeus* according to ancient readers

The ancient responses to the mathematics in the *Timaeus* can be roughly divided into four phases, all quite different from the modern attitude.

(1) The earliest reaction in the Old Academy, Aristotle's criticism of the use of mathematics in philosophy of nature,[26] led to a downscaling of its function.[27] Rather than seeing mathematics as a scientific instrument, early followers of Plato transformed its function into that of a provider of metaphysical principles.[28] In terms of the notions of mathematization introduced earlier, they would have considered the *Timaeus* an example of instrumentalist mathematization, in the very narrow sense that mathematical concepts have explanatory power by being

[23] Nikulin (2000: 211, cf. 71) takes Plato to portray the triangular physical elements as 'centauric entities' having both geometrical and physical properties, and reproaches Plato for not explaining how two kinds of properties (i.e. geometrical and physical) that he himself considers to be radically different can coexist. Consequently, Nikulin concludes that Plato did not succeed at realizing his project of mathematization. Other readings combining physical and mathematical qualities: Cleary (1995: 36, 64–65) who speaks of "ontological mathematics", Gregory (2000: 187 ff.), Johansen (2004: 163–164).

[24] Brisson (1994: 324 ff., 2000c: 300, 306).

[25] In his earlier work, Brisson opposes the thesis that the World Soul is a mathematical entity (or number, or harmony), without making explicit what in that case is the function of the mathematical explanations for the soul (metaphor of what?), and he maintains that the mathematical construction of the elements is no more than a metaphor: "une solution théorique d'ordre métaphorique" (1974: 387). In later work, however, he has taken on a more realist position, that the soul "présente une structure mathématique" (2000c: 300) or "exhibits a mathematical structure," Brisson and Meyerstein (1995: 29, cf. 31–35).

[26] Esp. *Cael.* III. On Aristotle's criticism see Cleary (1995: chapter 2).

[27] On the earliest reactions see Brisson (2000c).

[28] See esp. Brisson (2000c: 306 ff.).

metaphors for metaphysical principles of the physical world (including the World Soul).[29]

(2) A very different trend is seen to have developed among mathematicians, such as Eratosthenes and Theon of Smyrna, who took to lifting the mathematical passages of the *Timaeus* out of their context and explaining them for mathematical purposes only.[30]

(3) In reaction to this trend, and in line with his overal exegetical attitude, Iamblichus drastically elaborates the first position on mathematics' function for philosophy of nature. He formulates an arithmetical physics on the basis of Aristotle's *Physics*, using a concept of physical numbers, or physical manifestations of arithmetical numbers. O'Meara summarizes: "In general it appears that the physical universe is structured by immanent forms, called 'physical numbers', which derive their character and behaviour from the properties of mathematical numbers. Mathematical numbers in fact exemplify, in paradigmatic fashion, the organization of the universe. This means that physical theory can be found pre-contained in mathematics and that the elements of such a theory are instantiated in the various physical expressions of different mathematical numbers."[31] On the basis of O'Meara's analysis of Psellus' excerpts of *On Pythagoreanism* V–VII, Iamblichus' views on the relation between mathematics and philosophy of nature can be summarized as a moderate realism. Iamblichus assumes an ontological connection, obtaining between mathematics as the paradigm and the physical world as its image,[32] and thereby gives physical reality an arithmetical structure. Physical numbers differ from arithmetical ones, so pure arithmetic is not applicable to the natural world as such. What allows us to call Iamblichus a (moderate) realist nonetheless is the fact that for him the role of the arithmetical in the physical world is an *ontological*, not just a descriptive one. At the same time, Iamblichus pointed out that one should provide both a mathematical and a physical explanation of the mathematical description of the

[29] Cf. Tarrant (2000: 199, 204), who speaks of 'the correct decoding' of the mathematical passages as one of the main concerns of the first interpreters of the *Timaeus*.

[30] Cf. Tarrant (2000: 61–62), Ferrari (2000). Proclus himself wrote a separate treatise to explain only the mathematical details of the *Timaeus* (entitled 'συναγωγὴ τῶν πρὸς τὸν Τίμαιον μαθηματικῶν θεωρημάτων', *In Tim.* II 76.24), which he attached to the Commentary as an appendix.

[31] O'Meara (1989: chapter 3, 62, 69).

[32] O'Meara (1989: 84).

physical in the *Timaeus*,[33] because of the ontological difference between physical arithmetic and mathematical arithmetic.[34]

(4) Afterwards, the interpretations of Syrianus leans slightly more to the instrumentalist side. Syrianus, whose view of the relation between mathematics and the physical world on the whole owes a lot to Iamblichus',[35] maintains e.g. that the five regular polyhedra brought in in the formation of the elements are described in mathematical terms (μαθηματικοῖς ὀνόμασιν), but indicate the efficient and creative powers of nature.[36]

Proclus' position on the mathematization of nature, as it comes to the fore in his commentary on the *Timaeus*, is a sophisticated sequel to the views held by his predecessors Iamblichus and Syrianus. He maintains that, since the structure of physical reality is mathematical, we do need mathematical explanations of the physical, but for a full understanding of the physical world mathematical explanations are not sufficient.[37] In terms of realism and instrumentalism, his position is—how appropriate—something intermediate between the two.[38]

The critical reader may object that applying notions such as realism and instrumentalism to ancient thinking is unhelpful,[39] but I will maintain the distinction because it allows us to distinguish two aspects of Proclus' views on the role of mathematics in philosophy of nature: an ontological aspect and a methodological aspect.

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[33] *In Tim*. II 36.20–27, cf. Iamb. *Comm.Math*. 28.19 ff.

[34] For Iamblichus' syncretistic description of the use of mathematics for "attacking perceptible things", which O'Meara aptly qualifies as "embarass[ing] both by its richness and by its poverty", see *Comm.Math*. 32 (93.11) and O'Meara (1989: 49).

[35] See O'Meara (1989: 138–141). On mathematical number in Syrianus see Mueller (2000).

[36] *In Met*. 85.38–86.2, on Arist. *Met*. XIII 2 1076a38–b11.

[37] See also O'Meara (1989: 48–51) on the different aspects of the relation between the mathematical and the physical: abstraction (ἀφαίρεσις), joining (ἐφαρμογή), perfection (τελείωσις), participation (μετοχή), division (διαίρεσις), comparison (παραβολή).

[38] In general, realism and instrumentalism when applied to views of ancient philosophers and scientists are summoned mainly in the context of astronomy. The instrumentalists are those like Ptolemy, who famously attempt at 'saving the appearances', with the use of models and hypotheses. As Segonds (1987a, 1987b) and Lloyd, G.E.R. (1978) have shown, Proclus opposed this instrumentalist position on realist grounds. See esp. Lloyd, G.E.R. (1978: 211 and n. 52): Proclus' objection against hypotheses of epicycles and eccentrics is not that they do not provide a means of calculating the positions of the heavenly bodies, but that such hypotheses and the ensuing calculations do not constitute a consistent *physical* account of the heavenly bodies. Cf. V.5.2. On Simplicius' defence of the role of mathematics in astronomy see De Haas (2000).

[39] Cf. Gregory (2000: 8).

IV.2.2. *The Body of the World*

The first passage in the *Timaeus* on the body of the world (*Tim*. 31b–34a) can be divided into four sections: (1) the necessity of four primary bodies for the visible and tangible nature of the world (31b–32c), (2) the reason why all four primary bodies are used exhaustively in fashioning the world (32c–33b), (3) the spherical shape of the world and the fact that it has no limbs or organs (33b–34a), (4) transition to the World Soul (34a–b).[40]

For our purposes, section (1) is most interesting, and especially the following notorious passage, as it is there that mathematical proportions are brought in to explain the necessity of two mean elements (μέσα) between fire and earth to provide the natural world with three-dimensionality and unity:

> **T IV.2** But it isn't possible for just two things to be well combined, without a third; there has to be some bond (δεσμός) between the two that unites them. Now the best bond is one that truly makes a unity of itself and the things bonded by it, and proportion by nature accomplishes this best. For whenever of three numbers or masses or powers the middle (μέσον) between any two is such that the first is to it as it is to the last, and again the other way around, the last is to the middle as the middle is to the first, then the middle becomes both first and last, and in turn the last and the first both become middles, and in this way everything turns out to be the same, and being in the same relation to each other everything will be one. (*Tim*. 31b8–32a7, trans. allowing Proclus' interpretation)[41]

Before turning to Proclus' views on the role of mathematics in the *Timaeus*' explanation of the corporeal, let us briefly go over his reading of this passage.

In his interpretation of these proportional relations between the elements,[42] Proclus introduces a distinction between three kinds of 'bond' (δεσμός), namely (a) the bond that pre-exists 'in the cause', (b) the bond that is immanent 'in the things bound', and (c) the intermediate bond,

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[40] Cf. Cornford (1937) and Zeyl (2000: xci ff.) for similar divisions of the *Timaeus*-text. The second passage in the *Timaeus* on the body of the world is 53c ff., the construction of the four elements or primary bodies, earth, water, air, and fire from scalene and isosceles triangles.

[41] Note that the expression used for middle or mean (μέσον), as well as μεσότης, are used to refer both to any middle term and to an ἀναλογία. See Baltzly (2007: 10).

[42] *In Tim*. II 1–52.14. See for a translation of this passage with introduction and notes Baltzly (2007: of his introduction esp. 7–20).

that proceeds from the cause and manifests itself in the things bound.[43] By way of illustration Proclus offers an analogy with a living being, for which there are three bonds that guarantee its unity, namely (a) the 'one *logos*', the cause of the living being, (b) the tendons and muscles which are in the things bound, and (c) the φυσικὸς λόγος, which proceeds from the cause and uses the tendons and muscles to maintain the unity of the living being. These three bonds, then, are in fact three causes of unity.

Afterwards, Proclus emphatically excludes bonds (a) and (b): these are the two bonds that Plato is *not* aiming at in *Tim*. 31b8–32a7. (a) The first kind of bond, which Proclus calls demiurgic and creative (δημιουργική, ποιητικόν),[44] is a real cause and therefore transcends its effects. But since the bond we are looking for has to be one *between* the elements (*Tim*. 31c1), it cannot be transcendent. So the first bond is out.

(b) The second kind of bond, which is immanent, is not a true cause, but a *conditio sine qua non* (ὁ ὧν οὐκ ἄνευ λόγος) or organic bond (ὀργανικόν).[45]

The example provided by Proclus of bond (b) recalls *Phaedo* 98c2–99b4, where Socrates mentions his bones and tendons as the *conditio sine*

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[43] *In Tim*. II 15.12–17. For an extensive discussion of this passage and its sequel see Lernould (2000). Cf. MacIsaac (2001: 157–161). Lernould's treatment of the passage is very detailed, but has two major general flaws, namely that he emphasizes the opposition mathematical—physical too fervently, without respecting Proclus' own explicit vision (II 23). For example, when Proclus uses terms such as "equality" (ἰσότης) and "unity" (ἡ μόνας, II 19.23) that is called by Lernould a brusque change of register from the physical to the mathematical, and the verb πέφυκεν is considered a slip back into physical language (2000: 133–134). Secondly, as a consequence of this strong opposition, Lernould misreads Proclus' understanding of mathematics and concludes (2000: 144) that philosophy of nature is reduced to mathematics by our commentator.

[44] *In Tim*. II 15.25–30, cf. δημιουργικόν: 16.8, ποιητικόν: 13.

[45] τὸν ὧν οὐκ ἄνευ λόγον: 15.24, organic (ὀργανικόν): 15.30, 16.13. I choose not to translate ὀργανικόν as 'instrumental', as this might wrongly suggest that we are here at the level of the instrumental *cause* (Nature)—the organic bond is indeed instrumental, but to the transcendent-and-immanent bond, not to the demiurgic bond. I do not agree with the interpretation of Lernould (2000: 131 and n. 9) and the translations of Baltzly (2007: 58, ad loc.), Festugière (1966–1968: vol. III, 38 ad loc.) who take the τὸν ὧν οὐκ ἄνευ λόγον ἐπέχων to refer to the intermediate bond. For this reading, the phrase τὸν ὧν οὐκ ἄνευ λόγον ἐπέχων has to fall outside the scope of the negation οὔτε in II 15.24. This is a possible, but not the only possible construction. My main reason for assuming that the phrase falls under the negation, which renders a meaning such as "nor is it, due to having the place of *conditio sine qua non*, excluded from the class of true causes", is the parallel with the *Phaedo* (see below). Another argument, however, is the subsequent elaboration of the arguments against the relevant bond being either (a) or (b): μήτε … μήτε (II 15.25, 30), which suggests that the same two causes are mentioned in the foregoing οὔτε … οὔτε (II 15.23–24).

qua non (ἄνευ οὗ τὸ αἴτιον οὐκ ἄν ποτ' εἴη αἴτιον), but certainly not the real cause of his staying in prison.[46] Likewise, in the example above, the physical parts of the living being are the necessary condition, but not the real cause, of its unity. The *real* cause is bond (a), the 'one *logos*'. The intermediate bond (c) that is not entirely transcendent is still something of a real cause.

After the elimination of the two irrelevant bonds, Proclus moves on to the positive qualification of the intermediate bond. It is this bond which Plato calls "the most beautiful bond which truly unifies itself and what is bound by it,"[47] and this bond is "proportion" (ἀναλογία).[48] Proportion, according to Proclus, is singled out as the best kind of bond because it uses a μέσον or μέσα, i.e. the instruments which are the lowest kind of bond, to constitute a unity *of* as well as *with* the extremes.[49]

In order to illustrate how proportion achieves and becomes such a unity Proclus presents as examples the three mathematical ratios (μεσότητες)[50] from which Plato constitutes the soul, geometric, arithmetic and harmonic. In arithmetic ratios, there is a quantitatively equal increase (e.g. 1–2–3, increase of 1); in geometric ratios there is a qualitatively equal increase (e.g. 1–2–4, doubling); and in harmonic ratios the middle exceeds and is exceeded by the extremes by the same part (the ratio between first and last is the same as that between first-middle and middle-last, e.g. 3–4–6: the ratio 3:6 is identical to 4–3:6–4).[51] All three, geometric, arithmetic, and harmonic, are characterized by equality, namely of the ratio, which stays the same regardless of the factors, and as such they all have a unifying quality.[52]

In these illustrations Proclus shifts focus from proportions and bonds in general to *mathematical* ratios, following Plato, who (in **T IV.2**) first speaks about bonds in general and subsequently moves on to "numbers,

[46] The term οὗ ἄνευ οὐκ is not used often in ancient discussions about causes, but when it is, it usually refers to the physical instrument in a process (e.g. of generation). Cf. *In Alc*. 169.6–7 (on *Alc*. 106a), Arist. *Phys*. II 9 200a5 ff., Simpl. *In dA* 111.5–7.

[47] *Tim*. 31c2–3.

[48] *Tim*. 31c3–4, *In Tim*. II 16.1–13. Proclus first states that this bond has its power *through* proportion (16.3), but continues to say that it *is* proportion (16.5–7). On the central place of *ratio* (trans. of ἀναλογία) in Calcidius' commentary on the *Timaeus* see Somfai (2004).

[49] *In Tim*. II 18.22–19.3.

[50] On the use of both μέσον and μεσότης as referring either to middle term in any sense or to ἀναλογία see above n. 41.

[51] *In Tim*. II 19.9–30. O'Meara (1989: 188), MacIsaac (2001: 166–168).

[52] *In Tim*. II 19.30–20.4.

masses or powers" and proportional relations. Proclus, in his discussion thereof, introduces the three kinds of ratio that are "now being spoken about (τὰ νῦν μεσότητες) and from which Plato establishes the soul" (II 19.5–7). At this point in the *Timaeus* text, however, it is not at all obvious that Timaeus is speaking about the three kinds from which *soul* is established. By emphasizing the connection with the ratios that are relevant further on, in the psychogony of the *Timaeus*, Proclus wants to make clear that any explanation of the above passage should fit the dialogue as a whole, rather than, as he phrases it, discuss novel kinds of ratios such as "the likes of Nicomachus and Moderatus" do.[53] Moreover, Proclus sees a correspondence between the three kinds of ratios of the soul and the "numbers, masses or powers":

> T IV.3 = part of T IV.2 (iii) For whenever of three numbers or masses or powers the middle between any two (ὁπόταν γὰρ ἀριθμῶν τριῶν εἴτε ὄγκων εἴτε δυνάμεων ὁντινωνοῦν ᾖ τὸ μέσον) is such that the first is to it as it is to the last, and again the other way around, the last is to the middle as the middle is to the last, then the middle becomes both first and last, and in turn the last and the first both become middles, and in this way everything turns out to be the same, and being in the same relation to each other everything will be one.
>
> (*Tim*. 31c4–32a7, trans. allowing Proclus' reading)

Of this passage especially the phrase "εἴτε ὄγκων εἴτε δυνάμεων ὁντινωνοῦν" is a rich source of discussions on the mathematization of nature in the *Timaeus*, because of its ambiguity. In the given translation, it is an apposition with μέσον, and δυνάμις is given a non-mathematical meaning, but the phrase allows other syntactic constructions and δυνάμις can easily be given a more mathematical sense.[54] Without going into

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[53] *In Tim*. II 19.3–5. Lernould (2000: 133–134) concludes from this remark that the elements do not actually have mathematical structures ("des proportions telles que le géomètre les déploie discursivement (dianoétiquement) dans l'imagination"). It is a clear indication, Lernould says, that Proclus is thinking of 'essential' rather than mathematical proportions. This conclusion may be correct, but it cannot be drawn from this passage.

[54] For a thorough discussion of the possible constructions and interpretations of this sentence, see Pritchard (1990), who gives an entirely physical reading of δύναμις as "powers", but it is not clear to me what he takes these powers to be. In the end Pritchard puts the sentence down as a methodical passage containing playful nonsense. For a refutation of modern interpretations see Vinel (2003). To name some other interpretations: Taylor (1928: 96–99) follows Proclus but considers the whole passage "simply a play of mathematical fancy". Heath (1956 [1926]: vol. 2, 294 and n. 1) takes the ὄγκοι and δυνάμεις to be square and cubic *numbers*. Cornford (1937: 45–52) follows Heath, but at the same time maintains that ὄγκων and δυνάμεων depend on τὸ μέσον, and even pays himself a compliment for this interpretation: "Here, as in many other places, Plato is compressing

the details—which have been amply discussed elsewhere—suffice it to say that the passage has shown to be ambiguous enough to provide support both for the realist and for the instrumentalist interpretation of the *Timaeus*. Regardless of the preferred syntactic construction and meaning of δύναμις, the whole passage is today generally taken in a realist vein, to concern continuous geometric proportion (ἀναλογία συνεχής) and to express quantitative relations between the four elements. Proclus, we will see, makes good use of the ambiguity of the three terms ἀριθμοί, ὄγκοι, δυνάμεις. He first matches them with the different subjects (ὑποκείμενα) of the three kinds of ratios, arithmetic, geometric, and harmonic respectively, and subsequently also explains all three terms in a physical sense.[55]

The passage, which elicits a shift in Proclus' exegesis from philosophy of nature to mathematics, also triggers the first emphatic distinction in Proclus' commentary between the mathematical and the physical reading:[56]

> **T IV.4** First we should speak about these things in a mathematical manner (μαθηματικῶς) and subsequently in a physical manner (φυσικῶς), which is more to the point (ὅπερ μάλιστα πρόκειται). For our discourse should not distance itself too much from the proposed inquiry.
>
> (*In Tim*. II 20.19–21)

Proclus here defends the need of a physical reading of the mathematical text, but it will become clear that he also feels the need to justify his attention for the mathematical details, and even the very presence of mathematics in the context of physical doctrine.

The composition of his mathematical exegesis is ring-shaped: Proclus commences with the fact that geometrical proportion is proportion

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his statement of technical matters to such as point that only expert readers would fully appreciate its meaning" (1937: 47). Cornford (1937: 51–52) conjectures that Plato in this passage expresses actual quantitative relations between the four elements. For Proclus see below and next note.

[55] *In Tim*. II 25.24 ff., see below. Proclus' interpretation of the three kinds of means fares well with Taylor (1928: 99), according to whom it is "pretty clearly right", but less well with Cornford (1937: 45, n. 1) who finds in Proclus' discussion "an unfortunate attempt to drag in arithmetical and harmonic proportion", "connected with the false notion that δυνάμεις in our passage has a physical sense". This criticism is unjust, as Proclus clearly distinguishes the physical from the mathematical reading. See below. Pritchard follows Proclus' syntactical reading, but not his interpretation of the three kinds of means. On Proclus' interpretation see further Baltzly (2007: 13–15). See also Festugière (ad loc) and Lernould (2000: 135, n. 21) for other references.

[56] *In Tim*. II 20.19–28.7, with the transition to the physical explanation at 23.9.

properly speaking (ἀναλογία γὰρ κυρίως ἐστὶν ἡ γεωμετρική, 20.26–27); he moves on to show how the three kinds of items (numbers, masses and powers) can be matched onto the three kinds of ratios (arithmetical, geometrical and harmonic respectively);[57] he then returns to proportion as *bond* in the proper sense (ἔστι γὰρ ὁ μὲν κυρίως δεσμός ἡ ἀναλογία) and a principle (ἀρχή), and ends by pointing out, as he started, that geometrical proportion is truly proportion, since the aim of all proportion is identity (ταυτότης), and "strictly speaking identity is set over the geometric proportion (. . .), but equality (ἰσότης) is set over the arithmetic proportion, while similarity (ὁμοιότης) is set over the harmonic."[58] After this ring, Proclus ends his mathematical exegesis with an all-important conclusion, namely that because identity depends on unity, proportion, and especially geometrical proportion with its identical intervals between extremes and middle, leads to unity. In other words, proportion is a tool of reversion.[59]

After this, Proclus returns to the physical interpretation of the passage, to conclude that the most beautiful proportion (ἀναλογία) in the physical context is 'a certain single Life and single λόγος' (μία τις ζωὴ καὶ λόγος εἷς), which is the containing cause of the universe and everything in it,[60] and that the numbers, masses, and powers are in fact immanent forms (τὰ εἴδη τὰ ἔνυλα), their distributions over matter (αἱ ἐκτάσεις αὐτῶν καὶ αἱ διαστάσεις αἱ περὶ τὴν ὕλην), and the qualities that contain and form bodies (αἱ ποιότητες αἱ συνεκτικαὶ καὶ εἰδοποιοὶ τῶν σωμάτων) respectively.[61]

The relation between mathematical and physical explanation, which was summarily indicated earlier, is emphatically marked at the transition to the physical exegesis, in a page long discussion full of interesting remarks concerning both (i) the limitations and (ii) the benefits of mathematization in philosophy of nature. It begins as follows:

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[57] Since all this is marked by Proclus as the mathematical, as opposed to the physical reading, Cornfords criticism (see n. 55) concerning the "false notion that δυνάμεις in our passage has a physical sense", relies on a misconstrual of Proclus' exegesis: the δυνάμεις here are still *harmonic*, i.e. numerical (Baltzly translates 'musical') values. It is not until later (II 25.24 ff.) that they are also explained as sensible qualities.

[58] *In Tim*. II 22.29–23.5, trans. Baltzly (2007), modified. We hear an echo here of Adrastus, apud Nicomachus, *Introductio Arithmetica* 21–24. On analogy and identity see Beierwaltes (1979: 65, cf. 73, 153 ff.).

[59] Cf. *In Tim*. II 23.6–8.

[60] *In Tim*. II 24 ff. On this Life see also Nature in chapter II.

[61] *In Tim*. II 25.1–5. Cf. 24.21.

> T IV.5 After taking up the mathematical side of those words we should turn to the physical inquiry. (i) For it is fitting neither to remain in mathematics, distancing ourselves from the text (for the dialogue is physical), (ii) nor to disregard those words, inquiring further only into that which pertains to perception. Instead, we should connect both and always interweave the physical with the mathematical, just as the things themselves are interwoven, and are of the same kind (ὁμογενῆ) and related (ἀδελφὰ) due to the emanation from intellect. (*In Tim*. II 23.9–17)

It is worth our while to take a closer look at the further elaboration of the two issues raised here, and connect them to Proclus' general theory of mathematics. We will start out with the limitations of mathematization of philosophy of nature, and subsequently find out which use and benefits mathematics nonetheless does have for philosophy of nature.

i. The limitations of mathematization

From Proclus' awareness of the fact that mathematical proportion has its particular function in the argument for the solidity and tangibility of the natural world, one can already surmise that he would deem the argument of *Tim*. 31b–c a failure if it were taken to have a mathematical meaning only: a mathematical solid is ἀναφές, it does not have these properties of physical solidity and tangibility.[62] But Proclus has more general objections to offer to what we might call a 'mathematicist' approach to philosophy of nature, in the sense of the reduction of physical phenomena to mathematical facts, and the assumption that the former can be adequately explained with the use of mathematics only:[63]

> T IV.6 We should not (δεῖ δὴ οὖν μὴ) linger in mathematics, as some people do. (1) This both results in false convictions in the audience, namely that physical things are in fact mathematical shapes and numbers, and is otherwise out of place: (2) after all, philosophy of nature does not allow for the precision and firmness of mathematical objects.[64] (3) Moreover, we

[62] *In Tim*. II 13.3–6.

[63] As will be clear from the following quotation, Proclus does not distinguish clearly between reading a mathematical passage for its own sake, while disregarding the physical context, and assuming that a mathematical text gives a mathematical explanation of the physical. He does, however, present arguments against both.

[64] *In Tim*. II 23.28–30: οὐδὲ γὰρ ἐπιδέχονται τῶν μαθημάτων τὸ ἀκριβὲς καὶ ἐρηρεισμένον οἱ λόγοι τῆς φύσεως. I take οἱ λόγοι τῆς φύσεως to stand for φυσιολογία. The sentence could also mean something like "the rational principles of nature do not receive the precision and steadiness of mathematical objects," but as shows from the immediately foregoing καὶ ἄλλως ἄτοπον Proclus is offering another argument

> would not be following the rules of demonstration, in which it is said not to transfer the pieces of knowledge of one genus to another. (4) So it is also not possible to study the physical in an arithmetical manner.
>
> (*In Tim.* II 23.25–33)

This passage contains (1) an ontological argument, (2) an argument that combines ontology and epistemology, (3) an epistemological argument, and (4) a concluding remark.

(1) According to the ontological argument giving only a mathematical explanation of the proportions of the world body, i.e. without adding a physical explanation, does not suffice as it would instil in the audience the false opinions that natural objects consist of mathematical figures and numbers. This is a reference to a mathematicist (interpretation of) Pythagorean theory of matter, as it can be found criticized in Aristotle, who refers to a Pythagorean theory that all sensible substances are formed out of numbers with spatial magnitude.[65] This theory is rejected also by Proclus: physical objects are themselves no mathematical figures or numbers. And reading the *Timaeus* as if it says that they are, Proclus seems to be saying, is doing injustice to Plato.

(2) Accepting only mathematical explanations involves ignoring the fact that physical objects, as opposed to their mathematical counterparts, suffer from a well-known lack of exactness and permanence. This seems to be no more than a further elaboration of the previous argument, as it presents a clarification of the 'false convictions' (ψευδεῖς δόξας) that would be the result of a reduction of philosophy of nature to mathematics. In fact, however, it further narrows down the relation between mathematical and physical objects, adding a methodological argument against a mathematicist approach to the previous ontological one. Not only are *physical objects* themselves not reducible to *mathematical objects* (ontological argument), as a consequence of the difference between the two, and especially the imprecision and instability inherent in physical objects, it is moreover not possible to apply *mathematical explanations* as such within philosophy of nature (epistemological argument). Thus it seems that both the realist and the instrumentalist approach are excluded. The point of this epistemological argument is not, however, that it is altogether impossible to use mathematical explanations in philosophy of nature because of the lack of exactness of the physical. Rather,

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against lingering in mathematics, not a further explanation of the ontological distinction between mathematical and physical objects.

[65] *Met.* I 6 987b27 ff., XIII 6 1080b16 ff. See also Cleary (1995: 346 ff.).

Proclus is pointing to the different levels of certainty of different sciences and the consequent impossibility of applying mathematics to philosophy of nature *immediately*.[66] Further on this is more emphatically stated:

> **T IV.7** … the proportion in mathematicals has a precise and scientific character; for the [mathematical] ratios (λόγοι) are immaterial. But the situation is different in the case of proportion in the physical: any proportion in heavenly things still has a degree of certainty, but proportion in sublunar things [partakes in certainty] less, as it is always engaged in matter. (…)[67] … and whereas the heavenly things are in a way more closely related to precise λόγοι, sublunar things have a murky truth.[68] So Plato appropriately added 'insofar as possible' (*Tim*. 32b4–5), to prevent that you in any way demand the same kind of precision in the case of physical λόγοι, that is in mathematical ones.[69]

Note that Proclus here ascribes a number of epistemological properties—scientific character, precision, certainty, truth—to mathematical entities themselves, rather than to the knowledge we have of them. This can be forgiven, in light of the fact that the ontological home of mathematics is the soul, where ontological and epistemological properties partly coincide.[70]

More importantly, we can see very clearly how closely linked are reality and knowledge. The ontological distinction between the mathematical and the physical is directly related to that between a scientific account and a "likely story" (εἰκότες λόγοι), in a way that reveals that the mathematical description is more than a metaphor. When making the transition from the mathematical to the physical explanation, Proclus announces this transition as follows:

> **T IV.8** Starting from these [mathematical explanations] let us see, how the physical notions are consonant (σύμφωνα) with them, and let us fit a likely account to the scientific one (τοῖς ἐπιστημονικοῖς λόγοις τοὺς εἰκότας συναρμόσωμεν).[71]

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[66] Cf. *In Eucl*. 59.10 ff.

[67] The passage left out is quoted below at n. 98.

[68] ἀμυδρὰν ἀλήθειαν: cf. *In Eucl* 4.4, where it is associated with the objects of sense perception and δόξα. The expression seems to be unique to Proclus, and may go back to Plato *Rep*. X 597a, where the carpenter's bed is ἀμυδρόν τι, as opposed to truth/reality (the real bed). From 'something murky and not truth', through 'murky imprints of truth' (e.g. Plutarch, *de Is*. 354C1 ἀμυδρὰς ἐμφάσεις τῆς ἀληθείας), we reach Proclus' 'murky truth/reality'. Cf. chapter V on degrees of truth and on non-propositional truth.

[69] *In Tim*. II 51.5–10 and 15–19.

[70] Any soul, but primarily universal Soul. Cf. also Taormina (2000).

[71] *In Tim*. II 36.20–22. On the translation of εἰκοτ- as "likely" and on likely λόγοι in general, see chapter V.

It has been argued that Timaeus styles his own account a likely story because he uses all kinds of metaphors in his description of the world. Regardless of whether that is a correct reading of the 'likely story',[72] we can already see at this point that according to Proclus at least the mathematical passages about the body of the world cannot be reduced to metaphors, as they are called 'the scientific account', not the 'likely' one. That the mathematical passages are no metaphors does not imply, by the way, that they have to be taken literally or that mathematics cannot be instrumental in the understanding of the natural. First of all, there is some structural relation between the two, as the latter is somehow consonant (σύφωνα) to the former. And secondly, I propose a third possibility next to literal and metaphorical readings, namely an analogical one, in which from one level of reality we obtain information about another. We will return to this in the next section.

(3) A similar point is made in Proclus' epistemological argument, which takes up Aristotle's rule against kind-crossing (μετάβασις), but in a version adapted to Neoplatonic metaphysics. By presenting only mathematical explanations in philosophy of nature, he states, one would be committing a methodological error:

> **T IV.9** ... we would not be following the rules of demonstration, in which it is said not to transfer the pieces of knowledge from one genus to another genus (μὴ μεταφέρειν τὰ ἀπ' ἄλλου γένους ἐπιστητὰ εἰς ἄλλο γένος). (II 23.28–32)

Aristotle's rule against kind-crossing says that it is not possible to demonstrate something in science A using propositions from science B.[73] Since each science demonstrates the attributes of its proper γένος or subject matter, different sciences do not share middle terms, and hence demonstration combining terms or propositions from different sciences is impossible.[74] For example, it is not possible to prove within geometry that two κύβοι make a κύβος, since this can be proved only with the use of cubic numbers, and numbers form the genus of arithmetic.[75] The crossing from one genus to another is referred to as μετάβασις.[76] Transposed to our context: it is not possible to demonstrate something in philosophy

[72] This question will be addressed in chapter V.

[73] On Proclus' formulation of the principle see below.

[74] *APo* I 7 75a38–75b1; I 10 76a37–38, cf. I 7 75b10–11.

[75] *APo* I 7 75b13–14.

[76] This rule is discussed in *APo* I chapter 7, 9 and 13. Barnes calls it the kind-crossing rule. Barnes (1994: 123, 130–131, 134–135, 158–160); McKirahan jr. (1978, see also 1992: esp. ch. V) and Hankinson (2005).

of nature using mathematical propositions.[77] As is well known, there is an exception to Aristotle's rule against μετάβασις: when one genus comes below the other in some way, the attributes that the lower genus owes to the higher genus should be proved in the higher genus. More precisely, this kind of μετάβασις consists in providing grounds (τὸ διότι)[78] for the pieces of knowledge (τὸ ὅτι) belonging to subordinate science A within superordinate science B, where the two have a genus in common, in a way (πῇ).[79]

Consequently, some sciences, the 'subalternate' ones as McKirahan calls them,[80] are related to one another in the same way, so that the one studies the pieces of knowledge, whereas the other investigates their grounds. This kind of μετάβασις is encountered in the theoretical and applied mathematical sciences. For example, applied sciences such as optics and harmonics are subordinate to geometry and arithmetic respectively, in that optics and harmonics study the pieces of knowledge, with the use of sense perception, but not their grounds, which are instead studied by geometry (for optics) and arithmetic (for harmonics).[81] Μετάβασις is allowed here because in a way, the subordinate sciences deal with the same genus as the superior ones, but from a different perspective, with a different *modus considerandi*:[82] optics is about lines, but not *qua* lines, and harmonics is about number, but not *qua* number.

For a Neoplatonist like Proclus, whose division of the sciences is based on the Divided Line, and mirrors a reality characterized by a continuous hierarchy, all sciences are ultimately subordinate to dialectic or theology.[83] More specifically, in Proclus' work we also find the position that mathematics contributes to the more mathematical aspects of philosophy of nature,[84] because the mathematical is the proximate cause of the

[77] Cleary (1995: 73) considers Aristotle's mention of μετάβασις at *Cael* I 1 268b1 to be part of his criticism of Plato's mathematization of physics, and especially his objections to construing the three-dimensional from planes. This cannot be right, however, as at *Cael.* I 1 Aristotle is not making the methodological point of the *Posterior Analytics*, but merely denying the possibility of transition from bodies to a *fourth* dimension.

[78] 'Ground' is here used in a strong sense to allow for both causal and epistemic reasons.

[79] *APo* I 7 75b8–9, I 9 76a22–25, I 13 78b34–37.

[80] McKirahan jr. (1978: 198).

[81] *Apo* I 7 75b14–17; I 13 78b34–79a16.

[82] For this notion see Zabarella, *De Natura Logicae* I 15.

[83] Cf. *In Eucl.* 30.10–32.20; *In Tim* I 350.8–20; *De prov.* 27–32. See also Lernould (1987).

[84] *In Eucl.* 19.20–23.

physical.[85] What is more, the mathematical is even *of the same genus* (ὁμογενῆ, II 23.15–16) as the physical. Now if μετάβασις is allowed in those cases in which a superior science provides causes of the subject matter of an inferior science, because they have the same genus in some sense, then why would Proclus still invoke the rule against μετάβασις in this context?

The answer to this question lies in the fact that the rule against μετάβασις, and more generally ideas on the autonomy of the sciences, have been adjusted to fit Neoplatonic metaphysics and epistemology. Due to the hierarchical structure of reality, in which every lower level is caused by every higher level, each science, conceived of as studying one particular level or part of reality, and studying it from the point of view of its causes, by necessity involves a higher level in order to actually be a science.[86] As a consequence, the rule against kind-crossing loses its function of ensuring the autonomy of sciences that are not in a subordinate relation.[87] Instead, its new function is to prevent the collapsing of all sciences into one another by pointing out that one cannot *transport* (μεταφέρειν) the *pieces of knowledge* (ἐπιστήτα) concerning one domain (in the more narrow sense of a particular level or part of reality) *as such* to another genus. Borrowing pieces of knowledge from science B by science A should always be accompanied by a 'translation', so to speak, that clarifies how the ontological counterparts of those pieces of knowledge are active on the level of the genus to which science A pertains. Thereby the kind-crossing rule has become the methodological version of "Everything in everything, but appropriately to each thing".[88] With respect to the mathematical explanations of the body of the world, the translation consists in finding a *physical* cause that possesses a nature and function analogous to what is characteristic of geometrical proportion.[89]

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[85] Cf. *In Eucl.* 62.18–22.

[86] Of course, the aim of a science, for Neoplatonists, is also not so much the cognitive content provided thereby, but rather the possibility of moving up to a higher level of reality and acquiring knowledge thereof, again not for its own sake, but to allow a further ascent.

[87] Cf. Gerson (2004: 112): "Of course, we cannot say without further ado that the demotion of physical science to second place entails a rejection of its autonomy. That is what the Neoplatonists assume."

[88] *El.Th.* prop. 103.

[89] Cf. O'Meara (1989: 189–190). See also Beierwaltes (1979: 166), who refers to *In Parm.* 1129.18–21 (22–26 Cousin) and *In Tim.* II 245.25 ff.: "Dies heisst: Mathematische Gestalten wie Punkt, Gerade, Kreis und Spirale sind den Dimensionen des Geistes und der Seele angemessen zu verstehen. Sie können nicht unvermittelt ihrem Ursprungsbere-

(4) The concluding remark of Proclus' argument against using only mathematics in philosophy of nature is somewhat unexpected:

> **T IV.10** So it is also not (οὐκοῦν οὐδὲ) possible to study physical objects in an arithmetical manner. (*In Tim*. II 23.32–33)

The scope of the argument is here narrowed down to arithmetic, which is surprising as in the whole discussion Proclus speaks of mathematics in general, and in the wider context the main focus is on geometry (more precisely, geometrical proportions, cf. II 20.21 ff.), not arithmetic. Rather than explaining the reference to arithmetic here as an afterthought or even an interpolated gloss, I suggest that just like the beginning of the passage (see **T IV.6** and discussion) this statement shows that the whole enumeration of arguments against mathematization of nature is ultimately taken from, or at least still closely based on, a discussion and rejection of an overly Pythagorean approach to the study of natural objects, possibly from Syrianus.[90]

We have seen that mathematics has some place in philosophy of nature, but in itself is not enough for an understanding of the physical. The next question to be answered, then, is what the positive contribution of mathematics is, or how and why we can translate the mathematical explanations to physical ones.

ii. The use of mathematics

Proclus' defence of mathematics in philosophy of nature pertains not only to his own attention for the mathematical detail of the *Timaeus* passage: he is also justifying Plato's use of mathematics in physical theory. In his initial summary of his position on the matter (**T IV.5**), Proclus says that we should not disregard (ἀμελεῖν) the mathematical passage and look only for that which pertains to perception. So the point is not so much that one should interpret the mathematical passages in a physical manner, but rather that one should not skip them altogether. In other

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ich entnommen und in eine andere Dimension übertragen werden, so dass ein Verständnis ihres Sinnes nur eine Sache der Hinsicht wäre, die beliebig vertäuscht werden könnte. Sie sind vielmehr nur aus der jeweiligen Dimension heraus, in der sie Wahrheit aussagen, zu begreifen. Sie sind in der Seinsweise der jeweiligen Dimension."

[90] I take the conjunctive negation οὐκοῦν οὐδὲ to suggest a narrowing down, from the previous general exclusion of any explanation concerning a genus in a science that has another genus, to a specific science, arithmetic ("since it is not possible to study anything in a science to which it does not belong, it is also not possible etc.").

words: the mathematical passages do contribute something of their own to our knowledge of the physical world.[91] That this is so is explained from the structure of reality: the physical and the mathematical are like siblings from the same father, Intellect, and reality is not divided into separate compartments, each containing an entity of its own. Instead, everything is interwoven, in the so-called Pythagorean hierarchical scheme:[92]

> **T IV.11** In general, if the Pythagoreans arranged mathematical being as a middle term between intelligible and sensible things—in so far as the mathematical is more explicit (ἀνελιττομένην) than the intelligibles, but more universal (καθολικωτέραν) than sensible things—why is it necessary to leave out these things and think about physiological matters alone?[93] For how has the sensible been set in order (διακεκόσμηται)? In respect of what kind of rational forming principles (λόγοι) has it been arranged (διατέτακται), or from what manner of ratios (λόγοι) has it proceeded (προελήλυθε), unless it be from the mathematical ones? Certainly these λόγοι are primarily in souls,[94] having descended from Intellect. Next they come to be in bodies from being in souls.[95]

The use of mathematics for philosophy of nature, then, lies in explaining certain properties of the physical, namely its rational order and organization, and in revealing its proximate causes. In his more specific discussion of this topic in the *In Eucl.* Proclus enumerates the different contributions of mathematics to philosophy of nature as revealing the order (τὴν τῶν λόγων εὐταξίαν) according to which the universe has been constructed (δεδημιούργηται), and the proportional bonds that unite the opposites present in it; showing the primary elements of which it consists, and their properties; and discovering the numerical values of plan-

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[91] A different question, namely whether the mathematical aspects of the physical can be studied in mathematics, is answered in the negative by Proclus. The study of quantity in the perceptible and of magnitude in bodies itself is considered to belong to φυσιολογία, rather than mathematics. *In Eucl.* 36.8–12. See also appendix II.

[92] Cf. O'Meara (1989: 185–186).

[93] Φυσιολογία here clearly has the more restricted meaning of "doing philosophy of nature starting from sense perception only".

[94] The text has a plural, ψυχαῖς, but Festugière takes it to refer to the hypostasis of Soul. There is no need, however, to choose between individual souls and the universal hypostasis of Soul. The point made here is that the corporeal bodies display certain regularities due to λόγοι which they owe to (Intellect via) Soul, through being ensouled by individual souls and the World Soul. On the relation between mathematics and Soul/souls and the way mathematics is in Soul, see *In Eucl.* 16.16–18.14 and *In Tim.* II 239.5–16.

[95] *In Tim.* II 23.16–26, trans. Baltzly, slightly modified. The link with the Pythagoreans was already established in the very first pages of the commentary, and in similar wording: *In Tim.* I 8.13–29.

etary cycles and the periods of generation.[96] The majority of these contributions are referred to as manners of *showing* properties of the physical world (ἀναφαίνουσα, δείξασα).[97] As a consequence, the description is rather noncommittal and not very helpful, when it comes to finding an answer to the question whether Proclus considers the contribution of mathematics to philosophy of nature in realist or instrumentalist terms. We do know, of course, on the basis of the Pythagorean picture sketched above, that there is an ontological relation between the mathematical and the physical, and that this relation is what makes the contribution possible in the first place. This becomes even clearer when Proclus restates the ontological relation and its epistemological consequences as "Plato rightly lends credibility to the physical λόγοι from mathematicals, for the latter are their causes, and the demiurgic procession is brought to completion through Soul".[98] A proper understanding of the proportional relations between the elements, and consequently of the unity of the universe, is provided by relating them to their demiurgic cause, through their proximate cause, i.e. the intermediate level of mathematical entities.

The picture sketched here is well known. Following *Republic* book VII, like his teacher Syrianus and Iamblichus before him,[99] Proclus holds that mathematical being (ἡ μαθηματικὴ οὐσία, *In Eucl.* 3.1) has a position intermediate between the intelligible and the perceptible.[100] As Proclus

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[96] *In Eucl.* 22.17–23.11 Πρὸς δὲ τὴν φυσικὴν θεωρίαν τὰ μέγιστα συμβάλλεται, τήν τε τῶν λόγων εὐταξίαν ἀναφαίνουσα, καθ' ἣν δεδημιούργηται τὸ πᾶν, καὶ ἀναλογίαν τὴν πάντα τὰ ἐν τῷ κόσμῳ συνδήσασαν, ὥς που φησὶν ὁ Τίμαιος, καὶ φίλα τὰ μαχόμενα καὶ προσήγορα καὶ συμπαθῆ τὰ διεστῶτα ποιήσασαν, καὶ τὰ ἁπλᾶ καὶ πρωτουργὰ στοιχεῖα καὶ πάντη τῇ συμμετρίᾳ καὶ τῇ ἰσότητι συνεχόμενα δείξασα, δί ὧν καὶ ὁ πᾶς οὐρανὸς ἐτελεώθη, σχήματα τὰ προσήκοντα κατὰ τὰς ἑαυτοῦ μερίδας ὑποδεξάμενος, ἔτι δὲ ἀριθμοὺς τοὺς οἰκείους ἑκάστῳ τῶν γιγνομένων καὶ ταῖς περιόδοις αὐτῶν καὶ ταῖς ἀποκαταστάσεσιν ἀνευροῦσα, δί ὧν τάς τε εὐγονίας ἑκάστων καὶ τὰς ἐναντίας φορὰς συλλογίζεσθαι δυνατόν. ταῦτα γὰρ οἶμαι καὶ ὁ Τίμαιος ἐνδεικνύμενος πανταχοῦ διὰ τῶν μαθηματικῶν ὀνομάτων ἐκφαίνει τὴν περὶ τῆς φύσεως τῶν ὅλων θεωρίαν καὶ τὰς γενέσεις τῶν στοιχείων ἀριθμοῖς καὶ σχήμασι κατακοσμεῖ καὶ τὰς δυνάμεις αὐτῶν καὶ τὰ πάθη καὶ τὰς ποιήσεις εἰς αὐτὰ ἀναφέρει, τῶν τε γωνιῶν τὰς ὀξύτητας καὶ τὰς ἀμβλύτητας καὶ τῶν πλευρῶν τὰς λειότητας ἢ τὰς ἐναντίας δυνάμεις, τό τε πλῆθος καὶ τὴν ὀλιγότητα τῶν στοιχείων αἰτιώμενος τῆς παντοίας μεταβολῆς.

[97] The exception being the contribution to astronomy, which is described in more firm language as discovering (ἀνευροῦσα) the numbers of the periods of the heavenly bodies, with which syllogisms can be formed (συλλογίζεσθαι) about their trajectories, *In Eucl.* 22.26–23.2.

[98] *In Tim.* II 51.10–15, on *Tim.* 32b.

[99] Proclus' theory of geometrical objects is already to be found in Syrianus, esp. *In Met.* 91. Mueller (2000: 72 ff.). Cf. Iamblichus *Comm.Math.*; analysis in O'Meara (1989: 44 ff.).

[100] Mathematical reasoning is also intermediate: *In Eucl.* 3.16–4.8. Cf. O'Meara (1989: 172), Breton (1969: 110–123), MacIsaac (2001: 118 ff.).

tells us at the very beginning of his *In Eucl.*, it is superior to the physical in that the objects of mathematics are immaterial. On the other hand, it is inferior to the intelligible in that mathematical objects are not indivisible.[101] The relation that it has with both its upper and its lower neighbour is one of paradigm and image.[102] Mathematics displays images of the intelligible, and the intelligible is the cause of the mathematical. Likewise, natural things are images of the mathematical,[103] and the latter are causes of the former.[104] Due to that causal and iconic relation, the universe is a *kosmos*, an ordered whole, and it is this *kosmos* in which the mathematical cause of the visible world can be seen. That mathematical theory is functional in the science of the irregular and temporal world of sense perception, then, is due to the ontological iconic relation between natural and mathematical objects.

Returning now to the passage we started from (**T IV.2**), the following question remains to be answered: what kind of mathematical entities are the geometrical proportions described in the *Timaeus*? As O'Meara has shown, mathematical entities and principles are found in many guises in Proclus.[105] He maintains that "mathematical principles are not for [Proclus] the direct model of the universe, but are quantitative discursive projections by the human soul of higher principles which, on the divine level, guide the making of the world."[106] O'Meara here understands mathematical principles in a specific, and very common, sense,[107] namely as referring to the quantitative and discursive. He thereby takes position with respect to an ambiguity existing in Proclus' philosophy of mathematics. In his exposition on the body of the world as well as elsewhere, Proclus speaks of mathematical principles as paradigms and causes of the physical.[108] Yet at the same time his *In Eucl.* strongly and continuously sug-

[101] *In Eucl.* 3–5, esp. 4.18 ff. Cf. Plato *Tim.* 35a1–3, Arist. *Met.* I 6 987b14–18.

[102] *In Eucl.* 35.7 ff. Cf. *In Tim.* I 349.24 ff. τὰ μὲν γὰρ νοητὰ παραδείγματα τῶν διανοητῶν, τὰ δὲ διανοητὰ τῶν αἰσθητῶν. At *In Eucl.* 95.23–96.11 δόξα is mentioned as the faculty of arithmetical objects—this δόξα is the one described at *In Tim.* I 248.7 ff. (rather than I 223.16–30, as suggested by Mueller (2000: 73)).

[103] *In Tim.* II 39.18–19, καὶ γὰρ τὰ φυσικὰ τῶν μαθηματικῶν εἰκόνες εἰσί.

[104] *In Tim.* II 51.12–13.

[105] O'Meara (1989: 186–187).

[106] O'Meara (1989: 193). On Proclus' projectionism see Mueller (1987). Cf. the discussion of *In Eucl.* 121.2–7, 141.2–19 as a reception of *Tim.* 70e ff. in Sheppard (2003: 211–212).

[107] For different meanings thereof see O'Meara (1989: 186–187).

[108] See above. Cf. also *In Eucl.* 82.23–25, where the scalene and the isosceles triangles are called the proximate causes of the four elements (τὸ οὖν ἰσόπλευρον τρίγωνον

gests that mathematics is the unfolding of the principles of the human soul onto or by φαντασία.[109]

Unless we assume that the human mind as such is the cause of the physical world, this cannot but be taken to involve the assumption of a truly mathematical ontological realm, existing independently of the human mind, in between the physical and the intelligible.[110] The mathematical principles in this context are actually those of the World Soul, intermediate between intellect and the sensible, ontologically analogous to both, and more exact than the sensible,[111] that aid the intelligible in the ordering of the world. More specifically, it is the ἐνέργεια of the World Soul, or the unfolding of its essential λόγοι, that are themselves mathematical only in a psychic sense: unified, without shape or extension.[112] Since it is impossible to present these shapeless unextended mathematical principles in a text, the text of the *Timaeus* does describe them using the representations that are in our souls. Thus the text we have is a description of a mental representation of the higher psychic mathematical principles that are the causes of certain physical properties. The latter is not emphasized by Proclus, however, because of the ontological priority of 'psychic' mathematics. Thus the ambiguity mentioned above is actually the ambiguity in Proclus' use of the term 'mathematics', which he has refer both to the World Soul and to the projection of its essence in our souls.

That this is how we should understand the mathematical entities in question will be clear from the discussion concerning the World Soul (IV.2.3). First, however, let us bring together the results with respect to the body of the world.

προσεχὲς αἴτιόν ἐστι τῶν τριῶν στοιχείων πυρὸς ἀέρος ὕδατος, τὸ δὲ τετράγωνον τῆς γῆς).

[109] The latter is clear from the discussion of φαντασία in MacIsaac (2001: 172–184). As MacIsaac (2001: 176) points out, there is a conflict due to the difference between the World Soul and the partial soul. For Proclus' criticism of Aristotle's notion of abstraction in mathematics see Helmig (2007: 283–289).

[110] As O'Meara seems to think earlier on (1989: 186–187). There is no need to "hazard the thought" that there is a special realm of διάνοια, separate from Soul, as did Rosán (1949: 164), despite the fact that, as he admits, such a realm is not found in Proclus' philosophy.

[111] Cf. *In Tim*. II 51.5 ff., see also below. Note that the number of elements of the proportion (four) is maintained with mathematical precision, whereas the proportional division and separation of the elements is not, due to the material character of the physical elements. *In Tim*. II 52.15 ff.

[112] *In Tim*. II 164.21–23, II 238.25–239.16, *In Eucl*. 16–18, 36–37. MacIsaac (2001: 150). Cf. Dörrie and Baltes (2002: 240).

iii. Synthesis

What does Proclus' reading of *Tim*. 31b8–32a7 tell us about his views on the mathematization of the natural? At *In Tim*. II 16.6 ff. Proclus turns to a mathematical discussion of proportion, because he takes Plato to present a general account of means and proportions, before moving on to the application thereof to the construction of the sensible world. Mathematical proportions concern a layer of reality that is characterized by exactitude, and the three kinds of proportions found on the ontologically higher level of the World Soul can be considered the causes of any lower kind of proportions, and as a consequence the former can serve as paradigms aiding our understanding of the latter, physical proportions.

With the help of mathematics, we can display certain properties of the physical (such as order, proportion, and number), through analogy in Lloyd's sense, "any mode of reasoning in which one object or complex of objects is likened or assimilated to another (of the two particular instances between which a resemblance is apprehended or suggested, one is generally unknown or incompletely known, while the other is, or is assumed to be, better known)."[113] It is important to realize, however, that as Gersh (1973: 87) points out, although the English word 'analogy' "has a certain connotation of vagueness", the Greek word ἀναλογία is semantically strongly related to its original mathematical context, and "convey[s] the idea of precision". Moreover, that analogical reasoning can be applied at all, is due to an *ontological* analogy, or what Baltzly calls a 'strong analogy',[114] as the different objects are not likened or assimilated to each other *by us* in the first instance, but are in fact alike because the two realms involved are ontologically related. The physical is caused by the mathematical, and (real) causation in Neoplatonism involves the transference of a number of properties of the cause to the effect. So on the one hand, there is no veil that can be lifted from the physical world in order to reveal its mathematical core. The physical is not a sum of mathematical objects and matter, but it is intrinsically and essentially different from the mathematical. On the other hand, the physical does possess a—mainly structural—similarity to the mathematical.[115] The symmetries

[113] Lloyd, G.E.R. (1966: 175).
[114] Baltzly (2007: 15 etc.). See also Martijn (2008: at n. 6).
[115] On causation, parallelism of structure, and analogy see Gersh (1973: 85–86), cf. Opsomer (2000a: 358).

and proportionalities that characterize e.g. the elements[116] can be described most accurately in mathematical terms because their proximate causes exist as mathematicals. This does not mean, however, that one has thereby given an explanation of physical phenomena.

In the context under scrutiny so far, *Tim.* 31–32, the descriptions of mathematical proportions according to Proclus are analogical preparations of the descriptions of physical ones, which relate to an immanent physical principle, namely the Life that is the containing cause of the universe and everything in it (analogous to geometrical proportion),[117] as well as its manifestations, each analogous to the constituents of one of the three kinds of proportions: enmattered forms ('physical numbers'),[118] extension and spatiality/distribution over matter (geometrical 'volumes'), and containing and forming qualities (harmonic 'powers').[119] In order to find this proper physical explanation, the mathematics of the text needs to be translated into physical properties,[120] with a loss of some of the certainty, precision and unity inherent in the mathematical explanation.

When we look at the second hand information we have regarding Proclus' views on the geometrical figures and matter (*Tim.* 53b5 ff.), we find the same picture. Simplicius reports that Proclus does not maintain a "symbolical" reading of the geometrical figures, yet at the same time does not give a literal reading either: the geometrical shapes are translated, as it were, into both qualitative and quantitative physical properties.[121]

On the whole, the function of the mathematical proportions is mainly anagogic, even though it allows a descent to physical qualities, because it connects the physical as we know it to its causes. This anagogic function

[116] *In Eucl.* 19.20 ff.; 22.17 ff.

[117] *In Tim.* II 24.1 ff., cf. Nature in chapter II.

[118] On physical numbers in Proclus see O'Meara (1989: 187).

[119] *In Tim.* II 24.30 ff. One could argue over the question whether the introduction of this Life to explain the bond of the elements is indeed a physical explanation, rather than a metaphysical one, as it concerns the cause of physical order, that is imposed by the demiurge. Since the direct cause of this order (Nature) is immanent (as opposed to its source, the demiurge), and is moreover the cause only of things physical, 'physical' is probably the adjective to be preferred. That the Life in question is immanent is clear from Proclus' description of how it works from inside physical objects (II 24.1–6): ἡ μὲν οὖν ἀναλογία ἡ πρώτη (…) μία τίς ἐστι ζωὴ καὶ λόγος εἷς φοιτῶν διὰ πάντων καὶ ἑαυτὸν μὲν πρώτως, ἔπειτα δὲ καὶ ἐκεῖνα συνέχων, ἐν οἷς ἐστι …

[120] Cf. Charles (1971: 244).

[121] Steel (2005: esp. 185 ff.).

exists not by imposition but is due to the necessary ontological connection between the mathematical and the physical, or the paradigm and the image.

It has been argued that in Proclus' exegesis of *Tim*. 31c–d the distinction between mathematics and philosophy of nature, that is so emphatically made by Proclus, in fact disappears on every level except that of the third bond, i.e. the conditions *sine qua non*.[122] This interpretation is based on a confusion of what one might call two kinds of mathematics. First of all, there is the essentially mathematical character of Neoplatonism, as its monistic metaphysics is founded on concepts such as unity, equality, monad, etc. Secondly, there is what Neoplatonists themselves call mathematics, the science of (discrete and continuous) quantity, which is intermediate between the intelligible and the sensible. The distinction between mathematics and philosophy of nature, as well as the term 'mathematization of physics', refer to some application of the second kind of mathematics to philosophy of nature, not the first. In other words, when Proclus speaks, for example, of the source of proportion being equality (*In Tim*. II 18.29–30), that is not a mathematization of philosophy of nature.[123] Rather, it is a general description of certain relations using terms that lie at the heart of Proclus' metaphysical system.

IV.2.3. *The Soul of the World*

We find a confirmation for the above reading of Proclus' views of mathematization in his exegesis of the psychogony (*Tim*. 34b–37c). At 34a–b Timaeus introduces the World Soul as 'inserted' into the body of the world. Subsequently, the following issues are considered: (1) the ontological priority of soul over body (34bc), (2) the composition of the World Soul from Being, Sameness and Otherness (35a), (3) the division of the World Soul according to harmonic intervals (35b–36b), (4) the rational motions of the World Soul, described as the construction of the Circle of the Same, the Circle of the Different, and the planetary cycles (36b–d), (5) the connection of Body and Soul of the world (36d–e) and finally (6) cognition and discourse of the World Soul (36e–37c).

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[122] Lernould (2000: esp. 140–141). Lernould's main thesis is that what Proclus is offering is a mathematization of physics, which, through a theologization of mathematics, leads to a theologization of physics.

[123] *Pace* Lernould (2000: 132–133).

In the following, we will leave aside the psychogony itself altogether and instead focus briefly on Proclus' views on the role of mathematics in (3) the division of the World Soul according to harmonic intervals.[124] The main thesis of this section is that in the context of the harmonic division of the World Soul, although the ontological and epistemological background remain the same, both the *role* of mathematics and the *mathematics* we encounter are different from those concerning the corporeal. After the 'psychic' mathematical principles that described the proportional division of the elements through their causes, allowing a descent to the caused, we now find the use of enmattered and "pictured"[125] mathematicals, i.e. those projected in physical matter and in the human φαντασία respectively. From the enmattered and the "pictured" mathematicals we can ascend to a proper understanding of Soul.

i. The account in the middle

In its main theses, Proclus' discussion of the role of mathematics in explaining the World Soul resembles what we have seen earlier in **T IV.6**:

> **T IV.12** (1) The mathematical theory should not be spurned altogether, (2) nor yet should it be pursued in isolation, for its own sake; (1) for the former does not show us, as Plato wants it, reality in images, and (2) the latter makes the whole exegesis unbalanced; for it should be moored, as it were, to a steady cable, namely the essence of the subject of the text. (3) So let us, as we have said before, place our account in the middle (ἐν μεσῷ … καταστήσαντες τὸν λόγον), and explain the passage, first mathematically, then fitting the subject matter (οἰκείως δὲ τοῖς ὑποκειμένοις).[126]

As with the Body of the World, so too in the case of the harmony of the World Soul, mathematical theory "should not be spurned altogether", nor "pursued in isolation". The arguments presented this time are somewhat more informative than the ones we encountered in the context of the Body of the World.

(1) The first, ignoring the mathematical passages altogether, would result in not showing "reality in images" (τὰ πράγματα ἐν ταῖς εἰκόσι), which is apparently what Plato aimed at by inserting those passages.[127]

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[124] A new English translation of this part of Proclus' commentary with introduction and notes is forthcoming: Baltzly (2009). See also MacIsaac (2001: 136–157).

[125] "Pictured" is chosen here in order to avoid the use of "imaginary", which suggests a fictionality that is not relevant in the context.

[126] *In Tim*. II 174.15–23.

[127] Festugière (1966–1968: vol. III, 219) mistakenly takes the phrase to be a first of two

What Proclus does *not* have in mind here, despite the fact that the expression "reality in images" immediately recalls it, is *Tim*. 29b3 ff., where the universe is called an image of Being and a treatise on such an image a "likely story".[128] As will be clear from **T IV.13**, presenting reality in images here does not mean showing *Being* in its image Becoming, but is rather a rephrasing of "presenting the World Soul (τὰ πράγματα) in sensible mathematics (ἐν ταῖς εἰκόσι)". This brings to mind a different parallel, namely the well-known exposition on the iconic mode of discourse on the divine in *Theol.Plat*. I 4, more on which below.

(2) The second approach, limiting ourselves to mathematics only, is rejected on the grounds that it would make our exegesis like a ship that is adrift (ἀνερμάτιστον[129] ποιεῖ), as it needs to "be moored to a steady cable" (ἐπ' ἀσφαλοῦς πείσματος ὁρμεῖν).[130] These two Platonic references present in a beautiful metaphor the principle of εἷς σκοπός, by pointing out that the literal exegesis of a passage is useless unless it is connected to the main subject of the entire text, or in Proclus' words, to "the essence of the things of which the account treats".

(3) The proposed anchoring of the exegesis to the essence of the subject matter can be attained by starting from "an intermediate position", i.e. neither rejecting mathematics entirely nor pursuing it in isolation, but, after a preliminary explanation of the mathematics *per se*, subsequently moving on to an approach that is appropriate to the actual subject matter (οἰκείως τοῖς ὑποκειμένοις). That approach is also called 'substantial' (πραγματειώδης, *In Tim*. II 193.9), a revealing choice of words.[131] The

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arguments against pursuing mathematics in isolation, and translates "d'un côté, en effet, elle ne nous fait pas voir, comme Platon le veut (29 B 3 ss.), la réalité (sc. intelligible) dans les images (sc. sensibles), d'un autre côté …". Not ἡ μαθηματικὴ θεωρία is the subject here, however (the pronoun would have had to be feminine rather than neutral), but the verbal adjective. The structure of the whole sentence (τὸ μὲν … τὸ δὲ) repeats the opposition of the previous sentence (οὔτε … οὔτε …), resulting in one argument each for οὔτε ἀτιμαστέον and οὔτε ζηλωτέον.

[128] Cf. Festugière and Diehl ad loc.

[129] Said mainly of ships, metaphorically used for people or their souls, after *Tht*. 144a8. Cf. Plot. *Enn*. I 8 [51] 8.

[130] The image of the steady cable is borrowed from *Laws* X 893b4 ff., where the Athenian stranger asks the gods to be a steadying rope upon crossing a river of discourse (ἐχόμενοι δὲ ὥς τινος ἀσφαλοῦς πείσματος ἐπεισβαίνωμεν εἰς τὸν νῦν λόγον). Proclus uses the metaphor on several other occasions, ususally for something that provides epistemic certainty or grounding, e.g. *In Crat*. XCIX 51.9.

[131] Cf. *In Tim*. II 237.11 f., 238.10–12. Comparable expressions: II 206.13–14 ἔτι δὲ προσεχέστερον τοῖς πράγμασιν εἴποις ἄν κτλ.; ib. 213.8 Μετὰ δὴ τούτους ἄλλο πλῆθός ἐστιν ἐξηγητῶν πραγματειωδεστέρων λόγων ἀντεχόμενον. Whereas in the earlier

term is not uncommon in Proclus, and he often uses it to distinguish between an empty (ψιλός) logical approach and an approach with substance.[132] As in the case of empty logic, one could say that the purely mathematical explanation is empty *with respect to the physiological matter at hand*.[133] As such, it gives us no more than an attractive and correct formal representation of relations within the text, but no real knowledge until the relata are 'translated', as it were, into the subject matter (πράγματα) relevant in the context.

ii. Mathematical images

The description of mathematical proportions Plato uses to portray the structure of the World Soul is taken by Proclus to represent perceptible, 'enmattered' harmony, rather than the actual noeric one. From this portrayal of perceptible harmony, as an image, the exegesis should ascend to the paradigm which is the essential, immaterial harmony of the World Soul:

> **T IV.13** For the mode of exegesis about the World Soul should be adapted to its essence (τῇ οὐσίᾳ συμφυής), that is, it should separate itself from perceptible (φαινόμενη) harmony, ascend to the essential and immaterial harmony, and from images send itself up to their paradigms. For the harmony (συμφωνία) that flows in through our ears and consists of sounds and impressions, is completely different from the vital and noeric one.[134]

This passage, and Proclus' subsequent description of the transition from perceptible to essential mathematics give a new dimension to the analogy between the two realms. After the ontological relation we have seen

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opposition between a mathematical interpretation and one appropriate to the world's body, the appropriate one was always φυσιολογικῶς or φυσικῶς (cf. above n. 8), φυσιολογία is not once referred to in relation to the 'appropriate' explanations of the World Soul. Apart from the descriptions mentioned above, however, Proclus does once speak of a 'physical or philosophical' reading (φυσικῶς ἢ φιλοσόφως, II 212.3–4). The rare term ψυχικῶς is not used by Proclus in this context; it has a purely ontological meaning, referring to the hypostasis of Soul or its participations on other levels of reality.

[132] E.g. in the debate on whether the second half of the *Parmenides* is a mere logical exercise, or really has a philosophical content (*In Parm*. 635.21 ff. (31 ff. Cousin), cf. *Theol. Plat*. I 9 34.15) and Proclus' harsh judgment of Aristotelian logic at *In Crat*. II: τὰς τοῦ Περιπάτου ψιλὰς τῶν πραγμάτων μεθόδους διαλεκτικάς. See also Martijn (2009).

[133] The "empty" mathematics is comparable to what Mueller (1987) calls "ordinary" mathematics, which predominates in the Euclid Commentary *after* the prologues (p. 85 ff.). Cf. MacIsaac (2001: 119, n. 278).

[134] *In Tim*. II 195.11–17; cf. *In Tim*. II 211.15–16.

in the previous sections, we now obtain the constituents of analogical reasoning. The ascent from perceptible to essential mathematics is a gradual one, initially through a stripping away (ἀφελεῖν),[135] as it were, of those properties suggested by the analogy that are obstacles (ἐμπόδια) to our understanding of the World Soul, as they are not appropriate to its essence (corporeality, dimensionality, quantity, etc.).[136] The second step is, interestingly, a 'calculation' (ἀναλογιζέσθω, almost a 'translation') of the indications (ἔνδειξιν, στοχάζεται) of the essence of the Soul provided in the remaining aspects of the different kinds of proportion.[137] This step, in which we encounter the root ἀναλογ-, seems to form the heart of analogical reasoning. Finally, all this should lead to attaining understanding of the causes involved in the construction of the World Soul, with the Demiurge at the top of the list.[138] Just like the conceptual analysis of Becoming (see chapter III) this analogical reasoning leads to knowledge of causes, but on a more modest scale. Mathematics serves as an anagogic tool, then, also in the study of the World Soul, and as in the case of the physical proportions of the body of the world, physical harmonies are not a mere sum of mathematics and corporeality: stripping the physical of its typically physical aspects does not yet yield the "essential" mathematics of the World Soul.

This conclusion allows us to solve a little puzzle in the *Euclid Commentary*, where Proclus describes the role of mathematics in theology/philosophy as follows:

> T IV.14 … Plato teaches us many wonderful lessons about the gods through mathematical forms. And the philosophy of the Pythagoreans shrouds its mystical initiation to the divine doctrine, using them (i.e. mathematical forms) as veils (παραπετάσμασι).[139]

Contemporary readers are puzzled by the fact that Proclus speaks of Plato's many wonderful doctrines about the gods by means of mathemat-

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[135] Note that Proclus is here sketching an Aristotelian picture of abstraction (ἀφαίρεσις). See on this topic Helmig (forthcoming).

[136] *In Tim*. II 193.8–194.4, esp. 193.8–13.

[137] *In Tim*. II 195.22–24. Ἀναλογίζεσθαι is used especially for 'calculating something from something else' or 'in comparison with something else' (see LSJ sv). For ἔνδειξις cf. *Theol.Plat*. I 4 20.2 and *In Tim*. I 8.22.

[138] *In Tim*. II 211.10–30. Proclus does not tell us how to attain this understanding. The causes are enumerated at II 208.20 ff.

[139] *In Eucl*. 22.9–16. For the use of παραπετάσματα see Plato *Prot*. 316e.

ical forms, and refer to 'unwritten doctrines'.[140] Morrow tells us in a footnote: "We have, I believe, no writing of Plato's in which such teachings can be found, and it is significant that Proclus does not name any. He may be referring to versions of Plato's 'unwritten doctrines'. Such accounts were easily subject to contamination in this era of revived Pythagoreanism." This comment reveals a miscomprehension of Proclus' reading of Plato: there is no need for having recourse to the much abused 'unwritten doctrines'. It is the *Timaeus* that Proclus has in mind, and the gods he speaks of are most likely primarily the planets, but also divine principles in general. That Proclus "does not name any" is significant not because it reveals their "unwrittenness", but simply because he took it to be obvious what he meant. That the *Timaeus* is indeed what he has in mind is clear from *In Tim*. II 246.4–9, in Proclus' interpretation of the chi-shape of the World Soul (*Tim*. 36b6–c1), where we find a remark very similar to that in the *Euclid Commentary*:

> T IV.15 By way of concealment (ἐπίκρυψιν) of the words Plato used mathematicals, as veils (παραπετάσμασιν) of the truth about reality, as the theologians use their myths, and the Pythagoreans their symbols: for in images one can study the paradigms, and through the former make a transition (μεταβαίνειν!) to the latter.[141]

In this passage, we find again the combination of Plato's use of mathematics, mathematics as veil of reality, and the Pythagoreans. This time, it is Plato who uses the veils, not the Pythagoreans, but of course the *Timaeus* is a Pythagorean dialogue for Proclus.[142] The references to concealment, veils, and mystical doctrine suggest that mathematics is used according to Proclus to hide, rather than reveal, the nature of the subject in question.[143] That this is not the case, however, and that the veils are not meant to stay in place, but rather to be lifted, can be gathered from Proclus' addition that the veils, like theological myths and Pythagorean symbols, serve as a means of transition to the study of ontologically higher objects that are not immediately accessible—provided of course that we have the proper preparation and guidance.

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[140] Morrow (1992: 19, n. 41), Cleary (2000: 94).

[141] The construction is unclear. In the phrase δι' ἐπίκρυψιν τοῖς μαθηματικοῖς τῶν ὀνομάτων οἷον παραπετάσμασιν ἐχρήσατο I take τῶν ὀνομάτων as apposition of δι' ἐπίκρυψιν. Its position suggests that it be taken with τοῖς μαθημτικοῖς, but that does not make any sense. The combination δι' ἐπίκρυψιν with a form of ὄνομα or νομιζεῖν occurs several times in Proclus. *In Remp*. I 91.19, *Theol.Plat*. V 3 18.17, *In Tim*. III 28.3.

[142] See chapter I and O'Meara (1989: 179–181).

[143] Cf. Beierwaltes (1979: 171, n. 23).

The terms in which Proclus phrases his assessment of the mathematical explanations of the World Soul recall the iconic mode of discourse about the divine, which Proclus distinguishes from three other modes in a well known passage of the *Platonic Theology*:[144]

> **T IV.16** Apparently he does not pursue the instruction about the gods everywhere in the same way, but sometimes he unfolds the truth about them in an inspired way, and sometimes dialectically, sometimes he conveys their unspeakable properties symbolically, and sometimes he ascends from images (ἀπὸ τῶν εἰκόνων) up to them and reveals the primary causes of the wholes in them.[145]

Plato, Proclus says in this first description, has four ways of teaching about the gods: in an inspired way (ἐνθεαστικῶς), dialectically (διαλεκτικῶς), symbolically (συμβολικῶς) and from images (ἀπὸ τῶν εἰκόνων).[146] In the first two modes Plato presents us with the truth about the gods; in the third mode, what cannot be spoken about is expressed in symbols; and in the fourth the causal role of the gods is shown with the use of images. Later on all this is rephrased in a second description, where the former two modes are combined under the heading 'unveiled' (ἀπαρακαλύπτως), and the latter two are further qualified as 'by indication' (δι' ἐνδείξεως):

> **T IV.17** For those who speak about the gods by indication (δι' ἐνδείξεως)[147] speak either symbolically and mythically or through images (δι' εἰκόνων), whereas of the ones who advance their thoughts unveiled (ἀπαρακαλύπτως) some write scientifically, and others through inspiration from the gods.[148]

After the passage quoted above as **T IV.16**, Proclus continues with an illustration of these four modes of discourse about the divine, by mention-

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[144] The following discussion of *Theol.Plat*. I 4 appeared as section 3 of Martijn (2006b). On *Theol.Plat*. I 4 and especially the iconic mode of discourse see also Dillon (1976), Gersh (2000), Hadot, P. (1987: 30–34), Pépin (2000), Sheppard (1980: 196–201).

[145] *Theol.Plat*. I 4 17.18–24.

[146] Cf. *In Parm*. 646.16 ff. (21 ff. Cousin), where a similar division is made.

[147] Following Pépin (2000: 3–4) I suggest that the formula δι' ἐνδείξεως, expressing what the symbolical and the iconic modes of discourse have in common, is to be translated as 'by indication' or 'through signs', rather than 'dans un langage allusif' ('in allusive speech', Saffrey and Westerink (1968–1997)). Allusion is indirect reference, but the iconic mode is one that directly refers to 'signs' in our world, thereby providing understanding of a transcendental reality. More on this below.

[148] *Theol.Plat*. I 4 20.1–5. The switch from ἀπὸ τῶν εἰκόνων to δι' εἰκόνων here and διὰ τῶν εἰκόνων in I 4 19.10–11 may depend merely on the following verb (ἀνατρέχων in I 17.22; λέγουσιν here; γινώσκειν in 19.11) rather than on any difference in the function or nature of the εἰκόνες. Another option will be discussed below.

ing Platonic dialogues as well as non-Platonic texts in which they can be found, and including a third description of each of the modes. For the treatment of the divine in images, i.e. διὰ τῶν εἰκόνων, which following Gersh I shall call the *iconic* mode,[149] he mentions, among other dialogues, the *Timaeus*.[150] This mode of discourse is further characterized as "teaching through mathematics (…) and a treatise about the gods from ethical or physical λόγοι (τῆς διὰ τῶν μαθημάτων διδασκαλίας (…) καὶ τῆς ἐκ τῶν (…) φυσικῶν λόγων περὶ τῶν θείων πραγματείας.)". This description picks up two earlier qualifications of the iconic mode of discourse about the divine in **T IV.16** and **T IV.17**: δι' εἰκόνων and ἀπὸ τῶν εἰκόνων. Rather than equate these two phrases, ignoring the different prepositions, I propose to take them as expressing different aspects of that mode of discourse, namely its starting point and its procedure respectively. The images that form the starting point of the iconic mode are "the physical λόγοι", the description of the κόσμος.[151] The images *through* which we are taught are the mathematical ones, which "picture the powers of the gods".[152] Note, however, that it is not the *discourse* which pictures the divine, but mathematics itself. Mathematical discourse is not a literary image, but a description of ontological images, εἰκόνες.

Let us return to Proclus' views on the role of mathematics in our understanding of the World Soul. There is a good polemical reason for Proclus' repeated emphasis on its instrumental and 'anagogic' role. Behind his fairly casual explanation of that emphasis as being required due to the disagreement among exegetes on the nature of the proportional divisions of the World Soul,[153] lies Proclus' wish to avoid one particular interpretation of the mathematical passages. He has to get rid of a simplistic literal interpretation,[154] as it would result in the vulnerable

[149] Gersh (2000: 15).

[150] *Theol.Plat*. I 4 19.6–13 Εἰ δὲ βούλει καὶ τῆς διὰ τῶν μαθημάτων διδασκαλίας μνησθῆναι καὶ τῆς ἐκ τῶν ἠθικῶν ἢ φυσικῶν λόγων περὶ τῶν θείων πραγματείας, οἷα πολλὰ μὲν ἐν Τιμαίῳ πολλὰ δὲ ἐν Πολιτικῷ πολλὰ δὲ ἐν ἄλλοις διαλόγοις ἐστὶ κατεσπαρμένα θεωρεῖν, ἐνταῦθα δήπου σοι καὶ ὁ διὰ τῶν εἰκόνων τὰ θεῖα γινώσκειν ἐφιέμενος τρόπος ἔσται καταφανής. Ἅπαντα γὰρ ταῦτα τὰς τῶν θείων ἀπεικονίζεται δυνάμεις.

[151] In the *In Tim*. the expression φυσικοὶ λόγοι stands for φυσιολογία (e.g. I 19.23; 337.25 etc.), but more often for the productive reason principles of nature (e.g. I 27.27; 51.28 etc.).

[152] *Theol.Plat*. I 4 19.12–13, cf. 20–21.

[153] *In Tim*. II 212.3 ff.

[154] Literal is not used here as opposed to metaphorical, unless we take the latter to have a strong ontological sense, i.e. that certain levels of reality are metaphorical for others.

position of Plato describing a World Soul that is a physical magnitude. This position had been ascribed to Plato and consequently criticized by Aristotle, whose criticism is in turn vehemently rejected by Proclus as being the result of a faulty interpretation, as great absurdity (πολλῆς ἀλογίας, *In Tim.* II 250.10), and a waste of time (οὐδὲν ἡγοῦμαι δεῖν περιεργάζεσθαι πλέον, 278.30).[155] After this rhetorical defence, as so often, Proclus explains away the problematic passage by proposing a non-literal—and in this case that means an analogical, not a metaphorical—reading.

The relation between the World Soul and the mathematical ratios that describe how it was divided, at first sight seems similar to the relation between the elements and the mathematical proportions (see IV.2.2), namely an ontological iconic relation. There is a crucial difference, however, regarding the ontological level of the mathematics involved. The relation image—paradigm between World Soul and mathematical ratios is the inverse of the one we saw in the case of the elements. In the passages on the physical elements, certain properties of those elements are the images of, and are caused by geometrical, and to a lesser extent arithmetical and harmonic, proportions. Mathematization, in the sense of a description of the elements in mathematical terms, provided an analogy from which to *de*scend to understanding of the physical.

The World Soul, however, is ontologically prior to the mathematicals used to describe it and instead has certain of its properties reflected in both the enmattered mathematical ratios, and those in the human mind, that Soul in fact causes itself.[156] That is, the images presented in the context of the World Soul are not entities on a higher ontological level, or the paradigmatic causes of a lower level, but are themselves entities on a lower rung of reality:

> **T IV.18** All these mathematical ratios and numbers are images (ἀπεικονίζονται) of the true essence of Soul.[157]

Mathematization, now in the sense of describing and studying an entity in its mathematical images, will allow us to ascend from these images

[155] Arist. *dA* I 3 406b26–407b10; *In Tim.* II 249.31 ff.; 278.27 ff. For a reconstruction of Proclus' now lost polemical treatise refuting Aristotle's criticims of the *Timaeus*, see Steel (2005), esp. pp. 168–169 for the psychogony.

[156] *In Tim.* II 174.23–28, with a beautiful image of the κατατομή of the World Soul as an unfolding of the causes and principles that it contains.

[157] *In Tim.* II 212.5–9, cf. ἀπείκασται, 218.9–10.

to a higher ontological level,[158] or in other words, to be led by imagination (φαντασία) to scientific apprehension.[159] Thus the difference between the two discussions of mathematics is essentially based on the different referents of the words μαθήμα, μαθηματικός and the like, in both: regarding the World Soul Proclus maintains that mathematics (i.e. applied mathematics as we find it in harmonics) presents us with μαθήματα in the sense of mathematical *objects* as they are projected in matter and human mind, and of which the World Soul itself is the cause.[160] In the context of the body of the world, however, the mathematical explanation consisted of λόγοι μαθηματικοὶ, mathematical *principles*, i.e. the creative principles that reside in the World Soul itself, albeit described on the basis of the mathematics projected in our souls.

iii. Particular souls

A final occurrence of the issue of mathematization in the study of the soul in Proclus' commentary deserves our attention, as there the relations between different kinds of explanations is somewhat different. At *Tim*. 43d Timaeus recounts the effect of encounters of the human body with material obstacles on the soul, namely that of disturbing and confusing the ratios of which the soul consists. Proclus, in his exegesis of this passage, emphasizes the fact that the psychic ratios should be explained appropriately to each kind of soul (divine, demonic, particular), in the sense that they are more multiplied in lower souls, while retaining the ratio, which is not influenced by multiplication.[161] Subsequently, he points to the additional need of a physical (φυσικῶς) explanation of these mathematical ratios. Considering the priority of the soul over the physical, this physical explanation seems irrelevant. A closer

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[158] Cf. μαθηματικῶς … πρῶτον γυμνάσωμεν τὴν τῶν ἀκουόντων διάνοιαν, II 174. 28–29.

[159] *In Tim*. II 237.13–15. Festugière's translation of ἡ φαντασία as "la représentation figurée" is unfortunate, as Proclus is here referring to our *faculty* of projection of extension, the imagination. See Lautner (2002: esp. 263 ff.).

[160] There is an exception: at II 214.30 ff. Proclus has in mind a different set of image and reality, namely not mathematical theory presenting an image of the reality of the World Soul, but the mathematical (more precisely diatonic) nature of the World Soul as an image of a higher ontological level, of 'things divine, in just the same way as the body is admittedly spherical, but also, through being spherical, an image of νοῦς.'

[161] *In Tim*. III 336.3–340.27, esp. 24–25: καὶ ὁ αὐτὸς τῆς ἐξηγήσεως τρόπος, πλὴν ὅτι τὴν ἰδιότητα προσθήσομεν ἑφ' ἑκάστῳ.

look, however, shows that on this occasion the mathematical explanation and the physical one are related by a further causality, as the ratios of the soul produce certain physical manifestations:

> T IV.19 ... we should see this not in a mathematical, but in a physical manner. For the mathematical ratios are one thing, and the relations (αἱ σχέσεις), that the souls produce because they have those ratios are another.[162]

In this case, then, both explanations are valid in their own right, on their appropriate ontological levels, and neither is given merely by way of an anagogic tool. But even here the physical is more important, since a reading of a physical dialogue is incomplete without a physical explanation of every single detail.

IV.2.4. *Conclusion: Mathematization in the Timaeus according to Proclus*

On the basis of the foregoing, we can now sketch a picture of Proclus' explicit views of mathematization of philosophy of nature, and of his intermediate philosophy of nature. As opposed to most of today's readers, but like his teacher Syrianus, Proclus has a view that combines elements of realism and of instrumentalism: physical reality is caused by, but not identical or reducible to, a mathematical reality (realism); and mathematics as such can be used to describe physical reality, but not in isolation (instrumentalism).[163] Mathematical theories, according to Proclus, are *instrumental*,[164] have a methodological function in the philosophy of nature, due to a *real* (ontological) *relation* between the mathematical and the physical. Mathematical theories as such, however, represent or explain the mathematical, and not the physical world, as it is. In order to obtain an explanation of the physical world as it is, mathematical theories as such do not suffice. More precisely, the relation between

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[162] *In Tim*. III 337.25–27.

[163] MacIsaac (2001: 189–190) makes a similar point, but in comparing Proclus' ideas with those of modern physical scientists obscures the difference between instrumentalism and realism: "... mathematical number is a convenient, useful and precise way of representing in our thought the reality which is both above and below mathematical number itself. For modern physical scientists to be realists, i.e. to hold that their equations actually do reveal the structure of physical reality in some way, they must at least implicitly hold a similar ontological doctrine as Proclus with regard to the homologous or analogous structure between mathematical and physical reality, otherwise language drawn from one sphere would be inapplicable to another."

[164] Or useful, χρήσιμον (*In Tim*. II 32.1–2).

mathematical and physical theories is one of ontological ἀναλογία, i.e. the theories are *analogous*, due to the *ontological (causal) analogy* existing between the physical and its cause, the essential mathematics of the Soul.[165]

In the case of philosophy of nature concerning the body of the world, we are offered mental representations of the mathematical principles from the World Soul. These representations can be used as an analogy to descend to certain physical properties.[166] On the other hand, the role of mathematics in the part of φυσιολογία that concerns the World Soul is the inverse. In this case, too, there is an ontological relation between Soul and mathematicals, which provides us with the tool of analogy. The mathematical theories in question concern the projections or images in the material world and our souls of the principles that are primarily present on the level of Soul. Through them, again by analogy, we comprehend the character and structure of Soul. In both cases, of course, the mathematics actually used in the theories is the description of projections in the human soul. Thus we get the following picture (see p. 204).

At the heart of these two kinds of mathematical philosophy of nature lies the ontological relation between the mathematical ἐνέργεια of the soul, and its manifestations on the physical level. As a consequence, the analogical function of mathematics is far stronger than one of chance similarity.[167] One might wonder why the ἀναλογία works in two directions, both from the higher level of Soul down to the material level, and from the material level up to Soul.[168] And it must be said that Proclus is not very forthcoming about how analogical reasoning works in the downward direction. A partial answer lies in the fact that the ultimate aim both in the case of the body of the world, and in that of the World Soul, is to trace the qualities of the natural world back to their intelligible causes,

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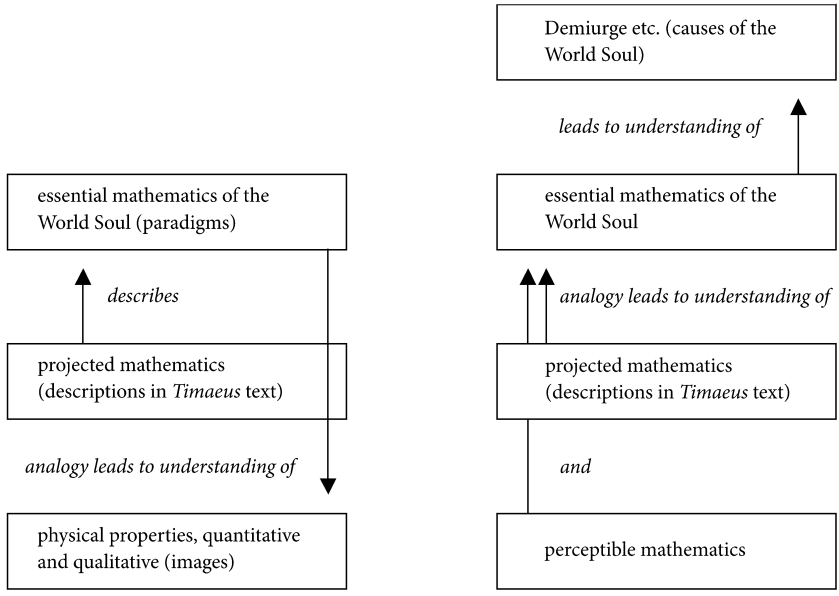
[165] MacIsaac (2001: 184, 186) uses the expression 'metaphor' as a translation of *analogia*, in the sense of "language drawn from one sphere of reality applied to another sphere of reality, which keeps its truth because of the homologous structure which holds between each level of reality."

[166] Cf. Steel (2005: 188) on Simplicius' view that the mathematical explanation is an ἔνδειξις, and that the elements are not themselves geometrical figures, but that the latter indicate quantitative structures of the physical.

[167] Bechtle's analysis (2006: 24–25) comes close to mine, but he downplays the ontological background of the "Mittelstelle" of mathematics. Cf. his analysis of the role of mathematics in Iamblichus (esp. 2000: 33 f. and n. 75).

[168] Cf. MacIsaac (2001: 184).



the one Life and the Demiurge respectively.[169] In other words, the direction is ultimately upwards in both cases.

IV.3. *Books IV and V: Lower Philosophy of Nature, the Senses, and Life*

In books II and III, Proclus gives ample attention to the limitations and range of philosophy of nature, and to the kind of reasoning to be applied. But after theological and mathematical philosophy of nature, which use dialectical and analogical reasoning respectively, references to range and method are far scarcer. In the following, we will go over what I call lower philosophy of nature, which is to be found in books IV and V, on the heavenly bodies and time, and human body and soul respectively. Remarks on the nature of philosophy of nature in these two books are made only when there is a need for them, for example to explain away omissions in the *Timaeus*. Both the omissions explicitly announced by Plato, i.e. what the Germans call *Aussparungsstellen*, and those signalled

[169] Cf. Plotinus who allows understanding of the sensible through the intelligible, Schroeder (1996: 348).

in the commentary tradition, are justified by Proclus by demarcating the boundaries of φυσιολογία. In fact, two shades can be distinguished: philosophy of nature is defined as an empirical science in book IV,[170] and as 'biology', a science pertaining to living being in book V. Because of the defensive nature of the remarks, one might think that there is no more to the characterizations in question than Proclus' embarrassment at certain shortcomings of the *Timaeus*. Since the success of the defense, however, depends on the validity of the characterizations, they are actual expressions of different aspects of philosophy of nature.

The empirical side of lower philosophy of nature is the main subject of section IV.3.1. The second, biological, aspect of philosophy of nature, which is more of an appendix because it is only referred to on two occasions in what is left of the commentary, is the subject of the section IV.3.2.

IV.3.1. *Book IV: Empirical philosophy of nature*

In book IV, on time and the planets (*Tim.* 37c6–40e5, *In Tim.* III 1.5–161.6), Proclus characterizes φυσιολογία as an empirical discipline, or sometimes in a somewhat wider sense as a discipline that has only the perceptible as its subject matter (which neither guarantees nor necessitates an empirical approach). He does this in four instances, mainly to justify omissions, but also to explain certain apparent inconsistencies, in Timaeus' account.

i. Parts of time

> **T IV.20** For before the heavens came to be, there were no days or nights, no months or years. But now, at the same time as he framed the heavens, he devised their coming to be.[171]

Plato's claim that the parts of time did not exist before the generation of the universe, confronted Proclus with an apparent metaphysical inconsistency. The claim as it stands seems to contradict the principles of creation,

[170] *Tim.* 37c6–40e5, *In Tim.* III 1–161. In fact, already in the description of the division of the World Soul into the planetary circles empirical φυσιολογία, or rather empirical astronomy, is introduced (II 266.1). And at *In Tim.* II 57.25 ff. Proclus even explicitly acknowledges the empirical nature of philosophy of nature. These are exceptions, however.

[171] *Tim.* 37e1–3, trans. Zeyl, exegesis at *In Tim.* III 34.14–36.33.

since it denies the existence of the transcendent paradigmatic causes of the parts of time. Proclus' solution to this inconsistency consists of three elements: first of all, paradigmatic Day, Night, Month and Year do in fact exist before the creation, but not as *parts* of eternity, since eternity has no parts.[172] Secondly, if Plato had wished to speak about the paradigms instead—and that he could have done so is demonstrated with reference to *Laws* X 899b2 ff.—, he would have used the singulars ἡμέρα, νύξ, μήν, and ἐνιαυτός, rather than the plurals we find at *Tim.* 37e1.[173] And thirdly, Plato has good reason not to discuss the paradigms, since he is here 'concerned with philosophy of nature':

> **T IV.21** We should not be surprised about the fact that Plato here speaks rather about appearances (τὰ φαινόμενα), because now he is concerned with philosophizing about nature (φυσιολογεῖν πρόκειται).[174]

Since Proclus takes this argument to be cogent, it seems reasonable to assume that he is here using the term φυσιολογία in the more narrow sense of 'discipline that studies enmattered reality'. Earlier on in the commentary, Proclus indicated that Plato is no ordinary philosopher of nature, as he transgresses the limits of the discipline.[175] Here, however, those very limits justify an omission on Plato's side. Of course, according to Proclus Plato could transgress the limits, he just does not do it.

ii. The ἀποκατάστασις

The impression that Proclus is using the term φυσιολογία in the narrower sense is reinforced by Proclus' response to another omission: Plato's failure to provide any concrete (numerical) information concerning the ἀποκατάστασις of the fixed stars (i.e. their return to the same point after a full period), or even to mention their contribution to the measurement of time.[176] The ἀποκατάστασις is important because the revolutions of the fixed stars, like those of the wandering stars, contribute to the measurement of "the whole of time", ὁ σύμπας χρόνος.[177] This omission is justified with an appeal, not only to the perceptibility of the

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[172] *In Tim.* III 34.19–23.
[173] *In Tim.* III 36.4–5.
[174] *In Tim.* III 36.28–29.
[175] *In Tim.* I 2.29 ff. and 237.3 ff., cf. 204.3 ff.
[176] *Tim.* 40b4 ff., with *In Tim.* III 129.16–130.3.
[177] *In Tim.* III 129.16–27. This may refer to ὁ τέλεος ἐνιαυτός of *Tim.* 39d4, the Perfect Year, also known as the Great Year throughout antiquity and after. Cf. II 290.6–17 and Kukkonen (2000: 124).

subject matter of philosophy of nature, but to the very empirical nature of the discipline:

> **T IV.22** … speaking in the manner fitting philosophy of nature, he said especially those things about the planets, since with regard to those things he had perception as a witness of the different motions of the planets, while on the basis of perception we can conclude nothing about the different numbers of the motion of the fixed stars and of the periods they make in their revolutions.[178]

The proper method of φυσιολογία, Proclus maintains, is an empirical one, and whereas perception does provide us with information on the 'number', i.e. the duration of the revolutions of the planets, it does not do so with regard to the fixed stars.[179] The *existence* of an ἀποκατάστασις of the fixed stars is not in question, despite the fact that we have no empirical evidence for it. It follows from the metaphysical presuppositions concerning the division of the World Soul. The precise arithmetical quantity of that ἀποκατάστασις, we can, by Proclus' account, unearth neither on the basis of those same presuppositions, nor on that of sensory information—although the latter would be the suitable approach.[180]

iii. Δαίμονες

> **T IV.23** As for the other divinities (δαίμονες, more on the term below), it is beyond our task (μεῖζον ἢ καθ' ἡμᾶς) to know and speak of how they came to be.[181]

After the account on the visible and generated gods (i.e. the planets), Timaeus states that discussing the generation of the lower divinities is beyond his task. Concerning this explicit omission, Proclus raises four aporias, and, as in the case of the ἀποκατάστασις, responds to two of them with reference to sense perception as the evidence for the philosopher of nature.[182]

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[178] *In Tim*. III 36.28–29.

[179] The mathematics involved is that of celestial numbers, or celestial instantiations of number, which partake, as Proclus mentioned elsewhere, in a fair amount of precision. *Theol Plat* IV 86.12–15, *In Tim*. II 51.5 ff. (quoted above, **T IV.** 7).

[180] Cf. *In Tim*. III 308.20–24, where Proclus argues for the dissemination of souls in the fixed stars by explaining that the fixed stars, too, are instruments of time (and since Plato states that souls are disseminated in the earth, the moon, and the other instruments of time, souls are disseminated also in the fixed stars), while admitting that we have no empirical data for their revolution.

[181] *Tim*. 40d6–7, trans. Zeyl, slightly modified.

[182] *In Tim*. III 152.5 ff.

The first aporia Proclus brings up concerning *Tim*. 40d4–5 again arises from an apparent contradiction, this time Plato's denying the possibility of knowing and describing the origins of "the other divinities", i.e. the traditional sublunary gods, after having discussed the ontologically higher celestial gods and the intelligible paradigm,[183] describing which should have been "beyond our task" *a fortiori*. The assumption resounding in the background is that knowledge of what is closer to us is more easily acquired.[184] Proclus' reaction to the omission, however, is that perhaps "the eye of the soul" remembers the ontologically more remote more easily than what is nearby, due to its greater impact on us,[185] just as we gaze at the stars rather than at what is lying right at our feet.[186] Thus the soul would recall the celestial gods better than the sublunary ones, and discussing the origin of the latter would thereby be more demanding.[187]

After this more general argument explaining what makes a discussion of the lower gods so "great a task", Proclus continues with a second argument in defence of Plato, which states that this is not the proper place anyway for such a discussion. It turns on the somewhat incongruous fact, from a Platonic point of view, that, although they are ontologically lower than the perceptible celestial gods, the sublunary gods are not perceptible. Discussing the generation of the sublunary gods is more difficult (than discussing the higher, celestial gods) due to the fact that we cannot reason about them from their manifestations in the perceptible realm (μηδὲ ἔστιν ἀπὸ τῶν ἐμφανῶν συλλογίσασθαι),[188] but only from inspired and intellectual intuition.[189] Not only does that increase the difficulty of studying them, however, it also disqualifies the sublunary gods as a topic of philosophy of nature:

> **T IV.24** ... we have no clear indication of their existence from the appearances. (...) Now it goes beyond philosophy of nature (μεῖζον ... φυσιο-

[183] *In Tim*. III 152.16–19.

[184] Cf. Arist. *APo* I 2 72a1–4.

[185] *In Tim*. III 152.31–153.18. Cf. *El.Th*. prop. 7. Note that physical distance and ontological priority are equated.

[186] *In Tim*. III 153.1–4. This position is supported with an argument that reminds of Aristotle's argument against "like is affected by like", *GC* I 7, *dA* II 5.

[187] Another solution to the *aporia*, namely that the δαίμονες are actually not sublunary gods, but superior ones, is discussed and rejected at *In Tim*. III 156.6–21.

[188] Cf. *In Tim*. III 40.18, συλλογίζεσθαι in the sense of reasoning.

[189] *In Tim*. III 153.17–21. This cannot be taken to imply that reasoning about the higher divinities excludes the use of such intuition, as that would result in the incongruity of the ontologically lower being know through a higher form of cognition, which flies in the face of the basic principles of Platonic epistemology.

> λογίας) to discuss that about which natural things do not give us a fixed conviction, and for this reason he says that, as a philosopher of nature (ὡς φυσιολόγος), talking about them is beyond him (ὑπὲρ αὐτὸν).[190]

The topics of nature are, it seems, not necessarily only those that are themselves perceptible, but those concerning which the objects of perception at least give us a "fixed conviction" (πίστιν ἀραρυῖαν); and since in the *Timaeus* Plato is being a philosopher of nature, as such (ὡς φυσιολόγος) the discussion concerning the lower gods is "beyond him".[191]

This argument is meant not only to explain why Plato refuses to go into the generation of the sublunary gods, but also to protect Plato's reputation by suggesting that he could give an account of those more difficult issues, no doubt using his "inspired and intellectual intuition", if he thought the context were apposite. To underscore this, Proclus in the following paragraph puts Plato and "the theologians", i.e. Orpheus, the Chaldaeans, and the Egyptians,[192] on a par, something he does not do explicitly anywhere else in the *Commentary on the Timaeus*.[193] The association of Plato with these alleged first writers of theogonies is elicited by Timaeus' statement that when it comes to knowledge of the invisible gods, we have to trust the early theologians who claim progeny from the gods (40d7 ff.). The irony in this statement, namely that these theologians are in fact unreliable according to Timaeus because they have evidence for their claims neither from perception nor from reasoning[194] is wasted

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[190] *In Tim*. III 156.26–29. This argument is presented in the context of the third aporia, "what is the ontological rank of the δαίμονες?", but is in fact a return to the first aporia, as is clear from the phrase "why he stated beforehand that he passes over the discussion about them" (156.22–23).

[191] A similar argumentation is used by Calcidius, *In Tim*. 127, Waszink 170.9–12, although his explanation differs to the extent that he adds a qualification of the method with which one would study these divinities, namely "epoptica", the method to be applied also to the *Parmenides*. On this topic, see Pépin (1974: 326–327), Somfai (2004: 206).

[192] *In Tim*. III 157.9–10 καὶ κατ' αὐτὸν ὥσπερ κατὰ τοὺς ἄλλους θεολόγους. This need not mean that Plato is here considered a theologian, as ἄλλος need not be inclusive, but the association is present either way.

[193] Or in other commentaries, with the exception of *In Remp*. II 255.25, *In Parm*. 1106.22–23 (28–29 Cousin) (where the theologians seem to be summoned by way of argument *ad auctoritatem*) and 1173.4–6 (5–7 Cousin). On the other hand, in the *Platonic Theology*, which after all deals specifically with Plato's theological doctrines, treating Plato as one of the theologians is not uncommon. *Theol.Plat*. I 10 43.26, IV 38 110–111, V 34 123.11 ff., 36 133.26 ff., etc.

[194] Thus Cornford (1937: 138–139), who among others refers to *Phdr*. 246c6–d2 and *Laws* X 886c. Cf. Lloyd, G.E.R. (1991a: 348–349), who takes the remark to be an indication that the likely story (more on which in chapter v) has a higher status than the subjects isolated in the omissions concerning particulars and myths about traditional gods.

on Proclus.[195] Proclus has the opposite view, and takes the theologians to be superior to the philosopher of nature, exactly *because* their knowledge derives not from "probable and necessary demonstrations", but from inspiration.[196]

The fact that Proclus dodges the most interesting question, namely why we have no empirical access to the sublunary gods, as well as his ultimate preference for arguments from authority above the senses, shows that the main aim of the discussion concerning the sublunary divinities is defending Plato.[197] Nonetheless, we can assume that he himself took the defence to be adequate.

iv. *Δαίμονες* once more

In this discussion of *Tim.* 40d6–7 the emphasis on sense perception as *sine qua non* for φυσιολογία occurs one more time, in response to the second aporia: "why are these lower divinities called 'δαίμονες' "? Proclus explains that the word δαίμονες refers to gods, not to proper demons—the common meaning of δαίμων in his day and age. If Plato had used the word δαίμων in its proper sense he would have been:

> **T IV.25** ... speaking as if he did not know their physical principles (ἀρχαὶ φυσικαί) from sense perception, from which philosophy of nature (οἱ φυσικοὶ λόγοι) should commence.[198]

That is, we do have evidence from sense perception about *demons*, and treating them would be appropriate in this context.[199] Therefore the statement that δαίμονες can*not* be treated here must imply that the

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[195] See also Dillon (1991).

[196] *In Tim.* III 160.5–12, esp. ... ἡ δὲ γνῶσις αὐτῶν ἐστιν ἐνθουσιαστική (...), πάσης ἄλλης ἐξῃρημένη γνώσεως τῆς τε δι' εἰκότων καὶ τῆς ἀποδεικτικῆς (...). Proclus ignores the concessive connective καίπερ at *Tim.* 40e1. On the different kinds of cognition see v.5.1.i.

[197] Cf. Philop. *Aet.Mund.* 633.14–636.2, where Philoponus accuses Proclus of using double standards in his explanation of this passage. The question is brought up later, however, in the context of *Tim.* 41a3–6 (*In Tim.* III 194.31 ff.). For acquiring knowledge of the *generation* of those gods, which is what the *Timaeus* passage speaks of, such empirical access hardly seems sufficient, but Proclus' point is that we have no clear indication from sense perception of the *existence* of these sublunary gods.

[198] *In Tim.* III 153.28–154.3. The 'as if' (ὡς ἂν) suggests it to be common knowledge that δαίμονες properly so called are in fact known through sense perception.

[199] On the visibility of δαίμονες see *In Tim.* III 194.31 ff. (on *Tim.* 41a3–6). On δαίμονες in Proclus, see Siorvanes (1996: 128, 169–170). Cf. Lernould (2001: 44 and n. 34).

word δαίμονες is used in a different sense than the usual. Whereas in the previous examples the role of sense perception in theory of nature was brought in as an argument to explain away an omission, here it is presupposed within another argument, which presents, one could say, a *lectio difficilior* rather than an *ad hoc* solution.

IV.3.2. *Book V: Philosophy of nature and living being*

About book V, which covers *Tim*. 40e–44d, we can be brief. It does not really fit in the picture we have sketched so far, mainly because in this book we find very few, and diverse, remarks on method and range of φυσιολογία. This may be due to the fact that it contains an important transition from the creation of the universe as a whole, to that of its parts, and from the first to the second demiurgy. The section on the genealogy of the lower gods (*Tim*. 40e–41a) is said to be a natural and immediate consequent of the treatment of the heavenly gods, and to possess a scientific character (τὸ ἐπιστημονικόν), which it obtains from the ontological continuity between the higher and the lower levels of divinity.[200] The report of the speech of the Demiurge,[201] in turn, is characterized as a verbal representation of the Demiurge's creative λόγοι, and a separation of the immortal and the mortal, or the creation of the universe as a whole from the creation of the parts.[202] As such, it has a Demiurgic style and truth of its own,[203] and in a sense we could say it is not even a proper part of Timaeus' exposition. And finally, on two later occasions in book V, Proclus invokes the boundaries of φυσιολογία as a science dealing with corporeal living beings. Let us briefly look at this last characterization.

In a manner comparable to what we have seen in book IV, Proclus appeals to the limits of φυσιολογία in order to justify certain omissions on Plato's part. This time, however, those limits are determined not by perception, but by the fact that φυσιολογία deals with what is corporeal, and with living being (ζῷον). According to Proclus, Plato's treatment of the human soul in the *Timaeus*, like that of Aristotle in *de Anima*, but opposed to dialogues such as the *Phaedo* and *Republic*, does not

[200] *In Tim*. III 162.1 ff.
[201] *Tim*. 41a–d, *In Tim*. III 199.29–200.27, see ch. V.
[202] *In Tim*. III 242.9–10.
[203] *In Tim*. III 199.14–200.27.

contain any information on the events before and after incorporation, or the related moral issues.[204] Instead, at 43b Plato discusses the incorporation of the soul without further ado. This is because, according to Proclus, Plato includes only what is in accordance with the purpose of the dialogue:

> T IV.26 Someone might ask 'So what is the reason for this omission?' And my answer is that [Plato] maintains what is fitting to the purpose of the dialogue, and includes the theory of the soul in this context only insofar as it is physical, by presenting the communion of the soul with the body.[205]

Psychology is treated only insofar as it is physical, i.e. insofar as it pertains to the soul's association with the body. Likewise, when at 44c Timaeus cuts his discussion of the afterlife short with the words "But these things come about at a later stage", Proclus explains the omission of such "ethical questions" by pointing to the task of the philosopher of nature to teach us about the life of the body (περὶ τῆς τοῦ σώματος ζωῆς), or in other words, about the living being (περὶ τοῦ ζῴου), that consists of body and soul.[206]

Thus we can carefully discern in book V a final notion of φυσιολογία as a biological discipline, the subject matter of which is the living being, both in a macrocosmic and in a microcosmic sense.[207] This notion differs from the others we have seen so far, as it merely concerns the delimitation of the subject matter of philosophy of nature, not its methods.

IV.3.3. *Conclusion:* ad hoc *philosophy of nature?*

Generally speaking, the passages discussed, which emphasize the empirical foundations of φυσιολογία and its embodied, living subject matter, could be given two interpretations, one weaker and one more substantial. (i) The weaker reading of the passages would be that they merely present *ad hoc* explanations of omissions in the *Timaeus*, and cannot be taken in evidence of Proclus' conception of φυσιολογία. (ii) The more substantial reading is that in the fourth and fifth books of the commentary,

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[204] *In Tim.* III 323.16–324.3. This point is in itself contestable, but Proclus apparently reads the *Timaeus* this way, perhaps by way of contrasting it with other dialogues, or as an *ad hoc* explanation of an omission. See below.

[205] *In Tim.* III 323.27–31.

[206] *In Tim.* III 353.13–22.

[207] *In Tim.* III 355.7–19.

the notion of φυσιολογία acquires different meanings, i.e. that of an empirical science, one that bases its theories on observations, and that of 'biology'.

The evidence points in the direction of the first option, first of all because there is simply far less attention for the method and range of philosophy of nature in these books, which suggests that earlier statements in that area still stand. Secondly, the stronger reading creates a tension with the earlier books, most conspicuously with the theological φυσιολογία of book II. And finally, Proclus in his exegesis of the *Timaeus* seems not to take seriously the boundaries he himself imposes on philosophy of nature. For example, he sees no harm in presenting details the source of which is not sense perception, but rather the "inspired and intellectual intuition" of Plato and the theologians, when he dedicates some twenty-five pages of his book V to the sublunary gods (*In Tim*. III 162–197.26).

An heuristic reason for nonetheless rejecting the former, weaker reading is that an interpretation of the passages as mere *ad hoc* explanations assumes a sacrifice of conceptual clarity to authority on Proclus' part. Thus choosing the second option is preferable on the basis of the principle of charity.

Let us try to merge these two readings into one. That is, maintain the original definition of philosophy of nature, while incorporating the later descriptions. In order to do this, we need to reconcile especially Proclus' emphasis on the empirical character of philosophy of nature with his earlier attempts at giving the discipline a scientific, rational, foundation. Such a reconciliation is obtainable by keeping four things in mind. First of all, in book IV Proclus demands that philosophy of nature deal with a subject matter for which sense perception gives us a clear *indication* (γνώρισμα)—leaving ample room for the discussion of non-perceptible causes that are perceptible in their effects. Secondly, despite the fact that the core of book II can be said to be giving philosophy of nature a scientific foundation as revealing knowledge of causes, at the same time the empirical foundation of philosophy of nature was shown to be crucial: Becoming is primarily known through perception and judgment (δόξα). Thirdly, the scientific nature provided to philosophy of nature in the second book is transferred to intermediate and lower φυσιολογία due to the continuity in the exposition of the κόσμος which in turn corresponds to the ontological continuity between causes and effects.[208] And finally,

[208] On this topic see chapter v and cf. above at n. 200.

there is a distinction between Plato's notion of philosophy of nature as found by Proclus, and Proclus' exegetical practice which is not bound by that notion.

IV.4. *General conclusion*

In this chapter, we have seen the intermediate and lower levels of philosophy of nature, which are witness to the fact that φυσιολογία, following its subject, φύσις, pertains to different levels of reality and as such is more than a kind of theology alone. We can now conclude that Proclus distinguishes four phases of philosophy of nature, that are hierarchically ordered, mostly with their own method: a theological one, using dialectical reasoning (book II), a mathematical one, using analogical reasoning (book III), an empirical one, using perception (book IV) and biological philosophy of nature (no method specified) (book V).[209] In this chapter the latter three have been studied. There is no rigid division in Proclus' exegetical practice: the transition from one kind of φυσιολογία to another is not marked, and on occasion the purity of the division is marred by the presence of e.g. an empirical explanation in the context of intermediate philosophy of nature.

With respect to 'intermediate', mathematical philosophy of nature, I have argued that the role of mathematics is one of ontological analogy, i.e. a strong analogy that is based not on chance similarity, but on ontological similarity between the physical and the mathematical, that is due to a relation of causation. Within mathematical philosophy of nature, two versions can be discerned, with respect to this relation of causation. In the case of proportional division of the body of the world, mathematics is brought in as the cause of the order, regularity and cohesion to be found in the corporeal. As such, it prepares us for an understanding of the physical properties themselves (top-down). With regard to the World Soul, however, the relation is the inverse: the mathematics brought in is read by Proclus as the projections into the material world and our souls, that are analogous to the actual structure of the World Soul (bottom-up). In general, I have argued that Proclus' position on the mathematization

[209] Note also that the three levels do not match the division of the commentary into the creation of the whole, the creation of wholes, and the creation of parts (starting at *In Tim.* III 97.1). We do not know whether Proclus added further distinctions to the concept of φυσιολογία in the exegesis of *Tim.* 45 ff.

of nature is one that combines aspects of realism—physical reality is caused by, but not identical or reducible to, a mathematical reality—and instrumentalism—mathematics as such can be used to explain physical reality, but not in isolation. Both versions of mathematization, i.e. in the context of the body and the soul of the world, ultimately serve the same purpose of facilitating understanding of the transcendent causes of their subject matter.

Philosophy of nature that starts from mathematics is 'intermediate' in two senses: from a methodological point of view it is intermediate between ignoring mathematics altogether in favour of the perceptible, and focusing exclusively on it. From an ontological and epistemological point of view it is ranked between theological φυσιολογία on the one hand and lower φυσιολογία on the other, just as mathematical objects are intermediate between the divine and the corporeal.

After this intermediate philosophy of nature, we find in the *In Tim*. a lower kind of φυσιολογία, that falls into empirical and biological philosophy of nature. Both seem conjured up for the sake of explaining away omissions in the *Timaeus*. On the other hand, since they are related to certain aspects of φύσις as the subject matter of the discipline, they can, and I propose they should, be taken as serious aspects of the overall notion of φυσιολογία.

Thus we can conclude that the different subjects discussed in the *Timaeus* as parts of philosophy of nature are taken by Proclus to go hand in hand with an adjusted emphasis on aspects of method and range of the discipline. That does not mean that we end up with different and mutually exclusive notions of philosophy of nature. It also does not lead to an imposition of those notions on Proclus' own exegesis. They are a matter of emphasis dictated by the context.[210]

From the different descriptions found in the different books, we can collect the following sophisticated Proclean description of Platonic philosophy of nature (with a negative complement), in which the whole chain of nature is represented: it is the discipline that studies the natural, perceptible, corporeal world, starting from perception, obtaining knowledge of its transcendent causes by dialectical reasoning based on

[210] Note that for Proclus philosophy of nature does not end with the account of the incorporated soul—and that we cannot conclude that Proclus' commentary beyond *Tim*. 44d was perfunctory (as does Lernould (2001: 21–22)): its lowest parts are where it discusses the basic principles of medicine, by establishing what is in accordance with and what goes against nature. See *In Tim*. I 6.7–21 and Tarrant (2007: 98 n. 30).

a hypothetical starting point, and obtaining knowledge of its structure and ordering by analogical reasoning based on mathematics. It does not reach an unhypothetical starting point, and it does not study the gods as such, or that for which we have no indication from perception, or life beyond this world.

IV.5. *Appendix: The Elements of Physics*

Now that we have discussed the different aspects of philosophy of nature, theological, mathematical, empirical, and biological, we should briefly turn to Proclus' other physical work, the *Elements of Physics*, and the question how it is related to the *In Tim.*, and especially the lower side of philosophy of nature.[211] Although the *Elements of Physics* has been compared with its sister, the *Elements of Theology*, a comparison with the *Timaeus Commentary* has as yet to be made. The reader will not find such a comparison here, but only some suggestions.

Proclus' *Elements of Physics* is for all appearances an attempt at reducing Aristotle's *Physics* to an exposition *more geometrico*. As has been argued by O'Meara and others, however, it is in fact a study manual on motion, the exposition *more geometrico* of which serves only a methodological purpose, in order to reinforce Aristotle's argumentation by imposing a syllogistic rigour. It is neither a commentary, nor an epitome, but rather a treatise on motion in its own right, based on Aristotelian material (*Physics* books VI and VIII, as well as parts of *De Caelo* I).[212] In fact, its alternative title in antiquity was Ἡ περὶ κινήσεως.[213] Proclus chose to leave out other problems discussed in the physical works of Aristotle, because "in realtà investono la metafisica,"[214] and when it comes to metaphysics, Aristotle is by far the inferior of Plato. Instead Proclus concentrated on motion, because this is what constitutes the true heart of Aristotelian philosophy of nature as such.[215] After all, nature is defined by Aristotle as "that which has its principle of motion and rest within itself".[216]

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[211] See Reale in Faraggiana di Sarzana (1985: xlv–lviii). For other references see Steel, et al. (2005: 49–50).
[212] O'Meara (1989: 177–179), Nikulin (2003).
[213] Faraggiana di Sarzana (1985: 33).
[214] Reale in Faraggiana di Sarzana (1985: xlvii–viii).
[215] Cf. *In Tim.* II 121.25 ff.
[216] Arist. *Met.* VI 1 1025b18 ff., 1026a10 ff., XI 7 1064a15 ff.

As is clear from the propositions in the second book of the *El.Ph.*, the ultimate value of Aristotle's philosophy of nature according to Proclus is the inference to an unmoved mover, in which, due to its incorporeal nature and infinite power, we find the transition to Platonic metaphysics. This can be seen most clearly in the conclusion of the work. The last proposition, II 21, reads "the first circular mover is without parts". This is followed by an argument *per impossibile*, the conclusion of which contains the following culmination of Aristotelian physics:

> T IV.27 Therefore the first mover of circular motion is not a body; it is incorporeal, and has infinite power, quod erat demonstrandum.[217]

Clearly then, the harvest of this Aristotelian treatise on motion is proof of the necessity of a transcendent unmoved mover. How does this relate to the Platonic philosophy of nature of the *In Tim.*? Unfortunely, Proclus himself is never explicit about it. We can surmise a little from the content, however.

Faraggiana di Sarzana (1985: 31), at the outset of her translation of the *Elements of Physics*, suggests a connection between the account of the animation of body in the *In Tim.* and the analysis of the relation between bodies and motion in the *Elements of Physics*, by quoting as a motto for her translation *In Tim.* III 119.17–23:

> T IV.28 The account about motion (ὁ περὶ τῆς κινήσεως λόγος) follows the one about animation: since each of the stars is ensouled, for this reason it has also obtained its proper motion; for soul is the source of motion. It also hangs together with the theory of figures, because what has a proper circular form and has received that form from the demiurgic cause by necessity also has an activity that is proper to that form and a circular motion.

This may seem an indication that for Proclus the *Elements of Physics* could be attached directly to the account about the soul in the *Commentary on the Timaeus*, but it is not. In fact ὁ περὶ τῆς κινήσεως λόγος refers to the *Platonic* account of motion, as starting at *Tim.* 40a7, where Plato has the demiurge bestow circular motion and axial rotation on the planets.

There is a tension in the *El.Ph.* due to the combination of content and method. On the one hand, the treatment of motion in the *Elements* gives insight into the principles of motion, but because it does not reveal the true, transcendent causes of that motion it will never provide scientific knowledge. Thus the kind of philosophy of nature it presents would

[217] *El. Ph.* II 21.16–17.

be inferior to even the lowest we encounter in the *In Tim.*, due to the fact that Platonic philosophy of nature derives everything from the transcendent causes of Becoming. We have seen an illustration of this difference in chapter III. Platonic philosophy of nature, we said, starts from the hypotheses of two genera, Being and Becoming. The inferior Aristotelian philosophy of nature, however, as it is referred to in the *Euclid Commentary*, has as its definite starting point *that motion exists*,[218] a starting point which is no more than Aristotle's effort to imitate Plato.[219]

On the other hand, the presentation of the principles of motion using the geometrical method—definitions followed by propositions with argumentation, and the recurring phrase 'quod erat demonstrandum' (ὅπερ ἔδει δεῖξαι)—suggests that the conclusions presented do constitute scientific knowledge.

The resolution of the tension is perhaps to be found in the fact that although the concepts under discussion are physical, the qualities discussed are actually geometrical or stereometrical: continuity, division, place, parts and wholes, finitude and infinity, linear and circular motion of bodies, and time. And of such properties, Proclus tells us, geometrical axioms are true as well.[220] The impression that the solution lies here is emphasized by the fact that the proofs provided for the propositions in the *El.Ph.* often treat their subject matter using letters, e.g. a continuous body AB (I 5) or 'a time AB' (II 16)—as if a continuous body and an interval of time were line segments. I propose, then, that what we have here is in fact a part of mathematical physics, namely that study of quantity in the perceptible and of magnitude in bodies we encounter at *In Eucl.* 36.8–12, where Proclus states that it is part of φυσιολογία, not mathematics.[221] The beauty of this part of physics *more geometrico* (in more than one sense!) is, of course, that it provides the philosopher of nature with proof of the necessity of a transcendent source of motion.

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[218] *In Eucl.* 75.19–20. Cf. Arist. *Phys.* I 2 185a12–13. See III.2.4.ii.

[219] *In Tim.* I 237.17 ff.

[220] *In Eucl.* 195.23–196.14. For the usefulness of geometrical proof in astronomy, see **T V.20**.

[221] Cf. above n. 91.

CHAPTER FIVE

DISCOURSE AND REALITY: THE ΕΙΚΩΣ ΛΟΓΟΣ

V.1. *Introduction*[1]

In chapter III, we have seen how Proclus uses the prooemium of the *Timaeus* to demonstrate that φυσιολογία is a hypothetical science which provides knowledge of the causes of the universe, primarily the demiurgic cause, and which starts from the information of sense perception. In that chapter we disregarded the last lines of the prooemium, concerning what Proclus tentatively considers 'the fourth demonstration', or the determination of the εἶδος of the text (*Tim.* 29b3–d3, *In Tim.* I 339.3–353.29).[2] The present chapter offers an analysis of Proclus' understanding of that passage, in which Timaeus famously refers to his exposition on the universe as no more than a 'likely account' (εἰκὼς λόγος),[3] and warns his audience not to expect an exposition about the universe to be entirely consistent and accurate, due to three things: the nature of its subject, the universe, which is an εἰκών of Being, the nature of discourse, which may not be incontrovertible and irrefutable, and finally human nature:

> **T V.1** (**T V.4**)[4] "Concerning an image and its paradigm, a distinction should be made in the following manner:" (**T V.7**) "accounts are related to that very thing of which they are the interpreters"—(**T V.10**) "for a text concerning the permanent, and stable, and what is evident to the mind is itself permanent and irrefutable—insofar as it is possible and appropriate for words to be irrefutable and invincible, it should not fall short of that;" (**T V.14**) "but a text which concerns that which is copied from it and is an image, is likely," (**T V.17**) "and standing in proportion to them: as Being is to Becoming, so truth is to belief." (**T V.19**) "If then, Socrates, in many respects

[1] Parts of this chapter appeared as Martijn (2006a).

[2] Proclus sees the determination of the εἶδος of the text (i.e. a likely story) as a demonstration from the nature of the universe, *In Tim.* I 355.25–28.

[3] Plato uses the expressions εἰκὼς λόγος and εἰκὼς μῦθος, see below. Occurrences of εἰκὼς λόγος: *Tim.* 29c2, 8; 30b7; 48d2 (bis); 53d5; 55d5; 56a1; 56b4, cf. d1; 57d6; 59d1, cf. d3; 68b7; 90e8; cf. 40e1. εἰκὼς μῦθος: *Tim.* 29d2, 59c6, 68d2.

[4] These numbers are cross-references to the places elsewhere in this chapter where the phrases in question and Proclus' analysis thereof are discussed in further detail.

> concerning many things—the gods and the generation of the universe—we prove unable to render an account at all points entirely consistent with itself and exact, you must not be surprised. If we can furnish accounts no less likely than any other, we must be content, remembering that I who speak and you my judges are only human, and consequently it is fitting that we should, in these matters, accept the likely story and look for nothing further." (*Tim.* 29b3–d3, translation based on Cornford.)

Considering Proclus' efforts to emphasize the scientific nature of φυσιολογία, Timaeus' statement concerning the status of an account about Becoming as an εἰκὼς λόγος may pose a threat for his position.[5] The main questions of this chapter, therefore, are in what sense, according to Proclus, Platonic φυσιολογία is a 'likely story', and how *Tim.* 29b3–d3 can be reconciled with the scientific status of φυσιολογία.

Part of the answer lies in a distinction Proclus makes between a *general principle* of the relation between account and subject matter, and the specific status of an account about Becoming. Like the starting points given earlier in the prooemium,[6] Proclus cuts up the last section of the prooemium into a division, followed by an axiom or general principle, concerning the relation between account and subject matter, and a 'demonstration', the application of that principle to the realm of Becoming as the subject matter of Timaeus' exposition.[7] Whereas today readers of the *Timaeus* generally consider the specific status of an account about Becoming to be the core of the above quoted passage, Proclus instead focuses far more on theorizing about the *general principle* of the relation between account and subject matter, and about human accounts and knowledge in general.

In the following I will refer to that general principle that accounts are like their subject matter as 'the principle of discourse', and to the specific application thereof to accounts concerning Becoming as 'the εἰκὼς λόγος'.[8]

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[5] Cf. the main thesis of Lernould (2005).

[6] See chapter III.

[7] *In Tim.* I 340.16–23 and 341.22–24. For the division, see below v.4. Note that, despite the presence of an ἀξίωμα and a διαίρεσις, which remind of the comparison with geometry in Proclus' exegesis of the first half of the prooemium, the geometrical method is not explicitly involved at this point. The reason for this is that, as indicated in chapter III, in the course of discussing the prooemium Proclus gradually shifts from a comparison with the geometrical method to a comparison between the structure of a text and the structure of the universe. See also below v.7.

[8] I will not present a general Proclean theory of discourse, as that would go far beyond the scope of this study. I will, however, discuss some principles that can be distilled from

After a summary of recent explanations of the εἰκὼς λόγος (v.2), and some introductory remarks on the ancient εἰκὼς λόγος (v.3), sections v.4, v.5, v.6 and v.7 discuss the details of Proclus' exegesis of *Tim.* 29b3–d3, following the lemmata Proclus distinguishes. We will conclude the chapter by bringing together some of the results of this chapter with those of chapter III (v.8).

The main argument of this chapter is that Proclus interprets *Tim.* 29b3–d3 in such a way that it reinforces his reading of the dialogue as a reversion to the demiurgic cause of the natural world. To obtain this reading, Proclus emphasizes the human factor involved. Λόγοι in the sense of verbal expressions are primarily natural emanations of higher levels of reality, like any other λόγοι, and therefore naturally similar to their source. But they are also—and this is where the human factor comes in—a didactic/anagogic tool of man, with which he tries to imitate reality and establish a reversion of his own and other souls. Read in this way, *Tim.* 29b3–d3 is no longer a statement of the inadequacy of discourse of philosophy of nature, but instead an addition lending support to Proclus' overall interpretation of the *Timaeus* as a didactic treatise of theological philosophy of nature.[9]

In the literature on Neoplatonic literary theory and theory of language the relation between text and metaphysics takes a central place. The interpretation of *Tim.* 29b3–d3, however, has so far hardly been taken into account.[10] In general, and especially in Proclus' case, it is in the context of the reception of the *Republic* and the *Cratylus*, rather than the

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Proclus' interpretation of *Tim.* 29b3–d3 and that might figure in such a general theory of discourse. Some remarks on terminology: i) When translating εἰκώς I have chosen 'likely', as a fairly theory-neutral rendering (as opposed to 'verisimilar' or 'probable') and to indicate its root in ἔοικα and its relation to εἰκών; ii) I will not use the expression εἰκὼς μῦθος as the word μῦθος hardly plays a part in Proclus' interpretation. As shown below at v.5.2.ii, its occurrence at 29d2 is considered a metaphor, and no serious alternative for λόγος; iii) As to λόγος, we should at all times be aware of the fact that Proclus makes extensive use of the polysemy of this word, as referring (in the context of *Tim.* 29b3–d3) to metaphysical, epistemological, logical and verbal concepts. When it refers to verbal expressions, I usually translate 'account' (in the sense of a verbal description, rather than an explanation), 'discourse', or (in plural) 'words'.

[9] Cf. chapter III.

[10] Esp. Beierwaltes (1985: 296–318, with review of Coulter and Sheppard), Coulter (1976), Kuisma (1996), Rappe (2000: esp. 170–180), Sheppard (1980: 296–318, 2002), Van den Berg (2001). The lacuna signalled by Beierwaltes (1985: 301, cf. 308–309), regarding the philosophical implications of Neoplatonic theories of literature and exegesis, has in part been filled by Kuisma, Rappe and Van den Berg, but a lot of work is yet to be done.

Timaeus, that that relation is extensively discussed. The issues involved in such discussions are generally the true meaning and value of myths and poetry in the former, the nature of words and symbols in the latter, and in addition the role of language in theurgy.[11] These issues and their contexts are treated in this chapter only insofar as they are subsidiary to our understanding of Proclus' interpretation of *Tim*. 29b3–d3.

Of the *In Tim*., if anything, the two so-called 'prooemia', i.e. the 'summary' of the *Republic* and the Atlantis story have been the subject of further investigation concerning Proclus' theory of discourse. Proclus introduces them as representations of the universe in images (εἰκόνες) and in symbols (σύμβολα) respectively, and they have therefore been studied for the sake of a comparison of his notions of image and symbol.[12] The exception is a recent paper by Lernould (2005: 20–21), which focuses entirely on the theme of the εἰκὼς λόγος, and the question how it is compatible with the claim for a scientific status of philosophy of nature. The paper contains valuable analyses and a wealth of material, but since the author emphasizes the *opposition*, rather than the *continuity*, inherent in Proclean metaphysics and epistemology, he has to conclude that Proclus' interpretation of *Tim*. 29b3–d3 is incompatible with the rest of his commentary. In this chapter it will become clear that such a conclusion can be avoided.

v.2. *The εἰκὼς λόγος today—a selection*

To allow an appreciation of how different Proclus' interpretation of the εἰκὼς λόγος is from most of the modern readings, and how close to other, especially more recent ones, let us briefly walk through some of those modern readings. This section highlights different interpretations of the εἰκὼς λόγος, but should not be considered an exhaustive discussion.

In the modern debate on *Tim*. 29b3–d3 three central issues are raised. (1) Plato speaks both of an εἰκὼς λόγος and of an εἰκὼς μῦθος, and this may, or may not, refer to different aspects of his cosmology or

[11] *In Remp*/poetry/allegory: Brisson (2004a), Coulter (1976), Dillon (1976), Halliwell (2002: 323–334), Hirschle (1979), Kuisma (1996), Sheppard (1980, 2002), Van den Berg (2001: chapter 6); *In Crat*./naming: Hirschle (1979), Van den Berg (2007). Theurgy: Struck (1998, 2002), Van den Berg (2001: chapers 4–5).

[12] Esp. Dillon (1976), Kuisma (1996: 54ff.), Sheppard (1980, 2002: 196–201). Cf. Beierwaltes (1979: 171, n. 23).

different senses of being likely.[13] (2) Considering the position of the εἰκὼς λόγος remark at the end of the prooemium, Plato may be taken to exclude the prooemium from that qualification.[14] Moreover, certain other parts of Timaeus' exposition may be excluded as well, most notably the introduction of the third kind at *Tim.* 47e ff.[15] (3) The central issue, of course, has been the meaning of εἰκώς.

Timaeus' remarks on the status of an account about nature are the subject of extensive discussion in their own right, but above all they have figured in an ongoing debate among Plato's modern-day audience, on the question whether we should read his cosmogony literally or as one great metaphor. In general, those who prefer the metaphorical reading of the *Timaeus* find one of their clues—or arguments—in the word εἰκώς, that tells them, among other things, that Plato never meant the world to have a beginning in time.[16] On the other hand, literalists—

[13] See the discussions in Johansen (2004: 62–68), Morgan (2000: 275–279). According to Vlastos (1964: 382) εἰκώς is the important word. See also Brisson (1994: 104–105). Johansen (2004) (see below at n. 28) connects μῦθος to the context of human nature. Brisson (1998: 129–130) comes up with very different descriptions, inspired by 20th century philosophy of science: "falsifiable discourse describing the present state of sensible things" (εἰκὼς λόγος) and "non-falsifiable discourse presenting, in an explanatory model, the state of sensible things before and during their constitution" (εἰκὼς μῦθος).

[14] Berti (1997: 121, 127), Reale (1997: 152). Cf. Hackforth (1959: 18 f.), Runia (1997: 113), Vlastos (1964: 402–405).

[15] Runia (1997: 111–112) sees the introduction of the third kind as an application of the method advocated in Socrates' 'second sailing' (*Phd.* 99d–102a). For the position that both the prooemium and the principles at 47e ff. are rationally established principles, and hence (or this is suggested) free from εἰκοτολογία, see Leinkauf (2005: xii, n. 4): "Die Unterscheidung zwischen eikôs mythos und logos ist schon im text des Platons selbst deutlich festzumachen: die fundierenden Passagen zur Unterscheidung von Sein und Werden (27Dff) oder zu den Prinzipien der Weltentstehung (47Eff: *nus* und *anankê*) gehören zur rational erfaß- und darstellbaren Ontologie und Prinzipienlehre, nicht, wie die Demiurgen-Schilderung, zum Mythos." Leinkauf has this distinction mirrored in the use of λόγος and μῦθος for the respective kinds of discourse. His reading is inspired by Gadamer (1974: 245).

[16] See Zeyl (2000: xx–xxv) for an extensive and insightful discussion of this debate. Zeyl's own reading will be discussed below. Baltes (1996: 94–95), who opts for the metaphorical reading, does not explicitly play the εἰκὼς μῦθος card, but the argument is present in his reasoning. He refers to Timaeus' repeated stressing of the difficulties involved in understanding what he says, despite the fact that in the *Timaeus*, more than in any other dialogue, the interlocutors are more or less on an equal level. Moreover, it is worth noting here that Baltes mentions Timaeus' statement that it is impossible for the description of the universe to be entirely free of contradiction. Baltes explains this as involving 'dass Timaios sich gelegentlich unscharfer kolloquialer Ausdrucksweise bedient'. Cf. Tarán (1971: 391 and n. 165), who sees the metaphorical character as a choice

as we may call them—try to defend their interpretation against the threat of the εἰκὼς λόγος, and, rather than focus on the λόγος' being εἰκώς, concentrate on its refutability.[17] Between these two extremes a rainbow of interpretations has been offered, from a reading of *Tim*. 29b3–d3 as indicating poetic license,[18] through the suggestion that Plato is not presenting us with his cosmological views, but instead challenges his readers to examine their own views,[19] to the anachronistic reading of the *Timaeus* in probabilistic terms or as verisimilitude, "the nearest approximation which can 'provisionally' be made to exact truth," and which is subject to perpetual revision.[20] An interesting reading, which shows some similarities with that of Proclus, is found in Donini (1988: 47). He suggests that there are degrees of 'verisimiglianza' in the *Timaeus*, depending on the source of our knowledge.

In the recent surge of interest for the εἰκὼς λόγος question,[21] apart from readings that fit in the dichotomy sketched above, a certain trend is detectable. In two respects a shift has occurred, that, as we will see, brings us closer to the Proclean interpretation.

(a) First of all, the word εἰκώς is explained as expressing the likeliness not so much of the exposition, but of the content of physical theory.[22] Still, the qualification εἰκώς is explicitly given to the text, not to its subject.

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masking the likeliness, and Finkelberg (1996). Dillon (1997), who emphatically sides with the non-literal camp, does not avail himself of the likely story, but of other indications, mainly inconsistencies, as 'clues sown' by Plato.

[17] This camp of the literalists, of which Aristotle is famously the first adherent, has few followers. Of course their forte—to try and explain a text from its very words—is also their disadvantage: discrepancies are hard to get rid of. Roughly speaking two versions of the literal view can be distinguished, on the one hand the view that only the account is cosmogonical (e.g. Vlastos (1964)), on the other hand the inference that Plato's genuine position was cosmogonical (e.g. Hackforth (1959)). Robinson, T.M. (1979) proposes a hybrid reading that is the inverse of and less successful than that of Dillon: he interprets the text literally, unless the text itself explicitly indicates otherwise.

[18] Cornford (1937: 28–32), cf. Atzpodien (1985: 113, cf. 108–110), who thinks the *Timaeus* is one great metaphor that allows the readers to see the "gedanklich-logischen Vorstellungswelt" of the harmonic structure of the cosmos and of the soul.

[19] Gregory (2000: 241–242, 259).

[20] Taylor (1928: 59–61), pushed to extremes in Ashbaugh (1988), more moderate versions in Sorabji (1983: 272), Wright (2000: 14–19), Morgan (2000: 271–281), and Runia (1997: 111–112).

[21] For example, in 'Interpreting the *Timaeus/Critias* (Calvo and Brisson (1997))', the Proceedings of the IV Symposium Platonicum, five out of 31 contributions are to a large extent devoted to the εἰκὼς μῦθος: Berti, Reale, Runia, Santa Cruz, and Vallejo.

[22] To be fair, this was already pointed out by Tarán (1971: 400–401 n. 104). Tarán does, however, belong to the team of those who read the *Timaeus* as a metaphor ('creation myth'), triggered by the word μῦθος.

Considering that this qualification *is due* to the subject matter, it has been pointed out that the distinction made is not one between literal and metaphorical, but between consistent and accurate vs. less consistent and less accurate, between apodeictic certainty and plausibility.[23] This is an important modification, since, assuming that the likeness of the text is of the same sort as that of the subject matter, it invalidates the εἰκὼς λόγος remark as arguments for the 'metaphoricalist' position.

(b) Secondly, more attention is given to the validity expressed in εἰκώς, i.e. the positive side of some kind of similarity, as opposed to the limitations of dissimilarity.[24] The ontological structure sketched in the prooemium necessitates the like(li)ness of discourse about the universe, but also supports and justifies this discourse.[25] It is, in fact, what makes sensible discourse about Becoming possible in the first place.[26]

Almost all of the readings discussed in the foregoing are rooted in the modern conception of cosmology or science of nature in general: science of nature is supposed to be a science *par excellence* that requires, if not certainty, at least exactitude. Therefore Plato's qualification of his science of nature as a mere like(li)ness has been regarded as a serious issue, with far-reaching consequences not only for the dialogue, but for Plato's doctrine about the generation of the universe and physics in general—to the extreme of qualifying the entire cosmological exposition as fiction.[27]

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[23] Johansen (2004: 51), Zeyl (2000: xxxii).

[24] As is most clear in Von Perger (1997). Cf. already Rivaud (1963 [1925]), who refers to Brochard (1902).

[25] Santa Cruz (1997), Van Ophuijsen (2000: 128), Zeyl (2000: xxxii–xxxiii), cf. Reale (1997: 152).

[26] Gadamer (1974: 10).

[27] A very different approach is the interpretation of the *Timaeus* as a (re)creation of the or a universe in words. This is a scintillating reading, and one that easily relates to the Neoplatonic exegesis of the *Timaeus*. See v.7.1. When applied rigorously to the *Timaeus*, however, it inevitably runs into problems due to lack of evidence and even evidence to the contrary. Osborne (1996) considers the 'likeliness' of Timaeus' discourse to lie in the extent to which it succeeds in moulding a world (if I understand her correctly, one that is independent of the material world) to match its paradigm, the Forms. A similar approach is to be found in Brague (1985), who analyses Timaeus' exposition in detail in order to map it on the male human body. Unfortunately, his apparent success is to a large extent due to his begging several questions. Most importantly, as Brisson (1987a: 127) points out, there is no reason to assume that the animal in question should be a human. Nor, I would add, a male. In this respect the anonymous author of the prolegomena understood the principle formulated in the *Phaedrus* better when he concluded that a text should resemble the universe as the perfect living being. More credible versions of this interpretation, that are not associated with the theme of the εἰκὼς λόγος, are to

The most recent interpretation, put forward by Johansen (2004), does not suffer from such modern presuppositions, but provides an interesting and rather Neoplatonic angle, namely that, as a source of knowledge *of the transcendent Forms*, the sensible world is only moderately useful, since it is an image thereof, but in a different ontological medium.[28] This is an interesting interpretation because it considers the *Timaeus* as ultimately also aiming at knowledge of the Forms, and as valuing cosmology to the extent that it provides that knowledge, rather than knowledge of the sensible world as such. In this respect Johansen is quite close to Proclus. Moreover, also like Proclus, Johansen emphasizes the role of the limitations of human nature (as opposed to divine nature), which so far has not been very present in the debate.[29]

v.3. *Proclus on the εἰκὼς λόγος: preliminaries*

From the moment the *Timaeus* was written, the polemics about whether the generation of the cosmos should be taken literally or in some metaphorical sense thrived. However, the theme of the εἰκὼς λόγος does not figure in any way in the ancient debate on this question.[30] For this reason Proclus' views on the generatedness of the cosmos will not be treated in this chapter.[31]

Moreover, the ancient scholars do not seem to have struggled all that much with the notion that the account is not 'truth', but an approximation or an image thereof.[32] On the contrary, writers after Plato have

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be found in Johansen (2004: 186ff.) and Hadot, P. (1983) (see below and n. 280). Cf. Friedländer (1975: 355) "Schon in seinem Aufbau ist der *Timaios* ein Abbild der Kosmos, den er deutend nachdichtet."

[28] Johansen (2004: chapter 3, esp. 56, 59–60). Cf. Von Perger (1997).

[29] Johansen (2004: 55, 60, 62–63).

[30] As shows from the fact that in the testimonia of this debate discussed in Baltes (1976, 1978) the εἰκὼς λόγος has no role whatsoever. Cf. Dörrie and Baltes (1998: 122–129 (texts and translation) and 426–436 (comments)) and Sorabji's lucid discussion of the ancients' dispute (1983: 268–282).

[31] For a thorough treatment of the issue in Proclus see Baltes (1978) and Lernould (2001: 129ff.). See below, v.7.1 on the sense in which Proclus' interpretation of the εἰκὼς λόγος and his reading of the generation of the cosmos do at times almost intertwine.

[32] Sceptics did make use of the notion εἰκός for their own purposes, as can be seen from Anon. *Prol.* 10. For a discussion of the role of εἰκός in the Fourth Academy see Tarrant (1985). On the influence of the *Timaeus* on Plutarch see Opsomer (1998: 183–184).

borrowed several expressions (εἰκοτολογία,[33] κατὰ λόγον τὸν εἰκότα, etc.) from the *Timaeus*, as implying the validity, if within certain limits, of what is said. For example, the expression 'κατὰ λόγον τὸν εἰκότα' implies that something is probable, that it agrees with the facts, however incomplete they may be.[34] So being εἰκώς means being fitting, seeming, probable: it does not imply a negative judgment. Proclus' optimistic reading of the 'like(li)ness' of an account of the physical world fits this picture. The more interesting part of the theme of the εἰκὼς λόγος for its ancient readers, as we will see, is the general principle according to which accounts are related to and "interpreters" (ἐξηγηταί) of their subject matter.

Right at the outset of Proclus' reading of *Tim*. 29b3–d3, we find a discussion that warrants a cautionary remark. In his views on the theme of the εἰκὼς λόγος, more than anywhere else in Proclus' work, we encounter a hermeneutic difficulty due to what one might call an extreme case of Ὅμηρον ἐξ Ὁμήρου σαφηνίζειν: Proclus' main argument in his interpretation of the *Tim*. 29b3–d3 is that very passage. That is, he keeps justifying Plato's and his own position regarding the account of philosophy of nature on the basis of the Platonic axiom that "words are related to their subject matter" (*Tim*. 29b4–5), even when this is the very statement that needs justifying. A clear example is his reading of *Tim*. 29b2–3, which forms the transition from what Proclus calls the 'hypotheses' and 'demonstrations' to the 'likely story':

> T V.2 Μέγιστον δὴ παντὸς ἄρξασθαι κατὰ φύσιν ἀρχήν.

This sentence is ambiguous enough to allow Proclus to explain it as pertaining to each of the three elements playing a role in his reading of *Tim*. 29b3–d3: discourse, reasoning, and reality. The universe, he states, proceeds from a natural beginning, namely "the eternity of the gods and the source of beings" and the final cause.[35] Likewise, knowledge starts by deriving suitable conclusions from suitable starting points, namely the hypotheses as the natural starting point of demonstration;[36] and

[33] This word is not used in the *Timaeus*, but is clearly derived from it. Cf. e.g. Theophrastus *Fr*. 51.1.1–3. Cf. also εἰκοτολογικῶς at *In Tim*. I 340.26, where Gaius and Albinus are said to think that Plato can 'express doctrine' (δογματίζειν) in this fashion.

[34] It does so in Plato at *Tim*. 30b7, 53d5, 55d5, 56b4, 90e8. Cf. Sext.Emp. *adv. math*. IX 107.4 etc.

[35] *In Tim*. I 337.29–31, 338.26–27.

[36] *In Tim*. I 338.2–4, 27–28.

the didactic account (ὁ διδασκαλικὸς λόγος) starts from "the distinction concerning the kind of teaching (διδασκαλία) involved, whether it should be taken as fixed and unalterable and fully precise, or as a likely discourse (εἰκοτολογία) which is not truth, but persuasion (πίστις) and made alike to truth (πρὸς τὴν ἀλήθειαν ὡμοιωμένην)."[37] Thus "knowledge follows the order of reality, and the didactic account follows the order of knowledge."[38] The principle behind this explanation is that a text is essentially and naturally related to its subject matter. The source of that principle, of course, is the *Timaeus* itself (29b4–5). Likewise, when discussing Plato's motivation for bringing up the relation between text and subject matter in the prooemium in the first place, Proclus explains it as an application of that same principle:

> T V.3 Now some people say that it is a part of speech writing to distinguish beforehand of what kind the account is, and what kind of attitude the audience should have, and that Aristotle emulated this,[39] as well as many other, more recent philosophers. I, however, would say that the account imitates (μιμεῖται) the demiurgy itself: just as the latter first brings forth the invisible lifes of the cosmos, and then establishes the visible, and contains its definition before the whole cosmos itself, so too Timaeus possesses the theory of things, and renders the kind of account appropriate to the things, and has assumed and distinguished the mode of speaking before the entire study, in order to adjust the entire teaching (διδασκαλία) to that definition. (*In Tim.* I 339.18–29)

This passage touches on a number of issues relevant in this chapter, and we will return to the details of the text, especially the fact that the similarity between text and subject matter is here considered the result of an activity of the speaker, at a later stage.[40] What is important at this point is Proclus' rejection of the option that the very application of the principle of discourse is a rhetorical topos, and his proposal to consider it instead

[37] *In Tim.* I 338.27–339.2 (trans. Runia modified), which I take to be parallel to I 337.31–338.2, where Proclus speaks of ὁ ἐπιστήμων λόγος, picked up almost immediately by ὁ διδασκαλικὸς λόγος (338.5). What Proclus has to say about the scientific account in the earlier passage ("starting from the natural beginning as from a root, it makes the following reasonings about the cause consistent with that beginning") can be explained as referring both to the εἰκὼς λόγος, so parallel with I 338.27–339.2, and as referring to any of the other 'beginnings' Proclus identifies: Timaeus' reversion to νοῦς (see V.7), the hypotheses, and the question whether the universe is generated or not, cf. *In Tim.* I 219.23–31 and III.2.1.

[38] *In Tim.* I 338.4–5.

[39] Probably a reference to Arist. *Rhet.* I 3 1358a36ff. (as Diehl proposes), which is about speeches, and a speech is what Timaeus will offer us (cf. *Tim.* 19d–20a).

[40] See V.6, V.7.

as a practice that imitates the Demiurge's conception of the 'definition' of the universe prior to his creative activities. Thus in the interpretation of the *Timaeus* the principle introduced at *Tim*. 29b4–5 occurs both as an *explanandum* and, since it had become embedded in the very heart of Neoplatonism, as an *explanans* of the relation between discourse and subject matter, both in general and with respect to the passage containing that very principle at *Tim*. 29b3–d3.

After these preliminary remarks, let us go over Proclus' exegesis of the εἰκὼς λόγος lemma by lemma.

v.4. *The nature of the εἰκὼς λόγος: resemblance*

> **T v.4** Concerning an image and its paradigm, a distinction should be made in the following manner … (ὧδε … διοριστέον) (*Tim*. 29b3–4)

Usually, Proclus ends a lemma at a punctuation, but in this case he breaks off the sentence from the *Timaeus* at the word διοριστέον, thereby creating a neat parallel with the 'division' of Being and Becoming made at 27d5 (διαιρετέον). The parallel is moreover emphasized with the use of verbal echoes in the following exegesis.[41] Thus the reader is reminded of that division, and of the correspondence between the couples Being-Becoming and image-paradigm.

In his exegesis of this passage, however, which is Timaeus' transition to the theme of the εἰκὼς λόγος, Proclus in first instance does not discuss the distinction between image and paradigm, but instead distinguishes three domains that are naturally 'grown together',[42] and that are all involved in the principle of discourse: "things, thoughts, and words" (τὰ πράγματα, τὰ νοήματα καὶ οἱ λόγοι).[43] By breaking off the

[41] τὸν διορισμόν (I 339.8), διέκρινεν (ib.), ὅτε δὲ τὰς ἡμετέρας γνώσεις διώριζεν ἐπὶ τοῖς πράγμασι, νῦν δὲ τοὺς λόγους μερίζων κατὰ τὰς διαφόρους γνώσεις τῶν λόγων ἡμῖν ἐπιδείξει τὴν διωρισμένην φύσιν (10–13). Proclus extends the parallel and reads *Tim*. 29b4–c2 as an axiom followed by a division. See v.7.

[42] συμφυῶς ἐχόμενα, *In Tim*. I 339.5, cf. ὁμόλογα (339.14), and in the next lemma συγγενῆ (340.22), ὅμοιον (341.4), συγγενῶς (341.6), συμφυῆ (341.10), συγγενής … καὶ οἷον ἔγγονος (341.19–20), cf. προσήκοντες (342.13, more specific context of λόγοι about intelligibles). On this natural relation see below, v.4.2.

[43] *In Tim*. I 339.5–6. This trio is inspired on Arist. *dI*. 1 16a3 ff. (to which Proclus refers at *In Crat*. XLVII), but the Aristotelian φωναί have been replaced with the λόγοι that are relevant in the context of *Tim*. 29b. Cf. Alex. *Quaest*. 59.12–13, who has the same trio in a discussion of definitions (σημεῖα γὰρ τὰ μὲν νοήματα τῶν πραγμάτων, οἱ δὲ λόγοι τῶν ἀπ' ἐκείνων νοημάτων).

sentence Proclus also creates room for an emphatic introduction of this Aristotelian trio "things, thoughts, and words", which is central to his exegesis of *Tim*. 29b3–d3.[44] In addition, in a somewhat repetitive passage that gives the impression of a chant, the connection of the three domains "things, thoughts, words" is mapped onto the earlier division into two realms: since cognitions stem from the things cognized, and different accounts from different cognitions, and since there were two kinds of things, Being and Becoming, and therefore two kinds of cognitions, summarized as intellection (νόησις) and opinion (δόξα),[45] there are also two kinds of accounts, permanent and likely (λόγους διττούς, μονίμους καὶ εἰκότας).[46]

That the trio requires such an extensive introduction is due to the fact that, as pointed out in chapter III,[47] our epistemological access to Becoming does not figure as such in Timaeus' remarks on the εἰκὼς λόγος. Instead, it is the ontological status of Becoming as an εἰκών that is brought forward as necessitating an account that is εἰκώς. For Proclus, however, it is crucial to underscore that the account does receive its epistemic status from reality, but is mediated by our thoughts, because the addition of the cognitions will later allow him to emphasize the epistemological side of the whole issue of the εἰκὼς λόγος, and change its focal point into the didactic value of Timaeus' account.

The following discussion of the natural relation between the three domains is roughly structured on the *Timaeus* text. In the discussion of *Tim*. 29bc, the first issue broached is, inspired by the text of the *Timaeus* itself, the sense in which the world of sense perception is an ontological image of the intelligible (v.4.1). Secondly, just as the world of sense perception is somehow a likeness of the Forms, so too discourse has a certain formal and semantic resemblance to its paradigm, i.e. the subject it deals with (v.4.2). This semantic/syntactic resemblance—syntactic insofar as it is detectable not in meaning but in form, e.g. length and order of sentences—is crucially related to a third aspect of the principle of discourse, namely the relation between cognizing subject and object of cognition. This third aspect, in which especially the downside of the

[44] Note that the trio is already present implicitly at *In Tim*. I 337.8–339.2.
[45] The summary may be inspired by *Rep*. VII 534a3–5.
[46] *In Tim*. I 339.5–18.
[47] See III.3.1.i.

principle of discourse comes to the fore, i.e. unlikeness, will be treated in section v.5, which deals with the question of unlikeness from different angles.

v.4.1. *The cosmos as image*

In order to understand properly the relation between the account about the universe and that universe, it is worthwhile first to have a closer look at how Proclus sees the ontological status of the sensible world as an image of the intelligible realm. We enter here into a vast territory at the very heart of Neoplatonic metaphysics, but will cover only a minute part thereof, which is especially relevant for the εἰκὼς λόγος.

We will briefly look at three issues: 1) the positive side of being an image, 2) the activity of paradigm and image and 3) the ontological level of the images in the sensible world.

1) When explaining in what sense "the world is necessarily an image of something" (*Tim*. 29b1–2), Proclus focuses primarily on the difference between having a paradigm and being an image.[48] The difference, he states, lies in the success of the imitation. Something can be made after a paradigm without being a real image, but "that which is not dissimilar but similar and resembling is an image;" so saying that the universe is an image is saying that it is in fact similar to the intelligible, that it is "mastered in terms of form", and really is an imitation (ὄντως μεμίμηται) of the paradigm.[49] Moreover, the similarity of the universe to its paradigm is "marvelous and ineffable and truly indissoluble".[50] As Opsomer points out in reference to *In Tim*. I 334.30–335.12, Proclus emphasizes the resemblance rather than the differences between the levels of reality.[51]

2) A second factor of the universe's being an image, besides it being a successful imitation of the paradigm, is the fact that for it to be an image is no mere end result, but a state of continuous activity both on the side of the causes, the paradigm and the Demiurge, and on that of

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[48] *In Tim*. I 334.30–337.5 (ad *Tim*. 29b1–2). Proclus also uses this passage to elucidate the relation between the intelligible paradigm and the Demiurge (for the latter see esp. 335.19 ff.).

[49] *In Tim*. I 335.8–12.

[50] *In Tim*. I 337.3–7. Proclus takes this to be one of the meanings of ἀνάγκη (*Tim*. 29b1), the other being logical necessity of the conclusion expressed in 29b1–2. The word 'indissoluble' (ἄλυτον) is a reference to *Tim*. 32c3, 41a8, b3.

[51] Opsomer (2000a: 356).

their effect, the universe as image. Proclus takes the world to be "the kind of image that we consider the image of souls to be,"[52] in the sense that the paradigm is "neither barren nor weak". He elaborates this in a truly Proclean triad: it is primarily the generative power of the paradigm that gives the cosmos its resemblance to the intelligible, which *by its very being* (αὐτῷ τῷ εἶναι) brings forth the image;[53] secondly, the *activities* (αἱ ἐνέργειαι) of the Demiurge in making the universe as alike as possible to the intelligible;[54] and thirdly,

> T V.5 … the *reversion* (ἡ ἐπιστροφή) of the cosmos itself to the production of forms and the participation of the intelligible. For it makes itself resemble them, by "hastening" (ἐπειγόμενος), as the Oracle says, to put on the "impression" (τὸν τύπον) of the images, the impression which the intelligible gods hold out to it.[55]

Of this triad of remaining, proceeding and reversion, especially the last will turn out to be interesting for the principle of discourse. Reversion in the sense of establishing similarity with one's source is the core of all non-selfsubstantiated existence, and therefore the world, as an image of the intelligible paradigm, actively assimilates itself to that paradigm.[56]

(3) Note that the expression "the world is an image of its intelligible paradigm" is in fact not entirely accurate. In a casual but important remark further on, Proclus limits the extension of "image of the intelligible":

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[52] *In Tim*. I 340.1–4. Rather than "au sense où nous pensons que les âmes sont des copies" (Festugière's translation of ὁποίαν τὴν τῶν ψυχῶν εἶναι νομίζομεν). The disadvantage of F.'s reading is that the illustration is hardly helpful. I take it that Proclus uses an example more familiar to us, namely images made by souls using their own ideas as paradigms, as opposed to those created by e.g. a mirror, to illustrate his point that the universe is not an image made after a lifeless paradigm. Cf. *In Tim*. III 335.26–27 ἡ πρώτη τῆς ψυχῆς εἰκὼν ἔμψυχός ἐστιν. Festugière's reading probably refers to Soul's being an image of Intellect, for which see e.g. *In Parm*. 745.2–3.

[53] *In Tim*. I 340.5–7, see also 335.26–28. Cf Plot. *Enn*. II 9 [33] 8.17–26.

[54] *In Tim*. I 340.7–9. Cf. *In Remp*. I 77.13–19, where Nature is compared to a mimetic artist.

[55] *In Tim*. I 340.9–13, with ref. to *Or.Chald*. fr. 37.7–9 Majercik. Cf. Plotinus, for whom the haste of the universe towards Being is an image of its incomplete and partial participation, *Enn*. III 7 [45] 4.28–33 and Wagner (2002: 301).

[56] *El.Th*. prop. 32. It is the similarity to which the cosmos owes its preservation: *In Tim*. I 336.28–29. On the mutual substantiation of image and paradigm through similarity see *Theol.Plat*. VI 4 24.13–20. The 'paradigm' here is a summary for both the intelligible paradigm itself, and the paradigm existing within the demiurgic mind, which he "looked at" (335.6) when shaping the universe. Cf. *In Tim*. I 335.19–28 and 322.18–323.22.

> T v.6 What has been formed as an image in relation to the intelligible are the works of nature, not those made in accordance with artistic skill, just as it is not individual characteristics taken separately (διωρισμένως) [that have been formed as an image in relation to the intelligible], but the common properties in them (αἱ ἐπ' αὐτοῖς κοινότητες).[57]

Two lower limits to the images involved in the εἰκὼς λόγος are here set. (a) The first excludes what one might call "second-degree" images, namely the products of craft (τεχνή), and (b) the second excludes particulars.

(a) The first limitation comes at the conclusion of a polemic against the famous Plotinian thesis that a good craftsman is capable of creating artefacts using the intelligible itself as his paradigm.[58] This limitation, we will see, positively affects the status of the account of φυσιολογία. (b) The second limitation imposed says that what is made alike to the intelligible paradigm is not the particulars taken severally, but αἱ ἐπ' αὐτοῖς κοινότητες. The term κοινότης is not a common one in Proclus. This passage aside, it occurs only in the *In Parm*., where it refers to a common quality between coordinate entities, the common quality itself being in the coordinate entities, but belonging to a higher ontological level than the particulars of which it is a common quality: a universal *in re*.[59]

The images of the intelligible which are the subject matter of Timaeus' account, then, and which Proclus calls the κοινότητες in (ἐπί +dat.) the sensible particulars, are the immanent universals. As is well known, Proclus harmonizes Plato's and Aristotle's theories of universals by arguing for the existence of both transcendent universals and immanent universals. What is important in the context of the principle of discourse is the

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[57] *In Tim*. I 344.22–24 (trans. Runia, modified). The context is the distinction between natural images and artefacts (on which see v.5.1.ii), so the addition of the individual characteristics is a little out of place. For this reason Proclus adds "we have spoken about this elsewhere". A candidate for this "elsewhere" could be the *In Parm*., but only because universals are there at the center of attention. For reff. see below, n. 59.

[58] *In Tim*. I 343.18–344.18.

[59] *In Parm*. 880.10–11 (14–16 Cousin) ἡ γὰρ κοινότης ὁμοταγῶν μέν ἐστιν, οὐχ ὁμοταγὴς δὲ τοῖς ὧν ἐστι κοινότης. Cf. the exegesis of *Prm*. 132a1 ff., against the "one over many" argument (esp. *In Parm*. 885.8 ff.), and *In Parm*. 714.17–20 (23–28 Cousin), where ἡ κοινότης is equated with τό καθόλου. Perhaps the term has its source in *Tht*. 208d5–9, where Socrates distinguishes between *differentia* and common property. Cf. Porph. *In Cat*. 81.14 ff. Cf. also the use of κοινωνία in Proclus, which can be used to describe a relation both (a) between similar particulars and (b) between a particular and a Form, e.g. for (a) *El.Th*. prop. 21 (24.13), and for (b) prop. 28 (32.19), prop. 32 (36.4 ff.), prop. 125 (112.6–7).

cognitive tool we have at our disposal with respect to these immanent universals. Proclus, like Syrianus, maintains that immanent universals, like nature!, are accessible to 'cognition through likely things' (γνώσις δι' εἰκότων), as opposed to scientific knowledge.[60] We will return to this later, when, after the analysis of the relation between text, subject matter, and human cognition, the time comes to determine in what sense and to what degree φυσιολογία is a likely story (v.6).

In summary, 1) the universe is an image of the intelligible paradigm, in the sense that it is really similar to it; 2) the relation between image and paradigm (both in itself and in the Demiurge) consists in constant activity on both sides; 3) the ontological level on which we find that which "has been formed as an image in relation to the intelligible", is that of the immanent universals. A lot more could be said about the relation between image and paradigm, but I will limit my treatment to these three topics, not only because they are brought up by Proclus within the confines of his exegesis of *Tim*. 29b3–d3, but especially because all three are crucial for the pedagogic value of an account of philosophy of nature, and allow us to explain Proclus' optimistic outlook concerning the status of philosophy of nature as science.

v.4.2. *The resemblance of discourse*

> **T v.7** ... accounts are related (συγγενεῖς) to that very thing of which they are the interpreters (ἐξηγηταί). (*Tim*. 29b4–5)[61]

This phrase—rather than the actual mention of the likely story at *Tim*. 29c7–8—in Proclus' view constitutes the core of the last section of the prooemium. In this phrase, he takes a general principle to be expressed

[60] *In Tim*. III 160.7–12. This passage is part of the exegesis of *Tim*. 40d–e, Plato's ironic remark concerning the theologians who claim to know all about their divine ancestors without any evidence whatsoever (see IV.3.1). Cf. Syr. *In Met*. 5.2–7, also discussed below, at v.5.1.i. Note that in ch. III immanent universals were found to be the proper subject of δόξα.

[61] Proclus suggests that this passage is the source of the distinction employed by Platonists in the school of Albinus and Gaius between two kinds of "δογματίζειν" or presenting doctrine by Plato: scientifically and "εἰκοτολογικῶς" (*In Tim*. I 340.23 ff.). See Dörrie and Baltes (1996: 357–359) and, for Albinus and Gaius' understanding of (the *Timaeus* as) εἰκοτολογία see Lernould (2005: 119–129). It is interesting that Albinus and Gaius see the εἰκὼς λόγος as a methodological principle the application of which is limited to Plato's own work, rather than a general point regarding the nature of discourse,

according to which two properties are ascribed to discourse: it is an interpreter (ἐξηγηταί) of some thing, and it is related (συγγενεῖς) to that thing. These are two different, yet connected properties. For Proclus, the latter is a requirement for the former: discourse *has to* (δεῖ) be related to its subject matter in order for it to be its interpreter.[62] The two properties are moreover related to two aspects of the way in which discourse reveals reality: (1) first, it is inherent in discourse that it is an image of reality, and that it therefore displays a certain similarity to reality. (2) Second, the very function of discourse is to interpret reality, but as we have seen above in **T V.3**, a speaker or author can increase the extent to which it does that by manipulating his discourse. For Proclus' reading of the *Timaeus* as a didactic and anagogic dialogue, these two aspects are crucial. As we will see, according to the first, which I will henceforth call the 'resemblance' of discourse, discourse and reasoning image reality due to *natural and necessary properties* of language, the human make-up, and reality as a whole. According to the second, however, which I will call 'assimilation', in the actual use of discourse and reasoning us humans have some room for conscious *manipulation* thereof, serving to *increase the similarity* both of discourse to its subject, and of the human soul to reality.

In the following, we will first look at the metaphysical foundation of the resemblance of discourse to its subject matter. The second aspect, assimilation, will make a short appearance in the following, but receive a more extensive discussion under V.7.

i. The hierarchy of λόγοι

According to Proclus' naturalistic view of language as described in the *In Crat*. words (ὀνόματα and ῥήματα) are *naturally* related to the reality they refer to.[63] Likewise, the λόγοι that are constituted of them are also

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which is how Proclus reads it. He seems to be quoting from Albinus. It is hard to see where the quote would end, but probably not before 341.4, since that is where we find out in what sense *Tim*. 29b4–5 is related to their distinction.

[62] *In Tim*. I 340.22–23. For more reff. see below, V.7.

[63] For the natural relation between ὄνομα and πρᾶγμα see *In Crat*., esp. XLVIII 16.17 ff. For Proclus' theory that names refer primarily to the Forms, and his criticism of Porphyry's semantics see *In Parm*. 849.13–853.9 (849.16–853.12 Cousin) with Van den Berg (2004). I will not give a detailed account of the relevance of the theory expounded in the *In Crat*. for Proclus' interpretation of *Tim*. 29b3–d3, but merely point out some parallels. I do assume that that theory about ὀνόματα does apply to λόγοι in the sense of a verbal

naturally related (συμφυῶς ἐχόμενα, *In Tim*. I 339.5) to reality, in the sense that they have a natural similarity to it. That the relation between λόγοι and reality is indeed natural is not only emphasized repeatedly in our passage,[64] it is moreover argued for on the assumption that discourse is capable of revealing the nature of things: an account would not be able to do that if it were not similar (ὅμοιον) to them.[65] Now being similar to something in fact comes down to *being the same thing*, albeit in a different manner:

> T V.8 What the thing is in a contracted mode (συνῃρημένως), the account should be in an articulated mode (ἀνειλιγμένως), so that it reveals (ἐκφαίνῃ) the thing and is subordinated to its nature. In the same way the divine causes of discourse both reveal (ἐκφαίνει) the realities prior to them, and are linked to them by nature (συμφυῆ[66]).[67]

Leaving the inferiority of discourse aside for the time being, let us see how Proclus explains the partial identity between discourse and reality by firmly assigning discourse its proper place in the metaphysical chain of λόγοι.[68]

The "divine causes of discourse" (τὰ θεῖα αἴτια τοῦ λόγου)[69] are the λόγοι that mediate, on higher levels of reality, between a primary and a secondary entity. This asymmetrical mediation, like the relation between an account and its subject, consists in revealing to the secondary entity the essence of the primary entity, through a (non-Wittgensteinian) family resemblance (συμφυῆ). Paraphrasing Proclus' explanation (*In Tim*. I 341.11–21): Zeus' messenger (ἄγγελος) Hermes is "the λόγος to

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account composed of ὀνόματα (and ῥήματα), cf. *In Crat*. XLVII 15.29–30. For λόγοι as composed of ὀνόματα and ῥήματα see Plato *Crat*. 425a2–4 (note that De Rijk (1986: 272 n. 34) suggests that ὁ λόγος here is a story and refers to Arist. *Rhet*. III 2 1404b26).

[64] συγγενη (I 340.22), συγγενῶς ἔχων (341.6), συμφυῆ (341.10), συγγενής … καὶ οἷον ἔγγονος (341.19–20).

[65] *In Tim*. I 341.5–6. Cf. also *In Remp*. II 354.27 (interestingly identical to *Scholia In Remp*. 621b, bis), where Proclus posits that myths are true, *because* they are the interpreters of reality. See below n. 118. Cf. however *In Tim*. I 343.1–2, discussed under v.5, where Proclus adds that words cannot actually comprehend the nature of their subject matter *as it is*.

[66] For συμφυῆς cf. *Tim*. 45d, on the connection of the visual ray with its object.

[67] *In Tim*. I 341.6–11, trans. Runia, modified.

[68] *In Tim*. I 341.11–24, ad *Tim*. 29b4–5.

[69] Despite the practically endless semantic range of λόγος in Greek and Proclus' play on its polysemy in this passage, I think translating it as 'discourse' here is justified, because ὁ λόγος, which is the subject of the immediately preceding sentence, clearly picks up *Tim*. 29b4–5. For the different meanings of λόγος in Plato, see De Rijk (1986: 225–231).

the intellect of the father", as that which proclaims (ἀπαγγέλλει) his will to the secondary gods;[70] among the essences Soul is the λόγος of the Intelligibles, and it reveals the unifying cause of the λόγοι that are in the Intelligibles, and from which Soul has its existence, to the essences;[71] one level above us, the "angelic" or messengers' order, which receives its existence from the gods, "continually interprets and transmits[72] the ineffable [command] of the gods". Likewise, "down here" the account of reality (ὅδε ὁ λόγος ὁ τῶν πραγμάτων) is related (συγγενής) to reality.[73] At this point Proclus adds an important adjustment, namely that our accounts are not immediate descendants of things, but "their grandchildren, as it were" (οἷον ἔγγονος αὐτῶν), as they are produced from our cognitions, which in turn correspond with reality.[74] According to Proclus verbal accounts are mediators in a series, caused by a higher ontological level.

Naturally, we form accounts about any level of reality: discourse can be an explicit and discursive expression of material reality, of divine beings, and even of the One—but Proclus here seems to assume that our language

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[70] On the Demiurge's speech to the lower gods, see below. On speech as messenger and the influence of the subject of the message on the medium, cf. Porph. *In Cat*. 58.23–24.

[71] I agree with Festugière that there is no need to change λαβοῦσα (N) into λαχοῦσα (Diehl). On the other hand, I also see no reason to change τῶν λόγων into τῶν ὅλων, as he does.

[72] 'Συνεχῶς ἑρμηνεύει καὶ διαπορθμεύει' echoes Plato *Symp*. 202e3–4 where, however, the communication established by Eros is symmetrical: ἑρμηνεῦον καὶ διαπορθμεῦον θεοῖς τὰ παρ' ἀνθρώπων καὶ ἀνθρώποις τὰ παρὰ θεῶν.

[73] As Festugière points out, τὰ πράγματα is here not to be understood in the narrow sense of the Intelligible, because in the sequel Proclus points forward to the division of λόγοι into two kinds, following the two kinds of πράγματα. ὅδε ὁ λόγος (I 341.18) can refer either to "logos in the sublunary realm" or more specifically to the account of Timaeus (which is how Runia reads it). Arguments for the latter are the circular construction of the discussion of this lemma (*Tim*. 29b4–5): at the outset of the discussion (340.18–19), we read that the λόγος of Timaeus, which is made similar to Beings, starts from one common and universal axiom concerning λόγοι; at 341.18 ff., the end of the discussion, we read that "this λόγος" is related to τὰ πράγματα, followed by the conclusion that "this (i.e. that λόγοι are related to their subject) is the common axiom". Arguments for reading ὅδε ὁ λόγος as referring to the logos in the sublunary realm are first of all the fact that the λόγος is said to issue from the knowledge "in us" (ἐν ἡμῖν), secondly the above explained reading of τὰ πράγματα as referring to all of reality, and consequently that at this point Proclus is still speaking in general terms: the direct context is the universal axiom concerning λόγοι, not yet the character of the particular λόγος about nature. I therefore prefer this reading.

[74] *In Tim*. I 341.19–21. Cf. Arist. *dI* 1 16a3–4. For νοήματα as paradigms of ὀνόματα, see *In Crat*. XLIX, esp. 17.21–23, LXXI, esp. 33.10–11.

is always an expression of the transcendent Forms (mediated, of course, by the proximate cause of the λόγοι: our thoughts). We will return to this issue later (v.5).

The hierarchy of λόγοι is difficult to understand, as it plays on the polysemy of λόγος as referring to words or an account, to creative rational principles and to a proportional relation. Proclus' discussion of the λόγοι of the Demiurge to the younger gods (*Tim*. 41a ff.) in the *Platonic Theology*, which also uses that polysemy, may help elucidate it.[75] The aim of that discussion, determining what kind of λόγοι the Demiurge 'expresses', since it cannot be human discourse, invites Proclus to pay more attention to the general metaphysical nature of λόγοι. He concludes as follows:

> T v.9 It is these efficient powers and activities, that advance from the one universal demiurgy into the demiurgic multitude of the gods, which Timaeus represents (ἀποτυποῦται) through words (διὰ τῶν λόγων). Indeed, words are images of thoughts (οἱ λόγοι τῶν νοήσεών εἰσιν εἰκόνες), because they unfold the folded being of the intelligibles,[76] bring the undivided into divided existence, and transfer what remains in itself into a relation with something else.[77]

Just as a speech is an image of our thoughts, so the demiurgic λόγοι, i.e. the powers and activities advancing from the Demiurge, are images of the νοήσις that remains in him.[78] Λόγοι in general are the emanating potencies (δυνάμεις) and activities (ἐνεργείαι) of their source (and as such images of the remaining ἐνεργείαι), that convey the main character of the source to the receiver and transform the receiver accordingly.[79] This latter aspect is important for Proclus' reading of the *Timaeus*, since transposed to the context of Timaeus' discourse, it explains the possibility

[75] *Theol.Plat*. V 18 65.23–66.2, on *Tim*. 41a–d (the speech of the Demiurge), cf. *In Tim* III 197.26–199.12 and 242.8–244.8, concerning the same *Timaeus* passage. See also below. Cf. *In Parm*. 853.1–9 (–12 Cousin) on different grades of names.

[76] Proclus uses the same terminology (ἀνελίσσει τὸ συνεσπειραμένον) of διάνοια, cf. *In Eucl*. 4.11–14.

[77] *Theol.Plat*. V 18 65.23–66.2. On the relation between namegiving and creation by the Demiurge see Beierwaltes (1975: 166), referring to *In Crat*. LI 19.25 ff., LXXI 30.8 ff., 31.29 ff., 32.18 ff.

[78] *Theol.Plat*. V 18 64.25–65.7, 65.23–66.2, and 66.12–16. Cf. *In Tim*. I 218.13–28.

[79] See also *Theol.Plat*. V 18 66.2–67.13 and *In Tim*. III 198.6–16. For an allegorical interpretation of the framing of the λόγοι in the *Parmenides* as representing the hierarchy of metaphysical λόγοι, or creative rational principles, see *In Parm*. 625.27 ff. (37 ff. Cousin).

of teaching through discourse. Discourse, like any other λόγος, has the capacities of transforming its receiver.[80]

Since the resemblance of discourse is ultimately caused by transcendent λόγοι (τὰ θεῖα αἴτια τοῦ λόγου), it is thus rooted in a necessary and *metaphysical* likeness. This likeness, which as we will see consists in an ἀναλογία, in the sense that the relations among the paradigms are the same as those among the images,[81] explains the capacity of language to transfer information. We can also gather from the above that for Proclus, just as for Plotinus, an uttered λόγος is an *image* (εἰκών) of a λόγος in our soul.[82] Proclus' choice of words is significant: as Sheppard observes, for Proclus εἰκόνες are generally speaking 'good images', i.e. not the kind of images one should reject because they somehow misrepresent their paradigms.[83] This does not imply, of course, that images are identical to their paradigms.

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[80] Cf. *Crat*. 388b.13 ff. on names as instruments for teaching, διδασκαλικόν τι ὄργανον. On the place of the teacher as elevated above his audience see v.7.1.

[81] Cf. Opsomer (2000a: 358) and Gersh (1973: 85–86).

[82] Cf. for a similar relation between 'names' (ὀνόματα) and their referents *In Crat*. IX (3.10–11), περὶ ὀνομάτων … καθ' ὃ εἰκόνες εἰσὶ τῶν πραγμάτων; XLVIII, esp. 16.15–17, δεῖται … ὡς δὲ εἰκὼν τῆς πρὸς τὸ παράδειγμα ἀναφορᾶς (of course already Plato *Crat*. 423b9–11 Ὄνομ' ἄρ' ἐστίν, ὡς ἔοικε, μίμημα φωνῇ ἐκείνου ὃ μιμεῖται, καὶ ὀνομάζει ὁ μιμούμενος τῇ φωνῇ ὃ ἂν μιμῆται, cf. 430a10 ff., 439a1 ff.), *In Parm*. 687.10–11 (13–15 Cousin), 851.6–7 (8–9 Cousin) Τὰ ἄρα ὀνόματα, εἴπερ ἐστὶν ἀγάλματα τῶν πραγμάτων λογικά. For Plotinus see *Enn*. V 1 [10] 3.7–8: "… just as λόγος in its utterance (ἐν προφορᾷ) is an image (εἰκών) of λόγος in the soul, so soul itself is the λόγος of Intellect."; I 2 [19] 3.28–31: "As the spoken (ἐν φωνῇ) λόγος is an imitation (μίμημα) of that in the soul, so the λόγος in the soul is an imitation of that in something else. As the uttered (ἐν προφορᾷ) λόγος, then, is broken up into parts as compared with that in the soul, so is that in the soul as compared with that before it, which it interprets (ἑρμηνεὺς ὢν ἐκείνου)." The best examples of semantic likeness according to Plotinus are the ideogrammatic symbols in Egyptian temples, *Enn*. V 8 [31] 6.1–9, with Armstrong's note. On Plotinus' theory of language see Heiser (1991), Schroeder (1996).

[83] Sheppard (1980: 196–201) discusses the distinction between good and bad images in the context of the 6th essay on the *Republic*, Proclus' defence of poetry. See also Dillon (1976), who points out that there is no strict division between the different terms used for images (more specifically icon and symbol). The term εἴδωλα, which in the 6th essay refers to bad images, does not have the same negative connotation in the *In Tim*., where we find it used mainly in non-literary, ontological context. E.g. I 285.17, 323.16. See also below, v.5.1.ii. For a comparison of εἰκών and εἴδωλον regarding words, see *In Parm*. 852.6–9 (7–11 Cousin).

V.5. *Unlikeness*

As Socrates says in the *Cratylus*, an image can only be an image if it is not only like, but also unlike its paradigm.[84] Proclus is well aware of this and maintains that, as a result, any image is inferior to its paradigm.[85] This has consequences for discourse in general, but it is reasonable to expect far bigger consequences for discourse about Becoming. The latter account must be inferior to an account about Being, due to the fact that Becoming is an image of Being. Moreover, since the account itself is an image of its subject, it is also inferior to its subject. These two elements are found by Proclus in the passage that nowadays is considered the heart of εἰκὼς λόγος:

> **T V.10** (1) … for a text concerning the permanent, and stable, and what is evident to the mind is itself permanent and irrefutable—insofar as it is possible and appropriate for words to be irrefutable and invincible, it should not fall short of that.[86] (2) But a text which concerns that which is copied from it and is an image (εἰκόνος), is likely (εἰκοτάς).[87]

This passage brings up the general refutability of discourse in a parenthesis, but its main aim is to introduce the parallel between subject and discourse, or in other words the metaphysical source of the likeliness of the εἰκὼς λόγος. Proclus, however, explains this passage, which he cuts into two lemmas ((1) and (2) in **T V.10**), in such a way that it no longer revolves around the deficiencies of the metaphysical resemblance of Becoming to Being, or even of an account to its subject matter. Instead, by a double strategy, he turns our attention away from

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[84] Plato *Crat*. 432a8–d3. Cf. *In Parm*. 743.8–14 (11–21 Cousin), 746.5–7 (6–9 Cousin), cf. 816.18–20 (26–30 Cousin).

[85] That an image is necessarily inferior to its paradigm is the core of Platonic metaphysics, of course, and is comprehensible especially in the context of causation, and the principle that the cause is superior to the effect (*El.Th*. prop. 7). Cf. *In Parm*. 816.12–14 (17–20 Cousin). On dissimilarity in Proclus' metaphysics see Gersh (1973: 85). In our context: *In Tim*. I 336.26–29 "Becoming is still an image", and its existence depends on the paradigm.

[86] The only reference we find to *Tim*. 29b3–d3 in Syrianus (*In Met*. 81.3–5) picks up this passage and combines it with a quote from the *Gorgias* (473b10) to emphasize the truth of Pythagorean and Platonic doctrine of principles.

[87] *Tim*. 29b5–c2. Note that Proclus has ἀκινήτοις, a textual variant of *Tim*. mms. FY, in his paraphrase of this passage at *In Parm*. 994.20–23 (26–30 Cousin). By again cutting a lemma in half (just as at *Tim*. 29b4) Proclus can start the next lemma, on the proportion between truth and belief, with the significant word ἀναλόγον (ἀναλόγον τε ἐκείνων ὄντας is in fact the end of the sentence here quoted).

metaphysics and to the issue of the limitations of discourse, and of human cognition in general, regardless of their subjects.

(1) The first half of this 'division', as Proclus calls it, which describes the status of a text dealing with the intelligible realm, elicits no comments on the metaphysical aspect of the principle of discourse, but is instead used to illustrate Proclus' general theory of discourse, and especially the 'unlikeness' inherent in λόγοι.

(2) Subsequently, in his exegesis of the second part of the 'division', describing the status of a text about 'images', Proclus prepares a shift to an epistemological approach that will dominate the remainder of the exegesis of *Tim*. 29b3–d3. He sets Timaeus' account apart from accounts about artefacts and closes the gap that he himself created earlier between text and cognition. As a consequence, he will be able to maintain that the status of discourse about Becoming has the same status as our knowledge thereof, which, as we know, is scientific.

v.5.1. *From metaphysical unlikeness to the unlikeness of λόγοι*

The core of **T v.10** is that, due to the relation between text and subject matter, some properties of the subject are transferred to discourse, influencing its epistemic status: its degree of stability and fixity. Proclus is hardly interested in this metaphysical side of the principle of discourse. He does not treat it in his explanation of either part of **T v.10**. Elsewhere we do find some remarks on the metaphysical side of the likely story, but only in parentheses, and in passages that on the whole pertain to epistemology:

> **T v.11** How would one express in words the material realm which is always changing and in flux, and indeed by nature is unable to remain at rest even for a moment?[88]

And some pages later we find another, almost perfunctory summary of the metaphysical unlikeness of the images of Being:

> **T v.12** Timaeus has mentioned that the account about nature is neither certain nor precise (μὴ ἀραρὸς μηδ' ἀκριβές) for two reasons: from the essence of the things of which it treats—for since the immaterial

[88] *In Tim*. I 346.18–21. See further below v.5.2.ii. Cf. I 353.1–3: due to the instability (ἀστάθμητον) of the sublunary world we have to make do with τὸ ὡς ἐπὶ τὸ πολῦ. Cf. Arist. *Rhet*. I 2 1357a22ff., where τὸ εἰκός is defined as "that which happens in most cases".

> became enmattered and the undivided divided and the separate "in an alien setting"[89] and the universal atomic and particular, it is not suitable for a scientific and irrefutable account, as such an account fits the universal and immaterial and undivided Forms—and from the impotence of those who study it.[90]

It is the "impotence of the students" that is subsequently elaborated. As said before, the two above quoted remarks on the metaphysical side of the εἰκὼς λόγος are made in contexts other than the actual *Timaeus* lemma expressing that metaphysical aspect (i.e. 29b5–c2, quoted as **T V.10**). In his exegesis of that passage Proclus instead displays a far greater interest in showing how the text itself is an illustration of the general principle of discourse formulated in the prooemium. By spelling out the details of the manner in which Plato fits the passage under examination to its subject, i.e. how he applies assimilation, Proclus creates a neat transition to the unlikeness of discourse. The details of assimilation will be elaborated on in v.7, but here we will briefly walk through Proclus' lexical analysis of the first part of **T V.10**, because it gives a clear indication of the direction Proclus wants what he calls the fourth demonstration to take.

He starts off by showing how Plato replaced the ontological attributes given to Being in the definition (*Tim*. 28a) with the corresponding epistemological attributes: "always being" is substituted by "stable", "always remaining the same" by "firm" and "understandable with intelligence" by "clear to the intellect".[91] There are three corresponding adjectives predicated of accounts, of which "stable" is repeated to indicate (ἵνα … ἐνδείξηται) the *similarity* (ὁμοιότης) between subject and discourse, "unchanging" is used because accounts about Being should *image* (ἵνα ἀπεικονίζωνται)[92] the firmness of reality, and "irrefutable" because they should *imitate* (μιμῶνται) the accessibility to intellect and proceed scien-

[89] Cf. Plato *Rep*. VII 516b5.

[90] *In Tim*. I 351.20–27. On the second source of imprecision, human cognition, see below. Note that discourse itself is not mentioned as a source of imprecision. For another passage in which Proclus points to the metaphysical source of likeliness see *In Tim*. I 410.11–19, discussed in v.6.

[91] *In Tim*. I 342.3–7.

[92] The sentence is something of an anacoluthon. The subject of the first clause, ἵνα … ἐνδείξηται, is Plato (or Timaeus), but the subject of this plural ἵνα ἀπεικονίζωνται, as well as the following ἵνα … μιμῶνται … καὶ … προέρχωνται, are λόγοι about Being (not the specific λόγοι of the lemma, since in that case the addition ἵνα … ἐπιστημονικῶς προέρχωνται does not make sense). Proclus starts out discussing the semantic likeness

tifically (ἐπιστημονικῶς).[93] Note that the scientific proceeding is added because what we grasp with intellect can *as such* not be expressed in an account.

The exegesis of this passage is layered, and what we have here is in fact a triple likely story. First of all there is the semantic likeness of *Plato's words* at 29b5–c2 to their subject, accounts about Being; secondly, these words express the resemblance of *any account* about Being to Being; finally, and for Proclus most importantly, the properties in question, the being stable, unchanging and irrefutable of the accounts, show that underneath the resemblance lies an *epistemological correspondence*, because, Proclus continues:

> **T V.13** … a λόγος is unfolded cognition.[94]

And since our knowledge of eternal reality is unchanging, so is our account of it.[95] This positive statement, however, brings Proclus to the downside of resemblance.

Because a text is unfolded *cognition*, it has the same properties as that cognition. Because it is *unfolded*, it has these properties to a lower degree.

Proclus explains *Tim*. 29b5–8 (part 1 of **T V.10**) in such a way, that it illustrates the consequences of this unfolding in discourse. The unfolding is imitated in Timaeus' words, he says, with the help of morphological and lexical quantity: when comparing language and reality (τὸ πρᾶγμα; he switches from cognition to reality! See below), the addition of multiplicity and of composition and the ensuing diminished unity and "partlessness" of the former as compared to the latter are represented by the juxtaposition of the singular and the plural (ἐκεῖνο [τὸ πρᾶγμα] μὲν *ἑνικῶς* μόνιμον καὶ βέβαιον καὶ νῷ καταφανὲς προσεῖπε vs. τούτων δὲ *πληθυντικῶς* μονίμους λόγους καὶ ἀμεταπτώτους καὶ ἀνελέγκτους εἰπών).[96] Note that, since the *Timaeus* text is about language, the exegesis of the text again has several strata. In this case the morphological *assimilation* of specific words to their respective subjects (things and words)

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of *Plato's* words (*Tim*. 29b) to their subject (λόγοι about Being) and switches to the resemblance between any account about Being and Being itself.

[93] *In Tim*. I 342.7–12.

[94] *In Tim*. I 342.16 … ὁ λόγος· ἀνειλιγμένη γάρ ἐστι γνῶσις.

[95] *In Tim*. I 342.15–16.

[96] *In Tim*. I 342.19–21.

is used for expressing the *unlikeness* of words *in general* to their subject matter. The fact that only one of the three adjectives (namely τὸ μόνιμον) remains identical, Proclus adds, illustrates the fact that the dissimilarity of λόγοι exceeds their similarity to the subject.[97] Especially this last addition to the interpretation of *Tim*. 29b5–8, in which the similarity of language to its subject (which in this case, is language as well) is again used to illustrate its *dissimilarity*, seems a case of pointless exaggeration due to exegetic zeal. However, the whole exercise has two specific purposes. In general, it is an illustration of the different manners in which a text is made an image of its subject matter on a microlevel, namely semantically, syntactically and morphologically. And the last example has the more specific purpose of emphasizing the dissimilarity of λόγοι.

Since the relation between λόγοι and their subject matter is in principle a natural one, and one of resemblance, like any image, discourse also necessarily suffers from dissimilarity to its paradigm. As we saw above, the dissimilarity of an image in discourse to its subject matter is caused primarily by what we could call a change of medium.[98] Discourse is in an unfolded (discursive) manner what its subject is in a unitary manner, no matter what the subject matter: "For it is necessary that what the thing is in a contracted manner (συνῃρημένως), the account be in a unfolded manner (ἀνειλιγμένως), so that it reveals (ἐκφαίνῃ) the thing, while it is inferior (ὑφειμένος) to it in nature."[99] The particular medium of spoken and written language is too poor to incorporate all at once the simplicity and fullness that reality possesses.[100] This weakness of language, which is famously criticized in the Seventh Letter, is most notable—and most discussed—with respect to the expression of the fullness and unity of the One,[101] but holds for lower levels of reality as well. Whenever it is possible to approximate in language the unity of, for example, the final cause of the universe, it is nonetheless impossible to include in that unitary

[97] *In Tim*. I 342.21–25.

[98] Cf. Johansen (2004: chapter 3, esp. 56, 59–60). Johansen speaks of the medium in relation to the difference between Being and Becoming, but it is just as applicable to the difference between text and subject matter.

[99] *In Tim*. I 341.6–9, quoted under **T v.8**.

[100] *In Tim*. III 244.12–22, 27 ἡ ἀσθένεια τοῦ λόγου. Cf. Plato *Epist*. VII 343a1 τὸ τῶν λόγων ἀσθενές.

[101] Plato *Parm*. 142a. On this topic see Heiser (1991: 59–72), Rappe (2000). On negative theology see Steel (1999) Martin (2001, 2002). On language and its incapacity of expressing the divine, cf. e.g. *In Tim*. III 243.5–13. Cf. Plot. *Enn*. V 5 [32] 6.15–16.

linguistic expression the wealth that is present in the ontological unity.[102] In language, riches and unity are mutually exclusive.

Thus there is a certain unlikeness in discourse *regardless of its subject matter*. That unlikeness is described in terms that are familiar from descriptions of the soul and its discursive thought. Proclus follows Plotinus in calling the soul 'unfolded intellect',[103] and the terminology in which he frames the unlikeness of λόγοι is the same as that which he uses elsewhere to portray διάνοια.[104] Moreover, in the exegesis of the rest of **T V.10** it becomes more and more clear that, after first introducing it, Proclus makes an effort to eliminate the distinction between discourse and thought.[105] As we have seen, this starts already in his explanation of the first part of **T V.10**, where he immediately switched to λόγοι as an unfolding, not of *thoughts*, but of *reality*. This switch is not due to mere carelessness. An analysis of Proclus' explanation of the second half of what he calls the division (see below **T V.14**), will clarify why the casual switch from λόγοι as unfolding *thoughts* to λόγοι unfolding *reality* is deemed harmless. Afterwards, we will further scrutinize how Proclus moreover almost reduces expressed λόγοι to internal ones, which allows him to highlight the epistemological sides of the εἰκὼς λόγος in a way that brings the scientific and the likely account much closer together.

i. Demonstration vs. likeliness

> **T V.14** (2) But a text which concerns that which is copied (ἀπεικασθέντος) from it [i.e. from the permanent, and stable, and what is evident to the mind] and is an image (εἰκόνος), is likely (εἰκοτάς). (*Tim.* 29c1–2)[106]

Despite the fact that Proclus is well aware of the consequences of the iconic status of discourse, he does not have a pessimistic outlook on the epistemic value of discourse—even if it discusses a subject matter as fleeting as the natural world. The main reason for Proclus' optimism is his view of the nature of the images in question. As mentioned above,

[102] *In Tim.* III 105.4–6. See also below, v.7.

[103] Cf. Plot. *Enn.* I 1 [53] 8.7–8, cf. Proclus *In Remp.* I 111.22, *In Tim.* II 249.9. There is an interesting semantic circle here: the word ἀνελίσσω, which is central in this context, is originally associated with discourse, as it refers to the unfolding of a book scroll.

[104] Cf. *In Eucl.* 4.11–14, mentioned also above.

[105] We will return to his reasons for introducing it nonetheless at v.7.2.

[106] Quoted above as the second part of **T V.10**.

εἰκόνες are 'good' images, and they represent their paradigms faithfully. Moreover, when it comes to λόγοι as representations of our thoughts, Proclus is convinced that their being a representation does *not* put them at a further remove from Being.

As opposed to the 'summary' of the *Republic* and the Atlantis story, which in accordance with Pythagorean tradition present the cosmos in images and symbols respectively,[107]

> **T V.15** Timaeus was going to offer an account of the demiurgic chain in a more universal and sublime way, and not through images (οὐ δι' εἰκόνων) …[108]

Timaeus does not use images representing the cosmos and its causes, i.e. *literary* images, in his exposition on the universe. In other words, Timaeus' account is not a metaphorical, allegorical, or otherwise indirect representation of reality.[109] "Timaeus is not forging myths."[110] Instead, as we have seen also in chapter IV, Timaeus presents ontological images through which insight is offered in their transcendent paradigms.[111] Whereas the *Critias* teaches about the cosmos through literary images (ἐν εἰκόσι), the *Timaeus* teaches about the Demiurge and the Paradigm he uses through the creation of the cosmos (διὰ τῆς τοῦ κόσμου δημιουργίας).[112]

The same outlook comes to the fore also in Proclus' interpretation of *Tim*. 29c1–2 (**T V.14**), and the distinction he introduces between accounts that are likely (εἰκώς) and accounts that are merely conjec-

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[107] *In Tim*. I 4.7–25, 30.11–15. Dillon (1976: 255).

[108] *In Tim*. I 63.8–9 Τίμαιος γὰρ καθολικώτερον καὶ ὑψηλότερον καὶ οὐ δι' εἰκόνων ταῦτα παραδώσειν ἔμελλεν. Note the sequel, in which Proclus adduces as an argument for this thesis the direct analogy between Timaeus and the Demiurge, who "decorates (διαζωγραφοῦντα) the heavens with the dodecahedron, and creation with the appropriate figures" (cf. *Tim*. 53c ff., esp. *Tim*. 55c4–6). This is a surprising choice, because it refers to a passage which could very well be taken as a description "in images", in the sense of metaphors. I take it, then, that Proclus is here emphasizing that the description of the Demiurge's activities should instead be taken literally. For the analogy between Timaeus and the Demiurge, see v.7.1.

[109] As is argued extensively also by Lernould (2005: 122–128 et passim).

[110] *Theol.Plat*. V 36, 133.11 ὁ Τίμαιος, οὐ μύθους πλάττων. Note that this does not prevent Timaeus from using signs or metaphors every now and then, e.g. at *Tim*. 36a, the passage referred to at *Theol.Plat*. V 36. Cf. *In Tim*. II 256.29 ff.

[111] See IV.2.3.ii, where it is argued on the basis of *Theol.Plat*. I 4 that the iconic mode of exposition of the divine uses ontological, not literary, images.

[112] *Theol.Plat*. V 21 18–22. I take the liberty to translate 'literary images' here. Proclus speaks of the war between Atlantis and Athens as imaging "the same things the paradigms of which the *Timaeus* praises through the creation of the cosmos," in other words, the cosmos itself. On Timaeus' creation of the cosmos see below, v.7.1.

tural (εἰκαστικός). Before we look at that analysis of different kinds of accounts, let us briefly go into the notion εἰκώς. It is interesting that all Proclus has to say about that notion in his exegesis of the above lemma, is that it is crystal clear (καταφανές) that, since Becoming is an image, an account of Becoming is likely.[113] He does not explain what it means for accounts to be εἰκότες. For such an explanation we have to analyze the general Proclean use of the word εἰκώς, the contexts in which it occurs, and the adjectives with which it is primarily associated.

Of the properties mentioned by Plato in the passage on the εἰκὼς λόγος: permanent, unchanging, irrefutable, invincible (29b), consistent, and exact (29c), and their opposites, the property which Proclus associates most with the likelihood of the account about the sensible is its lack of exactness,[114] followed by its refutability.[115] Interestingly, Proclus frequently adds a property that is not mentioned by Plato, namely fixity (ἀραρ-), a Homeric word that is not common philosophical vocabulary, but does occur in Iamblichus in connection with mathematical and demonstrative certainty.[116] That consistency, an internal property, does not play a part in Proclus' reading can be explained from his adherence to Iamblichus' exegetical principle of εἷς σκοπός according to which every text is internally consistent.

Turning to the word εἰκώς itself, we see that generally speaking in Proclus' use of that word the lack of precision,[117] irrefutability and demonstrative certainty are all in play, but that he tends to contrast being εἰκώς especially with demonstrative certainty. As we have seen, Proclus describes the epistemic status of the account of the images of Being, i.e. nature and immanent forms, as 'cognition through likely things', γνώσις δι' εἰκότων, as opposed to demonstration, ἀπόδειξις, which concerns incorporeal Being.[118]

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[113] *In Tim*. I 343.18–19.

[114] ἀκριβ-/ἀπηκριβ- within the exegesis of the likely story: *In Tim*. I 338.9–339.1; 340.27, 30; 342.13; 346.14, 16, 17, 19; 348.18; 349.6, 7, 9, 11, 14, 24, 31; 350.30 (selective quote from lemma); 351.3, 20; 352.30. Cf. for a beautiful illustration *In Tim*. II 51.5 ff., where analogy, exactitude and truth come together in a passage that slides from the ontological into the propositional.

[115] Within the exegesis of the likely story: I 342.25, 27; 343.4 (bis), 7; 347.6; 348.27; 349.14, 15; 351.25.

[116] Within the exegesis of the likely story: I 338.29; 342.14; 346.29; 351.20; 352.12. Cf. Iamb. *Comm. Math*. 5.18. Other terms occur no more than three times each.

[117] For the opposition of precision and the likely cf. Plato *Crit*. 107d6–8.

[118] *In Tim*. III 160.7–12 where they are compared to a third, ἡ ἐνθουσιαστική. Cf. Syr. *In Met*. 5.2–7 and 42.25, where Aristotle's statement that myths need not be taken seriously

The source of that distinction can be found in two Platonic passages. First of all, *Phaedo* 92d1 ff.,[119] where Simmias makes a distinction between a thesis that is based on demonstration (ἀπόδειξις) and one that is based on probability and likeliness. The latter, which is also called "an argument that demonstrates through likely things" (ὁ διὰ τῶν εἰκότων τὰς ἀποδείξεις ποιουμένος λόγος, 92d2), is in first instance rejected by Simmias as pretentious (ἀλαζών), but subsequently accepted on the condition that it start from an acceptable hypothesis (δι' ὑποθέσεως ἀξίας, d6). Note that Proclus modifies the Platonic phrase "demonstrations through likelihoods" and turns it into a distinction between cognition through likely things vs. cognition through demonstrations, perhaps influenced by Aristotle's requirements for demonstrations, according to which there cannot be demonstration in the strict sense from likely starting points.[120] This modification is visible also in Proclus' phrase "without likelihoods and demonstrations",[121] which is an adjustment of Plato's "without likely and necessary demonstrations" (*Tim*. 40e1). The rephrasing suggests that, whereas demonstrations have necessary conclusions by definition, reasoning through likelihood may have conclusions that are not necessary in some sense.[122] Moreover, considering the fact that Proclus takes the epistemic status of the account of the images of Being to be 'cognition *through* likely things', it seems reasonable to assume that it is the lack of certainty of the subject matter, reflected in the uncertainty of

(*Met*. III 4 1000a19) is criticized with reference to *Tim*. 40e1. The same discussion seems to be in the background at *In Remp*. II 354.27 ff. (=*Scholia in Remp*. 621b, bis), mentioned also above, where the truth of myths, which speak without likelihoods or demonstrations (ἄνευ εἰκότων καὶ ἀποδείξεων διδάσκοντες), is defended by pointing out that they are useful *because* they are "interpreters of reality", an interesting use of *Tim*. 29b4–5. Cf. above n. 65.

[119] Quoted in *In Eucl*. 192.12.

[120] *APo* I 2 71b21–22 ἀληθῶν τ' εἶναι καὶ πρώτων καὶ ἀμέσων καὶ γνωριμωτέρων καὶ προτέρων καὶ αἰτίων τοῦ συμπεράσματος. Plotinus, on the other hand, seems to maintain the opposition, although he speaks of syllogisms, not demonstrations: περὶ μὲν ἐκείνων (i.e. γένεσις) λέγων ἄν τις ἐξ ἐκείνης τῆς φύσεως καὶ τῶν ὑπὲρ αὐτῆς ἀξιουμένων συλλογίζοιτο ἂν εἰκότως δι' εἰκότων εἰκότας καὶ τοὺς συλλογισμοὺς ποιούμενος, *Enn*. VI 5 [23] 2.16–19.

[121] ἄνευ τε εἰκότων (λόγων) καὶ ἀποδείξεων, *In Remp*. I 185.16, II 340.29, 355.5.

[122] There are no indications that Proclus takes on board Aristotle's notion of the 'likely' as related to τὸ ὡς ἐπὶ τὸ πολύ, or the material of inferences from signs. At one point (*In Tim*. I 353.2) Proclus qualifies the *sublunary* as that with regard to which we have to be satisfied with τὸ ὡς ἐπὶ τὸ πολύ, but his notion of τὸ εἰκός is more extensive, cf. 353.3–5. For Aristotle's definition of τὸ εἰκός as τό ὡς ἐπὶ τὸ πολὺ γινόμενον see *APr* II 27 70a10 ff., *Rhet*. I 2 1357a31 ff.

the starting points (and here one could think of the hypothetical nature of φυσιολογία), that makes a likely story likely. Demonstration *simpliciter*, starting from necessary starting points, in a formally necessary way leads to (materially) necessary conclusions, whereas 'demonstration' from likelihoods renders, in a formally necessary way, possibly (materially) non-necessary, likely, conclusions.

This interpretation finds support in the connection Proclus makes elsewhere between the pair εἰκοτολογία—ἐπιστήμη and Aristotle's distinction between the different sciences on the basis of the level of precision of their subject matter with the subsequent characterization of the reasoning appropriate to that subject matter.[123] According to Aristotle, one should expect demonstration in geometry and πιθανολογία in rhetoric. In the *In Eucl.* Proclus adjusts that distinction to his own purposes and to Neoplatonic theory of science. Within mathematics—as, we will see, in philosophy of nature—different degrees of precision are to be found, depending on the subject matter at hand.[124] Moreover, Proclus states that, in accordance with the principle that every scientist should choose the appropriate kind of account (λόγοι), Plato *demands* (ἀπαιτεῖ) a likely account of the good philosopher of nature, and an irrefutable account of he who teaches about the intelligible.[125] As we will see later, however, Proclus takes the opposition not to be absolute, which allows him to see the *Timaeus* as a combination of likely story and truth (see below v.6–7).

Since it is the subject matter that determines the status of an account, there is one small matter that needs our attention. What is it we are talking about when we talk about the universe? As we have seen above, our discourse consists of λόγοι that emanate from the Forms. That seems to imply that we can speak only about one thing, namely the Forms, or even our own innate forms. How, then, is it possible to speak about the universe? Proclus does not address this question in the *In Tim.*, but there is an enlightening passage in the *In Parm.* to which we may briefly

[123] *In Eucl.* 33.21–34.15 (cf. 192.9–11), which is very close to Iamb. *Comm.Math.* 86.2–22 and refers to Arist. *EN* I 3 1094b22–28, which in turn has its source in *Tht.* 162e (which, ironically, is a reference to Protagoras' statement of ignorance concerning the *gods*). Another passage that is present in the background is Arist. *Met.* II 3 995a14–19 (cf. *APo* I 27 87a), on the fact that mathematics and philosophy of nature do not allow the same degree of precision. Cf. Alexander, who quotes the *EN* distinction between demonstration and πιθανολογία when explaining the *Met.* passage (*In Met.* 169.3 ff.).

[124] *In Eucl.* 34.11 ff.

[125] *In Eucl.* 34.1–7.

turn for an answer.[126] In that passage, Proclus explains that names indeed refer primarily to the Forms, and only homonymously to the sensible. The notion homonymy, Proclus explains, is here used in a stronger sense than usual, as it concerns, not just one name for two different things, but one name for a paradigm and, by analogy, its image. And when applied to the second case, the name is not entirely correct, because it suggests a purity that is not in the object. When people say something about the sensible, e.g. about a stick that it is equal (while it is also in many respects unequal), they actually have in mind a specific notion, namely equality *simpliciter*, so they are "carried back (ἀποφέρονται) to the primary equality", the Form.[127] Discourse about Becoming, then, is really incorrectly used discourse about Being.

ii. Images of images

Remember, however, that the above information on the notion εἰκώς and on discourse about Becoming is not to be found in the exegesis of the lemma that introduces that notion (**T v.14**). Instead, when discussing that lemma, Proclus focuses on distinguishing the likeness of accounts about images of Being from a kind of likeness that is further removed from truth, namely that of images of images. In doing so, he emphasizes the *proximity* of likely accounts to truth[128] and thus takes another important step in 'upgrading' the account of philosophy of nature.

One might wonder, Proclus says, what kind of accounts could be given of images of *sensible* paradigms, that is, the objects of conjecture (τὰ εἰκαστά) of the lower part of the Divided Line,[129] and artefacts (τὰ τεχνητά).[130] What follows is a short but dense discussion of objects at different 'removes' from the Forms, and the corresponding accounts.

Proclus distinguishes between images of intelligibles, to which Plato just assigned likely accounts, and images that do not have intelligible paradigms (the εἰκαστά and τεχνητά). To the latter Proclus assigns λόγοι εἰκαστικοί, while stressing the difference between ἐοικέναι ("to be like") and εἰκάζειν ("to portray", or "make oneself like"), and the corresponding

[126] *In Parm.* 849.13–853.9 (849.16–853.12 Cousin). On this passage see Van den Berg (2004).
[127] *In Parm.* 852.25–29 (32–37 Cousin).
[128] On truth see below v.5.2.i.
[129] *Rep.* VI 511e, VII 534a, the objects of εἰκασία.
[130] *In Tim.* I 343.18–22.

adjectives εἰκώς and εἰκαστικός.[131] The Platonic passages that are in the background here are of course book X of the *Republic* (esp. 596b ff.), where Socrates distinguishes three ontological levels (Form, object resembling the Form, and imitation of that object), and the *Sophist* (esp. the adjective εἰκαστικός).[132]

Note that for the verb ἐοικέναι in this context a translation such as 'avoir probabilité' (Festugière) is not precise enough. Proclus deliberately highlights the root of εἰκώς in ἐοικέναι and thereby its relation to εἰκών, and it is better to translate ἐοικέναι in the above distinctions as "to be like". The difference Proclus is after is that between a *natural* and an *artificial* ontological likeness, or between resemblance and imitation/assimilation. This difference may be illustrated by quoting the juxtaposition of the two verbs in *Phaedo* 99e6–100a1. Socrates there states "ἴσως μὲν οὖν ᾧ εἰκάζω τρόπον τινὰ οὐκ ἔοικεν," which is best translated as something like "perhaps that to which I liken it is in a way not *really* like it". The accounts of the images of Being, which 'are like it' (ἐοικέναι), are not somehow an educated guess, which therefore have probability, as opposed to random guessing (cf. 'conjecturer', Festugières translation for εἰκάζειν). Instead, they are the expressions of everything Becoming, which has a natural metaphysical resemblance to Being. As stories of images go, they are on a relatively high level of reliability, due to the nature of their content.

Proclus subsequently adds two further distinctions:[133] (1) he proposes that, although the accounts of the 'imagistic' (εἰκαστά) really are conjectural,[134] the ones of the 'artistic' (τεχνητά) are not. (2) Within the 'artistic' (τεχνητά) he distinguishes between two levels, namely (i) a first level of artistic objects based on forms (e.g. a bed), and (ii) a second level of artistic objects based on perceptible objects (e.g. on the first level artistic objects, so a picture of a bed). We know that Plotinus maintains that an artist *can* use intelligible paradigms, but Proclus here emphatically denies this possibility: when in the *Republic* Socrates speaks of an artisan using

[131] *In Tim*. I 343.21–27. At *In Eucl* 40.18 Proclus mentions an εἰκαστικὴ γνώσις, which is involved in the science called general catoptrics, i.e. the science of reflection of light.

[132] The word εἰκαστικός is not very common, and in classical Greek occurs only in Plato, in the context of τέχναι: *Soph.* 235c8 ff., esp. 235d6, 236b2, 264c5, 266d9; cf. *Laws* II 667c9, II 668a6.

[133] *In Tim*. I 343.27–344.5.

[134] The referent of τοιούτους in I 343.29 is unclear, but taking it to be 'imagistic' (as do Runia and Share (2009: 200, n. 838)) would leave the conjectural accounts without proper subject matter.

ideas (ἰδέαι), he is not referring to transcendent Forms.[135] Nonetheless the products of the artisan are on a higher ontological level than secondary artefacts, because the paradigms used by the artisan are the ideas existing in his own mind, not sensible objects. Thus accounts of these primary artefacts are likely (εἰκότες), just as accounts of the images of Being. The secondary τεχνητά, which do have sensible paradigms, are "at three removes from truth", and accounts of them, as of the natural copies of the sensible, are conjectural (εἰκαστικοί).[136]

Interestingly, both in *In Parm*. and in *In Alc*. we find paraphrases of the εἰκὼς λόγος in which Proclus uses the very word εἰκαστικός, in the *In Tim*. reserved for accounts at a third remove, to refer to the likeliness of accounts about the images of *Being*, i.e. those at a second remove. This choice can be explained from the context: the occurrences of the εἰκὼς λόγος at *In Parm*. and *In Alc*. are contained in passages which emphasize the *contrast* between the intelligible and the sensible.[137] In the *In Tim*., however, Proclus' main interest is the *continuity* between metaphysical levels (as well as, of course, between cognitive faculties, and between kinds of discourse).

This striving for continuity shows also from the fact that in the entire discussion in *In Tim*. of different kinds of accounts and different degrees of removal from the truth, the fact that the *accounts* in question are themselves images does not come up. Despite the fact that, as we have seen, accounts are ontological εἰκόνες of their subject matter, they are not at a further remove from the truth. The reason for this is probably that they are actually εἰκόνες of our knowledge. Considering the terminology used—εἰκόνες as good images—and the Platonic view of thinking as internal dialogue,[138] it is not unreasonable to assume that for Proclus

[135] *In Tim*. I 344.8–18, with ref. to *Rep*. X 596b and *Prot*. 312b–319c. Cf. Sheppard (1980: 196). For Plotinus' famous thesis that an artist can use an intelligible paradigm, see *Enn*. V 8 [31] 1, esp. 32–39, cf. Arist. *Phys*. II 8 199a15–17. As Sheppard points out, Plotinus does not apply his theory to texts. For a balanced discussion of Plotinus' aesthetic notion of mimesis see Halliwell (2002: 316–323). On the Neoplatonic discussion and rejection of Forms of artefacts, see *In Remp*. II 86.4–87.6 and *In Parm*. 827.19–829.14 (827.27–829.21 Cousin) and D'Hoine (2006a: 185–211, 2006b), on the *In Tim*. passage here discussed see D'Hoine (2006a: 209–210, 2006b: 300–301).

[136] *In Tim*. I 344.1–5, after Plato *Rep*. X 597e3–4. For ἀπὸ τῆς ἀληθείας instead of ἀπὸ φύσεως cf. *Rep*. X 599d2, 602c2. Proclus cannot use φύσις in that sense here because he is also discussing the distinction between φύσις and τέχνη.

[137] *In Parm*. 994.20–23 (26–30 Cousin), *In Alc*. 22.3–11, echoing *Tim*. 28a1–4, 29b3–c2 and 34c3, ἡμεῖς πολὺ μετέχοντες τοῦ προστυχόντος.

[138] Plato on thought as internal dialogue: *Soph*. 263e3–8, *Tht*. 189e6–190a2.

the gap between thoughts and uttered λόγοι is quite small. We may assume that according to Proclus the main difference between thoughts and uttered λόγοι is that the division which is unifiedly present in the former is given a temporal ordering in the latter, and that this difference is innocent enough to sometimes equate λόγοι as images of thoughts with λόγοι as images of reality.[139] Somehow there is a point-to-point correspondence between the accounts and thoughts.[140]

The harvest of Proclus' short discussion of different kinds of likeness, is an increase of the *proximity* of accounts about images of Being to truth: being only at a first remove from the Forms, they are now at the top of a list of accounts about images. The next question imposing itself is what is the relation between thoughts and reality?

v.5.2. *The unlikeness of thoughts*

Before we can answer the question what the relation is between thoughts and reality, however, we have to take a brief look at Proclus' use of the remark that a text about Being is irrefutable, "insofar as it is possible and appropriate for words to be irrefutable and invincible" (*Tim.* 29c7–8).[141] For Proclus this passage provides occasion to quite conspicuously establish the definite shift from λόγοι as uttered accounts to λόγοι as the reasoning that forms the foundation thereof. He does so by moving in three steps from accounts *about* something (λόγοι περὶ …), which suggests a verbal account, through 'the scientific account' (ὁ ἐπιστημονικὸς λόγος), to knowledge itself (αὕτη ἡ ἐπιστήμη).[142]

A scientific account may be irrefutable (ἀνέλεγκτος), says Proclus, but is so merely in a relative sense, namely with respect to our cognition (ὡς πρὸς τὴν ἡμετέραν γνῶσιν).[143] It cannot be refuted *by us*. It can, however, be refuted (ἐλέγχεται), which here means that it is incorrect, in two respects. (1) First of all, with respect to the very subject of our knowledge, and (2) secondly with respect to higher cognitions.[144]

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[139] Cf. *In Parm.* 809.11–15 (17–19 Cousin): ὡς γὰρ ὁ ἐν προφορᾷ λόγος τὸ ἓν καὶ ἁπλοῦν νόημα μερίζει, καὶ διεξοδεύει κατὰ χρόνον τὰς ἡνωμένας τοῦ νοῦ νοήσεις. Cf. Heiser (1991: 45–46) on Plotinus.

[140] At *In Tim.* I 353.17–22 Proclus even seems to suggest that a point-to-point correspondence between account and reality is possible.

[141] Quoted above as part of **T v.10**.

[142] *In Tim.* I 342.7–8 (discussed above), 342.25 and 343.3 respectively.

[143] *In Tim.* I 342.25–26.

[144] *In Tim.* I 342.27–343.15.

(1) As to the first, the account can "be refuted by the thing itself" (ἐλέγχεται δὲ ὑπ᾽ αὐτοῦ τοῦ πράγματος, 342.27–343.1), because accounts are incapable of comprehending the nature of their subject *as it is* (ὡς μὴ δυνάμενος αὐτοῦ τὴν φύσιν ὡς ἔστι περιλαβεῖν, 343.1–2) due to the above mentioned discursivity which diminishes the similarity between subject and account (ὡς ἀπολειπόμενος αὐτοῦ τῆς ἀμερείας, 343.2).[145] This argument is in turn argued for, not with reference to the nature of discourse, but of *knowledge*: the second kind of refutation is offered as argument for the first.[146]

(2) Our knowledge, and consequently the account we give thereof, are both correctable by νοῦς, as the highest form of cognition, but one that is exterior to our souls.[147] Every lower level of cognition adds a modification to the mode of knowing of the previous level, resulting in a diminution of cognitive power.[148] Or as Proclus put it: imagination corrects (ἐλέγχει)[149] perception, because perception works with affections, aggregation and separation,[150] whereas imagination does not; judgment corrects imagination, because the latter needs form and impression; science corrects judgment, because the latter does not know causes; and intellect corrects science (ἐπιστήμη), because the latter uses division and discursivity. Only intellect "will say what Being is in essence (ἐρεῖ τὸ ὂν ὅπερ ἐστί)."[151] And only intellect is really invincible (ἀνίκητος, cf. n. 87). All this is well-known Neoplatonic epistemology, and the surprise is not so much in the content, as in the location. With this discussion, Proclus has completed the shift started earlier, from λόγοι to ἐπιστήμη: while the deficiency of the εἰκὼς λόγος initially concerned specifically *discourse* and *images of Being*, i.e. the objects of δόξα plus αἴσθησις, Proclus has turned it around so that the deficiency concerns all of human *knowledge*, including and in fact especially ἐπιστήμη, and its inferiority to νοῦς. This shows from his concluding statement:

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[145] As a result of discursivity, the soul loses not only the unitary grasp of its object, but also the real nature (φύσιν) thereof, as its nature is in fact that which gives a thing unity. Not grasping a thing's unity implies not grasping its nature. Cf. Siorvanes (1996: 172).

[146] As shows from καὶ γὰρ, *In Tim*. I 343.3.

[147] *In Tim* I 343.3–4.

[148] Kuisma (1996: 47) calls what is here described "the principle of cognitive relativity".

[149] On this meaning of ἐλέγχειν see LSJ sv.

[150] Ref. to Democritean theory, cf. A 120 DK, Plato *Tim*. 67e5–6, Arist. *Met*. X 7 1057b8–9, *Top*. VII 3 153a38–b1, Plot. *Enn*. VI 3 [44] 17.19–24.

[151] Cf. Plotinus: Intellect is identical to what it says, *Enn*. V 3 [49] 5.25–26, cf. V 5 [32] 2.18–21; Heiser (1991: 27–28).

T V.16 Scientific knowledge (…) and a scientific account, are always the lesser (κρατεῖται) of intellect.[152]

The switch from accounts to knowledge is now complete and we can move on to take a closer look at the different aspects of the refutability of our knowledge in the next sections, after first following the further development of the new epistemological angle in the exegesis of *Tim.* 29c2–3.

i. Truth and belief

T V.17 And standing in proportion to them: as Being is to Becoming, so truth is to belief. (*Tim.* 29c2–3)[153]

The motif of truth and falsity, which runs through both *Timaeus* and *Critias*, culminates in this famous ἀναλογία that "as Being is to Becoming, so truth is to belief" (*Tim.* 29c3).[154] Proclus explains this ἀναλογία as a *geometrical alternation* (γεωμετρικῶς … τὸ ἐναλλὰξ προσέθηκεν) of terms that are related as ratios (what truth is to the intelligible, belief is to the generated).[155] What the value is of such an alternation, Proclus does not reveal, but it will turn out to be instrumental to one of his aims in the exegesis of *Tim.* 29c2–3: bringing closer together the forms of cognition related to Becoming and Being, i.e. belief and truth.[156]

Proclus' reading of this ἀναλογία starts out with a surprising summary. He lists the division of two realms, the intelligible and the generated, and the coordinate division of their ontological relation, paradigm and image, followed by the corresponding epistemic predicates ἐπιστήμη and εἰκοτολογία, or ἀλήθεια and πίστις, which he later calls γνώσεις. Although this reminds us of the earlier συστοιχία of reality and knowledge, some adjustments have been made to facilitate a continued epistemological angle.[157] At the beginning of his exegesis of *Tim.* 29b3–d3 Proclus used the terms 'truth' and 'belief' as referring to two kinds of

[152] *In Tim.* I 343.3–15.

[153] ἀνὰ λόγον τε ἐκείνων ὄντας. ὅτιπερ πρὸς γένεσιν οὐσία, τοῦτο πρὸς πίστιν ἀλήθεια. On the strange distribution of text over the lemmata, see above n. 87. For the ἀναλογία, cf. *In Remp.* I 284.5.

[154] Cf. within Timaeus' exposition: *Tim.* 37b9, 51d6, 53e3. On truth in *Timaeus-Critias*, see Runia (1997).

[155] *In Tim.* I 344.28–345.7. Cf. Arist. *EN* V 3 1131b5–7. On alternation in Euclid see *In Eucl.* 357.9–13.

[156] On these two as a pair of cognitions see below.

[157] On συστοιχία see Steel (1984: 7).

account (λόγοι), rather than forms of *cognition* (γνώσεις).[158] Moreover, he there identified the two forms of cognition corresponding to Being and Becoming as νόησις and δόξα, based on the 'definitions' of *Tim.* 28a1–4.[159] Now, however, he leaves out the 'definitions', but adds the relation paradigm–image and two new forms of cognition: ἀλήθεια and πίστις, equating them with ἐπιστήμη and εἰκοτολογία respectively. In support of his new coordinate series Proclus quotes from Parmenides' poem, whose description of ἀλήθεια he adjusts to fit the picture.[160]

That the pair ἀλήθεια and πίστις, which to 21th century minds look like the combination of a propositional property and a mental or cognitive attitude,[161] is by Proclus seen as a pair of γνώσεις, cognitive faculties or states,[162] is surprising, but fits the overall development of his exegesis. In the earlier passage he was concerned with introducing the συστοιχία of "things, thoughts and words," which he has dropped at this point in favour of a purely epistemological approach.

In the following, we will determine how the two pairs 'intellection and judgment' from the definitions and 'truth and belief' from the ἀναλογία can be reconciled. First, however, I will discuss the two notions, (1) πίστις and (2) ἀλήθεια, themselves and show how Proclus brings them closer together by elevating belief, the lower cognition, and lowering truth, the higher one.

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[158] *In Tim.* I 338.27–339.2, τῶν λόγων ὁ διορισμός, in which the pairing off of both εἰκοτολογία and πίστις with αλήθεια suggests that εἰκοτολογία and πίστις are interchangeable. See above v.3.

[159] *In Tim.* I 339.15, discussed above, v.4. On the definitions see chapter III.

[160] The quotations from Parmenides' poem are fr. 1.29 f., and fr. 4 (*In Tim.* I 345.15 ff.). In the first, Proclus has the textual variant Ἀληθείης εὐφεγγέος ("shiny truth") rather than εὐπειθέος (Sext.Emp. *adv. math.* VII 111, Simpl *In Cael.* 557.26 has εὐκυκλέος). O'Brien (1987: 316–317 and n. 10) argues convincingly that Proclus replaced εὐπειθέος in order to maintain the separation of πίστις and ἀλήθεια. Moreover, εὐφεγγέος gives him a nice parallel with the light metaphor at 347.20 ff., as shows from 346.1–2. On Proclus' use of Parmenides' poem see also Guérard (1987). On parallels between *Tim.* and Parmenides' poem see Gregory (2000: 252). The contribution of Parmenides' poem to Proclus' point is rhetorical, rather than systematic, as the quotation cannot be made to match the distinctions Proclus is introducing, and Proclus even seems to misread Parmenides by suggesting an identification of Becoming with non-being (346.1). We will therefore leave the details of Parmenides' lines aside.

[161] E.g. Johansen (2004: 50 f.). Van Ophuijsen (2000: 127–128) discusses the apparent discrepancy and convincingly argues for a reading of ἀλήθεια at *Tim.* 29c3 as well as elsewhere in Plato as a state of the knowing subject.

[162] Leaving the question whether he has in mind faculties or states aside for now, we will translate γνώσις as '(form of) cognition' for the time being.

(1) Since πίστις at *Tim*. 29c is coordinate with perceptible Becoming, the first notion of belief that comes to mind is the one we find in the Divided Line, where Plato ascribes πίστις to the second lowest segment of the divided line, as the cognition of the higher visible objects.[163] Proclus, however, explicitly rejects that notion of *irrational* belief as irrelevant for the *Timaeus* passage and states that "it seems that" (ἔοικε) here Plato adopts a notion of *rational belief* (λογικὴ πίστις) instead.[164] He does not tell us what indications he has for that suspicion, but I propose that he has two reasons for choosing rational belief. First, the presence of the original predication of ἀλήθεια and πίστις/εἰκοτολογία to accounts (λόγοι), which are by nature rational, is still felt in the background. We will return to this point below. And second, this is where the geometrical alternation of the ἀναλογία comes in. In explaining the geometrical alternation Proclus reconstructs the original ἀναλογία to which the alternation is applied from *Tim*. 27d5 ff. as "as truth is to the intelligible *paradigm*, belief is to the generated *image*", even though there is no mention of paradigm and image at *Tim*. 27d5 ff. yet.[165] After the alternation, we get "as Being is to Becoming, truth is to belief". The 'ratio', so to speak, is the relation paradigm-image which Proclus added to the original ἀναλογία.[166] Due to the alternation we know this same relation of paradigm-image to hold between truth and belief. And since Becoming owes any rational structure it has to being an image of Being, and truth is rational, therefore belief, as an image thereof, also has a certain degree of rationality, which it owes to truth.[167]

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[163] Plato *Rep*. VI 511e1, 509d. At *Theol.Plat*. I 25, esp. 110.17–111.7 Proclus distinguishes four kinds of πίστις: divine faith, which is part of the Chaldaean triad Love, Truth, and Faith (*Or.Chald*. 46 Majercik (=26 Kr.)), see Hoffmann (2000); the belief of the Divided Line; the conviction we have of (innate) common notions; and the ἐνέργεια of intellect. None of these, however, seems to match the rational belief Proclus is sketching in *In Tim*. Possibly he found his inspiration in his master's teachings. Cf. Syr. *In Hermog*. 57.21–23.

[164] *In Tim*. I 346.3 ἔοικε δὲ ἡ πίστις ἑτέρα τις εἶναι παρὰ τὴν ἐν Πολιτείᾳ … ἐκείνη μὲν γὰρ ἄλογός ἐστι γνῶσις … αὕτη δὲ λογικὴ … and 348.4–5. That Proclus calls the πίστις from the *Republic irrational* (ἄλογος), although Plato does not, is due to the fact that it is "distinguished from conjecture, but (…) classified in terms of sense-perception" (346.6–8).

[165] *In Tim*. I 345.2–3. Proclus construes the 'original' ἀναλογία, that is not in the *Timaeus*, from *Tim*. 29ab (the cosmos is an image, Being is its paradigm) and the definitions of Being and Becoming at 28a1–4, by replacing the definiens of Being with 'truth' and the definiens of Becoming with 'belief'.

[166] Cf. the alternation 2:4 :: 3:6 to 2:3 :: 4:6, where the ratio is 1:2 of the original pairs.

[167] Perhaps *Tim*. 37b8 is playing in the background. See *In Tim*. II 315.6–10 and II 310.10, where πίστις is the 'permanent and unchanging judgment of opinion' (ἡ δὲ πίστις ἡ μόνιμος καὶ ἀμετάπτωτος τῆς δόξης κρίσις).

That lower degree, of course, is due to the connection πίστις has with the realm of Becoming, and consists in its commixture (συμμίγνυται) with irrational forms of cognition, namely perception (αἴσθησις) and conjecture (εἰκασία). The rationality of πίστις lies in the fact that it uses these two for obtaining the fact (τὸ ὅτι), and from there moves on to providing causes (τὰς αἰτίας ἀποδίδωσιν).[168] This is a strange form of cognition: it is a 'belief' associated with perception and conjecture, which reminds of the earlier description of δόξα, but it cannot be synonymous with that δόξα, since it is also capable of providing causes, which δόξα is not.[169] It therefore has to be more elevated than δόξα. At the same time, the use of perception and conjecture seems to exclude that πίστις is here a synonym for διάνοια. Nonetheless, I propose that this is the case, and that πίστις here is something like a lower activity of διάνοια. Proclus' διάνοια is more varied than Plato's, and consists of different layers.[170] The πίστις we encounter in Proclus' explanation of the ἀναλογία of *Timaeus* 29c3, fulfils part of the role Plato gives to διάνοια in the *Republic*: reasoning discursively, and finding causes, while using the visible as images of higher realities.[171] Another argument in favour of reading πίστις here as a lower kind or part of διάνοια is the earlier description of διάνοια as cognition of the intermediaries, both intelligible *and* opinable (δοξαστά).[172] As a consequence of the adjustment of the form of cognition associated with Becoming, from δόξα which knows essences to πίστις which delivers causes (here taken as not including the essence), Proclus now comes very close to identifying Becoming, at least from an epistemological point of view, with the intermediate realm distinguished earlier, Becoming-and-Being.[173] Perhaps this adjustment can be explained with regard to context. In the definitions the cognitions ascribed to the different realms were the ones with which we *grasp* those realms. When it comes to Becoming, however, its respective forms of cognition, δόξα and αἴσθησις, will not suffice to give an *explanation* (λόγος) of that realm. That role of thinking about and giving an explanation of Becoming is here

[168] *In Tim.* I 346.8–12. For the link of giving causes and rationality cf. *In Tim.* II 120.23–28.

[169] E.g. *In Tim.* I 257.19–21. On δόξα see III.3.1.iii.

[170] For a recent and detailed treatment of διάνοια in Proclus see MacIsaac (2001).

[171] Plato *Rep.* VI 510d5–511a1.

[172] *In Tim.* I 247.1–2 διάνοιαν τὴν τῶν μέσων γνῶσιν νοητῶν καὶ δοξαστῶν, discussed in III.3.1.iii.

[173] *In Tim.* I 257.14 ff. On this intermediate realm see II.3.1 and III.3.1.

given to πίστις.[174] Despite the shift to epistemology, then, the whole discussion still regards the epistemological background *of the account given*.

(2) Truth is the cognition that in the ἀναλογία of *Tim*. 29c2–3 is coordinate with Being. As an adherent of the so-called 'Identity theory of truth', Proclus generally speaking sees truth as an ontological and cognitive property, in the sense that absolute truth is where cognizing subject and reality as object of cognition coincide.[175] This notion of truth, which has its roots in Alexander's reading of *Metaphysics* XII and *de Anima* III,[176] is also associated with the contemplation of Being as "the plane of truth" (τὸ τῆς ἀληθείας πεδίον).[177] On every level other than that of Intellect, we find only what Siorvanes calls "compromised" or partial truth, and truth as a relational property, rather than identity.[178] On lower levels the relation consists in "the agreement (ἐφάρμοσις) of the knower with the known",[179] and some kind of contact with the object of knowledge.[180]

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[174] Recall that an explanation of the natural world can be given only on the level of the immanent forms. See III.1.3.1.iii and V.4.1.

[175] Proclus on truth: *Theol.Plat*. I 21, with Taormina (2000). Künne (2003: 102) calls Proclus' the "least felicitous" of a number of ancient formulations of *correspondence* theories of truth, as "the knower cannot sensibly be called true" (with ref. to *In Tim*. II 287.3–5). This is unfair criticism, as Proclus' is an *identity* theory of truth. For different kinds of truth in Proclus and Plotinus and the importance of identity see Blumenthal (1989).

[176] Cf. Emilsson (1996: 237–239), who calls it the 'Internality Thesis' in his discussion of Plotinus' notion of truth. Cf. Plot. *Enn*. V 5 [32] 2.18–21.

[177] *In Tim*. I 347.27–28, quoting *Phdr*. 248b6. Cf. Plato *Phil*. 65d, where νοῦς and ἀλήθεια are tentatively identified. Proclus is generally following *Phaedrus* 247c3 ff., here and elsewhere, e.g. *In Parm*. 1015.28 ff. (35 ff. Cousin). Truth itself, i.e. in the intelligible hypostasis, is what makes all the Forms intelligible, *In Parm*. 944.22–24 (27–29 Cousin). Cf. Siorvanes (1996: 157, 194).

[178] Siorvanes (2000: 53). He passes over this "compromised" or partial truth later on in his paper, when he objects that according to the requirement of isomorphism "the criterion for truth is a whole and complete correspondence", in which case there should be a one-to-one relation between words and things (causing several problems, such as how to explain for different languages and synonymy). The solution is simple: there is no complete isomorphism between language and subject matter; complete, and therefore metaphysical, truth exists only on the level of Intellect. Cf. Blumenthal (1989: 276).

[179] See e.g. *In Tim*. II 287.1–5; cf. *In Tim*. II 315.21 ff. (γνώσις instead of ἀληθεία). *In Crat*. XXXVI 11.30–12.17 (ad *Crat*. 385b–c). In Peripatetic writings, ἐφαρμόζειν and relatives are commonly used of accounts and definitions, and often almost synonymous with 'being true of'. E.g. *Top*. VI 10 148a10 ff.

[180] Cf. *In Tim*. II 287.9–10. *Theol.Plat*. I 21 100.8 and 25 109.20 (συναπτεῖν), cf. Siorvanes (2000: 54).

In his exegesis of the ἀναλογία of *Tim*. 29c2–3, Proclus distills three kinds of truth of beings (ἀλήθεια τῶν ὄντων, *In Tim*. I 347.20)[181] from Plato's works. Using well-known imagery of light, he presents an emanation of unitary truth, as a light proceeding from the good and providing the intelligibles with unity and purity, followed by truth proceeding from the intelligibles, shining on the intellectual orders, and finally the truth in souls.[182] It is this last kind of truth which Proclus takes Plato to have had in mind in the ἀναλογία "what Being is to Becoming, truth is to belief", as it is the highest one attainable by human beings:[183]

> T V.18 … the truth that is innate (συμφυής) in the souls, which through intuitive thought (διὰ νοήσεως), fastens (ἐφαπτομένη) on to Being and by means of scientific knowledge (δι' ἐπιστήμης) has intercourse (συνοῦσα) with the objects of knowledge. (…) It is this truth found in souls that we must assume in the present context too, since it was this kind of belief that we assumed as well, not the kind that is irrational and has all rational fixity stripped away.[184]

Note that of the forms of cognition here associated with truth, intellection (νόησις) is known from the definition of Being, but knowledge (ἐπιστήμη) is not.[185] A number of Platonic passages where it does occur in the context of truth may be in the background, such as Plato's description of "the plane of truth" in the *Phaedrus* and in the *Timaeus* the description of the circle of the Same.[186]

At this point we can return to the question whether Proclus has in mind cognitive states or faculties when he calls the truth and belief of *Tim*. 29c2–3 γνώσεις. Proclus clearly describes πίστις as an agent (χρωμένη I 346.9, λαμβάνουσα 10, ἀποδίδωσιν 11–12), which suggests that we should read γνώσις in this context as a cognitive faculty. The case of truth is less clear cut, as the verbs attached to it could express both activity and state (ἐφαπτομένη 347.29, συνοῦσα 30), but this, one might

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[181] Cf. *In Crat*. LXIII 28.5, CX 60.19.

[182] *In Tim*. I 347.20–348.3, cf. Plato's *Rep*. VI (507b ff.); for truth as illumination cf. *In Tim*. III 114.19–23. See Runia and Share (2009) ad loc. for more reff. For a division of four objects of the predicates 'true' and 'false' see *In Crat*. XXXVI 11.30–12.17 (ad *Crat*. 385b–c).

[183] *In Tim*. I 343–344. Cf. *In Parm*. 946.21–24 (26–30 Cousin); *Theol.Plat*. I 21 97.17–21.

[184] *In Tim*. I 347.29–348.6, trans. Runia slightly modified.

[185] Note that in *Theol.Plat*. I 21 97.17–18 psychical truth is associated with opinions and knowledge.

[186] Plato *Phdr*. 247d1 ff., *Tim*. 37a–c. Cf. also *Rep*. VII 533c7, another ἀναλογία, where ἐπιστήμη is the highest section of the line, and νοήσις the combined highest two, ἐπιστήμη and διάνοια.

say, fits the nature of higher cognitions in which ultimately thinking activity and state coincide. Let us tentatively conclude, then, on the basis of the ἀναλογία that exists between πίστις and ἀλήθεια, that both γνώσεις are primarily to be taken as cognitive faculties.

In sum, according to Proclus the ἀναλογία of *Tim*. 29c2–3 distributes two cognitive faculties, rather than kinds of discourse, over the two realms of reality. The one, πίστις, which is coordinate with Becoming, is the faculty which combines rationality with perception (αἴσθησις) and conjecture (εἰκασία), and is capable of providing causes, whereas the one coordinate with Being, ἀλήθεια, is the faculty of cognition in our souls that works through both intellective insight (νόησις) and scientific knowledge (ἐπιστήμη). The main difference between the two, truth and belief, lies in the respective levels of precision of the resulting knowledge,[187] due to the 'instrumental' cognitions associated with them.

The upshot of Proclus' interpretation is the following: he brings the notions of truth and belief closer together by *elevating* the lower cognition, πίστις, to a "rational belief", by distinguishing it from its traditional Platonic level of association with the illusions of sense perception. On the other hand, he locates the relevant notion of the higher cognition, ἀλήθεια, at the *lower* end of its semantic spectrum, taking it as a cognitive truth on the level of human souls, rather than the primary metaphysical truth of Being. Apart from the introduction of ἐπιστήμη as 'instrument' of truth, this explanation of the notion of truth is not surprising in itself, and the sketch of the apparently irrelevant higher forms of truth serves to emphasize the elevation of πίστις.[188] The most important aspect of Proclus' interpretation, and what differentiates it from Plato's descriptions, is, of course, the addition of the delivery of causes by πίστις.

ii. La condition humaine and the εἰκὼς μῦθος

After adjusting the focus of *Tim*. 29b3–d3 to its epistemological side, and elevating πίστις to the lower limits of διάνοια, Proclus has paved the way for a reading of the εἰκὼς λόγος which makes full use of Plato's introduction of human weakness:

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[187] *In Tim*. I 346.10 ἀστάτου; 12–13 τὸ συγκεχυμένον … καὶ ἄστατον; 14–15 οὔτε ἀκούομεν ἀκριβὲς οὐδὲν οὔτε ὁρῶμεν; 18–20 σφάλλεται καὶ διαπίπτει τἀκριβοῦς. Cf. 346.3, on πίστις in Parmenides' poem, fr. 1.29 f. and fr. 4. See above n. 160.

[188] Cf. *In Tim*. I 348.3–7.

> **T V.19** (1) If then, Socrates, in many respects concerning many things—the gods and the generation of the universe—we prove unable (μὴ δυνατοὶ γιγνώμεθα) to render an account at all points entirely consistent with itself and exact, you must not be surprised. (2) If we can furnish accounts no less likely than any other (μηδενὸς ἧττον … εἰκότας), we must be content, remembering that I who speak and you my judges are only human (φύσιν ἀνθρωπίνην ἔχομεν), and consequently it is fitting that we should, in these matters, accept the likely story (τὸν εἰκότα μῦθον) and look for nothing further.[189]

That accounts of the natural world, both the sublunary and the celestial, but even those about the Demiurge,[190] are unfixed and imprecise is due to the impotence (ἀδυναμία, picking up μὴ δυνατοί) of their students,[191] which is in turn a consequence primarily of our enmattered state, forcing the use of particular tools upon us, as well as spatiotemporal limitations.

Since the passage in which Proclus explains the consequences of our impotence for astronomy is rather complicated, but does make an important point, let me quote it entirely in the translation of Runia, who I think understood very well what Proclus has in mind:

> **T V.20** (i) But someone might say, what have we here? Do we not give precise accounts about the heaven, such as that the celestial circles bisect each other? And when we are content not to obtain precision but what is close to it, is it not through our own weakness and not through the nature of the object that we fail to reach precision? But the fact is that *whenever we take our starting-points not from sense-perception but from universal propositions (λόγοι), in the context of sense-perceptible reality the accounts we give on the heaven do reveal precision and irrefutability, but in the context of the objects of science these too are refuted by means of the immaterial forms*. Let us look at the very statement that has just been made. The largest [heavenly] circles, they say, bisect each other. The intersection, therefore, necessarily takes place at [two] points. But this point is indivisible. What, then, is such a thing doing in the realm of the divisible? What is a substance without extension doing in the realm of the extended? After all, everything that comes to be in the bodily realm is physically divided together with its substrate. [But the response might be again]: What have we here? Is there not such as thing as a physical point? But this departs from what is truly indivisible. A point does exist in the physical realm, but it is not a point in absolute terms, with the result that the account of the point does not harmonize precisely with such a thing (i.e. the physical

[189] The numbers indicate the separation into lemmas: (1) *Tim*. 29c4–7 and (2) 29c7–d3 trans. Cornford, discussed at *In Tim*. I 348.8–351.14 and 351.15–353.29 respectively. For (1) see **T V.25**.

[190] On imprecision in accounts about the Demiurge, see v.7.2.

[191] *In Tim*. I 351.20–27.

> point).[192] In general terms, just as the accounts about the intelligibles do not harmonize with the objects of discursive thought, so the accounts of the objects of science do not harmonize with the objects of sense-perception, for the intelligibles are paradigms for the objects of discursive thought, while the objects of discursive thought are paradigms for the sense-perceptibles. After all, it is a soul which has ordered the mighty heaven and it continues to do so together with the Father. As a result, whenever we speak about circles in heaven and contacts and bisections and equalities, from the viewpoint of speaking about sense-perceptibles we are speaking with precision (ἀκριβῶς). But in the perspective of the immaterial realities (τὰ ἄϋλα), all such expressions are idle chatter.
>
> (ii) But if someone were to ask us: What have we here? Is not that which is truly equal a λόγος, and is not the true circle non-extended? After all, each of them is universal, and the universal is λόγος and indivisible form. But what is in the heaven is divisible and bisected and in a substrate, so again we say that here in the sense-perceptible realm there are no [true] circles or equalities or any other such thing, and it is in this way that we furnish our own accounts that are 'not consistent with themselves' (λόγους οὐχ ὁμολογοῦντας αὐτοὺς ἑαυτοῖς).[193]

Proclus is here in a somewhat forced way making two points, which explain two elements of (*Tim*. 29c4–7), namely "we prove unable to render an account (ii) at all points entirely consistent with itself and (i) exact". Unfortunately, Proclus' arguments are not very clearly structured and there is a textual problem. Proclus sets out to show that mathematical accounts about the physical may be exact on the perceptible level, but turn out to be imprecise on their proper level, of the immaterial forms. The points we talk about in astronomy are not 'exact points' and we use all kinds of expressions, such as 'contact', 'equal', 'bisect', that assume extension and divisibility in the mathematical realm.[194] The argument shifts to the inverse claim that mathematical accounts do not really apply to the physical, as e.g. a physical point is not really a point. The conclusion of the first part, at least if we follow Diehl's edition, is again that explanations involving bisection, contact and the like may be precise from the point of view of the perceptible, but are 'idle chatter' (φλήναφος) when

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[192] The word for 'harmonize' is ἐφαρμόζειν, which in geometry refers to the coinciding of figures. Note, however, that being true in all senses other than complete identity is also described as ἐφαρμόζειν.

[193] *In Tim*. I 349.6–350.8, ad *Tim*. 29c4–7, translation Runia, slightly modified, my emphasis. Cf. 29c6.

[194] There is no mention in this passage of intelligible matter, but that would not have changed the argument concerning the precision of astronomical explanations.

applied to the intelligible. Accounts that seem scientific, that is, are actually imprecise banter.

The second point, regarding the lack of consistency of our accounts, Proclus explains from the fact that the use of certain universals, such as "circle", reasoning about which does lead to real knowledge, will never apply to the physical, because there are no real circles in heaven. So by supposing in our astronomical account that conclusions involving objects such as circles apply to the heavens, or even by speaking of e.g. "circle" in that context, we end up with inconsistent accounts.

I agree with Runia that, despite the complexity of the argument, Diehl's reading does allow us to make good sense of it.[195] Hence, I do not agree with the interpretation of the passage provided by Lernould (2005: 116–118), who follows Festugière. Festugière adopts textual variants (μὴ ἀκριβῶς in I 349.30 where Diehl has ἀκριβῶς, and in ἐνύλων 350.1 instead of ἀύλων).[196] As a result, the conclusion of the first half of the passage quoted above changes into one concerning the inappropriateness of expressions concerning intelligibles to *perceptibles*. This has two disadvantages, namely (a) that it does not make sense of the beginning of the passage, which explicitly proposes to look at the inappropriateness of terminology involving divisibility etc. to the *intelligible*; and (b) it does render Proclus' argument more simple, but also repetitive, since the second point, made at 350.1–8 ("But if someone were to ask us, etc.") would come down to exactly the same as the first, namely the inappropriateness of expressions concerning intelligibles to perceptibles, despite the fact that it has to explain another aspect of Timaeus' statement, namely the lack of consistency of physical theory.

Three more illustrations of *la condition humaine* are presented by Proclus in a mixture of Platonic and Aristotelian themes, in which moreover the imprecision of our accounts is expanded to those about the intelligible.

In the cosmological and eschatological myth in the *Phaedo*, Plato has Socrates describe how we humans live at the bottom of valleys on the earth, filled with mist and water, and perceive the heavenly bodies through those substances, like someone who lives at the bottom of the ocean (ἐν μέσῳ τῷ πυθμένι τοῦ πελάγους) and thinks that the sea is the sky. He perceives the heavenly bodies through water, thinking he

[195] Runia and Share (2009) note ad loc. See however Diehl's own apparatus.
[196] Festugière (1966–1968: vol. II, 209 n. 3).

has a clear view of them. Our own slowness and weakness, like that of our hypothetical ocean-dweller, prevents us from actually reaching the heavens above the sky and getting a direct view of the beauty and purity up there.[197] The up there, in the case of us earth-dwellers, refers not to the heavenly bodies, of course, but to the transcendent realm of Forms. The issue at stake, as in the image of the cave of *Rep*. VII, is ontological rather than physical distance.[198]

Aristotle also remarks upon the disadvantages of our particular location in the universe, from his own non-otherworldly, empiricist point of view. Our position far away (πόρρω) from a different 'up there', namely the celestial bodies, or rather this position in combination with the weakness of our organs of perception, prevents us from having accurate empirical data and therefore accurate knowledge, of all the properties of those heavenly bodies.[199] In Aristotle's case, then, the issue is primarily relative physical distance, as opposed to the metaphysical distance in the *Phaedo*,[200] although in both cases the larger issue is that of cognitive problems as resulting from ontological differences.

In Proclus' exegesis of the prooemium of the *Timaeus* we find three references to our position in the universe and its effect on the reliability of our knowledge. In all three cases, Proclus combines the theme of the *Phaedo*-myth with Aristotelian material and brings up the issue in the context of the study, not of the Forms, but of "the images of Being" (ἡ θεωρία τῶν τοῦ ὄντος εἰκόνων), which he describes in terms of distance.[201]

The first instance concerns the above mentioned metaphysical side of the εἰκὼς λόγος. Precise knowledge of the sublunary cannot be obtained because the sublunary is "constantly changing and in flux, and indeed by nature is unable to remain at rest even for a moment".[202] And the

[197] *Phd*. 108c ff., esp. 109b4–110b2.

[198] Cf. Hackforth (1955: 174–175).

[199] Distance from the celestial bodies: Arist. *Cael*. II 3 286a4–7, ib. II 12 292a16–17; *PA* I 5, 644.22 ff. Unreliability of perception of things far away: *dA* III 3 428b28–30. The distance to the object of perception is a topos throughout the history of epistemology. In Epicureanism it is related to clarity of perception, cf. Sext.Emp. *adv. math*. VII 208 ff. (=Us. 247).

[200] Note, however, that Simpl. *In Cael*. 396 explaining the *Cael*. passage turns it into an example of the likely story: the distance is cognitive rather than spatial, referring to *Tim*. 29c2.

[201] *In Tim*. I 352.29–30.

[202] *In Tim*. I 346.18–21. See above **T V.11**.

heavenly bodies which are not subject to that same flux, Proclus adds with a beautiful oxymoron, are "far away from us" (πόρρω ἡμῶν), so we have still to be satisfied with approximating and plausible 'knowledge' (τὸ ἐγγύς … τὸ πιθανόν).[203] For that which has a spatial existence to be fully known, the presence of that which is acquiring knowledge of it is required. As a consequence, if certainty is attainable at all concerning the celestial, it is with regard to that aspect of it that does not have a spatial existence and therefore does not require our physical presence: we can know it insofar as it partakes in Being, and is therefore graspable through νόησις. "For wherever one places one's thought, it grasps truth as if it were present everywhere".[204] Insofar as they are perceptible, however, the heavenly bodies are "hard to grasp and hard to observe".[205]

This very argument on the distance between us and the heavenly bodies recurs only a few pages later, in roughly the same terms,[206] but with some modifications that only *seem* insignificant: the context has changed from metaphysics to the limitations of human knowledge, and therefore the perspective is inverted: it is *us* who are far away from the heavenly bodies (πορρωτάτω ὄντες ἐκείνων), rather than the other way around.[207]

Thus the second instance concerns 'knowledge' of physical objects down here, but from an epistemological point of view: we can gather such 'knowledge' only with the use of the corresponding form of cognition (σύστοιχος γνῶσις), namely perception.[208] Had we not been "living down here at the end of the universe" (ἐν τῷ ἐσχάτῳ τοῦ παντὸς κατῳκισμένοι) and "very far away" (πορρωτάτω) from the Forms, Proclus states, we would not have made so many mistakes—the point being that our position comes with certain cognitive limitations.[209] Note that we have a fascinating reversal of perspective here: Aristotle calls the *outer* limit of the universe the ἔσχατον τοῦ παντός.[210] In Proclus, this anthropocentric perspective is replaced by the perspective of emanation: the 'end of the universe' is that which is the furthest removed

[203] *In Tim.* I 346.21–31.
[204] *In Tim.* I 346.27–29.
[205] *In Tim.* I 347.1–2.
[206] Cf. the repetition of ἐγγύς and πόρρω close together at *In Tim.* I 353.6.
[207] *In Tim.* I 352.1, cf. 353.6. More on the context below.
[208] On divine knowledge of the perceptible see below.
[209] *In Tim.* I 351.30–352.1.
[210] *Cael.* IV 1 308a21, cf. Plato *Tim.* 36e2.

from the One.[211] Interestingly, Aristotle may have inspired this inversion, as he himself indicated that the common expression ἔσχατον τοῦ παντός as referring to the outer limit of the universe is incorrectly used, since that which we call the end of the universe is in fact primary in nature.[212]

The mistakes we make in studying the 'images of Being' are obviously not primarily caused by the distance between us and the objects of perception, since we live among them,[213] but by the ontological distance between us and reality, due to our enmattered state: we have a 'coarse and faulty' (παχέως καὶ ἡμαρτημένως) use of perception, imposed on us by our human nature, which is 'eclipsed by body, divided, and in need of irrational cognitions.'[214] Had we been 'up there', we would not have been enmattered humans, but divine transcendent beings, who perceive everything, *including Becoming*, in a divine manner:

> T V.21 Let us not think that the knowledge they have is characterized by the natures of the objects of knowledge, nor that what has no reliability is not reliable in the case of the gods, as the philosopher Porphyry says (fr. 45). (. . .) Let us rather think that the manner of knowing differs according the diversity of the knowers. For the very same object is known by god unitarily, by intellect holistically, by reason universally, by imagination figuratively, by sense-perception passively. And it is *not* the case that because the object of knowledge is one, the knowledge is also one [and the same].[215]

Proclus here follows Iamblichus' principle that the nature of knowledge depends on the knower, not on the object known.[216] Since divine intellection is not a 'surplus', i.e. is not distinct from what they are, the gods know as they are, undivided, unenmattered and eternal.[217] As opposed to us humans, they are capable of knowing everything, including the perceptible, the individual, future contingents, even matter, in a unitary,

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[211] Cf. *Theol.Plat*. V 27 102.6.
[212] *Cael*. IV 1 308a21–22.
[213] For the 'images of Being' that are farther away, the heavenly bodies, see below.
[214] *In Tim*. I 352.1–5.
[215] *In Tim*. I 352.11–16, trans. Runia.
[216] *In Tim*. I 352.3–353.11. Cf. *El.Th*. prop. 124, *Theol.Plat*. I 21 98.7–12, and reff. in Saffrey and Westerink (1968–1997: vol. I, 156, n. 1,2). *De prov*. chapter 63, 64, *De decem dub*. 2. Cf. *In Parm*. 961.18 ff. (19 ff. Cousin) ad *Parm*. 134cd. A weaker version of the principle, in which knowledge is given a relative property of being 'higher, lower than or on the same level as the thing known', is ascribed to Iamblichus by Ammonius (*in Int*. 135.14 ff., on future contingents). Sorabji (2004a: 72–73) points out that it is a version of "all in all but appropriately to each", which we do find in Porphyry. See Sorabji (2004a: 72–76) for more reff. on divine knowledge in the commentators.
[217] *In Tim*. I 352.19–24. cf. 352.32–353.1.

non-extended, undivided, ungenerated, eternal and necessary manner.[218] The distance in the *Phaedo* passage, then, is used by our commentator to express the essential deficiency of enmattered human souls regarding knowledge of any realm, including the realm of generation.

Finally, a little further we find the third reference to our position at the bottom of the universe, which describes its consequences to our knowledge of the heavenly bodies. Lack of precision in the study of those images of Being results, again, from our weakness (παρὰ τὴν ἡμετέραν ἀσθένειαν), but in a different sense,[219] which Proclus explains in the same oxymoron we saw before:

> T V.22 ... in the case of [the heavenly bodies] we have to be content with approximation (ἐγγύς), we who dwell far away (πόρρω) at the 'bottom', as they say, of the universe (ἐν τῷ πυθμένι, φασί, τοῦ παντός).[220]

The disadvantage of our—enmattered and distant—position is that we have to use perception and physical tools (ὄργανα), and fill ourselves with 'likelihood' (τοῦ εἰκότος) concerning the heavenly bodies.[221] Although they are unchanging, and thus do not suffer from unknowability due to flux, they are still hard to know.[222] The cause of the problem, in this case, is a *combination* of physical distance and the weakness of perception, as in Aristotle.

By way of example of the mistakes that are made as a consequence of our physical distance to the heavenly bodies combined with a research method using perception and astronomical instruments, Proclus refers to the astronomers he criticized also elsewhere: they formulate many different hypotheses, of epicycles, eccentrics, and contrary motions, but always as explanations 'saving' the *same* empirical data (τὰ φαινόμενα

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[218] *In Tim.* I 352.5–8, cf. *In Tim.* I 351.29–30, 352.24–27, 353.22–23. In Amm. *in Int.* 136.15–17 we find a similar series.

[219] *In Tim.* I 352.29–30.

[220] *In Tim.* I 353.5–7 (πυθμήν from *Phd.* 109c5), trans. Runia, slightly modified. Cf. ibid. 23–24 ἡμῖν δὲ ἀγαπητόν, εἰ καὶ ἐγγὺς αὐτῶν βάλλομεν. For a similar claim, using similar expressions, cf. Philop. *In APo.* 300.25–30.

[221] *In Tim.* I 353.3–5. Cf. the earlier reference to the distance between us and the heavenly bodies, with inverse perspective, *In Tim.* I 346.21–31, see above.

[222] Proclus does not say this in so many words, but it must be what he has in mind, considering that immediately preceding this argument he mentioned the 'instability' (ἀστάθμητον) of sublunary objects (I 353.1–3). That instability is irrelevant in the immediate context (i.e. that the nature of knowledge is determined by knowing subject, not known object), so I take it to emphasize the contrast between sublunary and celestial objects.

σῳζόντων).[223] Proclus implies that, since only one explanation can be true, at least some of them—and in fact all—must be mistaken.[224]

From the above we gather—and this fits Proclus' overall emphasis of the epistemological aspect of the εἰκὼς λόγος—that the ultimate source of the imprecision of any account, be it of the physical world or of the intelligible, lies with us, humans, not with reality, because in the end the nature of knowledge is not only determined by the object, but also by the knowing subject.[225] As we saw above, Proclus follows Iamblichus in maintaining that the character of knowledge is determined by the essence of the knower. Emphasizing this once more, Proclus concludes his exegesis of *Tim*. 29b3–d3 and the prooemium as follows, with an echo of Aristotelian and Platonic pleas for pardon of the weakness inherent in human nature:

> **T V.23** The gods know reality in a superior manner, but we have to be satisfied if we come close to the mark. We are humans and we are inserted in a body and we have before ourselves a partial kind of life and are replete with a lot of likeliness (αὐτοῦ πολλοῦ τοῦ εἰκότος ἀναπεπλήσμεθα), so that as is to be expected we will also give accounts that resemble myths (μῦθοις ἐοικότας … λόγους). For the human account is replete with a lot of thickness (παχύτης)[226] and confusion, which the word 'μῦθος' (i.e. in *Tim*. 29d2) indicates, and we should forgive human nature (δεῖ τῇ ἀνθρωπίνῃ φύσει συγγινώσκειν).[227]

Proclus here echoes Aristotle's discussion of equity as making up for the shortcomings of written laws: equity is also to forgive human nature (καὶ

[223] *In Tim*. I 353.7–11. On Proclus' criticism of 'low' astronomy see Segonds (1987a, 1987b) and ch. IV, n. 38. On Timaeus' 'hyperastronomy' (ὑπεραστρονομεῖν, inspired on *Tht*. 173e6) see *In Tim*. I 202.15 f., also III 277, *In Parm*. 828.19–28 (26–40 Cousin), *Hyp.Astr*. I 1. Cf. Syr. *In Met*. 88.21 f.

[224] See also above, **T V.20**, on the inexactness and inconsistency of accounts about the heavenly phenomena.

[225] I disagree with Lernould (2005: 115) on this point, who takes it that it is the imperfection of the *object* of knowledge that is emphasized most by Proclus. His reading of the passage that is the source of his statement (*In Tim*. I 346.21–29), is based on the textual variant adopted by Festugière, but which does not make better sense of the passage (see above **T V.20**). That accepting this variant is crucial for Lernould's interpretation shows from the fact that he keeps using the expression 'bavardage' (φλήναφος) in the context of explanations of the sensible Lernould: 117, 118, 122, 151).

[226] Παχύτης as metaphorical thickness, as opposed to precision, and due to corporeality: *In Remp*. II 281.4, Syr. *In Met*. 25.34, Iamb. *Protr*. 124.18. Cf. *In Tim*. I 352.1–2 παχέως καὶ ἡμαρτημένως τῇ αἰσθήσει χρώμεθα.

[227] *In Tim*. I 353.22–29, ad *Tim*. 29c7–d3.

τὸ τοῖς ἀνθρωπίνοις συγγινώσκειν ἐπιεικές).[228] The legal context is quite appropriate for the exegesis of *Tim.* 29c7–d3, since *Timaeus* is referring to his audience as οἱ κριταί (d1).[229]

In the above conclusion we find Proclus' only remark on the εἰκὼς *μῦθος*. The ancient debate on the εἰκὼς λόγος did not include, so far as we know, the issue of the significance, if any, of Plato's use of both λόγος and μῦθος when referring to the εἰκὼς λόγος.[230] This is not to say that the Ancients agreed with Vlastos that εἰκώς is the relevant word, rather than either λόγος or μῦθος.[231] Instead, they consistently speak of an εἰκὼς λόγος, rather than a μῦθος, which seems to imply a choice, if perhaps not always a conscious one.[232] In the case of our commentator, the all but complete ignoring of the role of μῦθος fits into the overall picture of a 'scientification' of the *Timaeus*: Timaeus "is not forging myths",[233] but presenting a certain type of scientific knowledge of the natural world.[234] Here, in the only comment Proclus makes on the εἰκὼς *μῦθος*, he explains it as pertaining to a property of the human account (λόγος), and as indicating (ἐνδείκνυται) the weaknesses inherent in human discourse.[235] By using the word μῦθος, Proclus explains, Plato indicates that our accounts of reality resemble myths (μύθοις ἐοικότας … λόγους)—even, I take it we can supply, the ones that attempt at being 'unveiled' and scientific.[236] We have seen a number of examples of such weakness of our accounts above, and will discuss yet a different one below (v.7.2), in which Proclus emphasizes that even when speaking of the intelligible we are forced to abandon truth and precision by dividing it and 'temporalizing' it.[237]

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[228] *Rhet.* I 13 1374b10–11. Cf. *EN* V 8 1136a5 ff.: involuntary mistakes made from ignorance are forgivable.

[229] Cf. in Plato: *Crit.* 107d5–e3.

[230] See above, v.2.

[231] Vlastos (1964: 382).

[232] See the indices to Dörrie (1987), Dörrie and Baltes (1990, 1993, 1996).

[233] *Theol.Plat.* V 36 133.11, quoted above at n. 110.

[234] On Timaeus' exposition as science see chapter III and v.8.

[235] *In Tim.* I 353.26–29, quoted above.

[236] I think this makes more sense of the phrase ἣν ὁ μῦθος ἐνδείκνυται than having the μῦθος refer to any specific myth or account, or myth as a genre (as Festugière seems to do). On myths as presenting veiled truth, cf. e.g. *Theol.Plat.* V 36 131.24 ff.

[237] *In Tim.* I 348.30–349.5. 'To temporalize' is here used in the sense of 'to place or define in temporal relations' and is a translation of ἔγχρονον ποιεῖν.

v.6. *A true and likely story*

The starting point of Proclus' explanation of Plato's εἰκὼς λόγος was that there are two kinds of accounts or teachings, scientific and likely, with their respective subject matter: Being and Becoming, cognitions: ἀλήθεια and πίστις, and epistemic properties: certain, irrefutable, exact, vs. uncertain, refutable, inexact.[238] In his exegesis of *Tim.* 29b3–d3, however, Proclus gradually and deliberately shifts the scene of the εἰκὼς λόγος from an ontological to an epistemological viewpoint, to conclude that the main source of the incertainty, refutability and inexactness in our accounts—primarily in those about Becoming, but even, to some extent, in those about Being—is the embodiment of the human soul. At this point, however, it is not yet clear why the epistemological viewpoint is so important, and how this interpretation hooks up with Proclus' view of the *Timaeus* and of philosophy of nature in general. We know the source of 'like(li)ness', but not yet *how* likely an account of philosophy of nature is, nor *what it means* that such an account is likely. So let us turn to the sense in which according to Proclus Platonic φυσιολογία is itself a likely story.

Entirely in line with his overall interpretation of the dialogue, Proclus does not simply earmark philosophy of nature as εἰκοτολογία, tied to πίστις, and inexact. According to our commentator, that Plato does in fact call Timaeus' account εἰκοτολογία is of course related to the subject matter, the nature of words, and human nature, but it is also the result of a *deliberate choice* he made:

> **T V.24** … Plato sometimes defines science (ἐπιστήμη) as 'providing causes', sometimes as 'the subject matter also having an entirely permanent essence, on top of giving account of the causes', sometimes as 'the principles not being hypotheses'.[239]

By the first definition, and only by that one, would φυσιολογία be a science. It will never be an unhypothetical science, since this is a prerogative reserved for theological dialectic; it can also never be a purely dianoetic science (as are the mathematical sciences), since the subject

[238] *In Tim.* I 338.28–339.2, 340.25 ff. (on Albinus and Gaius), 345.1. Cf. also 355.25–28; cf. *In Remp.* I 284.4–7. Cf. *In Tim.* II 36.20–24 where physical vs. mathematical is equated with likely vs. scientific, and *In Tim.* III 160.7–12 on knowledge from inspiration, demonstration and 'likely things'.

[239] *In Tim.* I 350.8–12. On this passage see also Martijn (2009).

matter of φυσιολογία does not have a permanent essence.[240] The only sense in which philosophy of nature can be a science is by providing the causes of natural phenomena. Proclus supposes that, although in the *Timaeus* causes of natural phenomena are indeed provided,[241] Plato nonetheless demands that we call it a likely account (ἀξιοῖ καλεῖν αὐτὴν εἰκοτολογίαν), because he here adopts the narrower second definition.[242] In Proclus' view, Plato uses the *terms* 'science' and 'likely account' as mutually exclusive, although something that is a likely account from one point of view is science from another. Proclus himself, however, has a more liberal use of the terms, and does not take them as mutually exclusive.

This shows again clearly from the explanation given by Proclus of the conclusion of the εἰκὼς λόγος, some aspects of which we have discussed above:

> **T V.25** If then, Socrates, in many respects concerning many things—the gods and the generation of the universe—we prove unable to render an account at all points entirely consistent with itself and exact (αὐτοὺς ἑαυτοῖς ὁμολογουμένους λόγους καὶ ἀπηκριβωμένους), you must not be surprised. (*Tim* 29c4–7, quoted above as **T V.19** (1))

According to Proclus with these words Timaeus prepares his audience for the coming speech on the natural world. He indicates how they should receive it, namely not as a perfectly finished (ἀπηκριβωμένοι) and really scientific (ὄντως ἐπιστημονικοί) account, but as similar (ἐοικότες) to it.[243] Proclus adds, however, that Timaeus also wants the audience to know that the account will not be a purely likely story, but a *mixture* (σύμμιξιν) of πίστις and ἀλήθεια, just as the universe is blended (συγκέκραται) out of "physical powers and intellectual and divine essences".[244] The seemingly innocent adverb ὄντως turns out to be telling: the account may not be pure science, but it is science in some way. It is surprising that Proclus would claim that the announcement of a *mixture* is to be found in the above quotation, and it seems that his only argument for this would be the fact that Timaeus mentions

[240] See chapter III.

[241] *In Tim*. I 2.1–4.5 etc.

[242] *In Tim* I 350.12–20. Plato may, of course, have used the third definition, but must at least have used the second.

[243] *In Tim*. I 348.16–20.

[244] As was emphasized in the exegesis of the preceding lemma, at *In Tim*. I 410.3–7. Cf. I 348.20–25.

both gods and the generation of the universe—and perhaps also the phrase 'at all points entirely consistent'. What is not surprising, is that Proclus sees the cosmological account as a mixture of truth and likely story.

As Proclus repeatedly emphasizes, the true causes of the natural world are transcendent, and hence true philosophy of nature as treated in the *Timaeus* does not study only Becoming, but Becoming insofar as it is caused by Being. As a consequence, if the division likely story-truth is parallel to and dependent on the division Being-Becoming, the dialogue cannot be a pure likely story.[245] Thus Timaeus' account produces a combination of truth and belief, and all aspects of it that are based in perception partake in a great deal of likelihood (πολλῆς μετέχει τῆς εἰκοτολογίας), whereas everything starting from the intelligible possesses some (ἔχει) irrefutability and infallibility.[246] Or as he says it at the end of the commentary as it is extent: insofar as the account is about nature and the creation of mortals, it is likely, but insofar as it ascends up to divine mind itself, it partakes in truth.[247]

Note that in these carefully phrased statements both truth and likelihood, as dependent on the respective objects of study, are a matter of degrees.[248] The two properties are not absolute and mutually exclusive, and what is more, the mixture of truth and likelihood is not determined only by the subject matter, but also by what we may call the human factor: discursivity and the structure of reasoning, which becomes explicit in our accounts. Thus Proclus immediately adds the modification that even our discourse about the Demiurge is far removed from reality because "we say that he deliberates and thinks and does this before that".[249] Even when it comes to the truth of the intelligible we are forced to "divide the undivided and temporalize the eternal."[250] We will return to this human factor again at a later point (v.7.2).

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[245] Leaving aside the fact that in the end all human accounts are likely.

[246] *In Tim*. I 348.25–27. On the translation of ἔχει see note 249.

[247] *In Tim*. III 356.17–22.

[248] It seems that in Proclus we find a forerunner of Donini's suggestion that there are levels of εἰκὼς λόγος in the *Timaeus*. Donini (1988: 47) connects the degrees of 'verisimiglianza' primarily to the source of our knowledge (φρόνησις, mathematical reasoning, perception, hearsay/traditional mythology). Cf. Runia (1989: 437).

[249] *In Tim*. I 348.27–349.3. The modificatory sentence starts with a γὰρ, which is out of place, unless we translate ἔχει in the previous sentence as "possesses (some)", as this way the modification is already announced and picked up by the γὰρ.

[250] *In Tim*. I 348.27–349.5.

The best illustration of the mixture of truth plus likely story, as well as its being determined on two levels, reality and discourse, is found after the prooemium, in the exegesis of *Tim.* 30b6–c1. The passage in question is Timaeus' conclusion that the universe is an animated intelligent living being:

> **T V.26** So we should say in accordance with the likely account (κατὰ λόγον τὸν εἰκότα) that this cosmos truly (τῇ ἀληθείᾳ) came to be an animated intelligent living being (ζῷον ἔμψυχον ἔννουν) due to the providence of the god.[251]

This conclusion seems to be qualified contradictorily as both adhering to the likely story, and offering the truth. Contemporary readers tend to pass over this apparent contradiction,[252] or, following Proclus, take the likeliness and the truth each to pertain to different parts of the sentence, namely the cosmos and divine providence respectively:[253]

> **T V.27** Just as the cosmos itself is a compound (σύμμικτος) consisting of both images and divine essences, and of both natural and supranatural things, so too did Plato call the account about it 'likely' and again dubbed it 'truth'. For insofar as it is moved in a discordant and disordered manner the account requires an εἰκοτολογία, but with respect to the noeric essence in it, and the divine cause from which it proceeds, it requires 'truth', and for this reason when he intended to speak about the cosmos he added the adjective 'likely', but when about divine providence 'truth'.[254]

Not surprisingly, considering the careful phrases we have seen before ("a great deal of likelihood" and "some irrefutability"), for Proclus this combination of truth and likely account on metaphysical grounds is merely a first step, summoned to dispel the apparent contradiction in the lemma. As above, he immediately widens the scope after this first step, by pointing out that "moreover, you may observe them in the account itself, the likely as well as truth, not just dividing them on the basis of the nature of the things [treated]."[255] We will here concentrate on reality, and leave the addition concerning likeliness and truth of the account itself for later.[256]

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[251] *Tim.* 30b6–c1.

[252] Taylor and Johansen, e.g. let it pass in silence. So does Gregory (2000: 250–251), who does point to other apparent contradictions (*Tim.* 37b, 47c, 56b). Cornford (1937: 34) adds a note that does not really explain anything, "it is literally true (not merely 'probable') that the world is an intelligent living creature."

[253] Thus Runia (1989: 441–443).

[254] *In Tim.* I 410.11–19.

[255] *In Tim.* I 410.20 ff.

[256] For the mixture in discourse see v.7.2.

In the elaboration of the combination truth-plus-likely account on metaphysical grounds Proclus distributes the two predicates on the basis of the different aspects of reality. He divides the different aspects of the universe into two sets of things: on the one hand images, physical things and the discordantly and disorderly moving substrate, which correspond with the account that is "likely", and on the other hand divine essences, supranatural things (ὑπερφυῆ πράγματα),[257] the intellectual essence and the divine cause of the cosmos, which correspond with "truth". Although this list is presented as a neat dichotomy, it is more of a spectrum which ranges over all aspects of Timaeus' exposition of the cosmos, from the ontologically most base to the most elevated. At the high end of the scale, we find the Demiurge as the divine cause of the universe, and at the low end the disorderly moving substrate, on which the Demiurge imposes order.[258] In between, in descending order, we meet the intellect of the world, the immanent forms (i.e. which Proclus identified as the images of Being),[259] and the objects informed by nature.

Thus the explanation for Timaeus' speaking the truth as well as the likely account in one and the same sentence is that the sentence in question contains information both about divine providence and about the *kosmos*, i.e. the order of what is in essence unordered. Since the universe is a composite, consisting of both Being and Becoming, consequently the text about the cosmos is a composite of the likely and the true.[260]

As said above, Proclus' assumption of a mixture of the likely and the true in philosophy of nature is intimately connected with his characterization of the dialogue, introduced in the very first pages of the commentary, as being both a physical and a theological study of the natural world. Interestingly, the arguments adduced in favour of this characterization are derived directly from *Tim*. 29b3–d3, and more specifically from the principle of discourse:

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[257] This literal use of ὑπερφυής, which is originally used as meaning "growing aboveground", but occurs mainly metaphorically in Classical Greek to indicate excellence, is found also in Iamblichus (e.g. *Myst*. 5.8.13), Olympiodorus (e.g. *In Gorg*. V 12.1) and Simplicius (e.g. *In Phys*. 1359.5).

[258] *Tim*. 30a3–6.

[259] See above v.4.1.

[260] Note that the truth and likeliness relevant here are not the cognitions of the ἀναλογία (see v.5.2.i), but instead properties of the account (λόγος, *In Tim*. I 410.13).

> **T V.28** If then one should actually be *making one's words similar* (δεῖ ὁμοιοῦσθαι) to the things 'of which they are interpreters (ἐξηγηταί)' as Timaeus himself will say (29b), it would be appropriate for this dialogue also to have a theological element too as well as its physical element, in *imitation* (μιμούμενον) of nature that is the object of study.[261]

And again, at the end of the first book of the commentary:

> **T V.29** True philosophy of nature must depend on theology, just as nature depends on the gods and is divided up according to all their orders, in order that accounts (οἱ λόγοι) too may be *imitators* (μιμηταί) of the things they *signify* (σημαντικοί).[262]

These are crucial passages, for two reasons. First of all, we here find the very principle that Plato uses to draw our attention to the *limitations* of the account of philosophy of nature, namely that an account is an interpreter of reality, reused by Proclus to explain why, in some sense and to some extent, it *surpasses* such limitations and is related to theology. And secondly, Proclus here introduces the side of the principle of discourse that I called 'assimilation' (v.4.2). Apart from being naturally related to its subject matter, a text *should make itself alike* to it, it should be a *mimesis* of reality. As shows from Proclus' formulation, this is not the same as it being a *natural* image (i.e. with necessary resemblance) of that to which it refers. This brings us to assimilation and the practice of the εἰκὼς λόγος, and to the sense in which philosophy of nature is a mixture of likely story and truth with respect to what I called the human factor: the level of reasoning.

v.7. *The practice of discourse: assimilation*

The natural relation between discourse and reality discussed earlier (v.4) makes possible the second property of discourse ascribed to it in *Tim.* 29b4–5 (quoted as text **T V.7**): its functioning as an interpreter (ἐξηγήτης) of reality.[263] The principle that an account is an interpreter of things

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[261] *In Tim.* I 8.4–13, trans. Runia, my emphasis. The infinitive ὁμοιοῦσθαι is here and in the following taken as a middle form. As we will see for Proclus it is not so much the text itself that 'does' the assimilating as its speaker or author.

[262] *In Tim.* I 204.8–12, my trans. I take the plural οἱ λόγοι here to refer to Timaeus' account as a whole.

[263] Apart from the passages mentioned in v.4.2: *In Tim.* I 343.25 (λόγοις … ἐξηγηταῖς), 27 (ἑρμηνεύεται); cf. *Theol.Plat.* I 10 46.2–9, VI 1 5.18–19; *In Alc.* 22.10–11, ib. 119.25–27, where Proclus likens the progression of the text to the circular processes in reality,

is understood by Proclus to mean, not only that there is a natural resemblance between a text and reality which allows a transfer of information regarding reality, but also that the user of discourse can and should actively try to *increase* the resemblance between discourse and reality. Thus the relation between discourse and its subject consists in opposite movements mirroring the metaphysical movement of emanation and reversion: just as the world is an image of the intelligible, coming forth from it and actively striving to return to it,[264] the text is both a *natural* image of a higher reality and an active *reversion* to it.

Before looking at the details of the application of assimilation in the *Timaeus*, let us subject the notion of assimilation itself to a closer inspection.

This notion is related, but certainly not identical, to what Coulter calls 'literary organicism', the influential literary theory according to which a text is a microcosmos.[265] In the *Phaedrus* we find the famous demand that a good text resemble a living being, with the proper body, a head and feet.[266] In Neoplatonic literary theory this requirement was merged with *Timaeus* 92c (quoted below as **T V.31**), and the animal of choice became the cosmos, as the most beautiful Living Being.[267] Consequently, identifying the constituent elements of the cosmos within the dialogue: the Good, the Intellect, the Soul, the form, and the matter of the dialogue, became part of the Neoplatonic *schema isagogicum*.[268]

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quoting Timaeus' phrase of words as ἐξηγηταί of reality. Cf. Ammonius, who has the inverse relation because he is explaining the necessary truth of propositions expressing necessities: *In Int*. 154.18–20 εἰσὶν ἐξηγηταὶ τῶν πραγμάτων οἱ λόγοι *καὶ διὰ τοῦτο* μιμοῦνται αὐτῶν τὴν φύσιν, ὡς πρὸ τοῦ Ἀριστοτέλους ὁ Πλάτων ἡμᾶς ἐδίδαξεν (cf. 152.9–11, 153.12–13). Cf. Porphyry on definition as explanatory (ἐξηγητικός) of things, *In Cat*. 63.7–8, cf. 73.19–20 and 31–35.

[264] See above v.4.1.

[265] Coulter (1976: 95 ff.).

[266] Plato *Phdr*. 264c.

[267] *In Tim*. I 29.11–13, *In Remp*. I 11.9–10, *In Parm*. 659.9–14 (12–19 Cousin). On this topic see Coulter (1976: 95–103, 120–121), Gersh (1973: 87–88), Kuisma (1996: 66–68), Mansfeld (1994: 28–29), Segonds (1987: 122), Sheppard (2002: 641–644). Cf. Anon. *Prol*. 4, 15.1–16, where it is not any text, but the Platonic dialogue that is compared to the perfect living being, and Olymp. *In Alc*. 56.14–22.

[268] *In Alc*. 10.4–19, cf. Hadot, I. (1987: 107). In the Anon. *Prol*. (an introduction to Platonic philosophy, dated by Westerink in the 2nd half of the 6th century AD), more details are provided on the analogy. Interestingly, Proclus does not name Nature as one of the constituents, whereas the anonymous author of the *Prolegomena* does. The latter distinguishes the Good (i.e. the end or purpose), an Intellect (the problem under discussion), a Soul (the demonstrations), a Nature (the manner or form of discussion), a form (the style) and a matter (characters and setting). Anon. *Prol*. 16–17, cf. Westerink

As Gersh describes the role of this principle in Proclus' work:

> . . . a work of Proclus (for example, a commentary on a dialogue of Plato or a treatise in a freer form) functions as a map of the real world with a point by point correspondence between its own constituent elements and those of its counterpart. This usage is obviously related to that in which one order within the spiritual world is said to mirror that of its prior, the only difference being that the context of discourse itself is viewed as taking the place of the lower order.[269]

Although Gersh illustrates the practice described with the 'organicism' of the *In Alc*. (10.3–14), in Proclus' work its ramifications extend far beyond its formal application in the introductions to his commentaries, because, as Sheppard points out, the parallel is "no mere device of literary criticism," but has a metaphysical foundation.[270]

We encounter the principle that a text is an ἐξηγητής of reality and therefore needs to be likened to it, throughout Proclus' writings, providing an explanation for certain choices authors or speakers make in assimilating parts of a text, or even a dialogue or treatise in its entirety, to reality. In his use of this principle, two versions can be discerned.

> **T V.30** δεῖ καὶ τοὺς λόγους ὁμοιοῦσθαι τοῖς πράγμασιν, ὧν εἰσιν ἐξηγηταί.[271]

This sentence, in which the necessity of assimilation is expressed, can be read in two ways, corresponding to the two versions of the principle found in Proclus. The relative subclause can be either (1) explanatory or (2) limitative.

(1) In the former reading, "accounts should make themselves similar to things, as they are their interpreters", the principle has a general application according to which the *structure* of proper accounts mirrors

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(1962: xxxii and xxxv–vi). The same method was applied to the 'frames' of Plato's dialogues: every speaker and every embedding level was identified as an aspect of reality. *In Parm*. 625.27–627.26, 644.1–645.6 (625.37–627.39, 644.1–645.8 Cousin), *In Tim*. I 8.30–9.24 and 14.5 ff., Anon. *Prol*. 8, 20.2–18. Cf. Dillon (1976: 254) on Proclus' interpretation of the characters of the *Timaeus* and *Parmenides* as images or symbols of reality. See also v.7.1.

[269] Gersh (1973: 87–88).

[270] Cf. Sheppard (2002: 642). The fact that just before the quoted passage Gersh (1973: 87 and n. 2) states that "the *structure* of discourse mirrors that of reality itself" (my italics), and refers to the analysis of the structure of Proclus' arguments in Festugière (1963), which is not limited to the *schema isagogicum*, suggests that Gersh is aware of this wider application.

[271] *In Tim*. I 8.9–10.

the structure of reality *as a whole*.[272] This reading is related to the literary organicism sketched above, the practice of identifying parts of the cosmos in any text. For example, according to Proclus the very introduction at *Tim*. 29b4–5 of the principle of discourse, or the "common axiom" (κοινὸν ἀξίωμα) as Proclus calls it, is similar to (ὁμοιούμενος) the emanation of everything from the One, or the development of (physical) number from the monad. Timaeus first posits *one* general axiom regarding λόγοι, and subsequently introduces a *division* (διαίρεσις) of two different kinds of λόγοι, on the basis of "the quality (ποιότης) of things".[273] The parallel here is merely that of numerical progression from any monad to any dyad, but as we will see Proclus considers such logical relations within the *Timaeus* to be crucial for its anagogic function.

(2) In the latter, limitative reading of the sentence, "accounts should make themselves similar to *those things* of which they are the interpreters", the principle has a more narrow sense, to the extent that a text should be similar to exactly *that part of reality of which it treats*. Accordingly, as we saw, it explains why Plato's cosmological dialogue is a mixture of philosophy of nature and theology: this is because the discourse makes itself alike (ὁμοιοῦσθαι) to Nature, of which it is the interpreter and contemplator (θεατής),[274] in order to become an imitator (μιμηταί) of things which it signifies (ὧν εἰσι σημαντικοί).[275] Likewise, this narrow sense of the principle dictates that a text *about the universe* is itself an *image of that universe* in more than a formal sense.

As a consequence of the topic of the *Timaeus*, in that dialogue the two versions of assimilation are almost indistinguishable. Every Platonic dialogue is a microcosmos that imitates its subject with semantic and syntactic tools, but since the *Timaeus* has the cosmos as its subject matter, it is a microcosmos in two different ways: (1) the dialogue as a whole has the same constituents as reality (it is *a* cosmos), in the more common

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[272] On the relation between Proclus' concept of image and parallelism of structure see Gersh (1973: 85–86).

[273] *In Tim*. I 340.16–23 and 341.22–24. See also above v.1.

[274] *In Tim*. I 8.9–13. Cf. III 104.30–31 ὁ λόγος ὁ τῶν θείων ἐξηγητὴς τὴν τῶν πραγμάτων ἀπεικονιζόμενος φύσιν, ὧν ἐστιν ἄγγελος. On discourse as ἄγγελος cf. above v.4.2.i. *Theol.Plat*. VI 1 5.14–18: the treatment of the gods should be imaged after reality (ἀναγκαῖον … τοῖς πράγμασιν ἀπεικάζειν τοὺς λόγους, ὧν εἰσιν ἐξηγηταί), *In Remp*. I 86.5 (of μῦθοι).

[275] *In Tim*. I 204.8–12. Λόγοι as μιμηταὶ also at *In Alc*. 22.10–11. On the range of μίμησις in Proclus' interpretation of Plato see Halliwell (2002: 332).

and superficial vein of the *schema isagogicum*. (2) More importantly, Timaeus' exposition is also a microcosmos, because it imitates its subject matter (it is *the* cosmos which is ordered by the Demiurge).[276] Proclus sees a deep structural similarity between the syntactic/logical structure of the text and its subject matter, the universe as the specific analogue of this dialogue, as well as numerous smaller semantic and morphological parallels.[277]

In the following, Proclus' elaboration of the second version of assimilation in the *In Tim*. will be discussed, taking two central issues as our starting points: the ἀναλογία between Timaeus and the Demiurge (v.7.1); and the structural parallels between reality and the text of Timaeus' account (v.7.2). These two issues will be shown to be intimately connected with a third issue, the didactic and anagogic nature of the dialogue. Plato's cosmology is for Proclus primarily a didactic text, a λόγος διδασκαλικός,[278] in the sense that, like the second half of the *Parmenides*, it trains the soul for the vision of a higher reality—the One in the case of the *Parmenides*, and the causes of the natural world, but the Demiurge in particular, in the case of the *Timaeus*. The role of assimilation in this anagogy cannot be overestimated, as the speaker employs it to facilitate the reversion mentioned at the beginning of this section by establishing the likeness of a text to its subject matter through his knowledge thereof. This in turn, we will see, paves the way for a reversion of the soul of the audience.

v.7.1. *Timaeus as demiurge, the Timaeus as cosmos*

In ancient literary theory the Demiurge, the divine creator of the cosmos, whose activities were described as those of an artisan, himself in turn became the paradigm for the inspired literary creator.[279] Already in the *Timaeus*, however, there seems to be a deeper parallel between the

[276] As such, it is a successor of Homer and Hesiod's poems, which according to Proclus imitate Nature's mimesis of the Intelligible, see *In Remp*. I 77.13–28. Note that the *Timaeus as a whole*, so not just Timaeus' speech, is also considered the analogue of the κοσμοποιία, *In Tim*. I 73.16–21.

[277] Another example of a dialogue in which Proclus sees this structure is of course the *Parmenides*, from the first hypothesis 'if the One is' at 137c onwards, see below v.7.2. Note that the principle is even used to explain the relation between Plato's dialogues as mirroring reality, with the *Parmenides* at the top (*Theol.Plat*. I 7 32.6–12). As is well known, Proclus structured his own systematic works, most notably *El.Th*. and *Theol.Plat*., in accordance with the structure of emanation. Cf. O'Meara (2000).

[278] *In Tim*. I 338.5. See also below.

[279] Cf. Coulter (1976: 96). On the Demiurge as artisan see Brisson (1994: 30 ff.).

Demiurge as the creator of the cosmos and Timaeus, not only as the creator of his text, but as the recreator in words of the Demiurge's creation:[280]

> T V.31 And so now we may say that our account of the universe has reached its conclusion (τέλος). This world of ours has received and teems with living beings, mortal and immortal. A visible living being containing visible living beings, a perceptible god, image of the intelligible Living Being, its grandness, goodness, beauty, and perfection are unexcelled. Our one heaven, indeed the only one of its kind, has come to be.[281]

The parallel between the work of the Demiurge and Timaeus' exposition is of paramount importance to Proclus, which shows from the fact that it is brought up extensively in the introduction of the commentary. In what we could call the metaphysical prosopography, i.e. the description of the metaphysical stratum each persona represents in the microcosmos of the dialogue, Timaeus is made the analogue of the Demiurge, while the three members of the audience are analogous to the demiurgic triad consisting of Demiurgic Intellect, Soul, and universal Nature,[282] with Socrates as the summit of the triad and the other two ordered below him, according to their verbal contribution: first Critias, who 'does say something', then the taciturn Hermocrates.[283] Socrates, Critias and Hermocrates receive the words of Timaeus as the demiurgic triad receives the λόγοι of the Demiurge.[284]

Of course, the parallel between Timaeus and the Demiurge goes deeper than this mere symbolic hierarchy suggested by the *quantitative* differences between the contributions of the four men.[285] It is in fact of great importance for the didactic nature of the text, as may be shown on the basis of Proclus' second elaboration of the parallel, at the beginning

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[280] Johansen (2004: 186 ff.) shows that there is a structural parallel between Timaeus' account and the world, as well as verbal correspondences between the tasks of Timaeus and the Demiurge. See also Von Perger (1997: 22–23). Cf. Hadot, P. (1983), who proposes that due to the imperfection of human nature the nearest approximation of creation obtained in an account is an imprecise imitation thereof, cf. above n. 27. On the literary artisan as analogous to the Demiurge see Coulter (1976: 105).

[281] *Tim*. 92c4–9, trans. Zeyl, slightly modified. Cf. *Crit*. 106a4, "that god who had existed long before in reality, but who has now been created in my words" (trans. Clay).

[282] *In Tim*. I 12.1–5.

[283] *In Tim*. I 23.11–16.

[284] *In Tim*. I 9.15–22. Cf. I 55.5 ff., 57.31–59.6, 62.5–63.12, 199.31–200.3 and after the prooemia: I 354.19–20. Note that both Plato himself and the dialogue itself are also compared to the Demiurge, e.g. *In Tim*. I 423.24–29, and *In Tim*. II 98.18 ff. On the λόγοι of the Demiurge see v.4.2.i.

[285] Although it is also a symbolic reading: *In Tim*. I 200.2–3.

of the second book of the commentary: in his exegesis of the prayer, the exhortation of the audience, and the commencement of Timaeus' exposition proper (*Tim*. 27c1–d1, d2–4 and d5 respectively).

The invocation of the gods at the beginning of Timaeus' account (*Tim*. 27c6–d1) is an imitation of the Demiurge's "entering the oracular shrine of night" before creation, as well as of the remaining of all beings with the gods before emanation.[286] Its function is to establish in Timaeus a unitary view of reality, the "supreme end of philosophical speculation" (τὸ ἀκρότατον θεωρίας τέλος) in order for him to be able to arrange the coming account, primarily according to Intellect, and secondarily, where that is not possible, according to human intellect and science.[287] Proclus is here referring to the fact that Timaeus' exposition combines expressions of intuitive knowledge with discursive argument, more on which below.

On a textual level, the prayer, representing the *reversion* to Intellect, provides the exposition of Timaeus with an ἀρχή that imitates (μιμεῖται) the ἀρχή of the universe.[288] It is followed by the exhortation of the audience (*Tim*. 27d1–4), explained by Proclus as the preparation of "that which will be filled", in order to facilitate both the contribution of Timaeus and the reception by his audience—an imitation, no doubt, of the Demiurge rendering the material substrate receptive to form.[289] This preparation is comparable to a first phase of emanation. Together, the prayer and the exhortation which constitute a combination of an upward and a downward motion starting from Timaeus, constitute a chain that reflects the demiurgic chain and ensures that Timaeus' account is connected with its divine source and will be received as such.[290] Thus by taking the place analogous to that of the Demiurge, who is the highest mediator between the intelligible and the sensible,[291] Timaeus becomes

[286] *In Tim*. I 206.26–207.2 (with reference to Orph. fr. 164–165 Kern), 214.23–26. On the prayer and the invocation see also Lernould (2005: 142–144) and the summary in Cleary (2006: 141).

[287] *In Tim*. I 221.1–8. On prayer as an essential condition for the transition from the study of the cosmos to θεολογία see Beierwaltes (1979: 328–329).

[288] *In Tim*. I 214.23–26.

[289] *In Tim*. I 222.11–15, esp. δεῖ γὰρ τὸ πληροῦν ἐξηρτημένον τῶν οἰκείων αἰτίων προανεγείρειν τὰ δεξόμενα καὶ ἐπιστρέφειν εἰς ἑαυτὸ πρὸ τῆς πληρώσεως. Cf. *El.Th*. prop. 134. On the Demiurge's preparation of the substrate, see *In Parm*. 844.1 ff. (11 ff. Cousin) and Van Riel (2009: esp. 247 ff.).

[290] Cf. *In Tim*. I 222.3–6.

[291] Cf. Beierwaltes (1969: 131): the Demiurge "wird so Vermittler zum Denken des höchsten Bereiches."

a mediator for his audience through his λόγος, and opens up an alley to knowledge.[292] In this sense of being the teacher and the mediator between a higher level and those whom he informs, Timaeus is slightly elevated above the level of his audience.[293]

Once the chain to the divine source is established, Timaeus' self-moving soul can take over and express its scientific knowledge (further emanation).[294] This is the actual production of λόγοι, which starts at *Tim.* 27d5. The commencement of Timaeus' account with the words "in my opinion" (κατά γε ἐμὴν δόξαν)[295] indicates the activation of the opinative part (τὸ δοξαστικόν) of the soul of the speaker, after awakening his intuitive part by the prayer and the dianoetic part of the souls of all those present by the exhortation of the audience.[296] The term δοξαστικόν here, as has been pointed out by Festugière, has an uncommon meaning: it is explicitly distinguished from δόξα as connected to sense perception and uncertainty,[297] and is instead conceived as that part of the soul which channels the scientific knowledge it receives from διάνοια to others.[298] That Timaeus can use this Pythagorean mode of teaching which consists in the dogmatic expression of discursive thinking, rather than the Socratic dialogue, is due to the fact that his interlocutors are intelligent men (ἄνδρες ἔμφρονες).[299]

The production of λόγοι is yet another aspect of the parallel between demiurge and Timaeus. Creating discourse, like creating the cosmos, is a matter of λόγους ποιεῖν, in the sense of the unfolding and exteriorization

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[292] To (the universe created in) the text, he is the Demiurge, to his audience, the mediator. Cf. *In Parm.* 838.26–839.5 (838.34–839.6 Cousin), where Parmenides, educating Socrates, is compared to the "paternal cause".

[293] See the hierarchy of λόγοι, v.4.2.i and n. 80.

[294] *In Tim.* I 222.17–223.2.

[295] *Tim.* 27d5, γε not in Burnet.

[296] *In Tim.* I 223.24–30.

[297] On δόξα cf. above v.5.2.i and III.3.1(iii).

[298] Festugière (1966–1968: vol. II, 47 n. 2) (ad κατ' ἐμὴν δόξαν): "Pas n'est besoin de signaler que δόξα et τὸ δοξαστικόν (223.24) sont pris ici dans un sense particulier, "l'expression au dehors de ἃ δοκεῖ", cf. ἐκδίδωσιν εἰς ἄλλους 223.18s., ἐπ' ἄλλους μετοχετεύει 223.26, ce sense se rapprochant de celui qui est usuel pour δόγμα. De là vient la précision indiquée plus loin (223.26ss.): ce δοξαστικόν-ci n'est pas comme la δόξα ordinaire qui est ἀμφίβολος, περὶ τὰ αἰσθητὰ μεριζομένη, ἐν ὑπολήψεσι μόναις τὴν εἴδεσιν ἀφωρισμένην ἔχουσα, mais il contemple (θεωροῦν! 223.30) le plan (λόγος) du Démiurge et porte sur la nature un jugement sûr (διακρῖνον)." Cf. Lernould (2005: 145).

[299] *In Tim.* I 223.5, 11–12. Cf. O'Meara (1989: 152–155) on the theory of learning in the *In Alc.*

of internal λόγοι.[300] The demiurge brings forth creative principles[301] and Timaeus expresses (ἐν προφορᾷ) his own scientific knowledge, in a didactic manner (διδασκαλικῶς), for the sake of education and communication.[302] In fact, the result of Timaeus informing his audience is analogous to that of the Demiurge informing the disorderly moving substrate, namely a κοσμοποιία, the creation of a cosmos:[303]

> T V.32 … the father of the text (ὁ πατὴρ τῶν λόγων) should stand in proportion (ἀνάλογον) to the father of things (ἔργα). For the creation of the cosmos according to λόγος is an image (εἰκών) of the creation of the cosmos according to mind (νοῦς).[304]

As we saw before, the demiurge has a preconception of the 'definition' of the cosmos before creation, and in imitation thereof Timaeus has a preconception of the account he will give, and defines its character, i.e. in *Tim*. 29b3–d3, before setting out on his own δημιουργία τοῦ παντός.[305] That demiurgy starts immediately after the prooemium, with the search after the final cause of the universe.[306]

The parallel between Timaeus' exposition and the details of creation runs throughout Proclus' commentary. Its most extensive feature is the structure of all of philosophy of nature as imaging the structure of the cosmos by an internal division into different phases. This feature was the subject of the two previous chapters. We also find the assimilation of text to subject on a far smaller, semantic and lexical level, of individual words imitating certain aspects of the universe and creation, and on a formal level (morphological, syntactic and discourse).

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[300] Cf. *Theol.Plat*. I 29 (on divine names), 124.7 ff., esp. 11–20, where discourse is called the presenting of a moving image of interior vision, comparable to the activities of the Demiurge.

[301] See above, v.4.2.i.

[302] *In Tim*. I 217.28 ff., esp. 218.13–28. On the Stoic distinction between the uttered word (λόγος προφορικός) and the inner thought (λόγος ἐνδιαθετός), see *SVF* (Sext. Emp. *adv.math*. VIII 275). Cf. Festugière (1966–1968: vol. V, 56 n. 4). On the Pythagorean side of Timaeus' discourse, monologic as opposed to dialectic, see below.

[303] Cf. Struck (2002).

[304] *In Tim*. I 9.15–17. Cf. *In Tim*. I 29.7–9, 222.17–20, 334.18–27, 338.5–7, 339.21 ff. The theme of the author as the father of his text can be found at *Tht*. 164e2 (μύθου), *Symp*. 177d5, *Phdr*. 257b2 (both λόγου). On the topic of lexical correspondence between demiurge and author in Plato see Segonds (1987a). In Proclus, the expression 'ὁ πατὴρ τῶν λόγων' is not uncommon for 'author', ὁ πατὴρ τοῦ λόγου and ὁ πατὴρ τοῦ μύθου are more rare.

[305] *In Tim*. I 339.18–29 (quoted as T V.3) and 355.28.

[306] *In Tim*. I 355.28–356.1.

In parenthesis: the presence of assimilation on the level of the λέξις of Plato's text at times brings the theme of the εἰκὼς λόγος very close to that of the generation or construction of the universe διδασκαλίας ἕνεκα. The main difference between these two issues could be summarized as positive vs. negative: whereas the εἰκὼς λόγος concerns the manner in which the account is a faithful image of reality, the issue of the generation of the universe instead centers around the fact that in some respects it is not. The unlikeness of the likely account is primarily and inevitably caused by the *nature* of the world of Becoming, of human cognition, and of language, while the *choices* made by the author *increase* its likeness. In the case of the cosmogony, however, the choices made by the author for the sake of clarity result in *decrease of likeness*. The two issues come closest, of course, when the principle of assimilation is summoned to explain passages that seem indicative of unlikeness, as in fact being instances of the imaging of the structure of reality. A clear example is *In Tim*. I 334.18–27, where Proclus explains that the statement that the world "comes into being and perishes" (*Tim*. 22c), later followed by more noble designations like "most beautiful of things become" and the like, are given in imitation of the order of generation, from disorderly motion to cosmos.[307]

It would be neither feasible nor fruitful to treat all the details of Proclus' rich and at times overly zealous identification of instances of assimilation,[308] so we will limit the remainder of our treatment thereof to some of the more interesting features, related to the structure of reasoning and the anagogic function of the dialogue.

v.7.2. *Reversion and emanation*

The last aspect of Proclus' interpretation of *Tim*. 29b3–d3 to be treated in this chapter is assimilation in the sense of the imitation of the subject matter in exteriorized λόγοι, with semantic and formal means, in order to increase the anagogic effect of the account. The procedure in question is one of a restructuring of reasoning into a phase of reversion and subsequent emanation, similar to the prayer and exhortation discussed above.

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[307] Cf. *In Tim*. II 102.27–104.16, where Proclus explains the fact that Soul is discussed after Body (at *Tim*. 34b3 ff.), despite the ontological priority of the former, as a temporary switch to exposition in the order of reversion rather than emanation.

[308] We have seen an example above in v.5.1.

The main purpose of this procedure is to imitate the metaphysical reversion and emanation and thereby stimulate the anagogy of the audience. We will see that it is in the context of this procedure that we can finally fathom the rationale behind the earlier introduction of the trio 'things thoughts *and* words', and the subsequent reduction of the εἰκὼς λόγος to its epistemological side. But before looking at the passages in which Proclus uncovers this procedure, let us review Proclus' description of the procedure and its connection to the εἰκὼς λόγος.

We now return at long last to Proclus' explanation of the apparent contradiction at *Tim.* 30b6–c1, where Plato combines truth and likely account in one sentence. After explaining this combination on the level of their respective metaphysical referents,[309] Proclus continues to add a distinction internal to the account, related to what I called the human factor, the structure of reasoning:

> T V.33 ... one could speculate that he uses the likely as well as truth in the account itself (κατ' αὐτὸν τὸν λόγον), not just one or the other according to the nature of the subject matter. For since in many places he dealt with the creation in stages (μεριστῶς), making use of 'reasonings' and 'divisions' and 'compositions', even though all things are simultaneous in the divine creation,[310] but in many other places ascended to the [single] complete intellection of the Father, as for example in the axioms "he was good" (*Tim.* 29e1) and "it was not, nor is it [ever], right for the best to do anything other than what is most beautiful" (30a6–7), he called the former [passages] 'likely discourse' (εἰκοτολογία), the latter 'truth', thereby referring to the simple apprehension (ἡ ἁπλῆ ἐπιβολή) as 'truth', and the fragmented (τὴν διῃρημένην) as 'likely discourse'. In fact he was using the various kinds (πολυειδής)[311] of knowledge [to be found] in us to demonstrate [the facts] of divine and demiurgic intellection.[312]

Proclus refines the division of likely and true by showing how the expression of the structure of reasoning contributes to the nature of Timaeus' discourse. On the basis of the earlier metaphysical division one might feel justified to assert that everything in the *Timaeus* that concerns the intelligible, the transcendent, the eternal, etc., is taken by Proclus to be

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[309] See above v.6.

[310] Cf. *In Tim.* I 348.27–349.5 and above v.5.2.ii.

[311] In the context, πολυειδής could be the opposite of both μονοειδής and ἁπλῶς, since Proclus is talking about our different forms of cognitions as well as the multiplicity of divided apprehension.

[312] *In Tim.* I 410.20–411.2, trans. Runia, modified. On textual problems of this passage see Runia and Share (2009: ad loc, n. 468).

exempt from the qualification of 'likely story', and is instead read as (compromised) truth. Here, however, Proclus states that, because of the many forms of cognition we have, also when it comes to descriptions of the activities of the Demiurge, that were in the previous part grouped with truth, both predicates, 'truth' as well as 'likely discourse', are applicable.

Our "multiform" cognitions and divided grasp (διῃρημένη ἐπιβολή)[313] of reality make us use "reasonings, divisions and compositions," i.e. not just in our own reasoning, but ascribing them to the Demiurge, whose activities are unitary and eternal.[314] The result is a likely account. Timaeus can also, however, represent the highest form of cognition he possesses of the Demiurge, intuitive and unitary understanding (ἁπλῆ ἐπιβολή), in an account, by formulating certain axioms.[315] Such a representation of the divine, as well as the unitary understanding of which it is an expression, deserves to be called 'truth'.[316]

Moreover, since the difference between the axiomatic expression of unitary understanding and the discursive expression of divided cognition is like that between permanence (μονή) and emanation (πρόοδος), Timaeus also imitates the process of emanation from permanence by the representation of his unitary understanding in the form of an anticipated conclusion, followed by its discursive unfolding consisting in the elaboration of the premises leading to the conclusion.[317] Using this procedure allows Timaeus to instruct his audience about "divine and demiurgic intellection" (see above and III.3).

We have to maintain a certain caution when using the above passage as a source for Proclus' views on the status of Timaeus' account as a whole, let alone discourse in general, since its content is clearly determined by the need to explain the current and preceding lemmas.[318] Nonetheless,

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[313] A διῃρημένη ἐπιβολή seems to be a contradiction in terms, as ἐπιβολή is associated with immediate, intuitive grasping. The combination διῃρημένη ἐπιβολή occurs, as far as I have been able to ascertain, only in Proclus. Cf. *Theol.Plat*. I 27 111.9.

[314] Calculations/reasonings (λογισμοί): e.g. *Tim*. 30b4, 33a6, 34a8; divisions (διαιρέσεις): e.g. *Tim*. 35b4; compositions (συνθέσεις): e.g. *Tim*. 35a1 ff.

[315] Their being axioms probably lies in the fact that they are not argued for. In the terminology of chapter III they are common notions rather than axioms.

[316] For truth as γνώσις see V.5.2.i.

[317] *Theol.Plat*. I 10 46.2 ff.: a simple syllogistic reasoning purveys a truth closer to the One than a complex syllogism. Of course according to Proclus, as well as Plotinus, the conclusion is prior to the argumentation, cf. for Plotinus *Enn*. V 8 [31] 7.36–47.

[318] The two axioms mentioned, "he was good" and "it neither was nor will be right for the best to do anything other than the most beautiful" are important arguments in favour of the conclusion that the world has been created as an animated intelligent living being.

the explanation given for the procedure applied at *Tim*. 29e1 will help understand passages which according to Proclus contain the same procedure.

Proclus explicitly identifies five instances of application of the procedure described above in **T V.33**, which on one occasion he calls ἀναφωνήσις:[319] (a) 'γέγονεν',[320] the 'axiom' that the world "has become", followed by the demiurgy; (b) παντὶ δὴ σαφές, ὅτι πρὸς τὸ ἀίδιον, Plato's statement that "it is clear to everyone that [he used] an eternal paradigm", followed by the demonstration of the paradigmatic cause;[321] (c) ἀγαθὸς ἦν, the assertion, immediately after the proœmium, concerning the goodness of the Demiurge as the final cause of the universe;[322] (d) ἕνα, the statement that the world is unique;[323] and finally (e) εἰσὶ δὲ δὴ τέτταρες, the claim that "there are four" kinds of living being.[324]

As becomes clear from the explanation Proclus gives of these instances, the progression of the text imitates the ontological structure of creation, but moreover mirrors the structure of cognition and reasoning. The principle that accounts are interpreters of reality, and "carry an image" (εἰκόνα φέρουσι) thereof, is most visible in the unfolding (ἀνέλιξις) of demonstrations, which parallels the structure of the reality they concern.[325] And the fewer the words, the more unitary the thing expressed.

Timaeus' questions whether the world has become, what its paradigmatic cause is, what its final cause, and whether it is unique, with their subsequent replies, are each mapped onto the circular motion of Timaeus' soul, as well as the creative activities of the Demiurge.[326] The triadic

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Despite the fact that in the other descriptions of the procedure (see below) Proclus often gives a list of its occurrences, the second axiom is never included. E.g. *In Tim*. I 360.5–14.

[319] *In Tim*. I 360.13, cf. the expression τὸ συμπέρασμα προαναφονεῖν, Hermias *In Phdr*. 118.9–10 and Simpl. *In Cael*. 61.6, *In Phys*. 278.20. Cf. *In Tim*. I 438.20 ἀνεφθέγξατο.

[320] *Tim*. 28b, *In Tim*. I 282.27–283.12. Cf. II 7.18–21, where Proclus seems to have forgotten which part of the argumentation was the axiom and has it refer to the universal premise involved.

[321] *Tim*. 29a4–5, *In Tim*. I 330.12–19.

[322] *Tim*. 29e1, *In Tim*. I 360.5–14, cf. 370.13 ff.

[323] *Tim*. 31a3, *In Tim*. I 438.20–439.1.

[324] *Tim*. 39e, *In Tim*. III 104.27–105.15.

[325] *Theol.Plat*. I 10 46.2 ff. Cf. I 11 53.9–10. See also Charles-Saget (1982: 310). For an early occurence of the expression εἰκόνα φέρειν, which suggests a Pythagorean origin, see Alex. *in Met*. 771.24, 772.8.

[326] For the fifth example of anticipating the conclusion, "that there are four", see below.

structure of Neoplatonic metaphysics, in the order reversion, remaining, and emanation is clearly distinguished in its epistemological context, as a movement εἰς νοῦν, κατὰ νοῦν, and ἀπὸ νοῦν.[327] Timaeus first turns from discursive reason to his own intellect, and subsequently proceeds from intellect back to reasoning.

In more detail, the three stages are the following: (1) Εἰς νοῦν. The first, preparatory stage is the formulation of an aporia, by posing a question, for example whether the world is generated or not.[328] This stage is an awakening and *reversion* (εἰς ἑαυτὸν ἐστραμμένος, ἀνατρέχων) of Timaeus upon his own mind, reflecting the self-motion of soul.[329]

(2) Κατὰ νοῦν: the second stage is the reply to the aporia in a single phrase or even word (μιᾷ φωνῇ), e.g. γέγονεν, which images the cast of intellect (μιμεῖται τὴν τοῦ νοῦ βολήν), and is comparable to the unitary and *permanent* act of creation of the Demiurge.[330] This phase expresses the intuitive, unitary (ἀθρόως) view of truth,[331] in the manner of the divinely inspired, who see everything all at once. Note that, whereas our discursive thought can be expressed in spoken language as is, the expression of an intuitive view of reality is itself not that intuition, but an image and imitation thereof. We cannot speak intellectively (νοερῶς).[332]

And finally, the last stage is (3) ἀπὸ νοῦ: the *proceeding* from intellect to rational exposition with the use of demonstration (ἀπὸ νοῦ προϊών, ἀπὸ νοῦ κάτεισιν εἰς λογικὰς διεξόδους).[333] Proclus argues for the necessity of the second phase for the third by referring to Arist.

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[327] *In Tim.* I 438.24–28: ἐπιστρέφων εἰς νοῦν … κατὰ νοῦν ἐνεργῶν … εἰς διάνοιαν ἀπὸ νοῦ κατιών.

[328] Proclus explains the three stages as the reflection of an internal dialogue: "For he himself is the one who raises the question, he is the one who solves it, and he is the one who presents the demonstration" (*In Tim.* I 438.23–24). Cf. Plato on thought as internal dialogue, *Soph.* 263e3–8, *Tht.* 189e6–190a2 and above n. 138.

[329] *In Tim.* I 282.31–283.1.

[330] Cf. I 370.17 ἀποφθεγματικῶς. As Lernould (2005: 154 n. 145) points out, the axiom is as it were a concentrated form of the whole argument.

[331] Cf. *In Tim.* I 360.14 τὴν ἀθρόαν τοῦ παντὸς περίληψιν.

[332] *In Tim.* I 283.4 μιμεῖται, 360.14 μιμούμενος, 438.27 εἰκών; cf. I 303.19–20, also quoted above. On this issue cf. Kuisma (1996).

[333] *In Tim.* I 282.27–283.11, cf. 438.20–439.1, *In Tim.* III 104.27–105.14. Note that Proclus splits the third phase of example (c) ἀγαθὸς ἦν in two at I 370.18 ff., namely an elaboration (a) διεξοδικῶς (at least, this is Taylors proposal for a lacuna in the text) and (b) ἀνειλιγμενῶς. This extra division seems to be inspired by the *Timaeus* text, but also by the metaphysical background. The anticipated conclusion expresses the goodness of the Demiurge, the discursive elaboration the will he has as a consequence, and the detailed elaboration the result for the universe (providence). See also Runia's note ad loc.

APo II 19: all demonstration takes its starting points from intellect.[334] The last phase, the discursive unfolding of what is present in a concentrated form in the anticipated conclusion, and the division of what is unitarily present in reality,[335] is needed because it is impossible to express both the unity and the fullness of distinction at the same time.[336] As said before, in language, riches and unity are mutually exclusive. Both need to be expressed, however, for the sake of anagogy. That Timaeus has an intuitive grasp of the entire cosmos and its causes is not enough: he has to express it and unfold it for the benefit of his interlocutors who are epistemically less advanced, and need guidance in their ascent to knowledge.[337]

The choice of the five examples of this procedure is not arbitrary, but also not based merely on rhetorical characteristics of the text (i.e. on the occurence of the order question, brief answer, argument). The fact that the fifth case, "that there are four", consists only of phases (2) and (3)—Timaeus does not ask a question prior to that statement—is an indication that Proclus uses another criterium of selection. If we take a closer look at the selection, we can see what it is. Assuming that Timaeus' procedure is successful, his audience will afterwards have required insight into (a) the nature of the universe, (b) the paradigmatic cause, (c) the demiurgic and the final cause,[338] (d) the unicity of the universe, and (e) the number of kinds of living beings. And this sums up pretty much the most important characteristics of the universe, comparable to the ones Timaeus mentions in his summary at the end of his exposition (*Tim*. 92c4–9, **T V.31**).

At this point we can answer the question why Proclus has chosen to expand Plato's discussion of things and words at *Tim*. 29b3–d3 into one about 'things, thoughts *and* words', despite the fact that he subsequently emphasizes the epistemological side of the passage: for Proclus the likeness that is most relevant in this section of the *Timaeus* is the psychological/epistemological one, through which our reversion is established, but this likeness is observable in and more importantly transferable through

[334] *In Tim*. I 438.28–439.1.
[335] *In Tim*. III 105.2–4.
[336] *In Tim*. III 105.4–6.
[337] Cf. Isaac (1976: 470). At *In Tim*. I 433.11–22 Proclus suggests that for didactic reasons Plato (sic) speaks in a certain manner in imitation of the emanation and reversion of the cosmos from and to the Living Being itself, in order to bring out clearly (ἡμῖν γνωρίμως) the ἀναλογία existing between them. Cf. Opsomer (2000a: 358 and n. 30).
[338] Example (c) was ἀγαθος ἦν, which expresses the final cause as it is present in the Demiurge.

the likeness of discourse. Therefore, it is crucial for the didactic reading of the *Timaeus* that all three, things, thoughts and words, be introduced at the outset of the interpretation of the εἰκὼς λόγος.

The procedure of anticipating the conclusion in imitation of reversion to νοῦς and emanation into discursive reasoning is one which we encounter throughout Proclus' work. It is what structures every proof in mathematics.[339] More importantly, is also found in the second half of the *Parmenides*, where it is part of a larger structure in which the audience is first stimulated to ascend to the One, and subsequently to follow the unfolding of all of reality from the One.[340] Likewise, in the *Elements of Theology*, Proclus commences with a short ascent (prop. 1–4), followed by a representation of the emanation of reality from the One/Good.[341]

It need not surprise us, then, that in Proclus' reading of the *Timaeus* the procedure of anticipating the conclusion is also part of a larger structure. In chapter III we have seen that Proclus explains the starting points presented in the prooemium as an ascent to the causes of the universe, and especially as they are present in the Demiurge. In this chapter, it has been shown in what sense Timaeus' exposition is an imitation of the activities of the Demiurge. I propose therefore that Proclus' reading of the *Timaeus*, inspired by the metaphysical reading of the hypotheses of the *Parmenides*, follows the same pattern as that of the *Parmenides*, but on a lower metaphysical level. It is a reversion to the Demiurge, followed by an emanation of the universe from divine providence. As such, the text is also a reversion for the writer/speaker and for the audience.

The *Timaeus* is not a poem. If we momentarily disregard genre boundaries, however, we can see the dialogue as a hymn to the Demiurge, and as akin to scientific poetry, the second kind of poetry described by Proclus

[339] *In Eucl.* 57.9–26 and 210.7–16, cf. 114.3–14, 291.20–294.14.

[340] On the procedure in the *In Parm.* and Proclus' own practice in the *El.Th.* see O'Meara (2000). Cf. *In Parm.* 1125.9–16 (13–22 Cousin), 1132.23 ff. (26 ff.), 1152.9 ff. (12 ff.), 1167.1 ff. Gritti (2003: 297 f.) states in the context of the *In Parm.* passages that the development of the demonstration that leads to the conclusion is a representation of the transition from discursive reason to intellect. Proclus, however, like Plotinus, maintains rather that the conclusion has priority over the demonstration, and that there is a transition from intellect to discursive reason, in turn followed by a reversion to intellect by the *second* statement of the conclusion.

[341] O'Meara (2000: 287–288). It is also well known that the 'second part' of the *Platonic Theology* (books II ff.) follows the order of emanation. See Saffrey and Westerink (1968–1997: vol. I, lx ff).

in the *Commentary on the Republic*.[342] We have seen in chapter 1 that the *Timaeus* for Proclus is a kind of hymn to the Demiurge.[343] In the foregoing, it has moreover become clear what that means, namely that the dialogue is an invocation of and reversion to the Demiurge who mediates between us humans and the transcendent.[344] That does not mean, by the way, that it is not also an argumentative and informative text, leading to knowledge of the Demiurge. In fact, the argumentative and informative qualities of the text allow it to function as a hymn.[345]

As scientific 'poetry', the *Timaeus* would be a form of teaching that is associated with both νοῦς and ἐπιστήμη, and teaches without the use of representation, by simply telling the reader or audience of its subject-matter within lower metaphysics, natural science, or ethics.[346] Taking the *Timaeus* as a non-poetic example of this kind of poetry may allow us to solve two small issues.

(1) First of all, we can solve the contradiction Sheppard signals with regard to scientific poetry and ἀναλογία, namely that from Proclus' 6th essay follows both that scientific poetry does not use any representation, *and* that it does use ἀναλογία,[347] can easily be solved. Ἀναλογία is indeed "a matter of representing something on a higher level of reality by something on a lower level which is like it," as she concludes on the basis of Gersh's discussion of the notion, but using εἰκόνες in the sense of *ontological* images, rather than literary ones.[348] That is, the representation is to be found on the level of the reality described in the text, not on that of the text itself.[349]

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[342] For reff. see n. 346. Cf. the suggestion of Coulter (1976: 108–109). As Sheppard (1980: 185) points out, in his discussion of scientific poetry Proclus is more interested in the properties of didactics than in delimiting a genre.

[343] See I.3.1.

[344] Beierwaltes (1969: 131).

[345] To go a step further, I see no reason to discard an argumentative and informative function of a text that is an invocation of the divine, as Rappe (2000: 170) does in the context of her reading of the *Platonic Theology* as an invocation of the divine.

[346] *In Remp* 177.23–178.2, 186.22 ff., note especially 25–26: πολλὰ … εἰκότα … δόγματα, 198.21–24. On Proclus' notion of scientific poetry see Coulter (1976: 107–109), Sheppard (1980: 95–103, 182–187) (who calls this kind of poetry 'didactic', but see Beierwaltes (1985: 304)) and Van den Berg (2001: 119 ff.).

[347] Sheppard (1980: 198–199).

[348] I think this is the point Gersh (1973: 83–90, esp. 84), to whom she refers, is making.

[349] See on this issue also Martijn (2006b) and cf. Opsomer (2000a). In a recent discussion of scientific poetry, Van den Berg (2001: 135) has another solution, which I take to be incorrect because it ignores the fact that the εἰκόνες are *ontological* images: Van den Berg denies that scientific poetry works without representation.

(2) Coulter, who associates Platonic dialogues in general with scientific poetry,[350] signals the "curious conflation of two faculties", νοῦς and ἐπιστήμη in the context of Proclus' description of scientific poetry, and explains it as an attempt to fit four cognitive faculties into three kinds of poetry.[351] As we have seen in the foregoing, however, the combination of just these faculties can be explained from the didactic nature of this particular kind of discourse, as leading the audience to a higher cognitive state.

v.8. *In conclusion: φυσιολογία as scientific mimesis*

In this conclusion we will review the different aspects of Proclus' reading of the 'fourth demonstration', *Tim*. 29b3–d3, and in the process address one final question, regarding Proclus' take on the relation between the starting points, which formed the subject of chapter III, and the εἰκὼς λόγος discussed in this chapter.

We have seen that Proclus' interpretation of *Tim*. 29b3–d3 knows many layers. Assuming the widest scope of the principle of discourse, any discourse is a likely story, imprecise and refutable, and not truth, due to the nature of language, which is inherently discursive. This holds for any account, be it about the perceptible or about the intelligible.

More importantly, the imprecision and refutability of, again, any account are due to the embodiment of human souls. Our cognition is the inferior of divine cognition. Accounts as expressions of our knowledge of the perceptible are refutable due to their dependence on the acquisition of knowledge with the use of faulty sense perception and external instruments, but even our knowledge of the intelligible is subject to discursivity and fallibility. Scientific knowledge of any subject is necessarily inferior to intuitive, unitary vision.

All this does not imply, however, that Proclus reduces the whole issue of the status of discourse described at *Tim*. 29b3–d3 to a trivial statement regarding the necessarily discursive nature of discourse and thought: Proclus' focus lies elsewhere. His explanation of *Tim*. 29b3–d3 has as its main focal point the relation between discourse, knowledge, and reality, and assumes a basic *continuity* between higher and lower levels, both *within* these three domains, and *among* them.

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[350] See above n. 342.
[351] Coulter (1976: 108, n. 19).

Due to that continuity, which is the result of the triadic nature of causation, every lower level of reality has an inherent and positive *similarity* to higher levels. The value of Platonic philosophy of nature lies in revealing that continuity and similarity between the sensible world and its transcendent causes, and thus connecting the perceptible with the intelligible.[352] Thus despite the fact that the subject matter of philosophy of nature is the in many respects indefinite and changing universe, that our tools in studying it lack precision, and that our means for expressing it lack unity, Plato's philosophy of nature is capable of conveying a certain kind of truth and thereby increasing our similarity to transcendent reality.

The role of discourse in that process is twofold, consisting of the pair emanation and reversion, or what I called resemblance and assimilation.[353] Discourse has a natural and ontological resemblance, i.e. a relation of similarity to its causes, reality and our thoughts. This explains the semantic power of language. On the other hand, an author or speaker can increase the similarity of discourse to its subject matter with mainly syntactical, but also lexical and morphological means, in order for texts to function as a means of reversion for both author and audience to higher planes of reality.

This brings us to a question that as yet remains to be answered, namely how Proclus' reading of the two parts of the prooemium can be reconciled. In chapter III we have seen that from the interpretation of the prooemium minus *Tim*. 29b3–d3 philosophy of nature emerges as a science.[354] The description of accounts of Becoming in the second part of the prooemium, *Tim*. 29b3–d3, at first sight seems to be at odds with this claim. It has been argued that the sense in which φυσιολογία is a likely account in Proclus' reading is irreconcilable with its scientific status and in general with Proclus' interpretation of the entire rest of the dialogue.[355] This claim, however, has been shown to rest on a faulty assumption, namely that in Proclus' view science and likely account are diametrically opposed.

That assumption can be refuted on the basis of our analysis of Proclus' interpretation of *Tim*. 29b3–d3. In the foregoing it has been shown

[352] *In Tim*. I 10.21; cf. 3.14, 7.5. Cf. Cleary (2006: 136).

[353] Note that this is the emanation and reversion *of* discourse, not the emanation and reversion expressed or imaged in discourse.

[354] The status of the starting points within the likely story is one of the issues in the modern debate on the *Timaeus*. See above v.2.

[355] Lernould (2005: 160). In his earlier work Lernould argues that the starting points are not subject to the principle of the likely story. Lernould (2001: 293–294, 296–297).

that Proclus takes the account of philosophy of nature as presented in the *Timaeus* to be a *combination* of (relative) truth and belief, i.e. of scientific knowledge and likely story, in the sense that, where it presents the intelligible in a *unitary* manner, as well as certain conclusions concerning the universe, it expresses the truth which is attainable for us humans. This truth is equated with a combination of intuitive insight and scientific knowledge. When treating the intelligible *discursively*, and even more when treating the heavenly bodies and the sublunary realm, Timaeus' exposition expresses the likely story, or belief. This belief is not, however, the opposite of truth in any way, but something related to and positively *resembling* truth, namely a lower, but still rational form of cognition (πίστις). We can conclude, then, that the facts of φυσιολογία at times are, and at times are like, scientific knowledge.

What does that tell us about the status of the starting points introduced in the first part of the prooemium? As said above (v.2), the location of the principle of the εἰκὼς λόγος at the end of the prooemium has been used to argue for the limitation of its application to what comes *after* the prooemium, and thus safeguarding the starting points themselves. Proclus, however, has a different view. He does feel that he has to explain why the principle of discourse and its application, which inform us on the status of Timaeus' account, had not been introduced at the beginning of that account.[356] His answer, though, is that the question what kind of λόγοι fit perceptible things is necessarily brought up *after* the demonstration that the universe is generated, but not before, when we did not know the nature of the universe yet. In other words, there was no point in presenting it earlier, as the *application* of the general principle that texts are related to their subject matter to the particular case of the natural world could not have been given before, although the *general principle itself* could have been introduced at the beginning of the exposition.[357] The location of the principle of discourse at the end of the prooemium, then, for Proclus need not have implications regarding its application thereof—or not—to the starting points. Quite the contrary, as the general principle of discourse does apply to them, no matter where it has been presented.

So let us decide on this matter by doing just that. Since Proclus identifies the introduction of axioms concerning the intelligible as scientific

[356] *In Tim.* I 339.29–340.1.

[357] Proclus is right that the addition of the general principle of *Tim.* 29b4–5 would have seemed out of place at, say, *Tim.* 28b2 (after the introduction of the paradigmatic cause).

knowledge, and explicitly includes the conclusion of the first demonstration, 'γέγονεν', among Timaeus' reversions to the truth of intellect, I propose that Proclus considers the axioms presented in the prooemium, as well as the conclusions of the demonstrations, to be elements of truth, whereas the elaborations of the demonstrations, e.g. into their premises, are 'likely' elements of the story.[358]

Apart from the relation between philosophy of nature as a science and as a likely story, another relation needs to be clarified: that between philosophy of nature as a hypothetical science starting from sensory data (as argued in chapter III) and as the presentation of intuitive knowledge. The question can be answered simply by pointing to the difference between order of discovery and order of presentation. The intuitive knowledge Timaeus presents is the final stage, the ἀκρότατον θεωρίας τέλος (*In Tim*. I 221.1), of his own epistemological journey, that originally started from sensory data. When teaching his interlocutors, Timaeus shows them the path he himself followed, in order that they discover their own innate knowledge.[359] Thus the preparatory account (describing the process of acquiring knowledge) starts from a question, "whether or not the universe has come into being", which is answered on the basis of empirical data or what is first 'to us' (πρὸς ἡμᾶς). The account proper, however, describing knowledge of nature and its transcendent causes, starts from intuitive knowledge, which is what comes first 'by nature' (τῇ φύσει), as well as in the order of presentation.[360]

[358] Note that the whole prooemium is a likely story insofar as it imitates the structure of reality.

[359] Cf. O'Meara (1989: 152–155 and n. 34), referring to *In Alc*. 225.4–226.7, 277.10–278.13, 280.2–281.14.

[360] On the distinction beteen what is better known to us and what is better known by nature see Arist. *APo* I 2 71b33 ff.

CHAPTER SIX

CONCLUSION

VI.1. *Introduction*

In Proclus' interpretation, the *Timaeus* is both a hymn to the Demiurge, and a scientific work of philosophy of nature. In this study we set out to analyze Proclus' philosophy of nature and its methods as described and applied in the *Commentary on the Timaeus*, and to show how hymn and science come together. We have seen that Proclus' notion of φύσις is primarily that of a transitional hypostasis connecting the intelligible with the sensible, and from a broader perspective that of a chain of natures, from its transcendent cause to individual natures. Mirroring nature itself, philosophy of nature consists in a number of hierarchically and serially ordered phases of φυσιολογία, namely theological φυσιολογία, which analyzes the universe into its transcendent causes, mathematical φυσιολογία, which through reasoning by ἀναλογία, using ontological images, leads to insight in body and soul of the universe, empirical φυσιολογία, which concerns the phenomena in the sky, and biological φυσιολογία, treating of the informed living body. Finally, we have seen that the didactic account given of philosophy of nature uses a combination of resemblance and assimilation, or the natural similarity between discourse and subject matter, and the additional similarity established by the speaker. As a consequence of resemblance and assimilation, the account of the *Timaeus* can initiate an ascent to its subject matter, and especially to the demiurge as efficient cause of the natural world.

Let us review the main findings of the preceding chapters.

VI.2. *Chapter II: Nature*

Proclus' φύσις is a complex stratum of reality, in which the necessary connection with material bodies seems to conflict with the transcendence of real causes. This conflict has been shown to be apparent: Nature is immanent in the sense that it is inextricably connected with bodies, yet it has

an ontological transcendence in the sense that it is *causally* prior to that in which it inheres. Primary Nature is universal insofar as it is the nature of 'the all', of all things that have a nature taken together, without thereby being separated from those things. This universal nature has thus been shown to fulfil a crucial metaphysical function, next to soul, as a transitional quasi-hypostasis, and the lowest link between the transcendent and the immanent.

Combining Platonic, Aristotelian and Plotinian material, Proclus sketches a nature that is very similar to soul, yet distinct from it, in order to explain the presence of unity and motion in bodies that are not animated by soul.

Moreover, by regarding nature as a tool of the transcendent efficient cause, the Demiurge, Proclus solves two problems: first of all, the problem of the immanent efficiency of a transcendent cause is solved by giving the transcendent cause an immanent tool which informs the sensible world. Secondly, the problem of the rationality-plus-irrationality of nature is solved by demonstrating that nature, which is itself not rational, is dependent on and connected with its rational demiurgic origin.

In order to obtain this original and sophisticated notion of nature, Proclus has to adjust his metaphysics in order to allow for a hypostasis that does not have an imparticipable monad, but instead has a participated monad, universal nature, the nature of the universe, and an imparticipable origin, the Demiurge, and before him Rhea/Hecate, the primordial source of nature. Thus we obtain a chain of natures, from its transcendent source—which is not itself nature—in Rhea/Hecate, through the paradigmatic nature in the Demiurge, primary nature which is the nature of the universe, the natures of different heavenly spheres, to the lowest, individual natures.

This vertically ordered ontological structure of natures has far-reaching consequences for philosophy of nature as studying the chain as a whole. Rather than being limited to one stratum of reality, or one scientific genus in the Aristotelian sense, Proclean philosophy of nature studies the chain of nature at all its levels, starting from its summit in the Demiurge, and reaching down all the way to the individual natures. The different ontological levels require different approaches and have different limitations.

VI.3. *Chapter III: Theological philosophy of nature*

At its summit, philosophy of nature studies the natural world in order to obtain knowledge of its transcendent causes. At this level, it can be called theological or dialectical philosophy of nature. That does not imply, however, that philosophy of nature at this level turns into theology pure and simple. The proper subject matter of the discipline is and remains the natural world, which imposes certain limitations on it, e.g. that it will never be a study of the transcendent *per se*, but always *insofar as it is the cause* of the natural world.

An important characteristic of this theological philosophy of nature in Proclus' *Commentary on the Timaeus* is the repeated comparison of Plato's method with the method of a geometer. One of the main functions of that comparison is to provide philosophy of nature with a scientific status, by showing how philosophy of nature deals with starting points (definitions, axioms, hypotheses, and demonstrations) and applies all the dialectical methods, division, definition, demonstration and analysis, as well as some geometrical practices, namely the assumption of hypotheses and conversion. These terms are often used in a sense that is not strictly technical, but adapted to the context.

The starting points of philosophy of nature are in part *a priori* and in part *a posteriori*. The metaphysical principles used in the demonstrations of philosophy of nature are so-called common notions, which are taken to be self-evident and serve as premises in the demonstrations. On the other hand, the ultimate foundation of philosophy of nature—and this is a second aspect of the comparison with geometry—remains hypothetical due to the assumption of the genus of Being. Moreover, the nature of the universe as belonging to the realm of Becoming is determined—and can only be determined—on the basis of empirical evidence. The combination of these two forms of knowledge, science and perception, is possible due to Proclus' ingenious adaptation of the notion of δόξα as mediating between perception and thought. Thereby, the scientific status of philosophy of nature—albeit one appropriate to the natural world—is guaranteed.

A third aspect of the comparison of Plato's method with that of geometry is to enable through the starting points a conceptual analysis of the world of sense perception, revealing its transcendent efficient cause, the Demiurge, as well as the paradigmatic cause and the final cause, but the latter two especially insofar as they are present in the Demiurgic mind, as the model he uses and his aim respectively. This delivery of true causes

is taken to be the distinguishing characteristic of Platonic philosophy of nature.

Finally, we have seen that in the prooemium the order of exposition knows two phases, namely a *didactic/anagogic* one, leading the audience to knowledge of the causes, and a subsequent *natural* order of exposition, i.e. following the ontological structure of the subject matter.

VI.4. *Chapter IV: Mathematical, empirical, biological philosophy of nature*

After the second book of the commentary, the notion of philosophy of nature is adjusted several times, following the change of subject matter.

When the body and soul of the universe are discussed in book III, Proclus assumes a notion of intermediate, mathematical φυσιολογία according to which mathematical explanations are instrumental to philosophy of nature, but need at all times be supplemented with a truly physical explanation. That is, we do not find mathematization in Proclus in the modern sense of the reduction of physical phenomena to quantitative relations.

Mathematical φυσιολογία is intermediate in the sense that it is ranked between theological and lower philosophy of nature, but also insofar as it takes an intermediate position on the methodological role of mathematics for the study of the natural world. Mathematical φυσιολογία neither ignores it by focusing only on the objects of sense perception nor does it take the mathematics in question as an object of study in its own right.

As in the case of theological philosophy of nature, Proclus combines the continuity of reality and the consequent treatment of different strata of reality within one science, by a strict safeguarding of the particular mode of explanation suitable to the part of reality that is the actual focus of the discipline in question.

The role of mathematics in philosophy of nature is that of allowing reasoning by ἀναλογία, more specifically by ontological ἀναλογία. Ontological ἀναλογία is a strong version of ἀναλογία (which in turn is a strong kind of analogy), consisting in similarities among realms of reality that are due not to chance, but to a necessary ontological relation between cause and effect.

The way in which mathematics is involved in the reasoning using this ontological relation depends on the level of reality to which it pertains. In the case of the body of the world, mathematics has the position of

cause, and the body of the world that of effect. The mathematical λόγοι of Soul cause certain structural aspects of the world body, namely unity or cohesion, order, and regularity. When studying those aspects of the physical world, starting from mathematics provides the student with a more accessible 'image' of the structures of reality, or rather that of which those structures are the image : the mathematical causes that lie at their source and are their paradigm, but that also lie at the source of the structure of the human mind, thereby functioning as a didactic tool.

When it comes to the World Soul, we find the inverse relation, since Soul is itself the cause of mathematics. Thus mathematics as such, in the shape of its projections in the material world that are in a sense abstracted from it by us, serves as an anagogic tool, providing an ascent to and insight into its cause, the World Soul.

Both these versions of 'mathematization' ultimately serve the same purpose, namely that of acquiring knowledge of the transcendent causes of certain structural properties of the universe.

In books IV and V, which treat of the heavenly bodies and the lower gods, and human body and soul respectively, we find lower philosophy of nature, which at first sight seems to fulfil only the function of justifying certain omissions on Plato's part. Their correspondence to aspects of Proclean φύσις, however, tells us that they should be taken as distinct aspects of Proclus' notion of philosophy of nature. In book IV, philosophy of nature is treated as an empirical discipline, which should not treat that for which it has no sensory evidence. And in book V we find an emphasis on biology, which treats of the soul not from an ethical point of view, or with respect to its afterlife, but only insofar as it is embodied.

VI.5. *Chapter V: The likely story*

After the subject matter of philosophy of nature and its different methods, the last chapter of this study dealt with its discourse. All human discourse is an *imitation* of its subject. That is the main message Proclus highlights in his commentary on the last section of the prooemium, Timaeus' formulation of the so-called εἰκὼς λόγος. I have argued that, rather than emphasize the relative unreliability of an account about the physical world, Proclus focuses on the mimetic qualities of discourse and its function in our epistemological development.

I also argued that for Proclus in the context of the account of φυσιολογία—as in its subject matter and methods—ontological continuity is a crucial feature of reality, which explains why the study of the natural world is in a sense theology and why the account of philosophy of nature is a combination of truth and belief (where the latter is a lower kind of truth), or of science and something closely resembling science.

The ontological continuity lies at the source of two aspects of all accounts, including the account of philosophy of nature: resemblance and assimilation. Just as the cosmos is an ontological image of the intelligible, in the sense of an emanation from the intelligible, accounts are ontological images of their subject matter. Therefore, every account has a natural resemblance to its subject that is due to the emanation of accounts (λόγοι) from transcendent λόγοι. As such, it is capable of conveying truth and meaning.

Moreover, in the practice of discourse the author or speaker adds an element of assimilation, by increasing the similarity between discourse and subject matter with the use of certain formal and semantic tools. As a result, discourse itself becomes a reversion to its subject matter and a means of reversion to the intelligible for both reader and audience.

In the case of the *Timaeus*, which is primarily an ascent to the demiurgic cause of the universe, the speaker uses his discourse to imitate the works of the demiurge. In construing his exposition as starting from principles setting out the divine causes of the universe, and subsequently unfolding the universe as it emanates from those divine causes, Timaeus provides an ascent to the Demiurge as the primary intelligible cause of the universe. Through this scientific treatment of the cosmos and its causes, he also offers a hymn to "the Demiurge and the Father of this universe, proclaiming his powers and creations and gifts to the cosmos."[1]

Of course, when the soul is united with the intelligible once she "gets beyond the threshold of the Demiurge," and "is dining with him on the truth of being," she realizes that "scientific discussions (ἐπιστημονικοὶ λόγοι) are mere words (μῦθοι)."[2]

[1] *Theol.Plat.* V 20, 75.10–14, also quoted in T 1.7.
[2] *In Tim.* I 302.5–6.

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INDEX RERUM

Authors are included only when their positions are discussed. See further index locorum.

accounts (λόγοι), *see* discourse
activity (ἐνεργεία), 15, 24, 27, 41, 42, 42n111, 48n136, 60, 62, 63, 64–65, 84n87, 144, 151, 163, 217, 228–229, 231, 232, 234, 238, 246n108, 258, 260–261, 280, 284n300, 287, 288, 289n327, 291
aim (σκοπός), 7–8, 7n33, 8n34, 8n35, 19–20, 20n8, 67, 69, 71, 72n28, 163, 194, 247
Alcinous, 6, 58n182, 81n73
Alexander of Aphrodisias, 37, 56, 56n166, 57, 140n355, 156, 259
analogy (ἀναλογία), *see also* proportion, 37, 39, 58n179, 59, 128, 128n284, 139n328, 139n331, 141, 153, 154, 156, 158, 159, 173n41, 174, 175, 175n48, 175n50, 177–178, 178n58, 182, 184, 187n86, 189, 190, 190n115, 191, 191n119, 195, 196, 196n137, 200, 203, 204, 214, 216, 239, 240n87, 246n108, 247n114, 250, 255–261, 260n186, 255n153, 257n165, 275n260, 277n268, 280, 280n276, 281–282, 281n280, 284, 290n337, 292, 297, 300
antecedent, 119–120, 156–158
anticipation of conclusion, 139, 139n328, 154, 158–159, 159n419, 160, 162, 287–288, 288n326, 289n333, 290, 291
Aristotle, 7, 8, 8n37, 8n38, 9n45, 13n59, 20, 22, 24n22, 25, 26, 35n83, 37, 37n90, 37n92, 45, 45n128, 47–48, 48n136, 57–58, 59–60, 61, 61n198, 61n200, 67, 74n37, 77n53, 79, 81n76, 82n78, 83, 83n85, 85, 88, 88n102, 92–95, 94n134, 95n136, 96–97, 96n139, 97n147, 100n158, 101n163, 102, 103, 105–106, 106n180, 110n195, 111n198, 113, 113n214, 114n218, 119, 119n246, 120n250, 126, 126n276, 133n300, 141–142, 141n340, 142n342, 151, 156, 158, 166n9, 170, 170n26, 171, 180, 182–183, 183n77, 189n109, 195n132, 196n135, 200, 200n155, 208n186, 211, 216–218, 224n17, 228, 229n43, 230, 233, 247n118, 248, 248n122, 249, 264–268, 269, 298
artefacts (τεχνητά), 37, 37n92, 233, 233n57, 241, 250, 251–252, 252n135
assimilation, *see* likeness/similarity
astronomy, 3, 4, 167, 168n13, 172n38, 187n97, 205n170, 218n220, 262–264, 263n194, 268, 269n223
  hyper-, 269n223
axiom (ἀξίωμα), 61n200, 68, 69n20, 71, 72, 72n28, 72n32, 80, 85, 92–94, 93n125, 107–111, 109n191, 110n194, 110n195, 112–114, 117n238, 118, 119, 121–123, 123n264, 124–125, 126n273, 127–128, 129, 131, 132, 135–136, 155, 155n406, 157, 157n415, 159, 161, 218, 220, 220n7, 227, 229n41, 237n73, 279, 286, 287, 287n315, 287n318, 288, 288n320, 289n330, 295–296, 299

Becoming, 6, 29, 30, 30n55, 32, 35, 65, 68, 72, 72n31, 73–80, 80–84, 82n78, 84n87, 85–87, 86n93, 88, 89n104, 90, 92, 96, 101, 103–106, 107, 107n184, 108, 109, 115–118, 115n220, 117n238, 120–123, 127–129, 132–134, 136, 137–138, 139–142, 143n347, 145, 147–150, 148n378, 149n382, 152, 155, 156, 159–161, 164, 194, 196, 213, 218–220, 225, 229–230, 240–241, 240n85, 244n98, 247, 250–251, 255–258, 256n160, 257n165, 260, 261, 267, 271, 273, 275, 285, 294, 299
Becoming-and-Being, 29–30, 258
Being, 7, 10, 29–32, 30n55, 54, 61n199, 65, 68, 72, 72n31, 74–78, 80–84, 82n81, 83n83, 84n87, 85–86, 85n89, 86n93, 87–92, 89n104, 90n109, 96, 98–102, 99n155, 101n162, 103–106, 105n179, 107, 108, 113, 118, 120, 123, 132–133, 136, 137, 148–150, 148n378, 150n384, 160, 161, 192, 194, 218, 219, 229–230, 232n55, 237, 240–243, 242n92, 244n98, 246–248, 250–257, 257n165, 259–261, 265–268, 267n213, 271, 273, 275, 299, 302
Being-and-Becoming, 29–30
belief (πίστις), 145–147, 150, 219, 228, 240n87, 255–259, 256n158, 256n160, 257n163, 257n164, 257n165, 257n167, 260–261, 261n187, 271–273, 295, 302
biology/biological, 3, 16, 165, 205, 212–213, 215, 216, 297, 300, 301
body (σώμα) (*see also* heavenly bodies), 6, 16, 24, 25, 26, 28–29, 28n46, 30–32, 31n61, 34, 36, 39, 40, 44, 44n121, 47, 47n135, 48n137, 52, 54, 59, 60, 60n190, 61n200, 62–64, 62n204, 62n207, 65, 126, 126n275, 126n276, 138, 145, 150, 164, 165–167, 166n8, 170, 173, 173n40, 178, 180, 182, 183n77, 184, 186, 186n91, 186n94, 187n97, 188, 189, 192, 193, 195n131, 196, 201, 201n160, 203, 204, 212, 214–215, 217–218, 225n27, 267, 269, 271, 277, 285n307, 293, 297–298, 300–301
of the world, 6, 164, 166, 166n8, 167, 173, 173n40, 184, 188, 192, 196, 201, 203, 214, 300
bond (δεσμός), 63, 63n211, 173–175, 174n45, 175n48, 178, 186, 191n119, 192
Brisson, 35n83, 63, 169n17, 170, 170n25, 223n13, 225n27

cause(s), 2, 5, 7n33, 8–10, 8n34, 15, 16, 17, 19, 21, 23, 28n47, 32, 35, 37, 38, 38n92, 39, 45–49, 46n130, 51–54, 55, 57, 57n175, 57n177, 60, 60n193, 63n211, 64, 64n224, 65, 69–70, 72–73, 78, 78n57, 80, 80n69, 86, 86n96, 89, 90, 91, 96, 101–102, 101n163, 103, 106, 108, 109, 114, 114n219, 115–118, 115n220, 117n234, 117n238, 118–123, 119n246, 121n257, 124, 127–132, 127n278, 128n281, 128n282, 130n289, 132–134, 136, 136n320, 138, 144–145, 144n353, 146n366, 147, 149, 151, 152, 153–154, 158, 159–162, 163–165, 173–175, 174n45, 175n46, 178, 183–184, 186–191, 188n109, 191n119, 193, 196, 196n138, 198, 200–201, 200n156, 202–203, 206, 213, 214–215, 217–218, 219, 221, 227, 228n37, 231, 236–239, 240n85, 244, 246, 254, 258, 258n168, 261, 268, 271–272, 273–274, 275, 280, 283n292, 284, 288, 290–291, 290n338, 294, 295n357, 296, 297–302
cohesive/containing, 64, 64n224, 178, 191
efficient, 8–10, 28n47, 38, 38n92, 45, 56–57, 59, 60, 65, 69, 70, 72–73, 78, 80, 80n69,

101, 108, 114, 114n219, 115, 115n220, 117–118, 117n234, 117n238, 119–120, 119n246, 122, 123, 127, 128, 128n282, 129, 130n291, 131–132, 136, 152, 153–154, 159, 161–162, 172, 238, 297–299
final, 5, 8, 10, 16, 28n47, 86n96, 124, 127–132, 128n282, 130n289, 130n291, 134, 136, 159, 161, 227, 244, 277, 277n268, 284, 288, 290, 290n338, 299
formal, 8–9, 10, 25, 25n25, 26, 28n47, 73, 130n291, 131, 136
instrumental, 28n47, 57, 60, 60n193, 131, 136, 174n45, 175n46, 182, 199
material, 8, 10, 28n47, 130n291, 136
paradigmatic, 5, 8–10, 28n47, 51, 52n150, 53, 56, 72–73, 78, 80, 80n69, 89, 91, 100–101, 108–109, 114, 114n219, 118–123, 119n246, 123n264, 123n265, 127–129, 131, 132, 136, 138, 152, 154–156, 158, 159, 161–162, 171, 188, 195, 200, 206, 208, 219, 225n27, 229–232, 231n48, 232n56, 233, 234, 239, 240, 240n85, 246, 250–252, 252n135, 255, 257, 257n165, 263, 288, 290, 295n357, 298, 299, 301
proximate, 15, 32, 45, 57, 60, 60n193, 136, 144, 183, 186, 187, 188n108, 191, 238
Chaldaean Oracles, 51–52
cognition (γνώσις), 16, 33n70, 70–71, 71n24, 81, 100, 106–107, 107n184, 144, 145n359, 148–150, 149n380, 150n384, 150n385, 192, 208n189, 229n41, 230, 234, 237, 241, 242n90, 243, 247–248, 251n131, 252, 253–261, 255n156, 256n162, 259n179, 266–267, 271, 275n260, 285, 286n311, 287, 287n316, 288, 293, 295
common notions (κοιναὶ ἔννοιαι), 37, 68, 71, 72, 89, 90, 93, 93n125, 100, 108, 109–110, 110n194, 112–114, 112n205, 113n206, 113n211, 113n214, 114n218, 114n219, 115, 116n229, 117–118, 122, 128, 161, 257n163, 287n315, 299
condition humaine (*see also* distance), 261, 264, 267–269, 273, 276, 281n280, 293
consequent, 78, 91, 96, 108, 119–120, 123, 156–158
continuity, 2, 5, 6n30, 7, 28, 32, 69, 71n27, 119, 119n242, 139, 152, 153–154, 183, 192, 211, 213, 218, 222, 252, 293–294, 300, 302
principle of, 32,
conversion (ἀντιστροφή), 71, 84, 84n88, 137, 139–144, 140n335, 141, 141n338, 141n340, 142n342, 144, 143n347, 155–158, 155n406, 156n410, 156n411, 156n412, 157n413, 159–160, 162, 299
cosmos/cosmic order (κόσμος), *see also* creation of cosmos, microcosmos, 4, 9, 13, 46, 49, 50, 55n164, 63, 64, 73, 89n104, 100, 121–122, 124–127, 124n268, 126n275, 127n277, 129, 131, 132, 138–140, 155n405, 161, 187n96, 188, 199, 213, 224n18, 226, 226n31, 228, 231–232, 232n56, 246, 246n112, 257n165, 274, 275, 277, 279–281, 282n287, 283–285, 290, 290n337, 302
Coulter, 277, 293
craft (τέχνη)/craftsman, 22, 23, 26, 26n33, 37, 37n92, 48, 48n136, 55–57, 56n166, 56n169, 56n171, 59, 155, 233, 252n136
demiurgic, 55–57, 59
creation of cosmos (κοσμοποιία), *see also* cosmos, 13, 100, 102, 130, 161, 211, 225n27, 246, 246n112, 280n276, 284

Demiurge, 2, 9–13, 10n47, 13n57, 13n59, 16, 21, 28n47, 33n70, 34, 37n90, 41, 45n126, 46, 49–53, 50n142, 51n148, 52n150, 52n151, 55–57, 55n164, 56n169, 57n175, 59–62, 62n204, 63, 65, 67, 69, 70, 73, 77n55, 77n56, 83n83, 89, 100–101, 101n162, 118, 120–121, 123, 123n265, 127, 127n277, 129n287, 130, 131, 136, 146, 153, 153n396, 153n397, 154–156, 159, 174, 174n45, 187, 191n119, 196, 204, 211, 217, 219, 221, 223n15, 228–229, 231–232, 231n48, 232n56, 234, 237n70, 238, 238n75, 238n77, 246, 246n108, 262, 262n190, 273, 275, 280–284, 280n279, 281n280, 281n284, 282n289, 282n291, 283n292, 284, 284n300, 284n304, 286–289, 289n333, 290, 290n338, 291, 292, 297–299, 302
Timaeus as, *see* Timaeus as demiurge
demonstration, 5, 6n26, 9, 14–15, 36, 68, 68n9, 69, 71, 71n25, 72–73, 72n28, 74, 76, 79, 84, 85–89, 85n89, 91, 93, 94n134, 95n138, 96, 98–99, 101, 102, 104–105, 106n180, 107–108, 111–114, 115, 119, 122, 124, 125, 129–130, 131, 132–135, 135n308, 136–137, 136n319, 136n320, 139–141, 139n329, 143, 144, 148, 152–155, 153n394, 158–162, 180, 182, 210, 219–220, 219n2, 227, 242, 245, 247–249, 248n118, 248n120, 249n123, 271n238, 277n268, 288, 289, 289n328, 290, 291n340, 293, 295–296, 299
dialectic(al method), 1n1, 4, 5–6, 11n50, 16, 69–70, 76, 76n50, 76n51, 87, 88n102, 96, 98, 98n151, 99, 101, 102n166, 103, 106, 117, 120, 120n250, 129, 132–135, 133n302, 159, 160, 162, 164, 183, 198, 204, 215, 271, 284n302, 299
analysis, 69, 69n18, 70, 75, 75n41, 76, 77n51, 118, 120, 123, 128–130, 132–136, 133n302, 139, 142n342, 144, 154, 159–161, 196, 242, 299
definition, 10, 25, 26, 29, 45, 56, 68, 71–72, 72n32, 73–74, 76, 76n51, 77, 77n53, 80–89, 80n73, 81n74, 81n76, 81n77, 83n83, 83n85, 84n87, 85, 85n89, 86n93, 91–97, 92n122, 92n123, 93n124, 93n129, 95n136, 95n137, 95n138, 97n144, 97n147, 105, 105n176, 106–108, 107n184, 107n185, 107n186, 108–110, 111n198, 112–114 112n204, 114n219, 118, 122, 123, 125–126, 125n271, 132–134, 133n300, 136, 137, 138, 139–143, 141n340, 142n342, 143n347, 144–149, 148n375, 148n378, 150, 150n384, 150n385, 154, 156, 159–162, 216, 218, 228, 229, 229n43, 242, 248, 248n122, 256, 256n159, 257n165, 258, 259n179, 260, 271–272, 272n242, 277n263, 284, 299
definitory, 81n74, 83–84, 83n83, 83n85
division, 75–81, 76n47, 76n49, 77n52, 77n55, 78n57, 80n73, 82n81, 83, 85n89, 87, 88n102, 91, 95n136, 96, 96n141, 106, 120n250, 132, 133, 137, 149, 159, 161, 172, 220, 220n7, 229, 229n41, 230, 237n73, 241, 245, 253, 254, 255, 273, 279, 286, 287, 287n314, 290, 299
synthesis, 76, 77n51, 87, 132, 133, 135

didactic, *see* teaching
discourse (λόγοι), 15, 17, 69, 86, 86n96, 177, 187n97, 194, 194n130, 198–199, 198n144, 198n147, 219, 220–222, 220n8, 223n13, 223n15, 225, 225n27, 227–246, 234n61, 236n69, 242n90, 245n103, 249–250, 252, 254, 259n178, 259n179, 261, 269–271, 273, 273n245, 274, 274n256, 275–279, 278n270, 279n274, 283–285, 284n300, 284n302, 286–288, 291, 293–295, 294n353, 297, 301–302
  as interpreter, 219, 227, 234–235, 236n65, 248n118, 276, 276n263, 278, 279, 279n274, 288
  causes of, 236
  iconic mode of, 69, 194, 198, 198n144, 198n147, 199, 228, 246n111
  principle of, 220, 228–231, 232–234, 241–242, 275–276, 279, 293, 295, 295n357
discursive thought (διάνοια), 150, 150n385, 151, 151n386, 151n387, 160, 176n53, 189n110, 201n158, 209, 238, 238n76, 245, 252n138, 258, 258n170, 258n172, 260n186, 261, 263, 266, 283, 284n302, 286n311, 289, 289n327, 289n328, 290–291, 291n340, 293
discursivity, *see also* discursive thought, 6n30, 129n287, 139, 147n371, 151, 188, 188n102, 237, 244, 245, 254, 254n145, 263, 273, 282, 286–287, 289–291, 289n333, 291n340, 293, 295
distance, *see also* condition humaine, 208, 208n185, 265–268, 265n199, 265n200, 266n206, 268n221
divine/divinity, *see also* knowledge, divine, 2, 4n22, 6–7, 9, 10, 10n47, 10n48, 12–13, 13n59, 19n1, 21, 23, 26, 28n46, 32n65, 39, 39n103, 40–43, 41n109, 42n112, 46n130, 50, 52, 54, 54n159, 55–57, 56n166, 59, 60, 62, 69, 70, 77n56, 90, 101, 102, 126, 126n275, 152, 163, 198, 194, 196–199, 201, 201n160, 207–210, 208n189, 209n191, 211, 215, 226, 234n60, 236, 237, 244n101, 246n111, 257n163, 266n208, 267, 267n216, 272, 273–275, 280, 282–283, 284n300, 286–287, 289, 291, 292n345, 293, 302
divisibility, *see also* dialectic(al method), division *and* World Soul, division of, 1, 15, 28–32, 30n55, 39, 40, 125, 150, 186, 188, 189, 200, 214, 218, 238, 242, 253, 254, 262–264, 267–268, 273, 276, 286, 286n311, 287, 290

emanation (πρόοδος), 10, 17, 56, 67, 126, 127, 127n278, 179, 221, 238, 249, 260, 266, 277, 279, 280n277, 282, 283, 285–287, 285n307, 289, 290n337, 291, 291n341, 294, 294n353, 302
empirical φυσιολογία, 16, 71, 137–138, 141–142, 144–145, 147–151, 152, 164, 165, 169, 205, 205n170, 207, 207n180, 208–210, 210n197, 212–216, 262–263, 265–268, 293–294, 297, 299–301
encosmic gods, 39, 41–43, 47n135, 54
Epicureanism, 122–123, 265n199
exactitude, 135, 179–181, 179n64, 189, 189n111, 190–191, 202n163, 207, 207n179, 220, 224, 225, 228, 241, 242n90, 247, 247n114, 247n117, 249, 249n123, 261, 262–264, 262n190, 263n194, 265, 268, 269, 269n224, 269n226, 270, 271–272, 281n280, 293–294

existence, 21, 23, 29–31, 37, 39, 39n99, 40, 43–45, 46n132, 48, 50n145, 56, 61, 84n87, 87–91, 90n109, 93, 93n129, 95–97, 95n136, 95n137, 96n141, 97n147, 98–102, 99n155, 100n158, 100n159, 103–106, 105n176, 106n180, 106n181, 107, 107n184, 112, 117–119, 119n246, 121–123, 123n265, 128, 130, 160, 161, 206–208, 210n197, 232, 233, 237, 238, 240n85, 266
explanation
  appropriate, 166, 166n8, 179, 193, 194n131
  mathematical, 16, 166–169, 169n17, 170n25, 172, 179n63, 180–184, 185–187, 191, 194n131, 195, 198, 201, 201n158, 202, 203n166, 300
  physical, 9, 166n8, 167, 171, 177, 177n56, 178, 180, 181, 185, 191, 191n119, 194n131, 201–202, 300

fallacy, 155–157
fate (εἱμαρμένη), 28n46, 33n70, 34, 34n76, 36n88, 41, 41n110, 49–50, 62, 62n203
Festugière, 55, 56n171, 70n22, 83n83, 85n89, 128n281, 130n289, 144, 158n419, 174n45, 186n94, 193n127, 201n159, 232n52, 237n71, 251, 264, 269n225, 283, 283n298
Forms
  existence of, *see* existence
  theory of, 82n81, 88, 101n163, 103–104, 119

genus (γένος), 33, 75n41, 76–79, 77n53, 77n54, 77n56, 78n57, 80n68, 81n77, 80n71, 81, 82–83, 82n78, 82n80, 82n81, 83n82, 84n87, 91–92, 105–106, 106n180, 107, 137–138, 141n338, 160, 180, 182–184, 185n90, 298, 299
geometry, 6n26, 67–70, 69n15, 69n20, 70n22, 71, 74, 75, 78, 87, 88, 88n100, 89, 91–97, 93n129, 95n137, 97n146, 98–99, 100n155, 102, 105, 105n176, 106–111, 112n205, 113–115, 119, 122, 123, 125–126, 132–133, 133n302, 134–135, 137, 139–143, 139n331, 142n342, 151, 153, 154, 155n406, 156, 159–162, 163, 167n9, 168n14, 170, 170n23, 175, 177–178, 182–185, 187n99, 188, 191, 200, 203n166, 216, 218, 218n220, 220n7, 249, 255, 257, 263n192, 299
Gersh, 190, 199, 278, 278n270, 292, 292n348

Hecate, 49, 52, 52n151, 53, 61n199, 63n209, 298
heavenly bodies, 16, 44, 54, 62, 62n207, 126n275, 168n13, 172n38, 187n97, 197, 204, 205, 207, 208, 217, 264–266, 265n199, 267n213, 268, 268n221, 295, 301
hymn, 11–13, 13n57, 13n59, 13n60, 13n61, 14n65, 291–292, 297, 302
hypercosmic-and-encosmic, 39–43, 40n106, 40n107, 41n108, 41n109, 54
hypostasis, 15, 19n1, 24, 24n21, 30–32, 35, 43, 48, 54, 58n181, 65, 90, 164, 186n94, 195n131, 259n177, 297, 298
hypothesis, *see also* starting point *and* unhypothetical, 5, 14, 15, 68, 71, 72, 72n28, 73, 73n35, 78, 80, 85, 85n89, 87, 91–100, 93n127, 94n134, 96n139, 102, 104, 105n176, 116n180, 107, 107n186, 108–111, 112–114, 112n204, 120n250, 122, 126, 126n273, 127, 129, 131, 132, 134–136, 136n319, 139, 141, 141n338, 143, 154, 155, 159, 161–162, 169n17, 172n38, 218, 227, 228n37, 248, 268, 271, 280n277, 291, 299

Iamblichus, 9, 44n120, 62n203, 73n35, 133n302, 163, 163n1, 166n9, 171–172, 172n34, 187, 187n99, 203n167, 247, 267, 267n216, 269, 275n257
image (simile *and* εἰκών), 7n33, 8n35, 9, 10n45, 12, 12n53, 15n68, 17, 34, 47–48, 48n136, 58–59, 69, 74n38, 78, 129n287, 136, 138, 138n325, 147, 155, 160, 171, 188, 188n103, 192, 193–194, 194n127, 194n130, 195, 197, 198, 199–200, 200n156, 201n160, 203, 219, 221n8, 222, 226, 229–234, 232n52, 232n55, 232n56, 233n57, 235, 238–239, 239n82, 239n83, 240–242, 240n85, 244–248, 246n108, 246n111, 246n112, 250–254, 254, 255–258, 257n165, 260, 265, 267, 267n213, 268, 274, 275, 276, 277, 278n268, 279, 279n272, 279n274, 281, 284, 284n300, 285, 288, 289, 289n332, 292, 292n349, 294n353, 297, 301, 302
  iconicity, *see also* discourse, iconic mode of, 17, 87n96, 138, 138n324, 165n6, 188, 200, 239n83, 245
  ontological, 9, 10n45, 17, 199, 230, 246, 246n111, 292, 292n349, 297, 302
imitation (μίμησις), 1, 15, 37, 97, 123n264, 218, 221, 228–229, 231, 239n82, 242, 242n92, 243, 251, 252n135, 276, 277n263, 279–280, 279n275, 280n276, 281n280, 282, 284, 285–289, 289n332, 290n337, 291, 293, 295n358, 301–302
instrumentalism, 168–170, 168n15, 168n16, 172, 172n38, 177, 180, 187, 202, 202n163, 215, 300
intellect (νοῦς), 5, 31n62, 32, 49n138, 52, 52n151, 54, 56n168, 57, 57n175, 57n177, 58, 61n199, 62n204, 81, 83n83, 85, 86n93, 101–102, 102n166, 102n167, 102n168, 107, 128, 129n287, 139, 147n374, 148–150, 158, 158n419, 159n419, 179, 186, 186n94, 189, 201n160, 228n37, 232n52, 237, 239n82, 242–243, 245, 253n139, 254–255, 254n151, 256, 257n163, 259, 259n177, 259n178, 267, 275, 277, 277n268, 281, 282, 284, 289–290, 289n327, 291n340, 292, 293, 296
intelligible, the, 1, 2, 5, 7, 9, 15, 16, 35, 43, 50, 65, 71, 75n41, 82, 84, 102n168, 109, 122, 126, 138n325, 149, 151, 154, 167, 186–189, 192, 194n127, 203, 204n169, 208, 229n42, 230–234, 231n48, 232n56, 237, 237n73–238, 241, 249–252, 252n135, 255, 257, 258, 259n177, 260, 263, 263n194, 264, 269–270, 273, 277, 280n276, 281, 282, 286, 293–295, 297, 302
intermediate, 29–31, 41n109, 51n151, 63n211, 71, 132, 148–151, 149n380, 152, 165, 1660167, 172, 173, 174n45, 175, 187, 187n100, 189, 192, 194, 202, 213, 214–215, 258, 258n173, 300
intuition, 90, 139, 143, 152, 160, 208, 208n189, 209, 213, 260, 282–283, 287, 287n313, 289, 290, 293, 295, 296
(ir)refutability, 136n319, 219, 224, 240, 242–243, 247, 249, 253–255, 262, 271, 273, 274, 293

Johansen, 21n13, 138n325, 223n13, 226, 226n27, 244n98, 274n252, 281n280
judgment (/opinion, δόξα), 16, 36, 71, 71n24, 75, 75n42, 81, 81n76, 86n93, 90n109, 100, 105–106, 107, 107n184, 137–141, 138n325, 143–151, 143n349, 145n357, 145n358, 145n359, 147n371, 147n373, 147n374, 148n378, 151n389, 152, 160–162, 163, 180, 181n68, 188n102, 213, 230,

judgment (/opinion, δόξα) (*continued*) 234n60, 254, 256, 257n167, 258, 258n169, 260n185, 283, 283n297, 283n298, 299

kind-crossing (μετάβασις), 182–184, 182n76, 183n77
kind/essence (οὐσία, εἶδος), 13n59, 14, 20, 21–22, 21n11, 22n14, 23–24, 26, 28, 31, 48n137, 58n179, 60, 62, 65, 73, 81n73, 81n77, 83–84, 87, 106, 117, 127, 144–146, 146n365, 146n366, 148, 148n378, 151, 152, 189, 193–196, 200, 223, 236, 237, 241, 254, 258, 269, 271–272, 274–275
knowledge, *see* science/scientific knowledge
  divine vs. human, 23, 220, 254, 266–269, 266n208, 267n216

Lernould, 5–7, 5n24, 6n26, 6n28, 6n30, 8n34, 70n22, 72n28, 84n87, 100n155, 110n194, 116n226, 123n265, 124n268, 174n43, 174n45, 176n53, 192n122, 232, 264, 269n225, 289n330, 294n355
life, 28, 29, 34, 34n75, 38, 49, 51–52, 52n149, 52n151, 53, 54, 59–61, 61n199, 62n207, 63, 145, 150, 153, 163, 165, 178, 178n60, 191, 191n119, 204, 211–212, 216, 228, 269, 301
likely account (εἰκὼς λόγος), 6n228, 7, 7n31, 11, 16, 71n25, 137–138, 137n321, 138n325, 138n326, 139, 153, 155, 169n20, 181–182, 181n71, 194, 209, chapter V *passim,* 301–302
  μῦθος, 219n3, 221n8, 222, 223n15, 227n22, 261, 269–270, 270n236
likeness/similarity, 32, 77, 88n100, 146, 178, 190, 203, 214, 221, 225, 225n27, 228, 230–232, 232n56, 233n59, 235–236, 237n73, 239, 239n82, 242, 242n92, 243, 244, 250–251, 253, 254, 272, 276, 278–280, 285, 290–291, 294, 297, 298, 302
  assimilation, 17, 154, 190, 232, 235, 242, 243, 251, 276–280, 276n261, 284, 285, 294, 297, 302
  resemblance, 17, 190, 229–232, 234–236, 239, 240, 243–244, 243n92, 251, 269, 270, 276, 277, 294–295, 297, 302
  unlikeness, 231, 240–242, 244, 245, 253, 285
literary organicism, 277, 278, 279
living being, 16, 63n211, 64, 174, 175, 205, 211–212, 225n27, 274, 277, 277n267, 281, 287n318, 288, 290
  intelligible, 9, 10n47, 16, 290n337
Lowry, 39, 39n102, 54, 54n159, 66

macrocosmos, 212
mathematics, *see also* geometry, explanations *and* mathematization, 4, 6, 6n30, 16, 69n15, 70n22, 92n123, 93n127, 94n129, 95n137, 96n139, 114n218, 142n342, 151n387, 152n391, chapter IV *passim*, 247, 249, 249n123, 263, 271, 271n238, 273n248, 297, 300–301
  images, 69, 195n, 200
  objects/entities, 179, 179n64, 180, 181, 186, 188, 189, 190, 201, 215
  principles, 188, 189, 193, 203
  ratios, 175, 200–202
mathematization, 6, 165, 166n9, 167–170, 167n9, 168n14, 169n17, 170n23, 172, 176, 178, 179, 183n77, 185, 190, 192, 192n122, 200, 201, 202, 214–215, 300, 301
matter (ὕλη), 4, 8–9, 23, 25–27, 35, 35n82, 50, 57–59, 58n179, 59n184, 59n186, 60n193, 65, 77n55, 79, 100, 102, 131, 136,

166, 166n9, 168, 168n14, 178, 180, 181, 185, 190, 191, 193, 195, 201, 242, 262, 263n194, 267–268, 277, 277n268
Menander, 13, 13n58, 13n60, 14n65
method(ology), 2, 4, 6n26, 7, 7n32, 10, 14, 15, 16n68, 67–70, 69n20, 70n22, 71, 75–76, 76n49, 77n51, 79, 80, 81n73, 83, 87, 88, 88n102, 88n104, 89–92, 97, 97n146, 99, 100n155, 103, 104, 106, 108, 109, 115, 117, 119, 120n250, 122, 123, 129, 132, 133, 133n302, 134, 134n307, 135, 136, 137, 139, 151, 152–155, 159, 160, 163, 164, 172, 180, 182, 183n77, 184, 202, 204, 207, 209n191, 211–216, 217–218, 220n7, 223n15, 234n61, 268, 278n268, 297, 299, 300–301, 302
microcosmos, 212, 277, 279, 280–281
monad, 33, 38–40, 39n101, 42–43, 48, 53–55, 65, 192, 279, 298
motion, 22, 24, 25, 25n26, 27n39, 28n46, 32, 32n65, 45, 47, 47n135, 52n150, 55, 59, 60–62, 60n189, 60n190, 61n198, 61n200, 62n204, 62n207, 65, 96–97, 123, 136, 192, 207, 216–218, 268, 282, 285, 288, 289, 298

Naddaf, 22–23
nature (φύσις), *passim, esp.* chapter II
  chain of, 1, 15, 43–44, 53–54, 215, 297, 298
  activities of, 15, 24, 27, 41, 42, 42n111, 47, 48n136, 60, 62–65
  imparticipable, 29n48, 39–40, 39n101, 42, 43, 48, 54, 55, 65, 66, 298
  universal, 15, 30n53, 32, 34, 41, 43–45, 44n120, 48, 49, 51, 54, 57, 62n203, 63, 65, 66, 74n224, 150, 281, 298
necessity, 5, 41, 68, 80, 86, 90, 100, 101, 115–117, 115n225, 116n228, 116n229, 117n238, 118, 119n246, 123, 123n265, 136n319, 138, 142n342, 157, 169n20, 173, 175, 184, 192, 210, 217, 218, 231, 231n50, 235, 239, 240n85, 244, 248–249, 268, 276, 277n263, 278, 297, 300

Opsomer, 30n55, 33–34, 33n68, 42, 42n113, 60n189, 153n397, 231
order of exposition, 137, 300

perception (αἴσθησις), 2, 5, 23, 28, 35, 46, 50, 57, 60, 65, 70–71, 81, 84, 85, 86n93, 100, 105, 106, 106n180, 107, 107n184, 110n195, 113n206, 137–138, 138n325, 140–142, 144–149, 147n374, 148n378, 149n382, 151, 151n389, 152, 161–162, 163, 164–165, 164n4, 167, 169, 172n34, 179, 181n68, 183, 185, 186n91, 186n93, 187–188, 195–196, 205, 207–211, 210n197, 210n198, 213, 214–216, 218, 219, 230, 261, 254, 257–258, 257n164, 261–265, 265n199, 266–268, 266n208, 273, 273n248, 281, 283, 293–295, 299–300
Peripatetic philosophers, 25, 25n31, 33, 44n117, 45, 55n164, 57, 63, 82, 112n205, 122–123, 155n406, 156, 259n179
Philoponus, 33, 142n342, 166n9, 210n197
plenitude, principle of, 28n47, 29, 32
Plotinus, 26–28, 35, 35n83, 57, 58, 58n182, 59, 59n186, 60n192, 63, 64n224, 75, 78, 81, 82n81, 204n169, 232n55, 233, 239, 239n82, 245, 248n120, 251, 252n135, 254n151, 259n175, 259n176, 287n317, 291n340, 298
poetry, 71, 222, 222n11, 83
  scientific, 13n59, 291–293, 292n342, 292n346, 292n349

Porphyry, 62n203, 73n35, 77n55, 81, 82n81, 149–150, 150n383, 235n63, 267, 267n216, 277n263
power (δύναμις), 13, 24, 25–26, 25n31, 28, 28n45, 30n55, 33n70, 35, 35n82, 41, 44, 45, 47, 50–51, 53, 55–58, 60, 64n224, 73, 84v87, 117, 132, 145, 172, 173, 175n48, 176–178, 176n54, 177n55, 178n57, 187n96, 191, 199, 199n150, 217, 232, 238, 254, 262, 272, 302
prayer, 12, 13n59, 14n65, 75, 75n42, 90, 90n110, 282, 282n286, 282n287, 283, 285
precision, *see* exactitude
principle of discourse, *see* discourse
principle of plenitude, *see* plenitude
principle of continuity, *see* continuity
prooemium, 6n26, 10–13, 11n50, 12n51, 14–15, 14n65, 16, 16n68, 67–69, 69n16, 70–72, 72n28, 72n31, 74, 75, 78, 84, 87, 90, 91, 105n176, 107–109, 108n188, 111, 112, 117n238, 121, 123, 124, 127–135, 128n282, 135n309, 137, 141–143, 148, 150–151, 154–155, 156n408, 159–161, 163, 165n6, 219–220, 220n7, 222, 223, 223n15, 225, 228, 234, 242, 265, 269, 274, 281n284, 284, 291, 294–296, 296n358, 300, 301
proportion, (ἀναλογία, *see also* analogy), 68, 69n15, 169, 173, 175–181, 175n48, 176n53, 177n55, 184–188, 189n111, 190–193, 195–196, 199, 200, 214, 219, 238, 240n87, 255, 284
psychology, 3, 4, 7n32, 114, 114n218, 212, 290
Pythagoreanism, 6, 6n26, 8, 8n40, 9, 9n43, 13n59, 68, 70n22, 74, 75n42, 96, 101–102, 101n163, 102n168, 129, 129n287, 132, 143, 165n6, 167, 171, 180, 185, 186, 186n95, 187, 196–197, 240n86, 246, 283, 284n302, 288n325

rationality, 21–23, 29n49, 30n55, 32–34, 33n68, 33n70, 33n71, 45–48, 45n126, 46n130, 52, 56–58, 60, 60n189, 61n201, 62, 62n204, 65, 119, 137, 145, 146, 148, 151, 158n419, 186, 192, 213, 223n15, 257–258, 257n163, 257n164, 258n168, 260, 261, 267, 289, 295, 298
rational principles (λόγοι), 44–47, 63–64, 64n219, 144–146, 179n64, 186, 199n151, 238, 238n79
  physical (φυσικοί), 1n2, 41–42, 63n211, 63n213, 64, 64n219, 174, 199n151
  seminal (σπερματικοὶ), 64
realism
  scientific, 168–172, 168n15, 169n21, 169n22, 170n25, 172n38, 177, 180, 187, 202, 202n163, 215
recollection (ἀνάμνησις), 85, 87, 133n302
resemblance, *see* likeness/similarity
reversion (ἐπιστροφή), 13, 13n61, 17, 28, 28n45, 32, 32n65, 40, 42n111, 50, 50n142, 56, 126–127, 127n278, 132, 133, 133n302, 136n315, 139, 140, 178, 221, 228n37, 232, 277, 280, 282, 282n289, 285–286, 285n307, 289, 289n327, 290–292, 290n337, 291n340, 294, 294n353, 296, 302
Rhea, *see* Hecate
Rosán, 38, 40, 41n108, 49n138, 189

schema isagogicum, 19, 67n2, 277, 278n270, 280
science/scientific knowledge (ἐπιστήμη), 2, 3, 3n6, 6n30, 7, 7n33, 9–11, 13n59, 14–16, 69–70, 71n26, 75, 76, 79, 85, 86, 86n96, 88, 91, 91n119, 93, 93n127, 94, 96–98, 98n151, 99, 101, 103–107, 106n180, 113, 114, 114n217, 114n218, 132, 134–138, 138n326, 140n336, 143, 144, 147, 149–151,

151n387, 152, 160, 160n424, 164, 165n6, 167, 168, 168n16, 169n17, 169n21, 170, 181–184, 184n86, 184n87, 185n90, 188, 192, 198, 201, 205, 211, 213, 217–218, 219–220, 222, 223n13, 225, 228n37, 234, 234n61, 241–242, 242n92, 243, 245, 249, 251n131, 253–256, 260, 260n186, 261, 262–265, 270–272, 270n234, 271n238, 282–284, 292, 293–300, 302
hypothetical, 16, 70, 85n89, 87, 88, 91, 91n119, 93, 93n127, 95, 97–99, 98n151, 102–103, 107, 160–161, 219, 271, 296, 299
self-evidence, 37, 94, 110, 110n194, 111, 113, 114, 116n229, 122, 123, 299
Sheppard, 239, 239n83, 252n135, 278, 292, 292n342
similarity, *see* likeness
Siorvanes, 3n6, 8n36, 27, 38, 38n98, 39n101, 40–41, 41n108, 44n121, 259, 259n177
soul (ψυχή), 15–16, 21–36, 26n34, 27n40, 27n41, 28n44, 28n45, 28n46, 28n47, 29n49, 30n55, 31n61, 33n67, 33n68, 33n70, 33n71, 34n71, 34n72, 34n76, 34n78, 35n82, 36n87, 39, 39n99, 40–41, 41n109, 43–44, 44n121, 46, 48–55, 49n138, 51n146, 57, 57n175, 57n177, 59–65, 60n189, 60n192, 61n198, 62n204, 62n207, 67, 75n41, 84n85, 90n109, 129n287, 142, 145–147, 145n357, 147n373, 149–152, 160, 165, 165n6, 169n19, 170n25, 175–176, 181, 181n70, 186–189, 186n94, 189n109, 189n110, 192–193, 194n129, 195n131, 196, 200, 201–202, 201n160, 203, 204, 207n180, 208, 211–212, 214, 215n210, 217, 221, 224n18, 232, 232n52, 235, 237, 239, 239n82, 245, 254, 254n145, 260–261, 263, 268, 271, 277, 277n268, 280–281, 283, 285n307, 288, 289, 293, 297, 298, 300–302
irrational, 29n49, 33–34, 33n70, 33n71, 60n189
World Soul, 26–27, 27n41, 34, 34n73, 34n78, 41, 43, 44n121, 52n152, 69, 69n15, 166–167, 166n8, 170n25, 171, 173, 186, 189, 189n109, 190, 192–196, 195n131, 198–201, 200n156, 201n160, 203, 205n170, 207, 214, 215, 301
starting point (ἀρχή), 14, 16, 20, 36, chapter III *passim,* 165, 199, 216, 218, 220, 227, 249, 280, 290, 291, 293, 294n354, 294n355, 295, 299
unhypothetical, 70, 98, 98n151, 102, 103, 130, 135–136, 136n316, 216, 271
Steel, 4, 48n136, 131, 167n9, 203n106
Stoa, 20, 26, 35n83, 55–57, 56n166, 56n170, 58n178, 64, 64n224, 78, 78n61, 81n74, 97n146, 109, 109n191, 111, 112n205, 112n206, 114n218, 116n226, 117n233, 122–123, 141, 155n406, 284n302
sublunary gods (δαίμονες), 42, 42n112, 207–211, 208n187, 209n190, 210n197, 210n198, 210n199, 213
syllogistic, 69, 112–113, 115, 116, 116n226, 116n227, 120–121, 120n250, 121n253, 121n255, 140, 140n335, 142, 142n342, 143, 144n353, 151, 157, 160, 187n97, 216, 248n120, 287n317
symbol, 15n68, 62, 165n6, 191, 197–198, 198n147, 222, 239n82, 239n83, 246, 278n268
Syrianus, 27n41, 32, 32n66, 33n67, 34n78, 45n123, 83n82, 101n163, 104, 151n390, 153, 154, 172, 172n35, 185, 187, 187n99, 202, 234, 240n86

teaching (διδασκαλία), 1, 16, 17, 74, 74n38, 84–86, 86n94, 86n96, 87, 94, 111–112, 116, 143, 152, 158–159, 199, 199n150, 221, 228, 228n37, 230, 235, 239, 239n80, 271, 280, 281, 283–285, 290n337, 291, 292, 292n342, 292n346, 293, 296, 297, 300, 301
theological(ly), 6, 9–10, 16, 51, 51n148, 52, 52n151, 70, 134, 159, 163–165, 197, 204, 209n193, 213–216, 221, 271, 275–276, 297, 299–300
theology, 1–4, 1n1, 6, 7, 9, 9n45, 10, 15, 67, 70, 98n151, 100n155, 104, 114n218, 161, 183, 196, 214, 244n101, 276, 279, 299, 302
Timaeus as demiurge, 22, 37n90, 129n287, 153, 225n27, 228, 238, 246n108, 280–285, 280n276, 288, 291
time, 29, 30, 68n5, 72n31, 84n87, 142, 143n349, 146, 149, 150, 152, 204–206, 207n180, 218, 223
truth (ἀλήθεια), 14, 14n65, 89, 90, 100, 110n195, 118, 122, 123n264, 124, 128, 130, 134, 136n319, 138, 146, 148, 150, 181, 181n68, 97, 198, 203n165, 211, 219, 224, 226, 228, 240n86, 240n87, 247n114, 248n118, 249, 250, 250n128, 252, 253, 255–257, 255n153, 255n154, 256n160, 256n161, 257n163, 257n165, 259–261, 259n175, 259n176, 259n177, 259n178, 259n179, 260n182, 260n185, 266, 270, 270n236, 271–276, 275n260, 277n263, 286–287, 287n316, 287n317, 289, 293–296, 302

universal nature, *see* nature
universale *in re*, 54, 147 233, 234, 234n60

Van den Berg, 12, 13n60, 235n63, 292n346, 292n349

INDEX LOCORUM

Adrastus
see Nicomachus

Aëtius
Doxographia
1.22.6 25n24
2.20.15 25n24
2.28.4 25n24
2.29.3 25n24
3.16.4 25n24
Placita
I 7 33 306.1, *SVF* II 1027 56n171
IV 11, *SVF* II 83 112n206
IV 20.2, *SVF* II 387 58n178

Alcinous
Didaskalikos
5 133n302
12 58n182
157.1–10 80–81n73
164.1–6 100n159

Alexander of Aphrodisias
De mixtione
216.14 112n206
In Aristotelis Analytica Priora
3.19–20 57n174
29.10 156n410
29.24–29 140n335
159.14–15 140n335
173.23 140n335
In Aristotelis Metaphysica commentaria
54.23 ff. 37n91
104.3 ff. 56n166
104.3–10 56n173
169.3 ff. 249n123
319.1–3 156n411
357.7 ff. 25n24
531 141n340
771.24 288n325
772.8 288n325
In Aristotelis Meteorologica
13.27 ff. 25n31
181.13 ff. 25n31
In Aristotelis Topica
191.15–19 156n411
241 141n340
301.19–25 78n61
359.12–16 78n61
Quaestiones
59.12–13 229n43

Ammonius
In Aristotelis de Interpretatione
135.14 ff. 267n216
136.15–17 268n218
152.9–11 276–277n263
153.12–13 276–277n263
154.18–20 276–277n263

Anonymous
In Aristotelis Categorias
32.27 140n335

Anonymous
Prolegomena in Platonis philosophiam
4, 15.1–16 277n267
8, 20.2–18 27–278n268
10 226n32
16–17 277n268
22.21–30 8n37
26.12–16 2n3

Anonymous
Scholia in Rempublicam
621b,bis 236n65, 247–248n118

Antipater
SVF
II 226 141n339

Arius Didymus
frg. 1 Diels, 9–10
see Eusebius

Aristotle
Analytica Posteriora
I 1 71a1–2 85
I 2 71b21–22 248n120
I 2 71b22 144n353
I 2 86n95, 93
I 2 71b33 ff. 85 and n90, 296n360
I 2 72a1–4 208n184
I 2 72a14–17 111n198
I 2 72a14–24 94
I 2 72a18–21 92, 95
I 2 72a23–24 97
I 7 106n180, 182n76
I 7 75a38–75b1 182n74
I 7 75b8–9 183n79
I 7 75b10–11 182n74
I 7 75b13–14 182n75
I 7 75b14–17 183n81
I 9 182n76
I 9 76a22–25 183n79
I 10 106n180
I 10 76b27–30 94n133, 112n204
I 10 76a37–38 182n74
I 10 76b16–18 106n180
I 12 78a6–13 142n342
I 13 182n76
I 13 78b34–37 183n79
I 13 78b34–79a16 183n81
I 26 87a 249n123
I 33 80b30 ff. 151n389
II 1 89b24–35 88n101
II 1 89b31–34 88n103
II 9 93b21–28 133n300
II 12 95b38–96a7 142n342
II 17 99a21 95n138
II 19 290
Analytica Priora
I 2 140n335
II 27 70a10 ff. 248n122
Categoriae
1 77n53
5 77n53
5 3a33–b9 82n80
13 14b34 77n55
De anima
I 2 403b26–28 61n198
I 3 406b26–407b10 200n155
II 3 63–64
II 5 208n186
II 12 424a17–24 57
III 259
III 1 146n365
III 3 428b28–30 265n199
De caelo
I 216
I 1 183n77
I 1 268b1 183n77
I 2 268b16 25n26
I 9 278b9 ff. 126n275
I 9 278b11 124n270
II 1 283b26 126n275
II 3 286a4–7 265n199
II 3 286a11–12 126n276
II 12 292a16–17 265n199
III 170n26
IV 1 308a21 266n210
IV 1 308a21–22 267n212
De generatione animalium
II 4 740b25–34 59n188
De generatione et corruptione
I 7 208n186
II 11 337b23 142n342
De ideis
79.3–85.13 103n171
De ingressu animalium
12 711a18 55n164
De interpretatione
1 16a3 ff. 229n43
1 16a3–4 237n74
13 22b5–7 116n228
De memoria
1 450a10 ff. 146n365

De partibus animalium
I 5 644.22 ff. 265n199
I 5 645a9 55n164
II 1 646a18 ff. 25n31
II 1 647b5–6 55n164
Ethica Nicomachea
I 3 79n62
I 3 1094b22–28 249n123
I 7 1098b7 74n37
V 3 1131b5–7 255n155
V 8 1136a5 ff. 270n228
VII 8 1151a16 f. 96n139
Historia animalium
VIII 1 588b4–6 61n198
Metaphysica
I 1 981b2–4 61n198
I 6 987 b 14–18 188n101
I 6 987b27 ff. 180n65
I 6 988a8–11 45n127
I 9 990b8–22 103n171
I 9 991a23 56n173
I 9 992a24–32 45n127
II 3 995a14–19 249n123
III 4 1000a19 247–258n118
V 4 20n9
V 5 1015a20 ff. 116n231
V 15 1023b19 80n71
VI 1 9n45, 82n81
VI 1 1025b16–18 106n180
VI 1 1025b18 ff. 216n216
VI 1 1026a10 ff. 216n216
X 7 1057b8–9 254n150
XI 7 1064a15 ff. 216n216
XII 259
XII 3 1070a11–12 25n25
XII 4 1078b12–37 101n163
XIII 2 1076a38–b11 172n36
XIII 5 1079b12–1080a11 45n127
XIII 6 1080b16 ff. 180n65
Meteorologica
I 3 340b14 ff. 25n31
Physica
I 1, 184a16 ff. 85n90
I 2 185a12–13 96n143, 218n218
II 1 37
II 1 192b8 ff. 20n9
II 1 192b20 f. 61n200
II 1 192b35–193a1 35n83
II 1 193a3–9 106n181
II 1 193a9–17 25n24
II 1 193a30 ff. 25n25
II 1 193a31 f. 37n92
II 1 193a31 ff. 37n90
II 1 193b5–6 25n29
II 8 199a12 ff. 37n90
II 8 199a15–17 252n135
II 8 199b14 f. 35n83
II 8 199b28–29 48n136
II 9 200a5 ff. 175n46
III 1 200b12–13 25n26
IV 1 208a28 88n103
IV 6 213a13 88n103
VI 216
VIII 216
VIII 4 61n200
Rhetorica
I 2 1357a22 ff. 241n88
I 2 1357a31 ff. 248n122
I 3 1358a36 ff. 228n39
I 13 1374b10–11 270n228
III 2 1404b26 236n63
III 13 1414a30 ff. 75n39
III 14 1414b19–26 11n50
Topica
I 5 101b37 ff. 83n84
I 11 105a3–7 106n181, 110n195
II 2 109b6 82n80, 83n82
VI 6 143a36 77n55
VII 3 153a38–b1 254n150

Chrysippus
SVF
II 53 58n178

apud Clement *Stromata*
III, vol. II 929 346.2 ff. 64n224

Cicero
Timaeus
2.4–5 125n270

Cleanthes
SVF
II 56 58n178

Damascius
In Parmenidem
156.31–157.28 51–52n149
In Philebum
57 133n301
59 133n301

Diogenes Laertius
VII 45–46 58n178
VII 65 109n191
VII 156 26n36, 56n171

Elias
In Aristotelis Categorias
122.22 ff. 110n195
In Porphyrii Isagogen
37.9–16 88n102

Epictetus
Dissertationes
I 27.7 117n233

Euclid
Elementa
I 93n124
I *Deff.* 10–12 96
I *Def.* 22 125n272
I *Prop.* 5 141n338
I *Prop.* 6 141n338
II–VII 93n124
II *Def.* 2 125n271, n272
V *Def.* 6 126n272
X–XI 93n124

Eusebius
Praeparatio Evangelica
XI, 23.2–6 58n182

Galenus
Institutio logica
vi 4 156n412

Pseudo-Galen
definitiones medicae
371.4–6 56n166

Hermias
In Platonis Phaedrum
111.24–112.1 60n190
118.9–10 288n319
120.6 ff. 83–84n85
200.29 62n203

Iamblichus
De communi mathematica scientia
187n99
4 77n55
5.18 247n116
28.19 ff. 172n33
86.2–22 249n123
32 93.11 172n34
De mysteriis
5.8.13 275n257
9.7 77n55
De vita Pythagorica
18.82.14–15 129n287
29.162.2 74n37
Protrepticus
124.18 269n226

Menander Rhetor
333.12 13n59
336.25–337.32 13n58
337.5 13n58, n59
337.22 ff. 13n58
337.23 13
337.25–26 14n65

Nicomachus
Introductio Arithmetica
21–24 178n58

Olympiodorus
In Alcibiadem
56.14–22 277n267

In Gorgiam
V 12.1 275n257
Oracula Chaldaica
fr. 37.7–9 232n55
fr. 46 257n163
fr. 54 52n151

Parmenides
frg. 1 256n160, 261n187
frg. 4 256n160, 261n187

Philo of Alexandria
De aeternitate mundi
41.6 56n169
Quis heres
156.2 56n169

Philoponus
De aeternitate mundi
509.11 ff. 124–125n270
633.14–636.2 210n197
In Analytica posteriora
300.25–30 268n220
In Analytica priora
40.15 ff. 142n342
In Aristotelis Physica
207.19 ff. 25n24
In De anima
4.6–7 147n371
In De generatione et corruptione
1.19 ff. 124–125n270

Plato
Critias
106a 13n60
106a1–3 12n53
106a3–4 12n54
106a3–b7 12n52
106a4 281n281
106 b1 12n52
106 b2–3 12n52
107d5–e3 270n229
107d6–8 247n117
108b4–5 12n52
Epistulae
VII 244
VII 343a1 244n100
VII 344d 21n11
Gorgias
473b10 240n86
473d1 114n219
Leges
II 667c9 251n132
II 668a6 251n132
IV 722d3–e1 11n51
IV 722e7 ff. 11–12n51
V 734e3–5 11n51
VI 753e6 74n37
VI 773d5 ff. 11–12n51
X 22 and n16, 25, 35 and n83, 56
X 886c 209n194
X 888e–889e 36n87
X 889a4–e2 22
X 889b1–5 61n198
X 889c5–6 56n168
X 891b–899d 36n85
X 891c 36n86
X 891b8–892c7 21
X 891c–892c 21, 23, 55
X 891c7 36
X 892a–c 36n87
X 892b3 ff. 25n30
X 892b3–8 56n168
X 892b6–7 35–36
X 893b4 ff. 194n130
X 896b4–8 61n198
X 899b2 ff. 206
X 908b 77n52
XI 925e6 ff. 11–12n51
XI 931a2 61n198
XI 931e1 61n198
XII 967a7–d2 61n198
Lysis
214b 21n11
Parmenides
135bc 100
135b3 78n57
135b5–c3 103n171

Plato, *Parmenides* (*continued*)
137b 73n35
137c ff. 280n277
142a 244n101
149d5–6 41n108
Phaedo
66c2 86n94
74a9 ff. 103n171
78b ff. 75n41
92d1 ff. 248
92d2 248
92d6 248
96a6 ff. 21
97c–99d 23
98c2–99b4 174–175
99d–102a 223n15
99e6–100a1 251
108c ff. 265n197
109b4–110b2 265n197
109c5 268n220
Phaedrus
237bc 88n104
245e4–5 61n198
246c6–d2 209n194
247c3 ff. 259n177
247d1 ff. 260n186
248b6 259n177
249b–c 147n371
257b2 284n304
264c 277n266
265c–266d 76n45
266d7–9 11n50
270a ff. 21
Philebus
23cd 77
27b1 77n56
59a 21n12
65d 259n177
Politicus
258b–268d 76n45
269d7 f. 124–125n270
272d ff. 22
272e 61
272e6 22
274e–end 76n45
Protagoras
312b–319c 252n135
315c 21n11
316e 196n139
Respublica
V 466c2 f. 74n37
V 475e4 130n293
V 476e6–478e6 90n109
V 477d ff. 100n158
V 479d7–9 151n389
VI 507b ff. 260n182
VI 508e1–509d5 90n109
VI 509d 257n163
VI 509d ff. 84
VI 509e6–511e5 90n109
VI 510 134
VI 510c 96
VI 510c1–d3 69, 93n127
VI 510d5–511a1 258n171
VI 511d–e 151n386
VI 511e 250n129
VI 511e1 257n163
VII 187, 265
VII 516b5 242n89
VII 531d7–8 11n50
VII 532d7 11n50
VII 533b6–c5 93n127
VII 533c7 134, 260n186
VII 534a 250n129
VII 534a3–5 230n45
X 596b 252n135
X 596b ff. 251
X 597a 181n68
X 597e3–4 252n136
X 599d2 252n136
X 602c2 252n136
X 611d7–612a4 90n109
Sophista
216a–232a 76n45
226d 77n52
229b7 80n71
235c8 ff. 251n132
235d6 251n132
236b2 251n132
254e ff. 82n81
263e3–8 252n138, 289n328
264c5 251n132
265c 23

265c–e 21
265c2 61n198
265e 26
265e3 56
266d9 251n132
Symposium
177d5 284n304
202e3–4 237n72
Theaetetus
144a8 194n129
162e 249n123
164e2 284n304
173e6 269n223
185–187 145n355
189e6–190a2 252n138, 289n328
191c8–e1 57
201c8 ff. 150
208d5–9 233n59
Timaeus
17a–27b 165n6
17a–44d 5
17b5–20c3 15n68
17b5–25d6 8n35
18d 21n13
19d–20a 228n39
20a 21n13
20c4–26d6 15n68
21a 13n60
22c 285
27a4 45n122
27b6 130n291
27c 13n60
27c1 11
27c1–2 141
27c1–d1 282
27c1–29d3 10, 11, 67
27c1–31b3 5
27c4 45n122
27c4–5 68n5
27c5 74
27c6–d1 282
27d ff. 223n15
27d–29d 14n62
27d1–4 12, 282
27d2–4 282
27d5 75n42, 80, 80n70, 229, 282, 283, 283n295
27d5 ff. 257
27d5–28b5 5, 112
27d5–29d3 14
27d6 101
27d6–28a1 75n43, 106n182
27d6–28a4 72
28a 81, 242
28ab 118n241
28a1–4 252n137, 256, 257n165
28a4–6 72
28a6 73
28a6–b2 72
28b 115n220, 124n268, 288n320
28b2 295n357
28b2–4 72, 111
28b3–6 74
28b4–29b1 136
28b5–29d6 5
28b7 120
28b7–c2 73, 84n88, 138n322, 139n327
28c 83n83
28c2–3 117–118n238
28c2–5 73
28c5–29a2 155n402
28c5–29b1 73
29ab 257n165
29a2 f. 74
29a2–4 155n403, n405, 158
29a4–5 158, 288n321
29b 21n13, 130, 229n43, 242–243n92, 247, 276
29bc 230
29b1 231n50

Plato, *Timaeus* (*continued*)
29b1–2 155n404, 231, 231n48, 231n50
29b2–3 227
29b3 45n122
29b3 ff. 193–194n127, 194
29b3–4 229
29b3–c2 252n137
29b3–d3 137, 153, 219, 220, 220–221n8, 221, 222, 224, 227, 229, 230, 234, 235n63, 240n86, 241, 255, 261, 269, 271, 275, 284, 285, 290, 293–294
29b4 80n70, 240n87
29b4–5 227, 228, 229, 234, 234–235n61, 236n68, n69, 237n73, 247–248n118, 276, 279, 295n357
29b4–c2 229n41
29b5–8 243, 244
29b5–c2 240n87, 242, 243
29c 247, 257
29c1–2 245, 246
29c2 219n3, 265n200
29c2–3 255, 259, 260, 261
29c3 139n331, 255, 256n161, 258, 259
29c3 ff. 138
29c4–7 262n189, 263, 263n193, 272
29c6 263n193
29c7–8 234, 253
29c7–d3 262n189, 269n227, 270
29c8 219n3
29d 130
29de 128
29d1 270
29d2 219n3, 221n8, 269
29d4–6 11
29d6 12
29d7 130
29d7–31b3 5
29e1 130n292, 131n297, 286, 288, 288n322
29e4 130n291
30a 61
30a3–6 275n258
30a6–7 286
30b 21n13, 31n61
30b ff. 56n167
30b4 287n314
30b4–5 31n61
30b6–c1 274, 274n251, 286
30b7 219n3, 227n34
30c 9n44
31–32 191
31a3 288n323
31b 140n336
31b ff. 164n3
31b–c 179
31b–34a 69n15, 173
31b–32c 173
31b4 164
31b5 ff. 166
31b5–37c5 166n7
31b8–32a7 173, 174, 190
31c 6
31c–d 192
31c1 174
31c2–3 175n47
31c3–4 175n48
31c4–32a7 63n211, 176
32b 187n98

32b4–5 181
32c–33b 173
32c3 231n50
33a6 287n314
33b–34a 173
34a–b 173, 192
34a–40d 69n15
34a3–8 61n200
34a8 287n314
34b ff. 166
34bc 192
34b–37c 192
34b3 ff. 285n307
34c3 252n137
35a 192
35a1 ff. 287n314
35a1–3 188n101
35b–36b 192
35b4 287n314
36a 246n110
36b–d 145n357, 167, 192
36b6–c1 197
36d–e 192
36e–37c 192
36e2 266n210
37a–c 260n186
37b 274n252
37b6–c1 147n374
37b8 257n167
37b9 255n154
37c6–40e5 205, 205n170
37e1 206
37e1–3 205n171
39–40 168n13
39d4 206n177
39e 288n324
40a7 217
40a7–b4 61n200
40b4 ff. 206n176
40d–e 234n60
40d4–5 208
40d6–7 207n181, 210
40d7 ff. 209
40e–41a 211
40e–44d 211
40e1 210n196, 219n3, 247–248n118, 248
41a ff. 51n148, 238
41a–d 211n201, 238n75
41a3–6 210n197, 210n199
41a6 50n142
41a8 231n50
41b3 231n50
41d 34n75
41e 20, 21, 49
41e1–3 49
41e2 45n122
43b 212
43d 201
44c 212
44d 2, 215n210
45 ff. 214n209
45b 21n13
45d 236n66
46c7 ff. 130n289
46de 22
47a7 45n122
47c 274n252
47e ff. 223, 223n15
47e3 ff. 100n157
48b 21n13
48d2 219n3
50b5–51b6 57
50b6 58n179
50c 58
50c2 58, 58n179
50c5 58
50d4 58n179
50e2 58n179
51b3 58n179
51b6–52a7 103n171
51b6–52b5 100n157, 101
51d6 255n154
52 ff. 169n21
53b5 ff. 166, 191
53c ff. 173n40, 246n108
53d4–7 169n20

Plato, *Timaeus* (*continued*)
53d5 219n3, 227n34
53e3 255n154
55c4–6 246n108
55d5 219n3, 227n34
56a1 219n3
56b 274n252
56b4 219n3, 227n34
56d1 219n3
57d 21n11
57d6 219n3
59c6 219n3
59d1 219n3
59d3 219n3
60b 21n13
62b 21n13
67e5–6 254n150
68b7 219n3
68d2 219n3
70e 188n106
74d 21n13
74e 33n67
74e2–3 33n67
75d 21n13
84c 21n13
90d 21n13
90e8 219n3, 227n34
92b 13n60
92c 277
92c4–9 281n281, 290

Plotinus
Enneads
I 1 [53] 8.7–8 245n103
I 2 [19] 3.28–31 239n82
I 3 [20] 6.2–5 76n50
I 8 [51] 8 194n129
II 9 [33] 8.17–26 232n53
III 7 [45] 4.28–33 232n55
III 8 [30] 2.3 59n186
III 8 [30] 2.30 ff. 59n186
III 8 [30] 3.1–5 35n83
III 8 [30] 3.4–5 59n186
III 8 [30] 4.14–16 27n40
IV 4 [28] 13 57–58
IV 4 [28] 13, esp. 3–4 27n40
IV 4 [28] 13.5–7 58n180
IV 4 [28] 13.8–11 35n83
V 1 [10] 3.7–8 239n82
V 1 [10], esp. 4.11–12 90n113
V 1 [10], esp. 8 35n79
V 3 [49] 5.25–26 254n151
V5 [32] 2.18–21 254n151, 259n176
V 5 [32] 6.15–16 244n101
V 8 [31] 1, esp. 32–39 252n135
V 8 [31] 6.1–9 239n82
V 8 [31] 7.36–47 287n317
VI 1 [42] 1–2 77n54
VI 1 [42] 3 82n81
VI 2 [43] 1, esp 21–28 78n60
VI 2 [43] 8.44–45 82n81
VI 3 [44] 17.19–24 254n150
VI 5 [23] 2.16–19 248n120

Plutarchus
De Iside et Osiride
354C1 181n68
373A 58n182

Porphyrius
In Aristotelis Categorias
8.14 ff. 233n59
58.23–24 237n70
63.7–8 276–77n263
63.20–24 141n340
73.19–20 277n263
73.31–35 277n263
Isagoge
5 82n81
5.1–2 82n81

Proclus
De decem dubitationes
2 267n216

De Providentia
7 32.1–2 113n208
11 60n195, 64n223
11–12 62n203
11–13 41
11 36.8 64n216
11 36.18 45n122, 64n222
11 36.20 62n206
27–32 183n83
112.18–19 (Isaac) 64n222
63 267n216
64 267n216
Elementatio Physica
Deff. II 1–6 97n144
Prop. I 5 218
II 16 218
II 21 217
II 21.16–17 217n217
Elementatio Theologica
(prop. plus line # Dodds)
7 38n94, 47n133, 208n185, 240n85
11 90
15–16 32n65
17 32n65
21 48, 233n59
21.23 43n116
21.24–25 43n116, 48
21.30–33 48
21.32 43n116
21.32–33 48
23 39n100
28 233n59
29–39 32n65
32 232n56, 233n59
45 117–118 n238
64 34n72
74 103n170
75 46n129, 47
103 7n32, 184n88
108–112 32n62
109 38n98
111 29n49, 32, 44
115 90n111
124 267n216
125 233n59
128 54n159
134 282n289
138 90n112
145 9n45
195.10–11 144n354
Hypotyposis astronomicarum positionum
I 1 269n223
In Alcibiadem
10.3–14 278
10.4–19 277n268
22.3–11 252n137
22.10–11 276n263, 279n275
104.8–9 113n211
104.18 ff. 114n217
119.25–27 276n263
169.6–7 175n46
175.19 ff. 113n214
225.4–226.7 296n359
250.5–18 145n357
259.13 ff. 129n287
262.16 157n413
265.12 157n413
277.10–278.13 296n359
280.2–281.14 296n359
In Cratylum
II 195n132
IX 3.10–11 239n82
XVI 5.27–6.2 129n287
XXXVI 11.30–12.17 259n179, 260n182
XLVII 229n43
XLVII 15.29–30 235–236n63
XLVIII, esp. 16.15–17 239n82
XLVIII 16.17 ff. 235n63
XLIX, esp. 17.21–23 237n74
LI 19.22 129n287
LI 19.25 ff. 238n77
LXIII 28.5 260n181

Proclus, *In Cratylum* (*continued*)
lxxi 30.8 ff. 238n77
lxxi 31.29 ff. 238n77
lxxi 32.18 ff. 238n77
lxxi, esp. 33.10–11 237n74
lxxxviii 44.5–8 43n116
xcic 51.9 194n130
cx 60.19 260n181
In Euclidem
3–5 188n101
3.1 187
3.16–4.8 187n100
4.4 181n68
4.9 102n166
4.11–14 238n76, 245n104
4.18 ff. 188n101
9.25 ff. 98n150
11.22 93n128
16–18 189n112
16.16–18.14 186n94
17.22 ff. 151n387
18.17 ff. 133n302
19.20 ff. 191n116
19.20–23 183n84
22.9–16 196n139
22.17 ff. 191n116
22.17–23.11 187n96
22.26–23.2 187n97
23 166n9
30.10–32.20 183n83
31.20 93n128
32.4 102n166
32.21 ff. 79n62
33.21–34.15 249n123
34.1–7 249n125
34.4–7 79n63
34.11 ff. 249n124
35.7 ff. 188n102
36.8–12 186n91, 218
36–37 189n112
57.9–26 291n339
57.18–26 80n73
57.19 93n128
59.10 ff. 181n66
62.18–22 184n85
68.7–9 166n9
68.21–23 166n9
69.9 ff. 80n73
69.17–19 133n302
72.27 ff. 93
75 f. 95
75.6–8 96n140
75.6–10 98n151
75.7 93n128
75.19–20 96n143, 218n218
75.27 92n121
75.27 ff. 94
76.9–15 110n196
76.12–15 94n132
76.16 113n208, n213
76.24–77.6 109n191
82 166n9
82.23–25 188n108
85 ff. 195n133
95.23–96.11 188n102
114.3–14 291n339
121.2–7 188n106
131.9 ff. 93
131.9–19 96n141
131.21 ff. 96n142
141.2–19 188n106
166 166n9
178.1–8 92n121
178.7–8 94n131
181.8–9 110n195
192.9–11 249n123
192.12 248n119
193.20–194.2 109n191
194.8 113n216
195.17 ff. 110n196
195.23–196.14 218n220
196.18–19 115n223
206.12–16 95n138
206.13 76–77n51
210.7–16 291n339
211.23–212.1 79n65
251.23–254.22 140n334
252.5–10 141n337
253.16 ff. 142n342

254.2–3 142n342, 157n413
254.6–20 141n338
255.16 113n210
266.11 ff. 113n211
291.20–294.14 291n339
354.8 92n121
357.9–13 255n155
388.14 92n121
398.25 92n121
In Parmenidem (ref. to Steel with Cousin in parenthesis if different)
625.27 ff. (37 ff.) 238n79
625.27–627.26 (625.37–627.39) 277–278n268
635.21 ff. (31 ff.) 195n132
641.1 ff. 9n42
641.1–643.4 (–5) 10n49
644.1–645.6 (–645.8) 277–278n268
646.16 ff. (21 ff.) 198n146
659.9–14 (12–19) 277n267
687.10–11 (13–15) 239n82
703.13–14 (18–19) 48n137
703.13–16 (18–22) 63n211
714.17–20 (23–28) 233n59
731.22–732.5 (731.30–732.6) 64n220
735.12 (17–18) 33n67
743.8–14 (11–21) 240n84
745.2–3 232n52
746.5–7 (6–9) 240n84
784.20 (27–28) 104n174
785.4–797.2 (.3) 104n174
791.21–795.6 (791.29–795.8) 44n117
792.16 ff. (20 ff.) 64n218
793.15–794.4 (793.22–795.5) 44
793.21–22 (31–32) 63n210
794.2–3 (3–4) 44
794.2–8 (3–11) 47n135
794.8–16 (11–23) 45n123
794.12–13 (17–18) 45
794.13–15 (20–22) 47n134
794.16–795.6 (794.23–795.8) 46n132
794.18–19 (26–27) 46
795.2–6 (–8) 50n144
795.23–25 (34–36) 60n193
795.24–25 (35–36) 46n130
809.11–15 (17–19) 253n139
816.12–14 (17–20) 240n85
816.18–20 (26–30) 240n84
819.22–820.24 (819.30–37) 33n70
820.2–3 (2–5) 33n70
820.4–5 (5–6) 33n70
820.15 ff. (23 ff.) 33n70
821.1–22 (820.38–821.33) 50n145
821.4 ff. (5 ff.) 51n148
821.10–14 (14–20) 51n148
827.19–829.14 (827.27–829.21) 252n135
828.19–28 (26–40) 269n223
837.29–840.7 (839.37–840.9) 58n183
838.26–839.5 (838.34–839.6) 283n292
841.2–10 (1–14) 59n185
841.7–11 (8–14) 48n136
841.25–26 (32–33) 59
844.1 ff. (11 ff.) 282n289
849.13–853.9 (849.16–853.12) 235n63, 250n126
851.6–7 (8–9) 239n82

Proclus, *In Parmenidem* (*continued*)
852.6–9 (7–11) 239n83
852.25–29 (32–37) 250n127
853.1–9 (–12) 238n75
880.10–11 (14–16) 233n59
883.22–23 (–29) 64n221
884.7–8 (9–10) 59n184
884.9–18 (12–25) 57n177
884.11 (14) 59
885.8 ff. 233n59
889.18–21 (24–27) 64n221
892.15–895.1 (892.17–895.1) 147n372
893.7–14 (7–17) 145n356
893.9–21 (11–27) 64n223
893.14–19 (17–24) 147n372
893.30–894.2 (893.39–894.4) 147n372
894.14–18 (19–23) 147n372
919.28–31 (36–40) 104n172
944.22–24 (27–29) 259n177
946.21–24 (26–30) 260n183
961.18 ff. (19 ff.) 267n216
976.21–31 (26–38) 78n57
978.16–983.14 (978.23–983.18) 100n159
987.21–22 (29–31) 151n390
980.13–982.24 (980.17–982.30) 133n302
980.23 ff. (29 ff.) 81n75
980.25 ff. (33 ff.) 76n51
981.2–3 (3) 76n51
981.18 (24–25) 76n51
982.9–10 (12–13) 80n73
982.9–12 (11–15) 76n51, 87n98
982.20–21 (24–25) 133n303
994.5–7 (6–9) 147n371
994.20–23 (26–30) 240n87, 252n137
994.22–24 (27–29) 259n177
998.6 ff. (7 ff.) 117n236
1000.26 ff. (34 ff.) 120n250
1003.12–22 (16–29) 133n302
1003.16 ff. (21 ff.) 132n298
1007.7–26 (10–34) 120n250
1015.28 ff. (35 ff.) 259n177
1045.22–24 (29–31) 61n196
1045.25–26 (32–33) 61n199
1045.26 (32–35) 49n138
1077.3–4 63n212
1091.19 ff. (24 ff.) 113n214
1092.15–19 (19–24) 113n211
1092.18 (23) 113n212
1092.21 ff. (27 ff.) 113n215
1092.26 f. (34 f.) 113n211
1106.22–23 (28–29) 209n193
1125.9–16 (13–22) 291n340
1129.18–21 (22–26) 184n89
1132.23 ff. (26 ff.) 291n340
1152.9 ff. (12 ff.) 291n340
1167.1 ff. 291n340
1170.11–12 (15–16) 157n413
1173.4–6 (5–7) 209n193
1221.25–31 (32–39) 41n109

In Rempublicam
I 6.1–4 8n35
I 11.9–10 277n267
I 27.13 111n199
I 29.26 157n413

I 30.8 157n413
I 33.19 111n199
I 36.13 111n199
I 77.13–19 232n54
I 77.13–28 280n276
I 86.5 279n274
I 91.19 197n141
I 95.2–7 33n69
I 111.22 245n103
I 164.13–21 136n315
I 185.16 248n121
I 263.15 ff. 147n371
I 263.19 151n389
I 263.19–20 147n369
I 283.2 ff. 98n151
I 283.11–12 136n316
I 284.5 255n153
I 287.24 148n377
II 9.26 111n199
II 11.12 111n199
II 12.13 ff. 33n70
II 13.1–3 62n203
II 86.4–87.6 252n135
II 150.19–23 52n154
II 150.21–22 51–52n149
II 255.25 209n193
II 281.4 269n226
II 284.4–7 271n238
II 340.29 248n121
II 354.27 236n65
II 354.27 ff. 248n118
II 355.5 248n121
II 356.6–8 62n203
II 357.7–27 34n76
II 357.11–27 28n46
II 357.22–26 36n88
II 357.23 37n89
II 357.26–27 62n203

In Timaeum

I 1.4–5 67n1
I 1.4–8 7n33
I 1.8–16 8n40
I 1.17–24 7n33
I 1.23–24 19n4
I 2.1–9 8n39
I 2.1–4.5 69n17, 121n257, 124n267, 272n241
I 2.7–8 19
I 2.15 ff. 8n38
I 2.15–29 62n205
I 2.20–26 45n126
I 2.23–24 45
I 2.29 ff. 19n4, 206n175
I 2.29–3.4 10n48
I 2.29–3.13 9n41
I 2.29–4.5 164n2
I 3.14 294n352
I 4.1–5 9n42
I 4.7–25 246n107
I 4.7–26 8n35, 165n6
I 4.25–26 165n6
I 4.26–29 128n282
I 6.7–21 215n210
I 6.23–24 1n2
I 7.5 294n352
I 7.26–31 102n168
I 8.2–5 9n43
I 8.4–13 276n261
I 8.5–8 55n163
I 8.9–10 278n271
I 8.9–13 279n274
I 8.13 9n45
I 8.13–29 186n95
I 8.22 196n137
I 8.30–9.24 277–278n268
I 9.15–17 284n304
I 9.15–22 281n284
I 9.31–10.2 20n7
I 9.31–12.25 19, 24
I 10.4–5 24n20
I 10.5–6 25n24
I 10.6–7 25n25
I 10.7–9 25n27, 35n84
I 10.9–10 35n81
I 10.9–12 25n31
I 10.10–11 25n32
I 10.12 26n33
I 10.12–13 26n34
I 10.13 ff. 35n82
I 10.14 25n28
I 10.16–21 28n45, 32n64

Proclus, *In Timaeum* (*continued*)
I 10.18–19 47n133
I 10.19–21 38n93
I 10.21 294n352
I 10.22–23 37
I 10.23–24 37
I 10.24 33–34n71
I 10.24–11.5 29n48
I 10.25 39
I 10.28 39
I 11.9 ff. 55n160
I 11.9–13 55n162
I 11.11 38n96
I 11.12 63n214
I 11.13–15 55n163
I 11.15–30 60n195
I 11.16–17 63
I 11.18–19 65
I 11.21 51–52n149
I 11.23–25 33n67
I 12.1–5 281n282
I 12.3 43n115
I 12.10–25 56n172
I 12.13 59n187
I 12.16 59n187
I 12.19 29
I 12.19–21 29n48
I 12.21 59n187
I 12.21–23 60n189
I 12.23–25 60n191
I 12.26–30 65n226
I 12.30–13.4 9n44
I 13.4 ff. 9n45
I 13.4–11 2n3
I 13.13–14 45n122
I 13.14–19 2n3
I 13.26–28 165n6
I 14.5 ff. 277–278n268
I 19.23 1n2, 199n151
I 19.25 165n6
I 23.11–16 281n283
I 29.11–13 277n267
I 26.21–73.21 15n68
I 27.27 64n219, 199n151
I 29.7–9 284n304
I 30.2–15 165n6
I 30.11–15 246n107
I 30.15–18 165n6
I 34.13 f. 44n120
I 49.17 64n219
I 51.25–52.1 62n208
I 51.27 43n116
I 51.28 64n219, 199n151
I 55.5 ff. 281n284
I 57.31–59.6 281n284
I 62.5–63.12 281n284
I 63.8–9 246n108
I 73.16–21 280n276
I 73.23–196.29 15n68
I 78.1 ff. 63
I 83.29 1n2
I 87.6 ff. 9n45
I 132.17–18 1n2
I 132.28 ff. 32
I 142.23 47n135
I 143.17–18 64n220
I 143.19–22 56n172
I 148.4–5 64n219
I 148.6 64n219
I 168.26 113n209
I 199.31–200.3 281n284
I 200.2–3 281n285
I 202.15 f. 269n223
I 203.15–204.16 102n168
I 204–355 5, 10, 67
I 204.3 ff. 206n175
I 204.4 161n425
I 204.8 161n425
I 204.8–12 1n1, 9n43, 15n67, 276n262, 279n275
I 205.16 ff. 63n209
I 206.26–27 14n65
I 206.26–207.2 282n286
I 214.19–20 67n3
I 214.23–26 282n286, 282n288
I 217.18–19 68n5
I 217.18–25 67n4
I 217.18–27 69n17
I 217.18–28 10n48

I 217.23–24 45n122
I 217.25 161n425
I 217.25–27 9n43
I 217.28 ff. 284n302
I 218.13–28 238n78, 284n302
I 219.21 ff. 68n6
I 219.23 161n425
I 219.23–31 73n35, 228n37
I 221.1 296
I 221.1–8 282n287
I 222.3–6 282n290
I 222.11–15 282n289
I 222.17–20 284n304
I 222.17–223.2 283n294
I 223.5 283n299
I 223.5 ff. 75n42
I 223.11–12 283n299
I 223.16–30 188n102
I 223.18 f. 283n298
I 223.24 283n298
I 223.24–30 283n296
I 223.26 283n298
I 223.26 ff. 283n298
I 223.30 283n298
I 224.10 76n47
I 224.12–13 76n47
I 224.17–227.3 76n48
I 224.25–29 78n61
I 225.24–226.2 78n58
I 226.2–7 77n56
I 226.7 ff. 77n56
I 226.22 107n186
I 226.22 ff. 85n89
I 226.22–227.3 68n7, 68n8
I 226.23–29 78n59
I 226.24–29 91n120
I 226.26 ff. 68n9
I 226.27–28 75n40
I 227.6–274.32 5
I 227.13 83n83
I 227.13–18 81n74
I 227.19 88
I 227.19–20 87n99
I 227.20–21 88n103
I 227.21–22 88n102
I 227.23–24 89n106
I 227.24–229.11 89n107
I 227.24–228.7 90n109
I 228.7–11 90n110
I 228.11 90n114
I 228.11–25 90n115
I 228.12 113n207, 113n213
I 228.25 ff. 85n89
I 228.25–26 89n108
I 228.25–28 90n116
I 228.25–229.11 68n7, 68n9
I 228.26–27 91n118
I 228.28–30 100n156
I 228.30 161n425
I 228.30 f. 98n148
I 228.30–229.3 90n116, 99n152
I 229.1 ff. 85n89
I 229.1–3 91n119
I 229.1–5 100n156
I 229.2–3 110n197
I 229.5–7 100n160
I 229.7–9 100n161
I 229.9–11 100n156, 101n164
I 229.11 ff. 72n31, 101n162, 103n170
I 229.26–230.4 101n162
I 235.32 ff. 85n89
I 235.32–236.13 75, 148n376
I 236 115n220
I 236–237 90n116
I 236.8 ff. 136n319
I 236.8–13 118n239
I 236.8–237.9 68n7, 68n12
I 236.10–27 126n273
I 236.11 68n9
I 236.14 110n197
I 236.15–28 71n26
I 236.17 161n425
I 236.20 161n425
I 236.21–27 72n29
I 236.23–24 115n220
I 236.26–27 129
I 236.28 ff. 104

Proclus, *In Timaeum* (*continued*)
I 236.28–32 104n176
I 236.30–237.3 99n153
I 236.32–237 99n154
I 236.32–237.3 98n149, 105n178
I 237.3 ff. 206n175
I 237.3–8 100n156, 101n165
I 237.3–9 161n425
I 237.9–16 126n273, 136n320
I 237.12–13 115n222
I 237.17 ff. 97n145, 218n219
I 237.21 1n2
I 237.30–31 91n117
I 238.5 ff. 72n31
I 239.17–20 72n31
I 240.13–243.2 81n76
I 241.31–242.2 81n77
I 242.3 ff. 82n79
I 242.5–10 82n81
I 242.12–13 83n82
I 242.16–18 110n197
I 242.16–19 85n89, 107n186
I 242.17 85n89
I 242.19–21 86n94
I 242.21 ff. 95n138
I 242.21–24 85n91, 107n186, 110n197
I 242.26 107n183, 134n304
I 242.26–27 85n92
I 243.13 87n97
I 243.26–258.8 81n76
I 246.10–248.6 150n384
I 247.1–2 151n386, 258n172
I 247.3 ff. 150n384
I 248.7 ff. 145, 188n102
I 248.8–10 146n363
I 248.11–13 146n366
I 248.14–15 151n387
I 248.18–19 146n366
I 248.20 145n359
I 248.21 145n359
I 249.4–5 151n386
I 249.4–8 150n385
I 249.9–10 146n366
I 249.21–22 146n365
I 249.29 146n368
I 251.5 ff. 146n366
I 251.17–18 148n379
I 251.22–23 151n389
I 251.28 146n366
I 254.16 87n97
I 255 84n87
I 255.29–256.5 84n87
I 256.30 ff. 142n343, 149n381
I 256.30–257.2 149n382
I 257.2–11 150n383
I 257.5–6 29n52
I 257.5–8 30
I 257.6–11 29
I 257.8 150n383
I 257.8–9 30n53
I 257.9–11 30n56
I 257.10–11 38n97
I 257.14 ff. 258n173
I 257.14–22 149n380
I 257.19–21 258n169
I 258.9–264.3 115n220
I 258.12 87n97
I 258.12 ff. 79n67
I 258.12–16 115n222
I 258.12–23 68n7, 68n10
I 258.13 161
I 258.14 114n219, 161
I 258.15 ff. 115n220
I 258.18–23 80n72
I 258.23–259.4 115n224
I 259.2–4 116n226
I 259.5–6 116n228
I 259.8–14 116n230
I 259.16–27 117n235
I 259.19–20 117n237
I 261.26 f. 31n60
I 261.26–27 55n162, 62n205
I 262.2 111n200

I 262.29 111n200
I 263.5 f. 31n60
I 263.19–264.3 68n7, 68n12, 136n320
I 263.21–23 129n288
I 263.23–27 60n193
I 264.4–272.6 118n241
I 264.10 119
I 264.15 119, 161
I 264.20 119, 161
I 264.15–20 119n244
I 264.23–24 120n248
I 264.24–27 120n251
I 264.27–28 120n248
I 264.27–265.3 121n253, 129n285
I 265.3 ff. 72n32
I 265.3–9 68n7, 68n9, 109n190, 122n259
I 265.6–7 115n220
I 265.7 114n219
I 265.9–266.21 122n260
I 265.15 122n261
I 265.21 122n262
I 265.30–266.1 157n416
I 266.7–9 123n264
I 266.20–21 122n263
I 266.21–268.24 123n265
I 266.25–30 122n258
I 266.30–267.1 119n245
I 268.13–22 45n126
I 269.17 f. 31n61
I 272.7–274.32 124n268
I 272.10 111n201, 124, 126n273
I 272.10–11 125
I 272.10–17 68n7, 68n11
I 272.13–14 125n271
I 272.17 126
I 272.17 ff. 126
I 272.26–27 126
I 272.27–28 124n268
I 272.28–29 126n276
I 273.2 ff. 126n277
I 273.3–4 124n268
I 274.21 ff. 126n273
I 274.21–23 127n279, 129n285
I 274.21–24 110n197
I 274.25 132
I 274.25–31 127n280
I 274.30–32 136n317
I 275–276.7 74n36
I 275.1–334.27 136n318
I 275.1–355.15 5
I 275.3–6 136n317
I 275.3–15 110n197
I 275.14–20 88n104
I 276.10–19 129n286, 132n299
I 276.14 ff. 129n287
I 276.20 75n40
I 280–282 142n344
I 282.27–283.9 139n328, 159n420
I 282.27–283.11 289n333
I 282.27–283.12 288n320
I 282.31–283.1 289n329
I 283 140
I 283.4 289n332
I 283.9 ff. 139n330
I 283.11–19 68n7, 68n12
I 283.12–19 84n88
I 283.15–18 140n332
I 283.15–19 107n186, 110n197
I 285.17 239n83
I 285.21 ff. 130n291
I 289.15 161n425
I 291.26–28 31n61
I 292.19 ff. 84n88, 107n186, 110n197
I 292.19–21 140n336
I 292.22–24 143n350
I 292.26–293.5 144n352
I 293.3 146n366
I 293.5 148n377
I 296.13 ff. 117–118n238
I 296.15 ff. 110n197
I 296.15–20 153n398
I 296.15–319.25 152
I 296.20–21 143n351

Proclus, *In Timaeum* (*continued*)
I 298.23–27 57n175, n177
I 299.21–300.13 153n397
I 301.10 64n219
I 302.5–6 302
I 303.19–20 289n332
I 303.24–319.21 153n395
I 303.27 ff. 55n164
I 304.22 ff. 55n164
I 309.8–13 83n83
I 309.9 83n83
I 310.3 ff. 153n397
I 314.14 f. 31n60
I 319.23–334.27 152
I 319.26–334.27 154n199
I 320.25–26 119n246
I 320.26 119n243
I 320.26–29 107n186
I 320.26–321.2 110n197, 154n401
I 320.27–28 87n97
I 321.2–24 120n247
I 321.24–325.12 154n399
I 322.18–323.22 154n400, 232n56
I 323.16 239n83
I 328 162
I 328.16–329.1 156
I 328.16–329.13 155n406
I 328.16–329.17 110n197
I 328.22–24 156n409
I 329.1–7 158n417
I 329.1–13 156
I 329.7–11 158n418
I 329.11–13 158n417
I 329.13–15 155n406
I 329.18–27 156
I 330.12–19 288n321
I 330.13 159
I 332.6–9 68n7, 68n13
I 334.18–27 284n304, 285
I 334.30–335.12 231
I 334.30–337.5 231n48
I 335.6 232n56
I 335.8–12 231n49
I 335.19 ff. 231n48
I 335.19–28 232n56
I 335.26–28 232n53
I 336.26–29 240n85
I 336.28–29 232n56
I 337.3–7 136n319, 231n50
I 337.8–338.19 74n36
I 337.8–339.2 230n44
I 337.10 ff. 130n290
I 337.15–17 136n319
I 337.24–25 1n2
I 337.25 199n151
I 337.29–31 227n35
I 337.29–338.4 86n96
I 337.29–338.5 86n96
I 337.31–338.2 228n37
I 338.2–4 110n197, 227n36
I 338.4–5 228n38
I 338.5 228n37, 280n278
I 338.5–7 284n304
I 338.8–9 74n37
I 338.9–339.1 247n114
I 338.22–23 86n95
I 338.23–24 45n122
I 338.24–25 1n2
I 338.26–27 227n35
I 338.27 86n96
I 338.27–28 86n96, 110n197, 227n36
I 338.27–339.2 228n37, 256n158
I 338.28–339.2 86–87n96, 271n238
I 338.29 247n116
I 339.3–353.29 219
I 339.5 229n42, 236
I 339.5–6 229n43
I 339.5–18 230n46
I 339.8 229n41
I 339.10–13 229n41
I 339.14 229n42
I 339.15 256n159
I 339.18–29 228, 284n305
I 339.21 ff. 284n304
I 339.29–340.1 295n356

I 340.1 45n122
I 340.1–4 232n52
I 340.5–7 232n53
I 340.7–9 232n54
I 340.9–13 232n55
I 340.16–23 220n7, 279n273
I 340.18–19 237n73
I 340.22 229n42, 236n64
I 340.22–23 235n62
I 340.23 ff. 234n61
I 340.25 ff. 271n238
I 340.26 227n33
I 340.27 247n114
I 340.30 247n114
I 341.4 229n42, 234–235n61
I 341.5–6 236n65
I 341.6 229n42, 236n64
I 341.6–9 244n99
I 341.6–11 236n67
I 341.10 229n42, 236n64
I 341.11–21 236
I 341.11–24 236n68
I 341.18 237n73
I 341.18 ff. 237n73
I 341.19–20 229n42, 236n64
I 341.19–21 237n74
I 341.22–24 220n7, 279n273
I 342.3–7 242n91
I 342.7–8 253n142
I 342.7–12 243n93
I 342.13 229n42, 247n114
I 342.14 247n116
I 342.15–16 243n95
I 342.16 243n94
I 342.19–21 243n96
I 342.21–25 244n97
I 342.25 247n115, 253n142
I 342.25–26 253n143
I 342.27 247n115
I 342.27–343.1 254
I 342.27–343.15 253n144
I 343–344 260n183
I 343.1–2 236n65, 254
I 343.2 254
I 343.3 253n142, 254n146
I 343.3–4 254n147
I 343.3–15 255n152
I 343.4 247n115
I 343.7 247n115
I 343.18–19 247n113
I 343.18–22 250n130
I 343.18–344.18 233n58
I 343.21–27 251n131
I 343.25 276n263
I 343.27 276n263
I 343.27–344.5 251n133
I 343.29 251n134
I 344.1–5 252n136
I 344.8–18 252n135
I 344.22–24 233n57
I 344.28–345.7 68n7, 68n9, 255n155
I 345.1 271n238
I 345.2–3 257n165
I 345.6 ff. 89n89
I 345.15 ff. 256n160
I 346.1 256n160
I 346.1–2 256n160
I 346.3 257n164, 261n187
I 346.6–8 257n164
I 346.8–12 258n168
I 346.9 260
I 346.10 260, 261n187
I 346.11–12 260
I 346.12–13 261n187
I 346.14 247n114
I 346.14–15 261n187
I 346.16 247n114
I 346.17 247n114
I 346.18–20 261n187
I 346.18–21 241n88, 265n202
I 346.19 247n114

Proclus, *In Timaeum* (*continued*)
I 346.21–29 269n225
I 346.21–31 266n203, 268n221
I 346.27–29 266n204
I 346.29 247n116
I 346.31–347.1 68n13
I 347.1–2 266n205
I 347.6 247n115
I 347.12–16 161n425
I 347.20 260
I 347.20 ff. 256n160
I 347.20–348.3 260n182
I 347.27–28 259n177
I 347.29 260
I 347.29–348.6 260n184
I 347.30 260
I 348.3–7 261n188
I 348.4–5 257n164
I 348.8–351.14 262n189
I 348.13 126n273
I 348.13 ff. 68n7, 68n12, 136n320
I 348.13–15 72n29, 110n197
I 348.16–20 272n243
I 348.18 247n114
I 348.20–25 272n244
I 348.25–27 273n246
I 348.27 247n115
I 348.27–349.3 273n249
I 348.27–349.5 273n250, 286n310
I 348.30–349.5 270n237
I 349.6 247n114
I 349.6–350.8 168n13, 263n193
I 349.7 247n114
I 349.9 247n114
I 349.11 247n114
I 349.14 247n114, 247n115
I 349.15 247n115
I 349.24 247n114
I 349.24 ff. 188n102
I 349.31 247n114
I 349.30 264
I 350.1 264
I 350.1–8 264
I 350.8–12 271n239
I 350.8–20 183n83
I 350.12–20 272n242
I 350.30 247n114
I 351.3 247n114
I 351.15–353.29 262n189
I 351.20 247n114, 247n116
I 351.20–21 1n2
I 351.20–27 242n90, 262n191
I 351.25 247n115
I 351.29–30 268n218
I 351.30–352.1 266n209
I 352.1 266n207
I 352.1–2 269n226
I 352.1–5 267n214
I 352.3–353.11 267n216
I 352.5–8 268n218
I 352.11–16 267n215
I 352.12 247n116
I 352.19–24 267n217
I 352.24–27 268n218
I 352.29–30 265n201, 268n219
I 352.30 247n114
I 352.32–353.1 267n217
I 353.1–3 241n88, 268n222
I 353.2 248n122
I 353.3–5 248n122, 268n221
I 353.5–7 268n220
I 353.6 266n206, 266n207
I 353.7–11 269n223
I 353.17–22 253n140
I 353.22–23 268n218
I 353.22–29 269n227
I 353.23–24 268n220
I 353.26–29 270n235
I 354.19–20 281n284
I 354.27–355.4 14n65
I 355.2–3 14n64
I 355.4–9 12

I 355.18–458.11 5
I 355.23–28 14n66
I 355.24 ff. 110n197
I 355.24–25 68n7, 68n12, 136n320
I 355.25–26 71n25
I 355.25–28 219n2, 271n238
I 355.28 284n305
I 355.28–356.1 284n306
I 356.16–357.2 128n284
I 356.28–29 128n283
I 357.11–12 130n293
I 359 ff. 131n297
I 359.22 ff. 130
I 360.5–14 287–288n318, 288n322
I 360.13 288n319
I 360.14 289n331, 289n332
I 360.15–26 130n294
I 370.13 ff. 288n322
I 370.17 289n330
I 370.18 ff. 289n333
I 373.7 ff. 28n47
I 381.26 ff. 61n202
I 383.5–12 62n204
I 383.7 61n202
I 383.11 61n202
I 384.19 f. 77n55
I 386.13 ff. 31n60
I 389.5–15 62n203
I 389.8–9 45n126
I 391.1–4 1n1
I 401.25 ff. 34n77
I 401.26–28 62n204
I 406.31–407.1 34n74
I 404.7–21 119n246
I 407.13–17 34n73
I 410.3–7 272n244
I 410.11–19 242n90, 274n254
I 410.13 275n260
I 410.20 ff. 274n255
I 410.20–411.2 286n312
I 423.24–29 281n284
I 429.6 62n206
I 433.11–22 290n337
I 438.20 288n319
I 438.20–439.1 288n323, 289n333
I 438.23–24 289n328
I 438.24–28 289n327
I 438.27 289n332
I 438.28–439.1 290n334
I 454.23 31n60

II 166n7
II 1–52.14 173n42
II.4.4 ff. 84n88, 140n336
II 4.4–16 87n97
II 4.16 ff. 142n343, 149n382
II 4.17–20 142n345
II 4.20–5.17 142n345
II 7.18–21 288n320
II 7.18–31 68n7, 72n28
II 11 49n138
II 13.3–6 179n62
II 13.15–56.11 69n15
II 15.12–17 174n43
II 15.12–25 63n211
II 15.17–25 64n223
II 15.21 64n219
II 15.23–24 174n45
II 15.24 174n45
II 15.25 174n45
II 15.25–30 174n44
II 15.30 174n45
II 16.1–13 175n48
II 16.3 175n48
II 16.5–7 175n48
II 16.6 ff. 190
II 16.8 174n44
II 16.13 174n44, 174n45
II 18.22–19.3 175n49
II 18.29–30 192
II 19.3–5 176n53
II 19.5–7 176
II 19.9–30 175n51
II 19.23 174n43
II 19.30–20.4 175n52

Proclus, *In Timaeum* (*continued*)
II 20.19–21 177
II 20.19–28.7 177n56
II 20.20 166n8
II 20.21 ff. 185
II 20.26–27 178
II 22.29–23.5 178n58
II 23 174n43
II 23.6–8 178n59
II 23.9 177n56
II 23.9 ff. 164n4
II 23.9–17 179
II 23.12 1n2
II 23.15–16 184
II 23.16–26 186n95
II 23.25–33 179–180
II 23.28–30 179n64
II 23.28–32 182
II 23.32–33 185
II 24 ff. 178n60
II 24.1 ff. 191n117
II 24.1–6 191n119
II 24.6–11 63n211
II 24.7 43n116
II 24.7–11 31n60
II 24.21 178n61
II 24.30 ff. 191n119
II 25.1–5 178n61
II 25.24 ff. 177n55, 178n57
II 27.1 ff. 85n89
II 27.2 166n8
II 32.1–2 202n164
II 36.20–22 181n71
II 36.20–24 271n238
II 36.20–27 172n33
II 38.22–29 61n201
II 39.16–17 166n8
II 39.18–19 188n103
II 51.5 ff. 189n111, 207n179, 247n114
II 51.5–10 181n69
II 51.10–15 187n98
II 51.12–13 188n104
II 51.15–19 181n69
II 52.15 ff. 189n111
II 53.27 43n116
II 53.27–28 63n211
II 57.25 ff. 205n170
II 24.6–11 63n211
II 72.26 43n116
II 76.24 171n30
II 86.26 43n116
II 96.10–11 61n200
II 98.18 ff. 281n284
II 102.4–316.4 69n15
II 102.27–104.16 285n307
II 105–106 34n73
II 120.23–28 258n168
II 121.25 ff. 216n215
II 139.19 64n219
II 142.2 ff. 31
II 146.5 61n199
II 146.7–8 64n219
II 152.9–20 30n58
II 164.21–23 189n112
II 166.15–211.30 69n15
II 174.15–23 193n126
II 174.22 166n8
II 174.23–28 200n156
II 174.28–29 201n158
II 193.8–13 196n136
II 193.8–194.4 196n136
II 193.9 194
II 195.11–17 195n134
II 195.22–24 196n137
II 206.13–14 194n131
II 208.20 ff. 196n138
II 211.10–30 196n138
II 211.15–16 195n134
II 212.3 ff. 199n153
II 212.3–4 194–195n131
II 212.5–9 200n157
II 213.8 194n131
II 214.30 ff. 201n160
II 218.9–10 200n157
II 237.8–279.18 145n357
II 237.11 f. 194n131
II 237.13–15 201n159
II 238.10–12 194n131
II 238.25–239.16 189n112
II 239.5–16 186n94
II 241.22–242.1 146n364

II 245.25 ff. 184n89
II 246.4–9 197
II 249.9 245n103
II 249.31 ff. 200n155
II 250.10 200
II 254.12 64n219
II 256.29 ff. 246n110
II 266.1 205n170
II 278.27 ff. 200n155
II 278.30 200
II 279.3–4 166n9
II 287.1–5 259n179
II 287.3–5 259n175
II 287.9–10 259n180
II 290.6–17 206n177
II 296.19 ff. 41n109
II 297.2–4 41n109
II 298.29–31 145n357
II 300.21 f. 31n60
II 310.3–10 107n184, 147n374
II 310.10 257n167
II 315.6–10 257n167
II 315.21 ff. 259n179

III 1–161 205n170
III 1.5–161.6 205
III 6.4 ff. 31n60
III 15.22 ff. 72n31
III 28.3 197n141
III 28.18 f. 31n60
III 34.14–36.33 205n171
III 34.19–23 206n172
III 36.4–5 206n173
III 36.28–29 206n174, 207n178
III 40.18 208n188
III 65.17–20 44n120
III 69.15 f. 44n120
III 97.1 214n209
III 104.27–105.15 288n324, 289n333
III 104.30–31 279n274
III 105.2–4 290n335
III 105.4–6 245n102, 290n336
III 114.19–23 260n182
III 115.23–27 31n60, 32n63, 38n98
III 115.26 43n116
III 119.11–126.5 61n200
III 119.17–23 217
III 119.24–26 61n200
III 129.16–27 206n177
III 129.16–130.3 206n176
III 152.5 ff. 207n182
III 152.16–19 208n183
III 152.31–153.18 208n185
III 153.1–4 208n186
III 153.17–21 208n189
III 153.28–154.3 210n198
III 153.31–32 1n2
III 156.6–21 208n187
III 156.22–23 209n190
III 156.26–29 209n190
III 157.9–10 209n192
III 160.5–12 210n196
III 160.7–12 234n60, 247n118, 271n238
III 162–197.26 213
III 162.1 ff. 211n200
III 162.15 42n112
III 173.2 ff. 9n45
III 188.5–11 64n220
III 188.7 64n219
III 188.28 64n219
III 191.7 64n221
III 193.30 f. 31n60
III 194.3 64n219
III 194.31 ff. 210n197, 210n199
III 197.26–199.12 238n75
III 197.30–31 63n213
III 197.31 43n116
III 198.6–16 238n79
III 198.11–16 31n60
III 198.13–14 38n95
III 199.13 ff. 50n142
III 199.14–200.27 211n203
III 199.29–200.27 211n201
III 242.8–244.8 238n75
III 242.9–10 211n202
III 243.5–13 244n101

Proclus, *In Timaeum* (*continued*)
III 244.12–22 244n100
III 244.27 244n100
III 248.24 ff. 34n78
III 249.12–20 52n153, 61n199
III 249.19–20 53n158
III 249.21 ff. 77n52
III 249.27 ff. 34n75
III 254.27–31 81n77
III 266.9–14 50n139
III 270.16–19 50n140
III 270.16–271.27 31n60
III 270.19–21 50n141
III 270.21–23 50n143
III 270.24–25 51n146
III 270.25–31 50n145
III 270.32 51n147
III 271.1–8 65n225
III 271.1–12 51n149
III 271.12 53n156
III 271.22–24 52n155
III 271.28–275.24 62n203
III 273.6 43n116
III 275.18–19 51n146
III 277 269n223
III 286.30 146n363
III 308.20–24 207n180
III 323.9 64n219
III 323.16–324.3 212n204
III 323.27–31 212n205
III 335.26–27 232n52
III 336.3–340.27 201n161
III 336.24–25 201n161
III 337.25–27 202n162
III 353.13–22 212n206
III 355.7–19 212n207
III 355.16 44n120
III 356.17–22 273n247
Theologia Platonica
I 3 10n46
I 4 10n46, 69n14, 194, 198 and n144, 246n111
I 4 17.18–24 198n145
I 4 17.20 198n148
I 4 19.6–13 199n150
I 4 19.10–11 198n148
I 4 19.11 198n148
I 4 19.12–13 199n152
I 4 19.14–17 166n9
I 4 19.20–21 199n152
I 4 20.1–5 198n149
I 4 20.2 196n137
I 7 32.6–12 280n277
I 8 32.14–18 2n3
I 8 32.16–18 7n33
I 9 34.15 195n132
I 9 40.6–8 133n302
I 9 40.10–12 76n51, 87n98
I 10 43.26 209n193
I 10 45.20–22 114n218
I 10 46.2 ff. 287n317, 288n325
I 10 46.2–9 276n263
I 11 53.9–10 288n325
I 15 75.22–23 63n215
I 15 76.20–21 30n56
I 21 259n175
I 21 97.17–18 260n185
I 21 97.17–21 260n183
I 21 98.7–12 267n216
I 21 100.8 259n180
I 22 103.26–28 31n60
I 25 109.20 259n180
I 25, esp. 110.17–111.7 257n163
I 27 111.9 287n313
I 29 124.7 ff. 284n300
I 29 124.11–20 284n300
II 10 62.11–13 38n97
II 10 62.12–15 31n60
II 12 66.1–9 136n316
III 2 8.2 f. 31n60
III 2 8.12–20 44n120
III 2 8.19 44n119
III 3 12.8–10 31n60
III 6 23.23 34n72
III 6 25.11 ff. 31n61
III 6 28.3 ff. 31n61
III 15 52.23–54.20 10n47
IV 15 47.7 f. 31n60
IV 20 60.1 ff. 31n61

IV 20 60.2 32
IV 25 74.20 ff. 31n60
IV 31 92.4 ff. 77n52
IV 38 110–111 209n193
V 3 18.7 197n141
V 18 64.3–20 38n98, 63n214
V 18 64.25–65.7 238n78
V 18 65.23–66.2 238n75, n77, n78
V 18 66.2–4 63n213
V 18 66.2–67.13 238n79
V 18 66.12–16 238n78
V esp. 20 72.7–76.12 10n47
V 20 75.10–14 13, 302n1
V 21 18–22 246n112
V 26 98.14 ff. 31n61
V 27 102.6 267n211
V 30 111.22–23 31n61
V 32 51–52n149, 52n153
V 32 117–120 53
V 32 118.1 53
V 32, esp. 118.3–9 50n145
V 32, esp. 119.16–19 62n203
V 32 119.26 53
V 34 123.11 ff. 209n193
V 36 246n110
V 36 131.24 ff. 270n236
V 36 133.11 246n110, 270n233
V 36 133.26 ff. 209n193
VI 42
VI 1 5.14–18 279n274
VI 1 5.18–19 276n263
VI 4 24.13–20 232n56
VI 15 74.21 ff. 40n105
VI 15–24 40n106
VI 22 97.15–17 47n135
VI 22 98.9–10 42n111
VI 24 109.19–114.22 41n108

Seneca
Epistulae
58.13–15 78n61

Sextus Empiricus
Adversus mathematicos
VII 111 256n160
VII 208 ff. 265n199
VII 227–229 58n178
VII 275 284n302
IX 107.4 227n34

Simplicius
In Aristotelis Categorias
6.27–30 10n48
In Aristotelis de Caelo
29.4 157n414
29.4 ff. 156n410
61.6 288n319
280 ff. 124n270
380.25 ff. 62n207
396 265n200
557.26 256n160
585.4–5 60n190
731.25–29 13n59
In Aristotelis Physica
135.9 ff. 77n55
230.36–231.5 58n181
273.35 ff. 25n24
278.20 288n319
298.18 ff. 27n41, 45n123
1359.5 275n257

Syrianus
In Aristotelis Metaphysica
4.37–5.2 149n382
5.2–7 234n60, 247–248n118
12.5 ff. 45n128
12.6 27n41
25.34 269n226
29.35 83n82
39.21 27n41
42.25 247–248n118
46.12 83n82
81.3–5 240n86

Syrianus, *In Aristotelis Metaphysica* (*continued*)
81.33 27n41
88.21 f. 269n223
91 187n99
105.12–14 101n163
113.2–3 27n41
119.6 27n41
137n17 ff. 45n123
147.12 27n41
161.15 ff. 151n390
186.3–5 32n66, 45n128
In Hermogenis librum De Ideis
57.21–23 257n163

Themistius
In Aristotelis Analytica Priora
23.31 140n335

Theophrastus
Fragmenta
51.1.1–3 227n33

Zabarella
De natura logicae
I 15 183n82

Zeno Citieus
SVF
I 171 26n36
II 774 26n36