If, then, therefore? Neoplatonic Exegetical Logic between the Categorical and the Hypothetical

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Abstract

In late antiquity, logic developed into what Ebbesen calls the LAS, the Late Ancient Standard. This paper discusses the Neoplatonic use of LAS, as informed by epistemological and metaphysical concerns. It demonstrates this through an analysis of the late ancient debate about hypothetical and categorical logic as manifest in the practice of syllogizing Platonic dialogues. After an introduction of the Middle Platonist view on Platonic syllogistic as present in Alcinous, this paper presents an overview of its application in the syllogizing practice of Proclus and others. That overview shows that the two types were considered two sides of the same coin, to be used for the appropriate occasions, and both relying on the methods of dialectic as revealing the structure of knowledge and reality. Pragmatics, dialectic, and didactic choices determine which type or combination is selected in syllogizing Plato. So even though there is no specific Neoplatonic logic, there is a specific Neoplatonic use of LAS.

Keywords

Syllogistic – Neoplatonism – commentators – categorical – hypothetical – exegesis

1 Introduction: Neoplatonic Logic?

One of the debates in the history of logic, is if there is such a thing as (Neo)Platonic logic. As Sten Ebbesen says, “there never was such a thing as Neoplatonic logic”, in the sense that there was no logic of a school, rather than a period, representing the preferred theory of reasoning or fitting the

philosophical system of that school (Ebbesen 2007, 140).¹ Instead, he prefers to speak of the Late Ancient Standard, i.e. the set of logical notions and principles that was common in late antiquity, and was passed on to the middle ages. Although LAS cannot, in his view, be qualified as Neoplatonic in any meaningful way, he does identify some “small platonic twists”. He mentions the genus containing the genera, the double imposition of names, and Boethius’ introduction to categorical and hypothetical syllogisms (2007, 140–141). Lloyd, who is probably the first modern scholar to have made an inventory of Neoplatonic features in logic (in a broad sense), and others, like Lee, Martin, and Bobzien, however, have also shown that even if there is no Neoplatonic logic in Ebbesen’s sense, and the logic used in late antiquity is instead an amalgam of Zenonian, Aristotelian, and Stoic elements, that more unmistakably Neoplatonic features are present and worth looking into.² In this paper, I will argue that the views on the differences and relation between categorical and hypothetical syllogisms is a point in case, as they are determined by underlying Neoplatonic epistemological (and hence metaphysical) considerations. To some extent, these considerations differ from one thinker to the next, and even from one context to another, but in general we could say that there is, not surprisingly, a significant correspondence between logical structure and process of knowledge acquisition and metaphysics. My focus will be on post-Iamblichean commentaries, which are richest in their applications of ‘syllogizing’.

The first section is a short introduction on the ancient ‘battle’ between hypothetical and categorical syllogisms, the second presents the Platonists’ view on this matter as discussed in Alcinous. In the third section, the heart of this paper, I will turn to some passages in the commentaries of primarily Proclus, but also Damascius, and Olympiodorus. Proclus is probably the most informative, but also most varied, source for thoughts on our topic, Damascius and Olympiodorus add further perspectives and developments. Together, they exemplify the choices made in syllogizing Plato, especially with respect to this aspect: the difference between hypothetical and categorical syllogisms.³ Of course, on some occasions the Platonic text forced the commentators’ hands, but even in those cases, the arguments used by the commentators to justify Plato’s choices are worth our attention, as they may reveal shared assumptions concerning the nature of syllogisms. Along the way, I will offer some

1 He also suggests that the ideas in question should be relevant to logic (2007, 139) and should not be diffuse (2007, 143).

2 A. C. Lloyd (1962; 1990); G. E. R. Lloyd (1991); Martin (2001); Lee (1984); Bobzien (2016; work in progress).

3 On syllogizing in commentaries on Aristotle’s *De Caelo*, see Dalimier (2000.) Like Dalimier, I consider the syllogizing to be more fundamental than an exercise in logic.

suggestions as to why it makes sense to “invoke the concept of Neoplatonism” (Ebbesen 2007, 152) in cases such as those.

2 Categorical and Hypothetical Syllogisms

In ancient logic, categorical syllogisms are primarily syllogisms consisting of categorical or probative premises, i.e. premises predicating something of something, and a categorical conclusion. To give an example of the most used variety, using universal affirmative premises:

- (1) All seals are mammals.
- (2) All mammals are animals.
- (3) So all seals are animals.

Categorical syllogisms are distinct on the one hand from propositional syllogisms, which connect sentences, rather than terms. On the other hand, the probative aspect distinguishes categorical syllogisms from hypothetical or conditional syllogisms, which contain at least one conditional premise. Best known in this case are the Stoic indemonstrables, which are both propositional and conditional.⁴ The stock example in this case is no doubt the following *modus ponens*:

- (1) If it is day, it is light.
- (2) But it is day.
- (3) Therefore it is light.⁵

The main differences between these two types of syllogisms are that in the former premises connect terms, and in the latter propositions, and that the former consists of categorical, but the latter of hypothetical and categorical statements. This is a straightforward, but also oversimplifying presentation of kinds of ancient syllogistic. All kinds of mixtures and variations exist in our sources, some of which will be discussed below. Moreover, ancient thinkers themselves discussed the mixtures and variations, but also the similarities and differences between these two kinds of syllogism. Theophrastus and Eudemus seem to have provided the first explicit elaboration of the relation, hinted at in Aristotle (*Analytica Priora* (= *An. Pr.* I 44), between categorical and

4 That does not mean that Stoic syllogistic was a sentential or hypothetical syllogistic. On this topic see Bobzien (1996).

5 See further Bobzien (2016).

hypothetical syllogisms.⁶ They do this in the context of the classification of hypothetical syllogisms. Within that category, they distinguish mixed syllogisms from wholly hypothetical syllogisms. In a mixed syllogism, hypothetical and categorical propositions are combined. Under this subcategory we find the abovementioned *modus ponens*, and *modus tollens*, the first Stoic indemonstrables, but also their term logical variations, which go back to Aristotle's *Prior Analytics*.⁷ The wholly hypothetical syllogism has a different structure: in this type of syllogism both premises and conclusion are hypothetical.⁸

After Theophrastus and Eudemus, other thinkers further elaborated the classifications of the different subtypes of hypothetical syllogisms, and tried to further clarify the relation between the different types. In late antiquity, the distinction between propositional and term logic was obscured by the rephrasing of categorical sentences into conditionals.⁹ The most impressive classification is that of Boethius, who distinguishes 24 different varieties of hypothetical syllogism, a result accomplished mainly by distinguishing subtypes on the basis of the shape and combination of the premises (affirmative, negative, mixed or wholly hypothetical, etc).¹⁰

One of the logical questions in late antiquity, as Alexander of Aphrodisias (2nd–3rd c.) mentions in his commentary on the *Topics*, is “Which kind of syllogism is primary, the categorical or the hypothetical?” (*On Aristotle Topics* 111 218.5).¹¹ Being primary, in this context, refers to the underlying question which type can be reduced to which, and hence which has (the most) demonstrative power.

According to Aristotle (*An. Pr.* I 44) hypothetical syllogisms cannot be reduced to the figures (i.e. of categorical syllogisms), because they start from

6 Alex. *An. Pr.* 326.31–2. On this topic see Barnes et al. (1999, 77–83, esp. 78; n.10); Algra et al. (1999) and Specia (2001). On the development of *modus ponens* in the Aristotelian tradition, see Bobzien (2002b). On hypothetical syllogisms in Aristotle see also *An. Pr.* I 23 (mainly on *reductio*) and 29.

7 The other indemonstrables (e.g. disjunction) are also sometimes classified as ‘hypothetical’. See below.

8 For the wholly hypothetical syllogism, see Bobzien (2016, 3.3) on Theophrastus fr. 111 and 112. Barnes et al. (1999, 80) mention that it is not clear whether the Peripatetic logicians assumed wholly hypothetical syllogisms to always be term logic.

9 See Philoponus *In An. Pr.* 243.11–36 and Bobzien (2000, section 10).

10 Bobzien (2002a).

11 See also Malink & Vasudevan (2018, 5). Frede (1974, 30–32) does not consider the debate a pervasive one. The context in Alexander is *Topics* 111 1, about what is more desirable or better. Alexander offers a collection of relevant areas in which this may apply, among which logic, and gives first the question whether induction or syllogism is more convincing, next whether categorical or hypothetical is prior, and finally which schema is first or better.

premisses assented to, not proved deductively.¹² Alexander was quite critical of *Stoic* hypothetical arguments – he thought the good ones are in fact reducible to categorical ones, while all others, especially the wholly hypothetical ones, are rather useless because they don't prove anything.¹³ Or, as Lee argues, elsewhere he mitigates this view and replaces it with another: that hypothetical syllogisms always need categorical ones.¹⁴

Galen, on the other hand, considers the question moot:

But about such disputes it is not important whether you try to solve them or to ignore them; for it is necessary to know both branches of the syllogisms, and this is the useful thing, but to call one kind prior to the other and to teach so, is as each man pleases; but it is not fitting to ignore them.

Institutio Logica 7.3

A second issue relevant in this discussion is what is sometimes called the “Peripatetic program” (Malink & Vasudevan 2018, 1; 5–12), i.e. the merger of Aristotelian¹⁵ and Stoic hypothetical logic, or in polemic terms, the reduction of Stoic hypothetical logic to Aristotelian logic, which we find in Alexander when he presents the Stoic indemonstrables as an invention of Aristotle's, but which in part precedes him (see section 3). Sometimes, this project consists in reducing Stoic logic to Aristotelian logic, hypothetical syllogisms to categorical ones, propositional logic to term logic, and sometimes to finding Stoic doctrine in Aristotle.¹⁶ The result is a rich late ancient toolbox.¹⁷

In the following, I will focus on some examples of the Neoplatonists' use of that toolbox, and how their thoughts on the priority of categorical or hypothetical figure in that use, leaving aside the matter of Aristotle vs. Stoa, and of term vs. proposition, unless it comes up in light of our main question: what are the Neoplatonic views and practices regarding syllogistic, with special attention for the relation between categorical and hypothetical syllogisms?

12 Boethus of Sidon considered hypothetical syllogisms “prior” to categorical ones, but he does not explain what he means by ‘prior’. See Galen *Institutio Logica* 7.2 and Bobzien (2016).

13 Frede (1974, 2); Sorabji (2004, 253–256). Alexander's criticism is that as soon as one of the premisses is conditional, the conclusion relies on whether or not the relation expressed in the conditional is indeed the case, which the syllogism will not tell us. On that relation see also below.

14 Lee (1984, 79:113 n.24).

15 Aristotle on hypothetical arguments: *An. Pr.* 40b25–6; 41a21–b3; 46b29–35; 50a16–b3.

16 Bobzien (2014); Sorabji (2004, 256–257). For the reception of this discussion in the Byzantine and the Latin tradition, see Ierodiakonou (1996).

17 For the terminology see esp. Bobzien (2014).

3 Alcinous

In the first centuries CE, as part of the newly emerging dogmatic approach to Plato, handbooks start emphasizing the presence of logic in Platonic dialogues,¹⁸ and logical diagrams appear in Platonic *scholia*.¹⁹ One of the few ancient works that goes further and addresses questions of Platonic logic specifically is Alcinous' *Handbook of Platonism*. In this 2nd century handbook the author presents an overview of Plato's teachings, including two chapters on dialectic and logic (chs. 5 and 6 respectively). Although this work is not a commentary, and hence is not devoted to Platonic exegesis as such, Alcinous does illustrate his claim about Platonic logic with examples from the dialogues, which presume such exegesis, or conversely, may teach a student of Platonic dialogues how to use logic as an exegetical tool.²⁰

In chapter 5 Alcinous introduces dialectic, its aim in investigating essence and accidents of anything (5.1), and its methods division, definition, analysis, induction, and syllogistic – which apparently here stands for *synthesis* (5.2–7).²¹ Of the types of division especially that of genus into species is relevant, as an instrument in obtaining the elements of definitions (5.2–3). Analysis is divided into three types (5.4–5, from objects of sense to primary intelligibles, from demonstrable to indemonstrable, and from a hypothesis to the unhypothetical), the latter two, which both concern finding principles from which to demonstrate a conclusion, accompanied by synthesis (or syllogistic) as the inverse way, from the principles to the desired conclusion.²²

Bobzien points out that “chapter 5 is witness to the emergence of a specifically Platonist logic, constructed on the Platonic notions and procedures of division, definition, analysis and hypothesis,” “but”, she continues, “there is little that would make a logician's heart beat faster” (Bobzien 2016, 7). The inclusion of ‘hypothesis’ in her overview, however, points to an elements of chapter 5 that is relevant to our investigation. As Longo (2009, 151–2) shows, in this chapter Alcinous illustrates the methods of (the second type of) analysis and synthesis by restructuring the *Phaedrus*' argument for the immortality of

18 Cf. Anonymous, *Prolegomena* 16–17, according to which the syllogistic demonstrations were the equivalent of the soul of the microcosmos that is a dialogue, cf. Proclus, *In Alcibiades* (= Procl. *In Alc.*) 10.3–13.

19 On logical diagrams in the scholia, and the thesis that they are a mathematization of Aristotelian logic, see Brumbaugh (1961). For further reading see also Brumbaugh (1968).

20 For examples see below.

21 Alcinous states that the difference between induction and syllogistic is that the former works with individuals, the latter with universals (5.1).

22 On the questionable distinction between the two, see Dillon (1993, 76–77).

the soul. The steps of analysis are framed as indirect questions (*ei + ind.*), the descent in categorical statements.²³ If we are to draw a tentative conclusion regarding Alcinous' logic, it would be that where the same argument is presented in syllogistic form, the hypothetical rendering represents the analytic path, and the categorical rendering the synthetic one.²⁴ Together, they form the perfect dialectical pair. This would make the hypothetical syllogism prior in the order of construction or invention, and the categorical one prior in the order of knowledge. It also assumes that hypothetical and categorical syllogisms are not distinct in the elements of their propositions, besides the logical form: either both connect terms, or both connect propositions.²⁵ Let us now turn to chapter 6, for further information on Alcinous' view on syllogistic.

In chapter 6 Alcinous presents a range of types of syllogisms found in Plato in his view. This chapter builds on chapter 5, but only implicitly. It is something of a hotchpotch of syllogistic, semantics, and more, but still, the combination of an overview of logical principles and a Platonic context provides interesting insights. Section 6.1 and 6.2 distinguish kinds of propositions, 6.3–7 presents a survey of different types of syllogisms used by Plato, section 6.8 contains some remarks on rhetorics, 6.9 introduces sophisms, 6.10 the so-called Platonic categories, and 6.11 dialectic in the narrower sense of the *Cratylus*.

For our purposes, it makes sense to briefly look more closely at the kinds of propositions:

Of propositions, some are categorical, others hypothetical. Categorical are simple propositions, such as: 'Everything just is fine'. Hypothetical are those which exhibit consequentiality or incompatibility.

ALCINOUS, *Didaskalikos* (= *Didask.*) 6.2²⁶

23 Subsequently, in ch. 25, the argument from the *Phaedrus* is loosely presented in a categorical syllogism. Interestingly, however, most of the other arguments are presented in conditionals. It would go too far to speak of syllogisms here, as often all we get is the first premise, or on occasion, first premise and conclusion, but the minor premise (which would be the affirmation of the antecedent in this chapter) remains implicit. For an exception see 25.3. On this chapter 25 also see Longo (2009), who focuses on the synthetic argument in 25.4.

24 Note that we're here thinking of these two directions as a symmetrical pair, not a Kantian distinction between a relation of conceptual containment (analytic) and one of non-containment (synthetic). Also noteworthy is that they could be given within one type of syllogism, just by reordering the premises. See Olympiodorus, *In Alcibiades* (= *Olymp. In Alc.*) 64.

25 For other Platonic views, in between Alcinous and the Neoplatonic commentators, Susanne Bobzien is preparing an overview.

26 Translations are Dillon's, unless otherwise specified.

In this passage, we already find the mixture of Aristotelian and Stoic logic that Alexander will also use, in the following terminology:²⁷ *'protasis'* (proposition) and *'katēgorikos'* (categorical) belong to the former, *'haplōs'* (simple), *'akolouthia'* (consequentiality) and *'makhē'* (incompatibility), to the latter. *'Akolouthia'* and *'makhē'* are Stoic terms for a relation of consequence (if [...] then, the structure of the first two indemonstrables) and disjunction (either [...] or, the structure of the remaining indemonstrables) respectively.²⁸

In 6.3, Alcinous then emphasizes that Plato uses syllogisms, in general, both for purposes of refutation and for demonstration:

Plato employs the procedure of syllogism for the purposes both of refutation and of demonstration, refuting false statements through investigation (*zētēsis*), and demonstrating true ones through a type of exposition (*didaskalia*). A syllogism is a form of reasoning²⁹ in which, when certain assumptions are made, something other than what has been assumed necessarily follows from those very assumptions.

Didask. 6.3

Refuting false statements in *zetesis* is part of the *elenchus*, and demonstrating true ones in *didaskalia* is found in the dogmatic parts of Plato's dialogues. Alcinous does not explain if and how the use of syllogisms differs between *zetesis* and *didaskalia*, but instead moves on to a second division of syllogisms, into categorical, hypothetical, and mixed. He does explain the differences between these types, in a way reminiscent of the peripatetic logicians:

Of syllogisms, some are categorical, others hypothetical, and others a mixture of the two. Categorical are those of which both the premisses and the conclusions are simple propositions, while those compounded of hypothetical propositions are hypothetical, and those which comprise both sorts are mixed.

Didask. 6.3; trans. Dillon, modified

27 On the late ancient merging of Stoic demonstrables into Aristotelian logic, and the terminology involved, see Bobzien (2002b; 2014). Cf. Dillon (1993, 80) who remarks on the presentation of the syllogisms: not Aristotelian, but later Peripatetic/Classical (first pointed out by Lukasiewicz).

28 Note that the disjunction falls under hypothetical propositions, because the disjunction may be understood as a conditional such as 'if a, then not b', or also 'if not a, then b' and both vice versa. Stoic disjunction is exclusive, see also Bobzien (2016, 5.2.)

29 Dillon here translates 'words' for *logos*.

It is clear that Alcinous here uses “hypothetical” to refer to a syllogism consisting exclusively of hypotheses, i.e. what Theophrastus calls the “wholly hypothetical syllogism” (see above n. 8). This is confirmed by the presence of the mixed syllogism, which we also find in Theophrastus, as a third type.³⁰ In mixed syllogisms, hypothetical and categorical premises are combined. Before moving on to the illustration of the three types, Alcinous introduces yet another subdivision of syllogisms, known from Aristotle *Topics* I 1, and divided on the basis of the epistemic status of their premises: demonstrative, dialectical, and eristic syllogisms.³¹ Plato, according to Alcinous, uses these types in expository dialogues, dialogues with sophists and youngsters, and eristic dialogues respectively.

The elaboration and illustration of the mixed syllogism in 6.7 (after the categorical in 6.5, and the wholly hypothetical in 6.6) is a bit problematic, because of a textual lacuna. The text as it stands refers to two subtypes: constructive and destructive on the basis of consequence, comparable to *modus ponens* and *modus tollens*, but probably also discussed the conjunctive and disjunctive hypotheticals,³² and, I would think, *reductio ad absurdum*, as refutation through hypothesis. Both Socratic *elenchus* and the ‘Zenonian’ method of the *Parmenides* rely on the undesired or even impossible consequences of certain claims – the interlocutors’ positions and the hypotheses respectively.³³ So considering Alcinous’ remark about Plato’s use of syllogism in *elenchus* and Alcinous’ appeal to the *Parmenides* for most of his examples, it is not unlikely that the *reductio ad absurdum* was part of his inventory.

Alcinous does not explicitly clarify the relation between the different distinctions he introduces (*zetesis* or investigating through refutation and *didaskalia* or teaching through demonstration, categorical, hypothetical, and mixed, and demonstrative, dialectical, and eristic). What is more, both categorical and hypothetical syllogisms are described in the same terms, of ‘propounding (or refuting) arguments’.³⁴ And we do not find a correspondence between categorical and demonstrative on the one hand, and between hypothetical (now

30 See above and Bobzien (2016, section 3.3).

31 Cf. 3.2, where Alcinous distinguishes demonstrative, epicheirematic, and rhetorical syllogisms, and sophisms.

32 I agree with Dillon (1993, 83–84) that something should probably be added at the end of 6.7, as the text seems to break off rather abruptly, and considering the description of hypotheticals in 6.2 we would also expect the remaining indemonstrables, working with incompatibility (disjunction).

33 For examples of *reductio* in both these contexts, see section 4.

34 *Erôtai logous* in 6.5.7 and *erôtōmenous* in 6.6.1.

including the mixed type) and refutative or dialectic on the other. This may be typical for the eclectic nature of the *Didaskalikos*.

So the *Didaskalikos* does not take a clear position in the priority debate, but does differentiate between hypothetical and categorical. Categorical propositions and categorical syllogisms are mentioned first, but this may be due to their relative simplicity (and hence priority in that sense), or the order of presentation in his own sources. Alcinous informs us why Plato supposedly made the choices that he did with respect to demonstrative, doxastic, and eristic syllogisms,³⁵ but he does not do this with regard to the choice between categorical, hypothetical, and mixed. Both for categorical and for hypothetical syllogisms three types are described, each with a Platonic example.³⁶ The six figures are presented for their own sake, it seems, to inform the reader about the figures as such, and about the fact that they are present in Plato, but do not tell us anything about why Plato would sometimes choose one, sometimes another. It is tempting to agree with Dillon that Alcinous just seems to enjoy the fact that the syllogistic harvest from Plato's dialogues – or even just from the *Parmenides* – is rich and varied, but Alcinous' conclusion of the discussion of syllogistic in 6.8 suggests a deeper strategy:

This, then, constitutes a survey of the specific differentiae.³⁷ When, therefore, one has acquired an accurate perception of the faculties of the soul and the differences between men, and the types of discourse which are fitted to this or that soul, and when one perceives with precision which sort of person can be persuaded by what arguments and of what sort those are, such an individual, if he also picks the right opportunity for using the particular argument, will be a complete orator, and his rhetorical skill would justly be termed the science of speaking well.

Didask. 6.8

The emphasis on rhetorical strength here may come as a surprise, but Alcinous has in mind the *Phaedrus*' 'true oratory', combined with Stoic optimism regarding rhetoric.³⁸ So if we assume that the lacuna is a small one, then the "kinds of

35 In section 4 Alcinous presents a distinction between demonstrative, doxastic and eristic syllogisms, on the basis not of characteristics of the types of syllogism, but rather of the context in which a type will be used by Plato: the first, he says, are used by Plato in expository dialogues, the second in those dealing with sophists and youngsters, and the third in eristic dialogues such as the *Hippias*.

36 As said above, the text for the mixed syllogisms is probably incomplete.

37 For the textual problem, see Dillon (1993, 83–84).

38 Cf. Dillon (1993, 84). On the Stoic view of rhetoric, see Liebersohn (2010).

arguments" (*ta eidē tōn logōn*) in this passage refer to syllogistic arguments.³⁹ That, in turn, allows us to conclude that for Alcinous logic is not a free-floating device, but a tool: our choice for a specific form of argument should take into account the nature of our audience and the occasion.

As we will see, in the later Neoplatonic stances on the relation between and especially relative worth of different types of syllogisms, the correspondence between types of Platonic teaching and types of syllogism is in fact present on occasion. Socratic elenchus or refutation does typically use mixed arguments, including *reductio ad absurdum*;⁴⁰ categorical syllogisms are used to present demonstrative knowledge; the wholly hypothetical syllogisms work as a preparatory dialectical stage. But more than this, in later antiquity, as in Alcinous, there is no strict division of labour: context determines which tool is taken out.

4 Syllogizing Plato – Introductory Remarks

It was not uncommon for Platonic commentators to syllogize Platonic dialogues.⁴¹ Following the handbooks, it was generally understood that it made sense to rephrase parts of the dialogues as syllogisms. As to the reasons underlying this practice, different views exist. Some scholars suggest this practice is merely an exercise in logic, or a didactical demonstration, but it may also be part of an attempt to compete with Aristotelian commentators.⁴² In this fourth section, I will present some Neoplatonic remarks on Plato's use of syllogistic,

39 In chapter 3, Alcinous used rhetorical only for the *enthymeme*, in contradistinction to the demonstrative and epicheirematic parts of syllogistic.

40 Dutilh Novaes (2016) considers them genealogical ancestors of *reductio*, where *reductio* is used in the strict sense as the argumentative steps leading to a true conclusion (the opposite of the hypothesis) or the rejection of a false one (i.e. the hypothesis). I here take *reductio* in a broader sense, as a translation of the Greek (*eis to adunaton apagōgē*), which was used in antiquity to denote the argumentative strategy showing the impossibility of maintaining a thesis in combination with other theses, and which is often used in the destructive part of *elenchus* (she calls this "dialectical refutation", Dutilh Novaes (2016, 2623)). This is not to say that with Vlastos (1983) I equate *elenchus* with its destructive part.

41 Even Alexander contributes to this activity (Alexander *In Analytica Priora* (= Alex. *In An. Pr.* I, 324, 5–16 and Longo (2009, section 3). See also Hene's paper in this volume, who shows that in Anonymous *In Theaetetus* categorical logic is used for Platonic arguments, but hypothetical logic only in rejecting Stoic doctrine.

42 For the former see Helmig (2017, 188); van den Berg (2008, 119) with reference to Aristotle's *Topics* 164a12–b7. For the latter see Segonds (1985, xxiii); Brumbaugh (1961, 45). Note that Plato's argument for the immortality of the soul in the *Phaedrus* is also seen as presented in syllogisms by Alexander *In An. Pr.* 272.5–10.

and on the relation between categorical and hypothetical syllogisms, as well as some evidence on their views in the actual syllogizing of Platonic material. Our main focus will be Proclus, but some passages from Damascius and Olympiodorus will be added for contrast and perspective. This is in no way an exhaustive treatment.

Before turning to Proclus, let us look ahead with some general remarks regarding the Platonic character of the syllogizing. Some of the choices the commentators faced (consciously or not) in syllogizing Plato, were, besides the identification of premises and conclusion in the text, for example whether to add further premises or a conclusion that is absent or implicitly present in Plato, whether to use a quantifier or not, and of course, whether to use a categorical syllogism, a hypothetical one (mixed or whole), or a combination of both. Not infrequently, the syllogisms constructed by the commentators seem invalid, but as has been shown, and as we will see on occasion below, this is often due to a quantifier or premise remaining implicit, implicitly assumed co-extension between terms, or to scribal errors in case of an intermediate scribe (a recorder or excerptor).⁴³ Very often, moreover, the Platonic text dictates the choices made, but there are philosophically more interesting motivations as well. As is to be expected, we find the methods of dialectic underlying the choices made, especially the choice for hypothetical or categorical syllogisms. This is perhaps best illustrated by a brief look at Philoponus' 6th century discussion on which of these types is prior. Philoponus is interesting because he works on Aristotelian logic, but is steeped in the Neoplatonic tradition as well. He considers categorical logic prior, because for us to know if the antecedent of the conditional of a hypothetical syllogism is true, we need a categorical syllogism.⁴⁴ If you were to present a hypothetical syllogism, he says, the first (conditional) premise would have to be shown to be true, and if you were to defend it with another hypothetical syllogism, you would have to prove the major premise of that syllogism, and so on, until you reached something agreed upon (*hōmologēmenon*), "which demonstrates the first hypothesis

43 See Tarrant (1997), esp. for Platonic context, missing quantifiers and scribal errors.

44 Philoponus *In Analytica Priora* (= Philop. *In An. Pr.*) 240.21–247.32, esp. 241.24–242.13. He also points out that some categorical syllogisms are demonstrated by *reductio*, and hence require the use of hypothetical syllogisms, but does not think this implies a reduction of categorical to hypothetical, because the demonstrative power of the *reductio* lies in its categorical element (*ibid.* 247.20–26). Another interesting topic is the variety we find in ancient explanations of *reductio* arguments as consisting of categorical and/or hypothetical syllogisms. On this topic, see Ierodiakonou 2016. (I do think that where she or the authors she discusses speak of the Stoics, one might as well include the Peripatetics, as the hypotheticals in question are part of that tradition.) For Proclus' view see *In Eucl.* 255.26–256.3.

categorically" (Philop. *In An. Pr.* 241.43–4) (this probably means that the way from the something agreed upon to the first hypothetical syllogism is one of categorical logic). The juicy bit here, is that Philoponus thinks that this is precisely what Plato does in the *Phaedo* when arguing for the immortality of the soul.⁴⁵ The procedure Philoponus describes is strongly reminiscent of the 'second sailing' or the hypothetical method described by Socrates at *Phaedo* 99d–102a: looking at what follows from a hypothesis, then establishing the hypothesis through something higher, and ultimately ending at something that does not need establishing.⁴⁶

The underlying assumption, it seems, is that the Platonic method does the same as the Peripatetic combination of hypothetical and categorical syllogisms, and that the analytic and the synthetic paths are reflected in these two types. In the Neoplatonists' practice of syllogizing the dialogues, the *Phaedo* is indeed one of the paradigms, as an example of *zetesis* – discovery or invention (as opposed to justification or teaching) – which, in a Platonic context, of course results in recollection. A related paradigm is that of the *Parmenides*, in which the hypothetical method is considered to be preferred over the categorical, because the former is more suitable for obtaining an overview of a complete spectrum of properties, but not at the cost of excluding categorical ones, which are instead instrumental in providing certainty of the truth of the hypothetical syllogisms. But the use of syllogistic does not follow fixed patterns. For example, hypothetical and categorical syllogisms are both considered suitable for giving an overview of the results of the discussion (but in different contexts).⁴⁷

Two other Platonic features are worth pointing out: co-extension and dichotomy. These two give a Platonic angle to late ancient syllogistic, as being founded, the first upon the logic of the intelligible, and the role of definitions in scientific demonstrations, and the second upon the dialectical method of division, with its assumption of exhaustive dichotomies. Moreover, they help explain why on occasion the commentators' syllogisms may seem invalid, but in fact turn out to be valid if we assume co-extension and dichotomy. The former, co-extension as we find it in the intelligible realm and in some cases in definitions, explains the validity of affirming the consequent, or denying the antecedent, which the commentators approve of at times, with or without signalling the co-extensionality. The latter explains the merging of

45 Philoponus *In An. Pr.* 241.31–242.7.

46 See also *Meno* 86e6–87b2 and *Republic* VI–VII.

47 For the use of hypothetical syllogisms in this manner, cf. the second definition of 'hypothesis' in the pseudo-Platonic *Definitions: sugkephalaïōsis logou* (415b10).

conversion-with-opposition (including *reductio*, insofar as it uses that method), with *modus tollens*.⁴⁸ To illustrate, a division tells us: ‘either the soul is mortal or the soul is immortal’; a second hypothetical starts from: ‘if the soul is mortal then it is perishable’; a so-called conversion with opposition leads to ‘if the soul is not perishable, then it is immortal’, assuming co-extension of terms; the minor premise ‘but the soul is not perishable’ (or with *reductio*: ‘for the soul to be perishable is impossible’), then leads to the conclusion ‘therefore the soul is not mortal’, which, with exhaustive dichotomy, allows us to also conclude ‘therefore the soul is immortal’.

Note, by the way, that in the Platonic context a hypothesis is often a non-conditional proposition used without conclusive evidence, such as ‘there is such a thing as Beauty (etc.) itself’, but it functions as a conditional in the subsequent argumentation: ‘If Beauty itself etc. exist [...]’. Moreover, the resulting conditional may be a connection of propositions, but also a connection of terms (If something is A, it is B). Finally, it bears pointing out once more that logic, for Platonists, is always about reality, and is ultimately always instrumental to the ascent of the soul. With this preparation, let us turn to the commentaries for some examples of Neoplatonic uses of and reflections on categorical and hypothetical syllogisms.

5 Proclus

5.1 *Introductory Remarks – Commentary on the Republic and Platonic Theology*

We know that Proclus was considered in late antiquity to have contributed to logic from references in Ammonius and others to the “Canon of Proclus” (Helmig 2017, 188–189). This canon describes the rules of obversion, i.e. of transforming categorical propositions into equivalent other categorical propositions by adjusting quality and quantity, which may also underlie some of his exegetical moves. Proclus is quite fond of syllogizing, and does so in a variety of ways, mainly depending on the Platonic context. In the following, we will go over remarks and examples from his commentaries, to try and collect a picture of his preferences. In theory, we should distinguish between what Proclus reads in Plato and what he himself adds in his exegesis, but I think it’s fair to say that Proclus tends to at least present his exegesis as revealing what Plato actually means, and hence as not adding anything.

48 This merging is discussed in Bobzien’s work in progress on Ammonius.

Looking at the *Commentary on the Republic* (= *In Remp.*), one would think that Proclus has a general preference for categorical syllogisms, as at first sight that is the only type of syllogisms he uses there. The most emphatic example is the third essay on the *Republic*, in which Proclus renders the arguments against Thrasy Machus in syllogistic form, always opting for categorical syllogisms.⁴⁹ Likewise, the fourth, fifth, eighth, and fifteenth essays, in turn, contain seven explicit syllogisms distilled from the Platonic text altogether,⁵⁰ and always in categorical form. What made Proclus syllogize in the places he did can most of the time only be a matter of guessing, but the context does seem to be that of *elenchus*. Besides for the refutation of Thrasy Machus, Proclus also abstracts syllogisms from the arguments against the disparagers of the gods, or against those who would consider women in the gymnasium a shameful thing. In essay 15 we find another fairly standard context of syllogizing: the arguments for the immortality of the soul.⁵¹ Interestingly, Proclus here emphasizes what one could call a power of metaphysical *elenchus*: it is a demonstration taking away (*anairousa*) the power of destruction from the cause of destruction.⁵²

An exception to the categorical preference is found in essay 16, on the myth of Er, where Proclus reports a kind of *modus tollens*, again as part of the *elenchus*:

49 *In Remp.* I 20.27–21.7 contains two syllogisms (both in Barbara), 25.28–26.13 contains four syllogisms in Barbara but mostly with implicit quantifier (e.g. ‘the soul [...]’). The latter four, as opposed to the former two, are called arguments (*logoi*), not syllogisms, but the discussion of the premises (*protaseis*) earlier and the repeated concluding particle ‘*ara*’ show that Proclus does have syllogisms in mind.

50 Essay 4, arguing for the goodness and truthfulness of the Gods: *In Remp.* I 28.23 ff., first syllogism at 28.25–29, the second at 31.10–32.3 – a long stretch, as the second syllogism is constructed step by step rather than all at once, out of five premises, the third of which is argued for with a *reductio ad absurdum*. Moreover, Proclus points out that the Platonic text only contains the first and last premises. Essay 5: *In Remp.* I 67.18–21. Essay 8: *In Remp.* 243.11–16; 244.3–11, 12–14, respectively a categorical syllogism of which only the premises are made explicit, as the conclusion, denying women access to training in the nude, is considered obvious (and shown to be refuted by Socrates by showing the major premise to be false because it relies on ambiguous terms); a replacement categorical syllogism arguing for choosing rational customs over pretty ones; another categorical syllogism of which only the premises are presented, applying the principle of specialization to the distinction between men and women (and which Socrates too shows to be a fallacy relying on ambiguous terms). Essay 15: *In Remp.* II 89.10–16, see below. Cf. Essay 6, *In Remp.* I 197.29–30: “bringing together premises” into a conclusion (categorical); Essay 16, *In Remp.* II 274.27–5.1, where the necessity of the chosen life is explained as understood by the soul on the basis of categorical syllogistic reasoning.

51 As shows from Alcinoüs’ introduction, but also the commentaries of Olympiodorus and Damascius on the *Phaedo*.

52 *In Remp.* II 89.10–16 “Not just a syllogism, but a demonstration (*apodeixis*) which rids the cause of destruction (the soul’s proper evil) of its power.”

If you choose injustice, you choose the most horrible prison. You flee the latter with all your might. Therefore, you should flee injustice as well.

In Remp. II 107.2–5⁵³

This passage probably presents Porphyry's view, however, which may also explain the exception in the logical form. Perhaps the general preference for categorical logic in this commentary reflects the didactic context of the commentary. If the intended audience in this case were students early in their Plato curriculum, they would have just finished their Aristotle readings, so revisiting categorical logic made more sense than hypothetical logic.⁵⁴ And by way of appealing but perhaps somewhat unlikely guesswork we could think that the essays betray a development from early on in Proclus' career to later, which includes a transition from a focus on categorical logic to a richer repertoire.⁵⁵

In other commentaries, Proclus frequently turns to both hypothetical and categorical logic. He does sometimes explicitly point out that one type is to be preferred over the other, but that seems to relate to the argument, its topic, and the audience, not a general theory about logic. For example, peeking ahead at his *Commentary on the Timaeus* (= *In Tim.*), where he finds a "categorical syllogism in the first figure" (*In Tim.* I 258.29–30), he explicitly prefers this over a hypothetical one:

It is better to infer in this [i.e. categorical] manner, as the divine Iamblichus thought, than as some others do, to construct a hypothetical syllogism.

In Tim. I 259.2–4, commenting on *Timaeus* (= *Tim.*) 28a4–5

The (modal) syllogism in question is

It is impossible for that which comes into being to come into being without a cause. But everything for which it is impossible to come into being without a cause necessarily comes into being by the agency of some

53 An interesting further question, suggested by a reviewer, would be how Proclus deals with the combination of myth with syllogism: does he sometimes syllogize myth as such, and if so, how? We will not go into this question here, other than to say that the four modes of discourse about the gods (*Theologia Platonica* (= *TP*) I 4) would suggest that myth and syllogism do not go hand in hand, and that, if we look at the *Timaeus*, which Proclus reads as a myth, the syllogisms in question concern universal and direct truths about the divine, not their mythical representation.

54 On Proclus' audiences see Baltzly et al. (2018) general introduction and introduction to essay 4.

55 It is hard, however, to establish a chronology of his works. See Helmig & Steel (2011).

cause. Therefore everything that comes into being necessarily comes into being by the agency of a cause.

In Tim. I 258.29–259.1

In this case, however, the preference of categorical over hypothetical can be explained with simple reference to the Platonic passage commented upon, which consists of two universal affirmative statements.

Most common in Proclus' syllogizing habits, is, as we will see, a combination of categorical with hypothetical elements. The reason for this is, I think, to be found in the *Platonic Theology*. In a chapter on Syrianus' interpretation of the second hypothesis of the *Parmenides*, Proclus emphasizes the relation between the order of being and the order of presentation of conclusions (*TP* I 11). First of all, the hypotheses, and the conclusions reached in discussing them, are presented in the *Parmenides* following the order of being, and following that order from the first to the last (*TP* I 48.16–49.11, cf. 53.3–10). In pointing this out, Proclus does not merely refer to a rhetorical feature of the dialogue, but to a deeper relation between reality and thought. The order of the reasoning, and the logical relations between premises and conclusions in the *Parmenides*, reveal ontological relations:⁵⁶

If [indeed] the treatise is not merely syllogistic, but also demonstrative, it is of course necessary that the middle term is the cause, and that it is by nature prior to the conclusion. [...] the conclusions of antecedent reasonings (*tōn hēgoumenōn logōn*) form the middle terms of consequent reasonings (*tōn hēpomenōn*).⁵⁷

TP I 11 54.1–5

The 'if' here should not be taken to express mere possibility, but the one of two options that turns out to be preferably: the first option has just been rejected, i.e. that the *Parmenides* is not demonstrative, but merely a logical exercise, has just been rejected, and instead this second option, that it is demonstrative, as Syrianus proposed, is accepted by Proclus. Furthermore, 'antecedent' and 'consequent' could merely point to an order of presentation, but considering the other logical terminology used, I think what Proclus has in mind is the

⁵⁶ Cf. *TP* I 11 48.16–22.

⁵⁷ There is a switch in the text from *ei men* + optative in the previous sentence, to *ei de* without explicit verb (so perhaps an implicitly repeated optative, or an indicative), to *hote* + ind. – so from unreal possibility (that the *Parmenides* is not demonstrative, but merely a logical exercise) to reality (that it is indeed demonstrative).

way syllogistic reasoning represents (and is based in) the ontological structure of layers of emanation. The antecedent and consequent in a conditional syllogism present, in the proper order, cause and effect, in a way a categorical syllogism will never do, even if the middle term in a properly scientific categorical syllogism does express the cause.⁵⁸

This is what Marler calls ‘causal reasoning’, i.e. using syllogistic reasoning as a tool to move up and down the ontological (and hence epistemological) ladder, by connecting ontological layers through a middle term.⁵⁹ We will look at some examples below.

5.2 *Examples from the Commentary on the Cratylus*

In the *Commentary on the Cratylus* (= *In Crat.*), one of the dialogues traditionally labelled as ‘logical’ by ancient readers (which refers to much more than just syllogistic, of course), the scales tip towards hypothetical syllogisms, often (but not exclusively) as part of the *elenchus*. We find syllogisms following the model of the Stoic first and second indemonstrables, or *modus ponens* and *modus tollens*, and *reductio*. In the most emphatic example of syllogizing, *In Crat.* 46, the first syllogism (15.1–5) provides the ultimate conclusion of the discussion, and six subsequent syllogisms (15.5–8; 8–12; 13–15; 15–19; 19–23; 23–26) resolve the minor premise (*analuōn tēn proslēpsin*, 15.5–6; 8–9; 12; 15–16; 19–20; 23), i.e. each conclusion will provide the affirmation of the antecedent in the previous syllogism,⁶⁰ the result being an explicit chain of the reasoning leading up to the conclusion, but in reverse order. Specifically, the conclusion that names achieve their correctness by nature is derived in seven steps from the premise that some men are very good and some very bad (harvested from *Cratylus* 386a–387d3). The point of using the hypothetical here seems to be clarifying Socrates’ argumentation and justifying its conclusion by providing sufficient conditions through an analysis leading up to a (mutually accepted or obvious) premise: that some men are very good and others very bad. Incidentally, that

58 Middle term is here used, then, not in the narrower technical sense of the term connecting subject and predicate of a conclusion in a categorical syllogism, as this is not an element of, e.g. *modus ponens*. Instead, it is used in a broader sense of term connecting terms in a string of arguments – in which case, e.g. two *modus ponens* arguments would share a ‘middle’ term (the first premises would be, e.g. If something is A, it is B. If something is B, it is C. The overall conclusion A is C would rely on the middle term B).

59 Marler (1993).

60 So in ‘if A, then B, but A, therefore B’, ‘but A’ is the minor premise which will be the conclusion in the next syllogism, ‘if C then A, but C, therefore A’, after which C will be the minor premise to be proved etc. On this chapter see also van den Berg (2008, 118–121).

same premise (or the negation of its opposite, to be precise) was already used in a *modus tollens* in ch. 38, refuting Protagorean relativism.

Earlier in the commentary, Hermogenes' position is rendered in *modus ponens*, followed by an addition of Proclus, likewise in *modus ponens* (*In Crat.* 30). Combined, they provide a *reductio* of Hermogenes' position: if there is a change of names, there is not.⁶¹ Likewise, in chapter 33, the author points out that Socrates refutes Hermogenes' position in three dialectical proofs (*epikheirēmata*), and provides the first, which is an argument in *modus tollens*.⁶² In chapter 58 (25.17–27), a categorical syllogism ascribed to Aristotle, summarizing his conventionalism about names, is refuted by Proclus in two steps (or even three): the major premise is refuted with a *modus ponens* focusing on an ambiguity of 'sameness',⁶³ the minor premise is refuted with a categorical syllogism relying on the fact that 'natural' and 'the same' are not co-extensive, in what looks like Bocardo.⁶⁴

A reason the hypothetical tends to be preferred over the categorical, in this commentary, might simply be the Platonic text (which at times e.g. demands connecting propositions, rather than terms, or is phrased in conditionals), or the fact that at the beginning of the dialogue Aristotelian logic was disqualified as 'empty logic' – this idea finds support in the fact that categorical syllogisms are used in the presentation and refutation of Aristotle's view.⁶⁵ Another, more interesting motivation may lie in the argumentative value of the syllogisms here, namely as useful in refuting interlocutors, and providing the analytic path tracing truths – not so much showing how Plato traces truths, as in the *Parmenides*, but us tracing the truth of Plato's conclusions.⁶⁶

61 More precisely, in fact, if it is possible, it is superfluous.

62 Cf. the slightly loose summary of Democritus' refutation of the naturalists' thesis in four *epicheiremata* at *In Crat.* 16. *Epicheiremata* are dialectical syllogisms, based on reputable premises (Aristotle, *Topics* 162a16). In later ancient philosophers the term is used in a broad sense. For a discussion of the role of the *epicheirema* in chapter 16, see Garin (2017), which unfortunately I was not able to consult.

63 For Aristotle, names are not the same for all men, for a Neoplatonist, names can be Forms, which manifest themselves differently in different matters.

64 Reading it as "All eyes (etc.) are natural, some eyes are not the same (in colour) for all men, so some natural things are not the same for all men".

65 The fact that a categorical syllogism in the last passage discussed is not a problem, I think, considering the fact that the context is that of refuting Aristotelian doctrine.

66 Hermias, too, uses the technique of syllogizing. In his exegesis of the *Phaedrus*, Hermias uses categorical syllogisms and *reductio*. His work is interesting for his remarks on the extent to which the syllogisms are explicit in Plato, but as he does not say anything about the difference between categorical and hypothetical syllogisms, we will leave his work aside.

5.3 *Examples from Commentary on the Alcibiades*

The *Commentary on the Alcibiades* (= Procl. *In Alc.*) is famously full of syllogisms, and Proclus spends quite some time on logical issues. On the question how one should understand the role of the syllogisms in the dialogue,⁶⁷ Proclus follows Iamblichus, maintaining that the syllogisms are subservient to the general three-part aim of the dialogue: refutation, exhortation, and elicitation.⁶⁸ The main role of the syllogisms is that they rid the audience of ignorance (Procl. *In Alc.* 14.9–13), and contribute to self-knowledge (18.7–10) through refutation of prior conclusions (170.18–19).⁶⁹ In such *elenchus*, the major premise is taken from common notions, the minor premise in agreement with the interlocutor, and the conclusions reached are irrefutable. It seems Proclus is here using Aristotelian terminology to describe dialectical syllogisms, with categorical premises (“whatever belongs to the predicate, also belongs to the subject”), but as part of a *reductio*, in which the assumption of the interlocutor leads to them contradicting themselves (“the method which leads us to a contradiction”) (Procl. *In Alc.* 175.19–176.5).

Looking at a subsequent application of the method in three first figure syllogisms, however, a different picture emerges: Proclus first establishes an affirmative and universal categorical syllogism about the definition of good counselors on the basis of the nature of their (self-)knowledge, then a second and third syllogism the conclusion of which is formulated as a conditional (Procl. *In Alc.* 176.10–178.10). The three are then merged into a chain of universal affirmative premises, or “firsts overlapping with firsts” (178.13–14) as Proclus calls it: the predicate of the first conclusion is the subject of the second and so on.⁷⁰ This chain as a whole functions as a conditional (starting with “If someone is a good counselor”, etc.). Proclus then adds ‘minor premises’, which consists in

67 See also Segonds (1985), introduction xlvii and ‘notes complémentaires’ to Procl. *In Alc.* 13–18.

68 Procl. *In Alc.* 13–14. Interestingly, at 13.21 the syllogisms are called ‘instrumental’ (*organika*). The same criticism of those giving priority to the syllogisms is also brought forward by the anonymous author of the *Prolegomena*, p. 19, with the following argument: Plato offers different syllogisms for the same point, so the syllogisms themselves do not complete the demonstration.

69 Cf. Aristotle, *An. Pr.* 66b11 and *Soph. Elench.* 165a2. See also Procl. *In Alc.* 175–176.

70 Procl. *In Alc.* 178.10–19. “Every good counsellor knows the subjects concerning which he offers counsel; everyone who knows the subjects concerning which he offers counsel, knows them either by learning or discovery; everyone who has learned or discovered has either approached teachers or enquired of himself; everyone who has approached teachers or enquired of himself could name a time in which he thought himself ignorant of the subjects concerning which he offers counsel.”

first denying what is considered the last consequent of a specific case, namely Alcibiades, which in turn leads to also denying the last antecedent in the chain. This is applied to the whole chain, and the end result is a chain of *modus tollens*, of a particular case as not subsuming under the last, and therefore the one before last, and so on until the first element in the chain of the definition. The ultimate conclusion is that Alcibiades is not a good counselor. In fact, the procedure here seems to be one of Platonic dialectic more than syllogistic: we have a question ('Is Alcibiades a good counselor?') followed by a conceptual analysis of 'good counselor' (the universal affirmative premises), and finally an application of the elements of the definition found to Alcibiades, to find out that he is not a member of the set of good counselors.

Proclus calls the two stages in this pattern the affirmative and the negative syllogisms respectively, and sees them as an expression of synthetic and analytic reasoning, or descent and ascent respectively. He compares them to the clothing in *chitones* of the descending soul, and the divesting to nudity in the ascent (Procl. *In Alc.* 179.9–180.5). In general, the *chitones* in Neoplatonism refer to the descent of the soul, and its acquiring irrational powers and entering a body, but in this case it merely refers to the path from the more perfect and universal to the less perfect and less universal. Although the pattern here leads to a negative conclusion, the reasoning relies, as in the *Platonic Theology*, on 'causal reasoning' (Marler 1993, see above).

Likewise, further on in the commentary, Proclus presents in more or less syllogistic form the discussion of *Alc.* 115a which concludes that the just is advantageous. There the main reason for this syllogizing seems to be determining the truth of Plato's premises, and the flaws in the criticism of other thinkers

First syllogism:	Second syllogism:
(P1) <i>everything</i> just is beautiful,	(P2*, presented first) <i>everything good</i> is beautiful,
(P2) <i>everything</i> beautiful is good,	(P1*) <i>everything</i> beautiful is <i>just</i> ,
(C1/P3) <i>so everything</i> just is good.	(C1*/P3*) <i>so everything</i> good is just.
(P4) But the good is identical with the advantageous,	(P4*) But the advantageous is identical with the good,
(C2) <i>so everything</i> just is advantageous	(C2*) <i>so everything</i> advantageous is just.
(Procl. <i>In Alc.</i> 318.20–23)	(C3) The just, <i>then</i> , is identical with the advantageous.
	(<i>In Alc.</i> 319.1–5) ^a

a O'Neill (1971) takes the last sentence not to belong to the syllogism.

(Procl. *In Alc.* 318.16–20). The first and second syllogistic summaries are given in the table above.

The second syllogistic summary leads to the converse conclusion on the basis of converse premises, and starting from the second premise, rather than the first, and then to the conclusion, based on both syllogisms, that just and advantageous are identical. Both summaries are entirely formulated in Barbara and with co-extensive terms (“in the first figure, embracing the minor terms within the major, and showing that the major terms are convertible with the minor”, 318.23–319.1).⁷¹

Just a handful of pages further, we find a similar exercise, concluding that good and beautiful are likewise interchangeable, again with what seems a dialectical background. In this case, the syllogism is not presented in summary, but with interspersed justifications of the premises. In paraphrase (leaving out especially the justifications, such as “this is self-evident”, 328.6):⁷²

First syllogism:	Second syllogism:
(P5) The beautiful is lovable [P5]	(P7*) <i>all</i> the good is desirable
(P6) <i>Everything</i> lovable is desirable [P6]	(P6*) <i>all</i> the desirable is lovable
(P7) and <i>everything</i> desirable is good [P7]	
(C1/P2) Now <i>if</i> all the beautiful is lovable, <i>all</i> the lovable desirable and <i>all</i> the desirable good, <i>then</i> , <i>all</i> the beautiful is good.	(C1*/P2*) <i>so if all</i> the good is desirable, <i>all</i> the desirable lovable, and <i>all</i> the lovable beautiful [P5*] <i>then all</i> the good is beautiful.

The basis is formed mainly by universal affirmative categorical premises, the conclusions are formulated as conditional phrases in which the premises of the syllogism together form the antecedents. The use of the conditional here seems to point to hypothetical syllogisms as functional in a dialectical exchange: if (or since) you agree with these premises, you will have to agree with the conclusion as well.⁷³

71

Morrow and Dillon (1987, 445 n. 79) point out that coextensivity does not seem to be a technical term in earlier ancient logic, but is part of the late ancient logical toolbox.

72

The last premise is split into two varieties: either as being a genuine or an apparent good; [P3] *if* properly desirable, *then* properly good; [P3a] *if* it is only apparently desirable, *then* the good too will surely be of the same kind. [P3b]

73

Cf. Aristotle *An. Pr.* 44 50a29–38 (although that concerns *reductio*).

A kind of interesting passage, not least because it is a clear example of Proclus' at times exaggerated exegetical strategies, is not about syllogizing, but about the difference between hypothetical and categorical *statements*. I discuss it here nonetheless, because it allows us, with some hesitation, to connect Proclus' interpretation of the dialectical patterns in the *Alcibiades* with our question on the relation between categorical and hypothetical syllogisms.

At *In Alc.* 167, interpreting *Alcibiades* (= *Alc.*) 106a, Proclus mentions Charmides' modesty dilemma (*Charmides* 158cd): "If I assert that I am moderate, my speech will be vulgar, and if I say that I am not, I shall be my own accuser." A similar dilemma underlies Alcibiades' words, according to Proclus: "if he admitted that he loved power he would be accusing himself of ambition, and if he did not admit it, he would be lying" (Procl. *In Alc.* 166.21–168.5). Proclus goes on to emphasize that the dilemma is presented in hypothetical, not categorical form, and contains both affirmation and negation. Socrates' view on Alcibiades' ambitions, instead, is presented in categorical and affirmative form:

[Alcibiades] puts his point not as a categorical statement, but as a hypothesis, nor does he quote only the affirmative, but also the negative. He says: "You have apparently decided whether I have such plans in mind or not." Again, by passing from these words to the subject-matter, you can see that the more perfect causes are free from all privation, but the inferior are implicated in non-being: the former are established on the level of form, but the latter sink even to privation. Yet Socrates at any rate simply and firmly asserted that "these are your plans", – the one half of the contradictory proposition; but Alcibiades tends in both directions, and that by way of assumption: "You have apparently decided whether I have such plans in mind or not and if I deny it, it will be no help to me towards persuading you otherwise".⁷⁴

PROCL. *In Alc.* 167.7–17; Trans. O'Neill (modified)

Proclus explains the phrasing used – categorical vs. hypothetical, affirmative vs. both affirming and negating – as reflecting both an ontological distinction between the transcendent causes which are just what they are, and the sublunary realm which always combines opposites, and an epistemological distinction between the superior Socrates, who has knowledge of being, and does not doubt,⁷⁵ and the inferior Alcibiades, who is still going through the dialectical

⁷⁴ Proclus is paraphrasing *Alc.* 105a.

⁷⁵ At least in Proclus' view.

process of recollection and ascent. So with some imagination, we can map this interpretation onto the distinction between *zetesis* and *didaskalia*: Alcibiades still needs to rid himself of all kinds of unfounded opinions, and follows the order of investigation upwards (hypothetical); Socrates has already ascended, and is capable of presenting the order of knowledge, and of being, as it is (categorical). Note that this interpretation of Proclus' was probably at least in part inspired by the phrasing of the *Alcibiades*, in particular Socrates' use of the word *katēgorēsō* (*Alc.* 105a2).

One respect which may seem not to fit the above, is that Socrates would end up fully 'clothed': if *didaskalia* and the gathering of conclusions about which we agree come after questioning, descent follows upon ascent. So for example, the collection of first figure categorical syllogisms as a summary of the discussion at *Alc.* 115–116 (Procl. *In Alc.* 315–339, esp. 318.16–319.5), showing, in Proclus' rendering, that the just and the advantageous are convertible, would be a case of joint harvesting of conclusions after questioning. This is not a problem, however, as *didaskalia* is the *presentation* of truths following the proper metaphysical order.⁷⁶

At times, the variety of logical notions introduced in the commentary on the *Alcibiades* reads like the first course after Logic 101, applying what we have studied in the introduction. This does in fact fit both the place of the *Alcibiades* in the curriculum (at the beginning of the Platonic curriculum and hence just after Aristotle), and the overall aim of the dialogue, self-knowledge through refutation – and it fits even with respect to the relation between subject matter and methodology, because syllogizing as part of discursive reasoning belongs to the epistemic level of the soul, and hence studying syllogistic reasoning teaches us about the nature of the soul.

5.4 *Examples from the Commentary on the Timaeus*

In the *Commentary on the Timaeus*, logical terminology is not often emphatically present, but there are some interesting exceptions. In the so-called *prooemium*, which Proclus interprets as an exposition 'more geometrico', Plato introduces some fundamental general statements concerning generation and causation:

[a] Now everything that comes to be must of necessity come to be by the agency of a cause, for it is impossible for anything to come to be without a cause. [b] So anything of which the craftsman, looking at what is always changeless and using a thing of that kind as his model, reproduces

⁷⁶ Cf. Martijn (2010, 84–86).

its form and character, then, of necessity all that is made beautiful.⁷⁷
 But were he to look at a thing that has come to be and use as his model
 something that has been begotten, his work will lack beauty.

Tim. 28a4–b2; trans. Zeyl, modified

Proclus analyzes this passage as presenting two ‘axioms’. The first, concerning the efficient cause [a], he presents as a categorical syllogism; the second, concerning the paradigmatic cause [b], in conditionals.⁷⁸ We can reformulate his first syllogism as

All becoming is incapable of becoming without a cause; all that is incapable of becoming without cause is necessarily becoming through a cause; therefore all becoming is necessarily becoming through a cause.⁷⁹

In Tim. I 258.23–259.4

Proclus basically follows the Platonic text, and makes the argument valid by adding the second premises, which expresses the exhaustive dichotomy: there are only two options, with cause or without cause.

Despite the emphatic universality of Timaeus’ claims concerning the paradigmatic cause (expressed in *hotou men oun an* and *pan* in [b]), Proclus’ exegesis turns this passage instead into a list of conditionals, before applying two of those conditionals in a categorical form.

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.

Proclus then formulates what he calls a “coherent syllogism”

- (1) The cosmos has become
- (2) *Everything* that has become has a demiurgic cause

77 Modified Zeyls translation to emphasize the double universality in Plato’s text. Another possible translation for ‘*pan*’ is “entirely” (i.e. beautiful).

78 For a more detailed analysis see Martijn (2010, 115–123).

79 Reformulating *In Tim.* I 258.23–259.4. For the arguments in favour of this reformulation see Martijn (2010, 115–116).

- (3) *Everything* that has a demiurgic cause also has a paradigmatic cause
- (4) *Therefore*, the cosmos has a demiurgic and a paradigmatic cause.

In Tim. I 264.24–265.3, trans. Runia & Share

Before we address the question what reasons Proclus would have had to rephrase [b] which is not conditional at all, into conditionals, let me first point out a couple of facts of note. First, the result of the first lines of rewriting is not a syllogism, as no conclusion is drawn on the basis of the conditionals as such. Second, the syllogism that is subsequently constructed is a sloppy version of a categorical polysyllogism in Disamis, with two universal premises, the major terms of which both turn up in the conclusion.

So why would Proclus reformulate passage [b] in conditionals? Where Plato has *pan* [...] *panto* [...] *hotou men oun an* [...] *pan*; *hou d'an*, Proclus after the categorical presentation of [a] gives us four hypotheticals, including the conclusion of [a].⁸⁰ One might call the question moot, and point out that in this case the conditionals are equivalent to categoricals: sometimes categorical syllogisms were in fact formulated using *conditional* premises with copulas: 'If something is A, it is B'.⁸¹ This would reduce Proclus' formulation to something like 'variatio' – one can only repeat Platonic phrases verbatim so often. The conditionals may have been inspired by the disjunction at 28b6–7: whether the cosmos has always been, or has become (*poteron ēn aei* [...] *ē gegonen*), and present a dialectical elaboration of the consequences of the second leg. The categorical syllogism, which takes as its particular premise that "it (sc. the cosmos) has become" (*Tim.* 28b7), then shows what holds of a particular subsumed under the universal. So I propose that here as in the *Alcibiades*, the universal chain is laid out in a chain of conditionals which we may consider the result of a dialectical exercise, and the specific case is subsumed under the chain in categorical syllogisms, which in fact reflect a *modus ponens*. And perhaps Proclus felt that as opposed to the efficient cause of becoming, the paradigmatic cause, i.e. the Forms, could expect more resistance from e.g. Peripatetic opponents, and hence required a more elaborate introduction.

A bit further, in Proclus' exegesis of *Tim.* 31a3–4, we find a *modus ponens* using well known terminology:

If it is agreeable, before looking at his actual words, let us set out his argument in syllogistic form and consider what truth there is in them. The full argument, then, goes like this: *If* the cosmos has come into being after the

80 On this passage see also Martijn (2010, 120–121).

81 Cf. Martin (1991, 286).

Paradigm and the Paradigm is unique, [then] the cosmos is unique. The *antecedent*. Therefore, the *consequent*.

In Tim. I 439.2–6

This is a proper hypothetical syllogism of the mixed kind, in *modus ponens*, and phrased in terms of LAS.⁸² Here, of course, the Platonic text provides a good argument for choosing a hypothetical syllogism: “There is [only] one, *if* it is to have been fashioned by the Demiurge after the Paradigm” (*Tim.* 31a3–4). Proclus does take pains, however, to justify the necessity of the relation of consequence between antecedent and consequent. He explains that ‘one of a kind’ (*monogenēs*) is used in three senses, and that if we grasp which of these meanings is the true one, and is hence relevant in this context, “the hypothetical proposition is at once a necessary one” (*In Tim.* I 443.29–444.11).⁸³ In other words, the Paradigm is indeed unique in the fullest sense of the word, and this means that whatever is made after its example is also unique (444.11–15). The added justification suggests that Proclus would have preferred a categorical syllogism, as in the above examples of fitting individuals under a chain of universals.⁸⁴ Moreover, this extra justification fits the pattern we find in Proclus of using syllogisms to demonstrate the validity and truth of Plato’s reasoning.⁸⁵

5.5 *Examples from the Commentary on the Parmenides*

In the *Commentary on the Parmenides* (= *In Parm.*), the choice would be, one might think, crystal clear and unavoidable for exegetical reasons: hypothetical arguments are to be preferred for tracing metaphysical truths over categorical arguments, because they allow a more thorough and hence accurate study of properties of the subject matter:

82 See Bobzien (2014, 216).

83 Although the third sense at first seems to refer solely to not having a coordinate entity, Proclus subsequently points out that this third variety encompasses both other senses of ‘*monogenēs*’ as well: “it is the cause of all living things, has the status of monad in relation to everything [else], is participated by a single [entity], and is coordinate with nothing else but is genuinely monadic” (*In Tim.* I 444.7–10, trans. Runia & Share).

84 The categorical syllogism would have been something like: ‘The Paradigm is unique in the fullest sense of the word. [Everything that is fashioned after the Paradigm is similar to the Paradigm. Therefore] everything that is fashioned after the Paradigm is unique. The cosmos is fashioned after the Paradigm. Therefore the cosmos is unique.’

85 This treatment of Proclus’ syllogizing in the *Commentary on the Timaeus* is not exhaustive, I am leaving out cases where Proclus presents opponents’ views in syllogisms, see e.g. *In Tim.* I 424.7 ff.

When we are in pursuit of (metaphysical) reality (*zētountes ta pragmata*), we are more likely to discover the truth through this [sc. hypothetical] system than through that [sc. categorical], since through this multiplicity of hypotheses we can track down more accurately the subject of investigation. For the most part we will employ hypothetical syllogisms, always setting forth what is true and what is not true of our postulated entities. For these acquaint us particularly well with the common properties of things, showing us what relation they have to each other, and also their bases of divisions from each other; but we will also make use of categorical [syllogisms], when we have to establish the conjunction (*sunēmmenon*) of each hypothesis, or its minor premise.⁸⁶

In Parm. 1007.17–26

This is an interesting passage, reminding us of the now familiar strategy of on the one hand investigating, tracing metaphysical truths, through hypothetical (mixed) syllogisms, and on the other hand demonstrating the truth of the premises, through categorical syllogisms. In itself, the hypothetical method of the *Parmenides* is not a syllogistic, it just works through a full range of conditional propositions about a specific property or entity. This range of what would follow affirmation and negation of its existence, both ‘in relation to itself’ and ‘in relation to others’, may still provide conclusions with respect to necessary consequence, whenever, for example, positing the existence of something has certain consequences in all cases, while positing the non-existence has the opposite consequences (an example is the conclusion that “likeness is a cause of community and sympathy in this realm”, *In Parm.* 1010.14–9).

For those hypotheses to be part of a hypothetical syllogism that is not wholly hypothetical, for example modus ponens, the minor premise (affirming the antecedent) would still need proof. And apparently, considering the use of the word ‘*sullogismos*’, that is how Proclus thinks the *Parmenides* should be interpreted. Proclus shows himself well versed here in terminology and discussions on hypothetical syllogisms, using Peripatetic terminology. The “conjunction of each hypothesis” in the passage above refers precisely to the connection ‘if [...] then’ (the *sunēmmenon* or first premise in hypothetical syllogism), the minor premise to the affirmation of the antecedent (or as the case may be, the negation of the consequent). As he says elsewhere, only those hypothetical propositions (*sunēmmenon* again) are true in which, if the antecedent is true, so is

86 Translations of *In Parm.* are modified from Morrow & Dillon unless otherwise indicated.

the consequent (*In Parm.* 696.25–33).⁸⁷ The “relations and divisions” Proclus mentions in the quoted passage can then be mapped onto what Alcinous calls ‘consequentiality and incompatibility’, and what the early Peripatetics call ‘connection and division’, i.e. conditional premises, or disjunctive ones (cf. Galen, *Institutio Logica* 3.3–5).⁸⁸ Alternatively, the ‘division’ refers instead to conditionals with negative consequent.

As the second half of the quoted passage shows, the role of categorical logic in the *Parmenides*, according to Proclus, is to establish the truth of the relation of consequence between antecedent and consequent, and establishing the truth of the minor premise of a *modus ponens* by constructing a categorical syllogism with that premise as its conclusion. “Tracing metaphysical truths” (*zētein ta pragmata*, *In Parm.* 1007.17), for him, is not so much a matter of presenting true conclusions based on true premises and logical reasoning, but a conceptual analysis mapping out “the common properties of things” (1007.22–3), and their relations and divisions.

Interestingly, despite the contextual reasons for preferring hypothetical reasoning, the scholarly view is that Proclus overall prefers categorical syllogisms in his exegesis of the hypotheses of the *Parmenides*.⁸⁹ A closer look, however, shows that within the confines of what Proclus considers the *lexis* (in the sense of the analysis of the argumentation), he does often combine the two types – but the categorical ones are usually given first and stand out more, and the hypothetical ones are sometimes no more than conditional reformulations of categorical proofs.⁹⁰ Looking at the Platonic passages commented upon, and the kind of syllogisms presented, we can moreover find something of a pattern: right after the introduction of the first hypothesis (*Parmenides* (= *Parm.*) 137c) in book VI of the commentary, Proclus’ exegesis contains hypothetical syllogisms, or combinations of categorical and hypothetical.⁹¹ Further on, however, in the elaboration of the consequences of the hypothesis, we find only categorical syllogisms, basically from the moment Aristotle stops asking questions and instead merely agrees: at *In Parm.* 1206–7 (commenting on *Parm.* 140b–c), 1208 (140c–d), 1232 (141c–d), 1238 (141e), we find one categorical syllogism each. This alone could be an indication that the difference between

87 This passage is missing from Cousin’s edition, but Steel et al. did add it (as did Morrow and Dillon in their translation).

88 See Barnes in Barnes et al. 1999, 79 on that passage.

89 Hence Dillon (1993, 81) says that in his exegetical practice of the *Parmenides*, Proclus confines himself to categorical syllogisms (with one exception, in interpreting 137cd).

90 And it seems sometimes the hypothetical arguments are taken as given in the Platonic text.

91 To find the line between syllogism and argumentation, which is not always easy, I start from Proclus’ signalling of the beginning and end of the logical exegesis.

the two types is a dialectical one: hypothetical for finding agreement on and explaining metaphysical truths, and categorical to sum up the consequences and what is agreed upon.⁹²

Moreover, the ‘we’ in the passage quoted above is not further specified, but I propose that it refers to ‘we the Platonists’, including Plato. This would add to our explanation of the apparent preference for categorical syllogisms, as the elaboration of the conditional reasoning is already present in the Platonic text (if not in explicit syllogisms). We will see an example below. Because the categorical syllogisms in the commentary are rather straightforward and for our purposes not very interesting summaries of Parmenides’ argumentation, in the following I will leave them aside, and instead focus on some instances where Proclus uses hypothetical reasoning, or combinations of hypothetical and categorical syllogisms.

When explaining the logic of *Parm.* 137c5–7, Proclus emphasizes that negating ‘many’ (or ‘whole’ or ‘parts’) of ‘One’ is not a case of negating the antecedent (which would result in a fallacy), but of a *modus ponens* with negative premises. He illustrates this by giving another example of *modus ponens* with a negative major premise: “If something is not an animal, it is not a man”. The claim “But it is not an animal” is now affirming the antecedent, and the result is a valid syllogism (*In Parm.* 1097.23–1098.21). Proclus adds that, even in the case of coextensive terms, this move is valid, not on a quantitative basis, but a qualitative one, namely the relative power of the terms (*In Parm.* 1098.20–21.).

This passage is important, because it displays the use of syllogistic used to counter possible criticism of Plato’s argumentation (as, perhaps, in the *Commentary on the Timaeus*), in this case of a core element of the dialectic of the *Commentary on the Parmenides*: negative theology.

The most emphatic combination of categorical and hypothetical syllogistic (which Dillon also mentions), follows at the next lemma, in the analysis of *Parm.* 137cd. Proclus analyses this into two categorical syllogisms of the second figure, and then again, without explaining why, in *modus tollens*:

The One is not many
 A whole is many
Therefore, the One is not a whole
 The One is not many
 That which has parts is many

92 This is related to Proclus’ statement that the demonstrative syllogisms “prove what was required in a geometrical manner from what was agreed upon before”, *In Parm.* 1140.17–18), but the point there seems slightly different.

Therefore, the One does not have parts

And in a hypothetical syllogism: *If the One is a whole, it has parts; if the One has parts, it is many; but the One is not many; therefore, it is not a whole, nor does it have parts.*

In Parm. 1104.19–26; summary based on Dillon & Morrow

This, he states, is Plato's summary of the proof that the One does not have parts (being a whole is understood as not missing parts, and hence contributing to that same proof). What is the difference between the two presentations? It is not one of predicate versus propositional logic, or of demonstration versus investigation; underlying the hypothetical statements are the general categorical statements, e.g. 'Every whole has parts' – this makes the hypothesis "If the One is a whole, it has parts" true. Nor is the categorical syllogism proof of the minor premise of the hypothetical one ("the One is not many" does not need proof) or proof of the relation of consequence between antecedents and consequents. By presenting both syllogisms, however, Proclus elegantly makes the most of the difference in the order of presentation between the two types. By putting the categorical syllogism first, he emphasizes a point he made a bit earlier, and which he may think he needs to highlight considering the convolutions of the Plato text at 137cd: that the negation of 'many' is more powerful than the negation of 'parthood' and 'wholeness' (*In Parm.* 1097.17–1102.4). By adding the hypothetical syllogism, he lays out the land of (im)possibilities, as it adds to the categorical syllogisms (which shows the relation between whole and many and having parts and many respectively), the relation between wholeness and parts. The result is a clarification and strengthening of Plato's argumentation.

On three occasions, Proclus does combine categorical and hypothetical in the way he promised us, the former proving premises for the latter. First, at *In Parm.* 1140.5–1144.31 (commenting on *Parm.* 138a), he presents three related categorical syllogisms, two of which prove the minor premise of the third, which summarizes categorically the results of a *reductio ad impossibile* in the Platonic text. Since *reductio* belongs with the (mixed) hypothetical syllogisms, it looks like we here have an example of the inclusive 'we': Plato provides the hypothetical syllogism, Proclus the categorical support. Second, in the exegesis of *Parm.* 138b, which is a continuation of the same argument, Proclus interprets the Platonic text as itself providing syllogisms clarifying the premises of the earlier syllogism, possibly in response to a request for clarification on Aristotle's part (*Pōs dē*; at 138a3) (*In Parm.* 1147.10–25). Finally, the exegesis of 139a4–b3 starts with a categorical syllogism (the first premise being "Everything that is at rest wishes to be in the same place" (1170.5), the conclusion "everything that

is at rest is at rest in something" (1170.8)), and in the application to the One switches to what looks like hypothetical reasoning. Proclus first prepares the major premise "If everything that is at rest is in something, that which is not in something is not at rest" (1170.10–11), using what he calls a "conversion with opposition of the premise" (1170.11–12).⁹³ This is then applied to the case of the One (1170.5–10; 10–12; 12–15 respectively), with the final argument being

If the One is not in something [antecedent], as we have shown previously [affirming the antecedent], and that which is not in something is not at rest [consequent], it is surely plain that the One is not at rest. [conclusion].

In Parm. 1170.12–14; additions in square brackets are mine

The main conclusion is obtained in the hypothetical syllogism, which relies on the conclusion of the categorical syllogism. Here, then, we have a clear example of Proclus himself combining the two types, in the way he promised us. And in this case, he himself points to the dialectical context: "the interlocutor had said 'How so?' and asked him to prove the major premise" (*In Parm.* 1170.20–22).⁹⁴

One unfortunate feature of this example, is that it is the inverse of the procedure we saw in other commentaries, where Proclus used hypothetical syllogisms for the universal statements, and categorical for the application to a particular case (e.g. the cosmos in the *Timaeus*). Fairness also demands that I point out that we find the inverse combination in another sense in the *Parmenides* commentary, namely where the conclusions of a categorical syllogism are themselves corroborated in hypothetical terms. This does not match Proclus' own statement on the division of labour, discussed above, but the three cases I found do have something in common, namely that they aim at fortifying the categorical conclusions by showing the impossibility of the opposite. I take this to mean that they do a similar job as the hypotheses, namely exploring the range of (im)possibilities.⁹⁵

93 For this technical term see Alexander, *In An. Pr.* 29.15 ff., Galen, *Instutio Logica* 6.4.3 and Philoponus, *In An. Pr.* 42.10–11. It is not uncommon in the commentators, see e.g. Olympiodorus, *In Phaedonem* 2.4.7, Hermias, *In Platonis Phaedrum scholia* 26.26.

94 The major premise in this case seems to be the connection "If it is not in anything, it is not in the same (condition)" made at *Parm.* 139a3–4.

95 A *reductio* as support for a categorical demonstration (*In Parm.* 967.20–25 categorical and 25–28 *reductio*); a categorical syllogism, one of the premises of which is elaborated in terms that again suggest *reductio* (although 'syllogism' is too strong a word for this argument, *In Parm.* 1195.29–1196.17, 139e–140a); and again the minor premise of a categorical syllogism elaborated through a conditional: "if it is not possible for the One to be anything

In the commentary on the *Parmenides*, then, Proclus himself is quite clear on the respective roles of categorical and hypothetical syllogisms, but the elaboration is more varied. He does indeed sometimes use the categorical syllogisms as ‘prodeductions’, to establish the correctness of the hypothesis and the truth of the minor premise. And at times, it seems the categorical syllogisms are presented as the end stage of demonstration after a thorough investigation in the consequences of the hypothesis. Overall, an important feature in this commentary is role of both Platonic dialectic in the specific sense of the hypothetical method, and the dialectical context, in the narrower sense of the discussion between Parmenides and Aristotle in the dialogue.

In conclusion, we find in Proclus different ways of syllogizing Plato, depending, probably, on the dialogue and the type of exposition (or interlocutor) at hand. Overall, however, it is clear that the dialectical methods form the pattern on which the syllogisms are mapped, and that the syllogisms tend to serve both to clarify and justify Plato’s reasoning, and to stimulate recollection.

6 Damascius and Olympiodorus

In the 6th century, Damascius’ commentaries on the *Phaedo* (= Dam. *In Phd.*) display a kind of next level syllogizing: besides the explicit spelling out of syllogisms as found in Alcinous and Proclus, we also, and more frequently, encounter fascinating diagrammatic renderings of syllogistic reasoning, as in the Platonic *scholia*.⁹⁶ He uses two types of diagram in both commentaries, namely linear rendering of class relations (the best example is at *In Phd.* I 264, but see also I 131, 155, 329, 370, 405, 426, II 77) and triangular rendering of syllogistic figures (Dam. *In Phd.* I 361, 367, 370, 379, II 45, 50). The terminology Damascius uses to frame his exegesis of the logical aspects of the *Phaedo* is that of LAS, with Aristotelian plus Stoic elements in the first, and mainly Aristotelian in the second commentary.⁹⁷ He does not explicitly discuss the relation between hypothetical and categorical logic, but his exegetical practice does tell us something. In the first commentary, Damascius tends to formulate Socrates’ main arguments as *modus ponens*, with other strategies (categorical syllogism, but also induction and common sense) to prove the major and

other than one, it cannot be other” (and the major premise through an analysis of set inclusion of the terms involved) (*In Parm.* 1197.25–1198.9, 140ab).

96 Cf. Damascius, *In Phil.* 26, 179, 196. For this type of diagrams as originating in Platonic *scholia*, see Brumbaugh (1961).

97 Lending support to Westerink’s thesis that the two commentaries were not written during the same course, but at different times. Note that the diagrams are used in both.

minor premises. We find him pointing to the affirming of the antecedent in *modus ponens* (Dam. *In Phd.* I 184, 405.10–11; 15–16, 427, cf. I 57, and of course in the summary at 458–465),⁹⁸ and to *modus tollens* vs. the fallacy of affirming the consequent at I 136; but we find e.g. a string of universal affirmative categorical syllogisms proving major and minor premises at both I 264 and II 13, although in the former case again intermingled with Stoic or dialectical elements (namely disjunction⁹⁹),¹⁰⁰ Disamis at II 34 and 77, Cesare at II 50.

Besides this difference in emphasis between the two commentaries, it seems that in both works Damascius wants to make explicit what the hypotheses are Socrates builds his argument on, and how these hypotheses are or are not proved (e.g. Dam. *In Phd.* I 262, 307, 362–70, 449–57 and correspondingly II 13, 45–54). Overall, it seems Damascius is aiming at showing how the arguments for the immortality of the soul fit the ‘second sailing’, i.e. Socrates’ hypothetical method as described at *Phaedo* (= *Phd.*) 99–101, which was also alluded to by Philoponus: working from hypotheses, seeing what follows from them, and also investigating what further hypotheses they rely on. The method is in fact explicitly brought up in the second commentary, in a brief discussion of what the “adequate starting point” (*Phd.* 101e1) Socrates refers to might be – and Proclus’ suggestion that the ‘adequate’ starting point is the Good is countered with the proposal that it is instead context dependent and dialectical: the adequate starting point, says Damascius, is that which, in each discussion, is agreed upon and considered self-evident (Dam. *In Phd.* II 74).¹⁰¹ Damascius’ teacher Isidore did not recommend focusing on syllogistic, as he thought it distracted from the search for inner truth, but Damascius himself does not share that distrust (*Vita Isidori* 43). Instead he seems to have a pragmatic approach to syllogizing Plato: perhaps he does follow Isidore in assuming

98 The remark at Dam. *In Phd.* II 76, that Socrates makes sure the soul will not escape his hypotheses, at first sight refers to the assumptions made at 103e5–105c7, and which Damascius summarizes in II 75, but “not escaping the hypotheses” itself comes down to a particular resorting under a class, in a way which could be rendered syllogistically, e.g. in a kind of *modus ponens* with a general hypothesis and a specific minor premise which shows that the particular “does not escape the hypothesis”: if something is A, it is B, the soul is indeed A (i.e. falls under the hypothesis), therefore it is also B.

99 Cf. Dam. *In Parm.* 186.3 ff.

100 In Dam. *In Phd.* II the syllogisms are ascribed to ‘the commentator’, i.e. Proclus.

101 Note that the first commentary instead seems to accept Proclus’ understanding of the passage. It does not discuss the method, but applies it by “thinking deeper”, and finding the one principle before differentiation and unification (Dam. *In Phd.* I 420). This difference again reinforces Westerink’s understanding of the two commentaries, see n. 65 above.

that the logical figures are useful, but conventional, rather than natural, and sees it as a challenge to find the most useful form for each occasion.¹⁰²

Damascius' contemporary Olympiodorus tends to find syllogisms that are rather far removed from the original Platonic text. That fits his view of Plato as reasoning but not *writing* in syllogisms: Plato did not write in lists or syllogisms, because he is a 'logographer', and hence the transition from one argument to the next is "noiseless like a stream of oil" (Olympiodorus, *In Phaidonem* (= *Olymp. In Phd*) 2.7.6–7).¹⁰³

When syllogizing those smooth texts, Olympiodorus is slightly more outspoken than Proclus and Damascius in his preference for categorical syllogisms. With only a couple of exceptions, he tends to provide categorical syllogisms in his commentaries. On one occasion, he explicitly claims that a categorical syllogism is stronger, but he does not elaborate on this claim (and it is not even clear if this is a general remark or regards only the case at hand):

The task at hand is to find what our substance is, that a human being is not its body, not the combination. And he shows this through two syllogisms, one categorical and the other hypothetical. And he put the categorical first, as it is stronger than the hypothetical.¹⁰⁴

OLYMP. *In Alc.* 202.1–6

It is not at all obvious that Plato gives a categorical and a hypothetical syllogism, but if we look at Olympiodorus' reconstruction thereof, we can say that the categorical is a syllogism with affirmative premises and implicit universal: the human being uses the body as an instrument, that which uses the body as an instrument is the soul, hence the human being is the soul (*Olymp. In Alc.* 202.6–9). This is probably gleaned from *Alc.* 129b–130a. What Olympiodorus calls the hypothetical argument is a disjunction,¹⁰⁵ starting from what Socrates considers the exhaustive options that a human is either body, or body plus soul, or soul (at *Alc.* 130a3) plus an additional lemma, that human beings rule

102 The above is in no way an exhaustive treatment of Damascius' use of syllogisms. Some further examples: Damascius also recognizes syllogisms through *diairesis* (cf. Theophrastus frs. 111 and 112, syllogisms using exclusive 'or'), at *In Phd.* 1 118.1; *In Parm.* 192, 226. At *In Phd.* 11 54 Damascius presents a categorical syllogism with hypothetical premises, but it is a fallacy as it stands – which Damascius does not point out as such, although he does criticize the argument.

103 Cf. 10.3: Syllogistic arguments, as providing knowledge through middle terms, are stories (*mythos*) for Plato, as opposed to higher kinds of knowledge (and the Peripatetic tendency to worship syllogisms).

104 Commenting on *Alc.* 129b1 ff.

105 On this terminology see Bobzien (2002b, 388).

over their bodies; this is followed by the exclusion of the former two options through *reductio ad absurdum*: we cannot be body or the combination, because in that case the body would rule itself, which (this remains implicit) is impossible; and the conclusion that therefore the remaining option, that we are the soul, must be true (Olymp. *In Alc.* 207.3–14).

The underlying reasoning in this case of syllogizing and Olympiodorus' preference for the categorical syllogism, may be that a hypothetical syllogism requires an extra *lemma* and is for this reason less strong; on the other hand, the lemma merely replaces the premise about using the body as an instrument, so if there is no substantial difference between the two premises, this could hardly count as explaining the supposed difference in strength. Another explanation, which could explain his general preference, is that Olympiodorus is thinking of the Aristotelian tenet (as also discussed above) that only the categorical syllogism gives us an explanation for the truth of the conclusion (the middle term connecting subject and predicate).¹⁰⁶ And of course, yet another explanation could be the dialectical context. In the commentary on the *Gorgias*, where Olympiodorus does see a hypothetical, this is inspired, as Tarrant convincingly shows, both by the Platonic text (*Gorgias* 468d1–4), and by the dialectics: the matter expressed in the conditional is in fact under discussion, and hence cannot be categorically claimed.¹⁰⁷ Alternatively, we find a rephrasing of the Platonic text into a hypothetical syllogism as part of the elenchus – so the conditional should be understood as expressing the dialectical process, in taking Callicles along in the reasoning “If you agree with this, then you also have to agree with this” (*In Grg.* 28.1, commenting on *Grg.* 488d–e.)

Where both types are presented to prove the same thing, the Platonic method of dialectic and the importance of exhaustive divisions, comes into play again: by also giving the disjunction and excluding all options except the one reached in the categorical syllogism, we know that there could not be another categorical syllogism proving that a human being is, not the soul, but e.g. the body.¹⁰⁸ And finally, we find in Olympiodorus also a recognition of the method Proclus identified in his commentary on the *Parmenides*: establishing the truth of a hypothetical syllogism through categorical ones. At *In Phd.* 3.2–3 Olympiodorus analyses Socrates' argument on the philosopher's willingness to die (*Phaedo* 63e8–65a8) as presenting first a hypothetical syllogism in *modus*

106 Note that in this case the middle term does not provide us with a causal relation; and that there is also a common notion involved in the reasoning, that that which rules is superior to that which is ruled.

107 *In Platonis Gorgiam Commentaria* (= *In Grg.*) 16.3, see Tarrant (1997, 419; 421–422).

108 As above in Procl. *In Alc.* 207.3–14.

ponens, with the major premise proved “in a few words, saying that [the opposite] is foolish” (Olym. *In Phd.* 3.2.4), which suggests a *reductio*, and the minor premise provided by a categorical syllogism.¹⁰⁹

The overall picture in Olympiodorus seems to be, then, that hypothetical syllogisms are used in dialectical contexts, and categorical syllogisms for demonstrations, and that categorical syllogisms are preferred, probably precisely for the reason that they are demonstrative, rather than investigative.

7 Conclusion

All in all, the Platonic commentators show a great versatility in their syllogizing. They are hardly interested in the question whether – in general, when it comes to systems of logic – hypothetical or categorical syllogisms are prior. Instead, they consider them two sides of the same coin, to be used for the appropriate occasions, and both relying on the methods of dialectic as revealing the structure of knowledge and reality. In the order of investigation and in refutation, the hypothetical is prior, as it investigates possibilities and consequences, and finds premises. In the order of knowledge, reality, justification, and teaching, the categorical is prior, as it gives certain proof from causes. In syllogizing Platonic dialogues, pragmatics, dialectic, and didactic choices seem to decide whether a categorical or a hypothetical syllogism is presented, the hypothetical being superior as philosophical instrument, but the categorical superior as didactic tool. Where a conclusion is argued with both types, and apparently no new information is added in the reformulation, the combination serves to emphasize the options excluded.¹¹⁰

In general, returning to the point of Ebbesen (2007): there may not be a specifically Neoplatonic logic, but it is fair to say that there is a specifically Neoplatonic use of logic: as Proclus points out at the beginning of the *Commentary on the Cratylus*, logic has to be about reality. And as Alexander complains: logic is an instrument, so there is no sense to it if it is not useful.

¹⁰⁹ “The major premise he proves in a few words, saying that it is foolish (ἄτοπον), if one has spent all one’s life preparing for a thing and pursuing it (namely to die and be dead), then to be afraid when it comes” (Olym. *In Phd.* 3.2.4–6, trans. Westerink). On this argument see also Gertz (2011, 61 ff).

¹¹⁰ I.e. when the same argument is presented both in categorical and in hypothetical form, and both either connect terms (‘All A are B’ becoming ‘if something is A it is B’). This reveals that the difference between the two was not considered to lie in the distinction term logic vs. propositional logic.

Likewise, for a Neoplatonist it is what you can do with logic that matters most. Neoplatonic logic is a preferred use of theories of reasoning.

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