Hypothetical Syllogisms and Infinite Regress

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At the beginning of his commentary on Aristotle’s De interpretatione, Ammonius puts forward an argument for the priority of categorical over hypothetical syllogisms. He argues that any demonstration using hypothetical syllogisms must ultimately make use of a categorical syllogism establishing one of their premises (3.19–30). Ammonius’ argument employs two of the Five Modes of Agrippa, the modes from infinite regress and from hypothesis. Apart from this, however, much of the argument remains unclear and open to doubt. As Jonathan Barnes points out, it seems to rely on ‘some pretty questionable assumptions’.

The aim of this paper is to contribute to a better understanding of Ammonius’ argument and its underlying assumptions. To this end, I consider two related arguments for the priority of categorical over hypothetical syllogisms given by Pseudo-Ammonius and Alexander of Aphrodisias in their commentaries on the Prior Analytics (67.11–15 and 263.7–21, respectively). I argue that all three arguments originate in early Peripatetic discussions of Aristotle’s treatment of syllogisms from a hypothesis in Prior Analytics 1.23. Specifically, they derive from Theophrastus’ account of Aristotle’s claim in Prior Analytics 1.23 that all syllogisms from a hypothesis ‘come about through the three figures’ of categorical syllogisms (41a37–b3). The early Peripatetic argument reported by Ammonius, Pseudo-Ammonius, and
Alexander employs the second and fourth of the Five Modes of Agrippa. It is well known that Aristotle discusses and rejects skeptical arguments based on these two modes in *Posterior Analytics* 1.3. The present paper shows that these modes played a more positive role in the logical writings of the Peripatetic school. In a tradition that goes back to Theophrastus, they were used in arguments establishing one of the central tenets of Peripatetic logic, the priority of categorical over hypothetical syllogisms.

I begin by considering the argument presented by Ammonius (Section 1). A related argument is given by Pseudo-Ammonius in his discussion of Aristotle’s treatment of syllogisms from a hypothesis in *Prior Analytics* 1.23 (Section 2). Both arguments face a challenge from Aristotle’s response in *Posterior Analytics* 1.3 to skeptical arguments based on the second and fourth Modes of Agrippa (Section 3). I show how this challenge can be met by means of an argument given by Alexander in his commentary on *Prior Analytics* 1.23. The argument, which Alexander attributes to Theophrastus, pertains to the epistemic status of the premises of hypothetical syllogisms. It relies on the view that the statement of a hypothetical proposition *If P, then Q* does not amount to the unqualified assertion of a conditional proposition, but rather to a conditional assertion of *Q* on the supposition that *P* (Section 4).

1. Ammonius on Hypothetical Syllogisms
At the beginning of his commentary on the *De interpretatione*, Ammonius observes that this treatise is centrally concerned with assertoric sentences (λόγοι ἀποφαντικοί).¹ According to Ammonius, there are two kinds of assertoric sentence: categorical and hypothetical.² A categorical sentence is a simple predicative sentence in which a predicate is affirmed or denied of a subject, as in *All humans are mortal* and *No human is a stone*. Hypothetical sentences are compound sentences consisting of two or more categorical sentences joined by connectives. Ammonius distinguishes two kinds of hypothetical sentence: conditionals, as in *If it is day, the sun is above the earth*, and disjunctions, as in *Either it is day or it is night*.³

Ammonius points out that, in the *De interpretatione*, Aristotle sets aside hypothetical sentences and deals exclusively with categorical ones:

Aristotle teaches us only the categorical kind of assertoric sentence, since it is complete in itself and useful for demonstrations, but the hypothetical, since it is defective and utterly lacking the completion of the categorical, he will never judge worthy of primary concern. (Ammonius, *Commentary on Aristotle’s De interpretatione* 3.15–19)

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¹ Ammonius in *De int.* 1.21–2.25.
² in *De int.* 3.7–15.
³ in *De int.* 3.30–4.3, 67.11–14, 73.25–33.
In this passage, Ammonius claims that categorical sentences are superior to hypothetical ones in that the former are ‘complete and useful for demonstrations’, whereas the latter lack these distinctions. Ammonius proceeds to justify this claim as follows:

For hypothetical syllogisms assume what is called the substituted assumption or the co-assumption without demonstration (and sometimes also the conditional or the disjunctive that they assume is in need of argument). Thus, they obtain conviction from a hypothesis, viz., whatever conviction admitted their first hypotheses. If, then, you use another hypothetical syllogism to establish these hypotheses, you will in turn need another support for the conviction of the hypotheses occurring in it, and for this yet another, and so on ad infinitum, if you want to strengthen the hypotheses by means of hypotheses. But if the demonstration is to be complete and self-sufficient, it is clear that a categorical syllogism is needed, which professes to demonstrate the conclusion without any hypothesis. This is also why we call categorical syllogisms simply ‘syllogisms’, but we call hypothetical syllogisms by the full phrase ‘syllogisms from a hypothesis’, and not simply ‘syllogisms’. (Ammonius, *Commentary on Aristotle’s De interpretatione* 3.19–30)

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4 Ammonius does not discuss the case in which the conditional or the disjunctive premise is in need of argument. Alexander (*in APr. 263.22–5*) argues that, if the conditional premise is in need of argument, it is established by means of a categorical syllogism.
This argument pertains to the role played by hypothetical syllogisms in demonstration (
\(\alpha\pi\omicron\delta\epsilon\iota\varsigma\iota\varsigma\)). Ammonius focuses on hypothetical syllogisms such as those of the form *modus ponens*:

\[
\text{If } P, \text{ then } Q \\
P \\
\text{Therefore, } Q
\]

Ammonius refers to the first premise of such a syllogism as ‘the conditional’ (\(\tau\omicron\\sigma\nu\eta\mu\mu\epsilon\nu\nu\)). The second premise is referred to as ‘the substituted assumption’ (\(\mu\epsilon\tau\alpha\lambda\iota\nu\varsigma\iota\varsigma\)) or ‘the co-assumption’ (\(\pi\rho\omicron\omicron\lambda\iota\nu\iota\varsigma\iota\varsigma\)). Ammonius states that this latter premise is assumed ‘without demonstration’ (\(\alpha\nu\alpha\pi\omicron\delta\epsilon\iota\kappa\iota\nu\omega\varsigma\)). Consequently, whatever conviction (\(\pi\iota\sigma\tau\iota\varsigma\)) in the conclusion such a hypothetical syllogism is able to produce is only ‘from a hypothesis’ (\(\epsilon\xi\upsilon\omicron\omicron\theta\omicron\xi\omicron\omicron\upsilon\varsigma\omega\varsigma\)). The conviction in the conclusion \(Q\) is conditional on the conviction in its undemonstrated co-assumption, \(P\). Thus, Ammonius refers to this co-assumption as a ‘hypothesis’. Now, the demonstrator might try to establish this hypothesis by another hypothetical syllogism of the form:

\[
\text{If } P, \text{ then } P
\]

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5 The former term is of Peripatetic origin, whereas the latter term is of Stoic origin (see Philoponus in *APr.* 242.34–243.10; cf. Bobzien 2014: 217–20).
In this case, however, the same reasoning applies to the new hypothetical syllogism, thus giving rise to a regress of hypothetical syllogisms. In this way, Ammonius argues, the attempt to demonstrate a conclusion solely by means of hypothetical syllogisms results in a chain of hypothetical syllogisms which proceeds \textit{ad infinitum} (εἰς ἀπειρόν). Clearly, such an infinite regress of hypothetical syllogisms fails to constitute a demonstration of the original conclusion.

As Jonathan Barnes has pointed out, this argument against hypothetical syllogisms employs the second of the Five Modes of Agrippa, the mode from infinite regress.\textsuperscript{6} Sextus Empiricus describes this mode as follows:

\begin{quote}
In the mode deriving from infinite regress, we say that what is brought forward to produce conviction (πίστιν) in the matter in question needs another conviction, which itself needs another, and \textit{so ad infinitum}, so that we have no point from which to begin to establish anything, and suspension of judgement follows. (Sextus Empiricus, \textit{Outlines of Scepticism} 1.166)
\end{quote}

\textsuperscript{6} Barnes 1990: 38–9.
Ammonius argues that, if the demonstrator stops the regress of hypothetical syllogisms simply by not providing a syllogism establishing one of the co-assumptions, then the original conclusion is established only 'from a hypothesis'. Again, such a derivation would fail to constitute a demonstration of the original conclusion. On this point, Ammonius follows the fourth of the Five Modes of Agrippa, the mode from hypothesis:

We have the mode from hypothesis (ἐξ ὁποθέσεως) when the dogmatists, being thrown back ad infinitum, begin from something which they do not establish but claim to assume simply and without demonstration in virtue of a concession. (Sextus Empiricus, *Outlines of Scepticism* 1.168)

Ammonius goes on to argue that, in order to avoid these objections from the second and fourth Modes of Agrippa, the demonstrator must employ a categorical syllogism establishing the co-assumption of the last hypothetical syllogism in the regress. For example, if this co-assumption is a categorical sentence of the form *All As are B*, the demonstrator must establish it by a categorical syllogism in Barbara:⁷

\[
\text{All As are C}
\]
\[
\text{All Cs are B}
\]

⁷ Ammonius seems to assume that both the antecedent and the consequent of a conditional hypothetical sentence are categorical sentences (see in *De int.* 3.11–15; cf. Bobzien 2002b: 109 n. 19).
Therefore, *All As are B*

If such a categorical syllogism is used to establish the co-assumption of the last hypothetical syllogism, it is possible ‘to demonstrate the conclusion without any hypothesis’. Provided that the other conditions for demonstration are satisfied, the resulting chain of categorical and hypothetical syllogisms will constitute a ‘complete and self-sufficient’ demonstration of the original conclusion. According to Ammonius, this is the only way to obtain a demonstration that involves hypothetical syllogisms. Any demonstration which involves a hypothetical syllogism must ultimately employ a categorical syllogism. By contrast, the converse is not correct, for there are purely categorical demonstrations that do not involve any hypothetical syllogisms. Thus, categorical syllogisms are prior to hypothetical ones with regard to their usefulness in demonstrations. For this reason, Ammonius argues, categorical syllogisms can be regarded as syllogisms without qualification whereas hypothetical syllogisms are syllogisms only in qualified sense, namely, ‘syllogisms from a hypothesis’ (συλλογισμοί ἐξ ὑποθέσεως).⁸

While the general structure of Ammonius’ argument is sufficiently clear, the argument leaves the reader with some questions. For example, why is it that the co-assumption of every hypothetical syllogism is in need of justification by a further syllogism? Also, why are categorical syllogisms not subject to the same problems raised by Ammonius for hypothetical syllogisms? Thus, Jonathan Barnes comments that Ammonius’ argument is not ‘immediately

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convincing’ and ‘makes some pretty questionable assumptions’.\(^9\) In what follows, I argue that a better understanding of Ammonius’ argument can be obtained by considering it against the backdrop of two related arguments for the priority of categorical over hypothetical syllogisms given by Pseudo-Ammonius and Alexander of Aphrodisias.

2. Pseudo-Ammonius on Hypothetical Syllogisms

Volume IV.6 of the Commentaria in Aristotelem Graeca contains a commentary on the Prior Analytics which has been transmitted under the name of Ammonius. The first part of the commentary (CAG IV.6 1–36) consists of notes taken by a student ‘from the voice of Ammonius’.\(^{10}\) The second part (CAG IV.6 37–76) does not derive directly from Ammonius’ lectures, but instead, as Wallies points out, ‘seems to be excerpted from the pages of some follower of Ammonius’.\(^{11}\) The relevant argument for the priority of categorical over hypothetical syllogisms appears in this latter part, in Pseudo-Ammonius’ commentary on chapter 1.23 of the Prior Analytics.

In Prior Analytics 1.23, Aristotle argues that ‘every syllogism comes about through one of the three figures’, i.e., through one of the three figures of categorical syllogisms (40b21–2). To establish this thesis, Aristotle distinguishes two kinds of syllogism: direct syllogisms and those ‘from a hypothesis’ (ἐξ ὑποθέσεως). Direct syllogisms are purely categorical, constructed

\(^9\) Barnes 1990: 38.

\(^{10}\) CAG IV.6 1.1–2.

\(^{11}\) CAG IV.6 p. vii.
by means of the syllogistic moods in Aristotle’s three figures.\textsuperscript{12} Syllogisms from a hypothesis, by contrast, involve a non-categorical component. Aristotle argues that these syllogisms, too, ‘come about through the three figures’, in the sense that they contain a direct, purely categorical syllogism as a part. In chapter 1.23, Aristotle focuses on an important kind of syllogism from a hypothesis, namely, that by \textit{reductio ad impossibile}.\textsuperscript{13} In this kind of syllogism, the contradictory of the original \textit{demonstrandum} is posited as an assumption for \textit{reductio}. Next, an impossible consequence is derived from this assumption. Aristotle emphasizes that this derivation is a direct syllogism or, at least, that it contains a direct syllogism as a part.\textsuperscript{14} Given this derivation of an impossible consequence from the assumption

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\textsuperscript{12} This can be seen from Aristotle’s treatment of direct syllogisms at \textit{APr. 1.23 40b30–41a20} (on which see Smiley 1994: 29–34, Barnes 1997: 157–9).

\textsuperscript{13} \textit{APr. 1.2340b25–9} and \textit{41a21–37}.

\textsuperscript{14} \textit{APr. 1.23 41a32–4, 1.44 50a29–32}. These passages are naturally understood as stating that the derivation of the impossible consequence is a direct syllogism (Alexander \textit{in APr. 259.9–11}, 261.24–8, 262.3–4, Pseudo-Ammonius \textit{in APr. 66.39–67.4}, Lear 1980: 34, Crivelli 2011: 125). On the other hand, there is reason to think that Aristotle allows for nested applications of \textit{eductio ad impossibile}, in which the impossible consequence of a \textit{reductio} is itself derived by means of a \textit{reductio}. Aristotle makes use of such nested applications of \textit{reductio} in his modal logic (e.g., \textit{APr. 1.15 34b2–6, Metaph. 4 1047b14–26}; see Fine 2011: 1023–8, Rosen \& Malink 2012: 234–42, Malink \& Rosen 2013: 971–3). Moreover, Aristotle seems to allow for nested applications of syllogisms from a hypothesis in the case of ‘other’ syllogisms from a hypothesis, which do not proceed by \textit{reductio ad impossibile} (see n. 20). Given this, it is natural to expect that he would allow for nested applications of \textit{reductio} as well. Thus, Aristotle may be taken to require that, in a \textit{reductio ad impossibile}, only a proper part of the derivation of the impossible consequence be a direct syllogism, leaving open the possibility that the derivation itself is a syllogism.
for reductio, the original demonstrandum is then inferred by means of a non-categorical inference. Aristotle describes this latter inference as ‘from a hypothesis’, and emphasizes that it cannot be analyzed as an application of a categorical syllogism.\(^{15}\) Nevertheless, in Aristotle’s view, the fact that the derivation of the impossible consequence is, or contains, a direct syllogism suffices to show that syllogisms by reductio ad impossibile satisfy the thesis of Prior Analytics 1.23. Thus, these syllogisms ‘come about through the three figures’ in the sense that they contain a proper part which is a direct, purely categorical syllogism.\(^{16}\)

Aristotle goes on, in Prior Analytics 1.23, to argue that the same thesis holds for all other syllogisms from a hypothesis, those which do not proceed by reductio ad impossibile. These ‘other’ syllogisms from a hypothesis are arguments in which the original demonstrandum is derived by establishing what Aristotle calls a ‘substituted proposition’ (τὸ μεταλαμβανόμενον).\(^{17}\) They rely on an agreement to the effect that, if the substituted proposition is established, then the original demonstrandum may be inferred.\(^{18}\) For example, suppose that an interlocutor wishes to establish the demonstrandum that there is not a single

\(^{15}\) APr. 1.23 41a34, 1.44 50a29–32.

\(^{16}\) APr. 1.23 41a32–7; see Lear 1980: 34–5.

\(^{17}\) An. Pr. 1.23 41a39, 1.29 45b18. For the following account of syllogisms from a hypothesis, see Alexander in APr. 262.4–24, Lear 1980: 34, Bobzien 2002a: 368–72, Crivelli 2011: 142–9.

\(^{18}\) Aristotle refers to this agreement as a ὁμολογία (1.23 41a40) or συνθήκη (1.44 50a18).
science of contraries. To establish this *demonstrandum*, the interlocutor obtains an agreement to the effect that, if there is not a single power of contraries, then there is not a single science of contraries. The interlocutor proceeds to establish the substituted proposition, that there is not a single power of contraries. Given this, the agreement will then allow the interlocutor to infer the original *demonstrandum*, that there is not a single science of contraries.

In his discussion of these ‘other’ syllogisms from a hypothesis, Aristotle emphasizes that the derivation establishing the substituted proposition is a direct syllogism or, at least, that it contains a direct syllogism as a part. Hence, just like syllogisms by *reductio ad impossibile*, the other syllogisms from a hypothesis ‘come about through the three figures’ in the sense that they contain a proper part which is a direct syllogism. Aristotle writes

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20 *APr*. 1.23 41a38–9, 1.44 50a27. These passages can be read as stating that the derivation of the substituted proposition is a direct syllogism (Alexander in *APr*. 262.5–6, Sigwart 1871: 4–5, Striker 1979: 36, Lear 1980: 34, Bobzien 2002a: 370, Crivelli 2011: 143). However, they can also be read as requiring that only a proper part of this derivation be a direct syllogism, leaving open the possibility that the derivation itself is a syllogism from a hypothesis. Alexander argues for the latter reading, based on Aristotle’s example of a syllogism from a hypothesis at 1.44 50a19–23 and on his use of ἄνω at 50a27 (Alexander in *APr*. 387.5–388.22). This reading also seems to have been adopted by Theophrastus (*apud* Alexander in *APr*. 388.17–19) and Pseudo-Ammonius (*in* *APr*. 67.11–15); see n. 30 and n. 54 below. The latter reading suffices to establish Aristotle’s main thesis in *Prior Analytics* 1.23, that all syllogisms from a hypothesis ‘come about through the three figures’ in the sense that they contain a direct syllogism as a proper part.

And likewise also all the other kinds of syllogism from a hypothesis. For in all of them, the syllogism comes about in relation to the substituted proposition, while the original demonstrandum is inferred through an agreement or some other hypothesis. But if this is true, every demonstration and every syllogism necessarily comes about through the three figures stated before. (Aristotle, Prior Analytics 1.23 41a37–b3)

When Aristotle states that ‘the syllogism comes about in relation to the substituted proposition’, by ‘syllogism’ he means a direct syllogism in the three figures.\(^{22}\) Thus, Aristotle holds that every syllogism from a hypothesis contains a proper part which is a direct, purely categorical syllogism. Unfortunately, Aristotle does not provide a justification of this claim in chapter 1.23 or elsewhere in the Prior Analytics. This is a significant omission, and it is natural that later commentators working in the Peripatetic tradition would have sought to fill the gap by supplying an argument on Aristotle’s behalf. For example, Pseudo-Ammonius provides such an argument in his commentary on Prior Analytics 1.23. In his discussion of the passage from 1.23 just quoted, Pseudo-Ammonius writes:

> Among hypothetical syllogisms, not only the ones by reductio ad impossibile but in general all hypothetical syllogisms are reduced to the three figures [of categorical syllogisms]. For direct hypothetical syllogisms too are reduced to the three figures; for

\(^{22}\) Alexander in APr. 262.5–6.
they establish the doubtful premises in hypothetical syllogisms by means of a
categorical syllogism, in order that they might not proceed to infinity, establishing any
previously assumed hypotheses by another hypothesis. (Pseudo-Ammonius,
*Commentary on Aristotle’s Prior Analytics* 67.11–15)

In this passage, Pseudo-Ammonius refers to Aristotle’s syllogisms from a hypothesis as
‘hypothetical syllogisms’ (ὑποθετικοὶ συλλογισμοί). Elsewhere, Pseudo-Ammonius uses the
term ‘hypothetical syllogism’ to refer to syllogisms of the form *modus ponens* studied by the
Stoics. Thus, he seems to regard Aristotle’s ‘other’ syllogisms from a hypothesis as
hypothetical syllogisms of the form *modus ponens*. There are, of course, reasons to doubt that
Aristotle himself would have regarded his ‘other’ syllogisms from a hypothesis as hypothetical
syllogisms of the form *modus ponens*. Nevertheless, it is not surprising that Pseudo-
Ammonius regards them as such. As Susanne Bobzien has shown, the accounts of
hypothetical syllogisms of the form *modus ponens* found in many late Peripatetic and
Platonist texts are part of a Peripatetic tradition that originates in Aristotle’s treatment of
syllogisms from a hypothesis. These texts include Ammonius’ commentary on the *De
interpretatione* and Pseudo-Ammonius’ commentary on the *Prior Analytics*. Given this

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23 Similarly, Pseudo-Ammonius in *Apr. 65.37–8, 67.33–41.*


background, it is understandable that Pseudo-Ammonius refers to Aristotle’s syllogisms from a hypothesis as ‘hypothetical syllogisms’.\textsuperscript{28}

The argument given by Pseudo-Ammonius parallels the one given by Ammonius in his commentary on the \textit{De interpretatione}. Both commentators argue that the only way to prevent an infinite regress of hypothetical syllogisms is to make use of a categorical syllogism establishing the substituted assumption of the last hypothetical syllogism in the regress.\textsuperscript{29} In considering a regress of hypothetical syllogisms, Pseudo-Ammonius seems to allow for the possibility that the substituted proposition of Aristotle’s syllogisms from a hypothesis is established by another syllogism from a hypothesis.\textsuperscript{30} He contends, however, that any regress of syllogisms from a hypothesis ultimately terminates in a categorical syllogism establishing the last substituted proposition. Pseudo-Ammonius takes this to show that syllogisms from a hypothesis ‘are reduced (\(\acute{a}v\acute{a}\gamma\omicron\omicron\nu\tau\alpha\iota\)) to the three figures’ of categorical syllogisms.\textsuperscript{31}

\textsuperscript{28} Similarly, Alexander of Aphrodisias suggests that hypothetical syllogisms of the form \textit{modus ponens} are among the ‘other’ syllogisms from a hypothesis discussed by Aristotle in the \textit{Prior Analytics} (\textit{Alexander in APr.} 262.28–31, 326.3–5, 389.31–390.6, 386.22–30; see Bobzien 2014: 202–4).

\textsuperscript{29} Thus, Pseudo-Ammonius writes that ‘every hypothetical syllogism … is in need of a categorical syllogism; for if we always establish the hypotheses through a hypothesis, we will never come to an end’ (\textit{in APr.} 66.2–5).

\textsuperscript{30} In this respect, he seems to follow Theophrastus and Alexander (see nn. 20 and 54).

\textsuperscript{31} He presumably does not mean that syllogisms from a hypothesis can be analyzed as categorical syllogisms in the three figures. For Aristotle explicitly denies this latter claim (\textit{APr.} 1.44 50a16–19, 50a29–32, 50b2–4; cp. 1.32 46b40–47a5). Instead, Pseudo-Ammonius seems to have in mind that syllogisms from a hypothesis are ‘reduced’ to the three figures of categorical syllogisms simply in virtue of the fact that they contain a categorical syllogism, which can be reduced to Aristotle’s three figures (see \textit{Alexander in APr.} 265.23–9, Philoponus 241.24–5 and
The arguments given by Ammonius and Pseudo-Ammonius differ in that the former applies specifically to demonstrations (ἀποδείξεις), whereas the latter applies more generally to all syllogisms whether or not they are demonstrations. Apart from this difference, the two arguments follow essentially the same pattern. Both Ammonius and Pseudo-Ammonius appeal to the second of the Five Modes of Agrippa, the mode from infinite regress. Moreover, as we have seen, Ammonius appeals to the fourth mode, the one from hypothesis. While this mode is not explicitly mentioned by Pseudo-Ammonius, it is likely that it is part of the argument intended by him. Pseudo-Ammonius hints at the fourth mode when he describes the substituted assumption of hypothetical syllogisms as ‘doubtful’ (ἀμφίβολόμενα).

Elsewhere in his commentary, he attributes the view that the substituted assumption is doubtful to Aristotle:

Simple hypothetical syllogisms … are in need of a categorical syllogism proving their co-assumption. For it is necessary, Aristotle says, that the conditional in hypothetical syllogisms has been agreed upon in every case, and that the co-assumption is doubtful. And both points are well taken. For if the conditional was doubtful, it is also doubtful that they are hypothetical syllogisms, and if you establish the conditional you establish

242.10–13; cf. Barnes 1983:286–7 n. 3). Pseudo-Ammonius’ reference to ‘reduction’ may be motivated by Aristotle’s claim in Prior Analytics 1.23 that, since all syllogisms come about through the three figures of categorical syllogisms, ‘it is clear that every syllogism is brought to completion through the first figure and reduced (ἀνάγεται) to the universal syllogisms in it’ (APr. 1.23 41b4–5). This claim depends on the syllogistic theory developed by Aristotle in Prior Analytics 1.2 and 1.4–7 (especially 1.7 29a30–b25).
at the same time also that they are hypothetical syllogisms; and if the co-assumption has been agreed upon as well, there is no need for a hypothetical syllogism at all.

(Pseudo-Ammonius, Commentary on Aristotle’s Prior Analytics 65.35–66.2)

As before, Pseudo-Ammonius uses the term ‘hypothetical syllogism’ to refer to Aristotle’s syllogisms from a hypothesis. The ‘co-assumption’ of these syllogisms is the substituted proposition (τὸ μεταλαμβανόμενον), and the ‘conditional’ is the agreement that licenses the inference from the substituted proposition to the original demonstrandum. Pseudo-Ammonius attributes to Aristotle the view that this ‘conditional’ is not doubtful but has been agreed upon (ἡμολόγηται). This is supported by the fact that Aristotle characterizes it as an agreement (ὁμολογία, 1.23 41a40).\footnote{See Frede 1974a: 16. Pseudo-Ammonius argues that the conditional of hypothetical syllogisms cannot be doubtful on the grounds that, if the conditional was doubtful, it is also doubtful that they are hypothetical syllogisms. This argument seems to rely on the view that the ‘conditional’ of a hypothetical syllogism is not a premise of the syllogism that may or may not be endorsed by the reasoner, but an act of agreement between interlocutors that is constitutive of a hypothetical syllogism. This is in accordance with Aristotle’s account of the agreement (ὁμολογία) in syllogisms from a hypothesis (see nn. 59 and 60 below).} Aristotle states that, in all syllogisms from a hypothesis other than those by reductio ad impossibile, this agreement needs to be made in advance (προδιομολογήσασθαι).\footnote{APr. 1.44 50a33–4, Top. 1.18 108b15; see also APr. 1.44 50a24–6, Top. 2.3 110a37–110b4. Cf. Lear 1980: 39–43, Bobzien 2002a: 366–72.} Accordingly, he maintains that all of these syllogisms from a hypothesis are ‘agreed upon through a convention’ (διὰ συνθήκης ὡμολογημένου, 1.44 50a18–
19. Pseudo-Ammonius takes this to mean that the conditional in hypothetical syllogisms is clear (σαφής). By contrast, the co-assumption is not clear but established by means of a syllogism. Thus Pseudo-Ammonius writes:

Doctrines of Aristotle are: that the conditional in hypothetical syllogisms has been agreed upon, and that the co-assumption is established in every case. And we have shown in our investigation that both of these points are true. (Pseudo-Ammonius, Commentary on Aristotle’s Prior Analytics 67.21–3)

Pseudo-Ammonius’ claim that, for Aristotle, every co-assumption is established by a syllogism is supported by the passage from Prior Analytics 1.23 quoted above. In this passage, Aristotle states that in all syllogisms from a hypothesis other than those by reductio ad impossibile, the substituted proposition is the conclusion of a syllogism. Pseudo-Ammonius takes this to mean that the co-assumption of hypothetical syllogisms is in need of being established by a syllogism, and hence doubtful. This enables him to apply the fourth of the Five Modes of Agrippa: if the regress of hypothetical syllogisms stops at some point, the co-assumption of the last hypothetical syllogism is doubtful, and hence the original demonstrandum is established only ‘from a hypothesis’.

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34 Pseudo-Ammonius in APr. 68.22.

Of course, the question remains as to why there cannot be hypothetical syllogisms in which the co-assumption is not doubtful but has been agreed upon just like the conditional. If there were such hypothetical syllogisms, the objection from the fourth mode would not be applicable. For, in this case, it would be open to the defender of hypothetical syllogisms to argue that, since none of the premises is doubtful, the original *demonstrandum* has been established not just ‘from a hypothesis’ but without qualification. In the passage quoted above, Pseudo-Ammonius excludes such cases on the grounds that, if both the co-assumption and the conditional have been agreed upon, ‘there is no need (χρεία) for a hypothetical syllogism at all’. However, it is not clear what this remark amounts to and how it is meant to help Pseudo-Ammonius’ argument. After all, the advocates of categorical syllogisms would presumably accept categorical syllogisms in which no premise is doubtful and in need of justification by a syllogism. So why are there no hypothetical syllogisms of this kind? As we will see, this question is exacerbated by Aristotle’s response to the fourth of the Five Modes in *Posterior Analytics* 1.3.

3. Aristotle on the Modes of Agrippa

In the *Posterior Analytics*, Aristotle undertakes to develop an account of knowledge (ἐπιστήμη). Knowledge, for Aristotle, is tied to demonstration (ἀπόδειξις). A demonstration is a syllogism through which, when we possess it, we have knowledge.\(^{36}\) In a demonstration, a

\(^{36}\) *APost.* 1.2 71b18–19.
proposition which serves as the conclusion is deduced from two or more propositions which serve as premises. Every proposition that falls under the purview of a given science either is or is not demonstrable in this science. To have knowledge of a demonstrable proposition, the scientist must possess a demonstration of it.\textsuperscript{37} According to the \textit{Posterior Analytics}, demonstrations take the form of categorical syllogisms in the three figures. For example, a universal affirmative proposition of the form \textit{All As are B} is demonstrated by means of a syllogism in Barbara:

\begin{center}
\begin{align*}
\text{All As are C} \\
\text{All Cs are B} \\
\text{Therefore, All As are B}
\end{align*}
\end{center}

In such a demonstration, each of the two premises either is or is not demonstrable. If it is demonstrable, then, in order to have knowledge of the conclusion \textit{All As are B}, the demonstrator must have knowledge of this premise through yet another demonstration.\textsuperscript{38} This demonstration will again be of the form Barbara, since this is the only way to deduce a universal affirmative proposition in Aristotle’s syllogistic theory by means of a direct syllogism.\textsuperscript{39} For example, the premise \textit{All Cs are B} may be demonstrated as follows:

\textsuperscript{37} \textit{APost}. 1.2 71b28–9, 1.22 83b34–5; see McKirahan 1992: 164.

\textsuperscript{38} See \textit{APost}. 1.3 72b20–2, 1.22 83b34–8; cf. Philoponus in \textit{APost}. 254.24–255.25.

\textsuperscript{39} See \textit{APr}. 1.26 42b32–3.
All Cs are D

All Ds are B

Therefore, All Cs are B

The same argument applies to the new premises, All Cs are D and All Ds are B. Thus, the scientist faces a regress of demonstrations. The existence of this regress gives rise to sceptical challenges based on the second and fourth of the Five Modes. Aristotle describes such sceptical challenges regarding the possibility of knowledge in *Posterior Analytics* 1.3:

Some hold that there is no knowledge because this would require knowing the first premises…. They suppose that there is no way of knowing other than by demonstration, and claim that we are led back *ad infinitum*, seeing that we will not know the posteriors on account of the priors if there are no first premises behind the priors. And they argue correctly, for it is impossible to traverse infinitely many items. And if it comes to a stop and there are principles [i.e., first premises], they say that these are unknowable since there is no demonstration of them, which they say is the only way of knowing. But if we cannot know the first premises, neither can what depends on them be known *simpliciter* or properly, but only from a hypothesis (ἐξ ὑποθέσεως), on the supposition that these are the case. (Aristotle, *Posterior Analytics* 1.3 72b5–15)
The sceptics targeted by Aristotle in this passage hold the view that the only way of knowing a proposition is by possessing a demonstration of it. Based on this assumption, they argue that it is impossible to know anything. As Anthony Long has pointed out, the arguments advanced by these sceptics employ the second and fourth of the Five Modes, the ones from infinite regress and hypothesis.\(^{40}\) Aristotle rejects these arguments by denying their initial assumption, that all knowledge is demonstrative. Instead, he contends that there is non-demonstrative knowledge of the first, or ‘immediate’, premises of a demonstration:\(^{41}\)

But we assert that not all knowledge is demonstrative; rather, in the case of immediates, it is non-demonstrative (ἀναπόδεικτον). And it is clear that this must be so; for if it is necessary to know the priors and those things from which the demonstration proceeds, and it comes to a stop at some point, it is necessary for these immediates to be indemonstrable (ἀναπόδεικτα). (Aristotle, *Posterior Analytics* 1.3 72b18–22)

In this passage, Aristotle states that no regress of demonstrations proceeds to infinity, but that any such regress terminates in first premises which are indemonstrable.\(^{42}\) In particular, a

\(^{40}\) Long 2006: 48–51. In addition, Aristotle addresses the fifth of the Five Modes, the mode from ‘reciprocal’ or circular reasoning (SE *PH* 1.169), in *Posterior Analytics* 1.3 (72b15–18, 72b25–73a20; see Barnes 1976 and Malink 2013).

\(^{41}\) See also *APost.* 1.2 71b26–9, 1.23 84b28–31, 2.3 90b24–7.

\(^{42}\) See also *APost.* 1.22 84a30–b2.
demonstration establishing a universal affirmative categorical proposition terminates in indemonstrable categorical propositions which are known by non-demonstrative knowledge. Aristotle is clear that this non-demonstrative knowledge is superior to demonstrative knowledge in the sense that the knower has a better grasp and is better convinced (ἴσιμεν τε καὶ πιστεύομεν μᾶλλον) of the indemonstrable propositions than of the theorems demonstrated from them.\textsuperscript{43} Aristotle writes:

\begin{quote}
Anyone who is going to have knowledge through demonstration must be more familiar (μᾶλλον γνωρίζειν) with the principles and be better convinced (μᾶλλον πιστεύειν) of them than of what is being proved. (Aristotle, Posterior Analytics 1.2 72a37–9)
\end{quote}

Accordingly, Aristotle holds that the indemonstrable premises of demonstrations ‘obtain their conviction through themselves’ (δι’ αὐτῶν ἐξουσία τὴν πίστιν), and that they are ‘convincing themselves through themselves’ (αὐτὴν καθ’ ἑαυτὴν εἶναι πιστῆν).\textsuperscript{44} In this way, Aristotle is able to block the skeptical challenges from both the second and the fourth modes. Not only is there no infinite regress of demonstrations, but every demonstration terminates in indemonstrable premises that are not in need of being established by a further demonstration. Given that these premises are better known than the theorems demonstrated from them, such

\textsuperscript{43} APost. 1.2 72a25–32.

\textsuperscript{44} Top. 1.1 100b18–21; see Alexander in Top. 16.1–8.
a demonstration does not produce mere knowledge from a hypothesis but knowledge without qualification.

Since, for Aristotle, demonstrations are categorical syllogisms in the three figures, there are categorical syllogisms which produce knowledge without qualification, proceeding from premises which are not doubtful and not in need of being established by a further syllogism. Why, then, is this option not available to the defender of hypothetical syllogisms? Why are there no purely hypothetical syllogisms producing knowledge without qualification, proceeding from premises that are not doubtful? As we will see, Alexander of Aphrodisias provides an answer to this question in his commentary on Prior Analytics 1.23.

4. Alexander on hypothetical syllogisms

In Prior Analytics 1.23, Aristotle claims that all syllogisms from a hypothesis come about through the three figures of categorical syllogisms (41a37–b3). In his commentary on this claim, Alexander of Aphrodisias provides an argument explaining why the co-assumption of a hypothetical syllogism must not be familiar but doubtful:

If the co-assumption was not in need of proof but was evident and familiar like the conditional, an argument of this sort would no longer be a syllogism. For an argument of this sort cannot furnish any of the usefulness of a syllogism at all, since a syllogism must prove something that would not be familiar without syllogistic reasoning. In the hypotheticals, then, which they [the Stoics] call mode-forming, in which things are this
way, the conditional is assumed and posited as familiar. It remains that the co-
assumption is doubtful, as Theophrastus says, and in need of proof.
The syllogism that the co-assumption holds will be categorical and direct, so that also
in hypothetical syllogisms based on a mode-forming conditional what is established
and in need of proof is proved by means of a categorical syllogism, but the original
demonstrandum is proved not through a syllogism, but through the hypothesized
hypothesis, i.e., the hypothesis of the conditional. For it is not possible to prove
something which is not familiar ... except by means of a categorical syllogism.
(Alexander of Aphrodisias, Commentary on Aristotle’s Prior Analytics 263.7–21)

In this passage, Alexander argues that a hypothetical argument of the form modus ponens in
which both premises are evident and familiar fails to be a syllogism. This is because such an
argument is not useful in the way a syllogism is supposed to be useful. According to
Alexander, a syllogism ‘must prove something that would not be familiar without syllogistic
reasoning (ἀνευ τοῦ συλλογισμοῦ)’. More specifically, Alexander attributes to Aristotle the
view that ‘the usefulness (χρεία) of a syllogism consists in making evident what is not held to
be familiar through things that are familiar and evident’.45 Arguments of the form modus
ponens in which both premises are evident and familiar fail to meet this condition, for their
conclusion is familiar without any syllogistic reasoning.46 Alexander goes on to assert, just like

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45 Alexander in Top. 9.23–5.

46 See also Alexander in APr. 265.5–8.
Pseudo-Ammonius, that the conditional of a hypothetical syllogism is familiar.\textsuperscript{47} It follows that the co-assumption is not familiar, for otherwise the hypothetical argument would not be a syllogism. This means, according to Alexander, that the co-assumption is doubtful and in need of proof.

Alexander’s argument fills the gap in the arguments given by Ammonius and Pseudo-Ammonius, who do not explain why the co-assumption of a hypothetical syllogism must be doubtful. Although the latter two authors do not make explicit Alexander’s reasoning, there are echoes of it in Pseudo-Ammonius’ claim that, ‘if the co-assumption has been agreed upon as well, there is no need (χρεία) for a hypothetical syllogism at all’\textsuperscript{48} Since both Ammonius and Pseudo-Ammonius were familiar with Alexander’s work on the \textit{Prior Analytics}, it is plausible that their arguments implicitly rely on the considerations put forward by Alexander in his commentary on \textit{Prior Analytics} 1.23.

Alexander attributes the view that the co-assumption is doubtful to Theophrastus. As Barnes points out, this suggests that the argument presented by Alexander in the passage just quoted is essentially due to Theophrastus.\textsuperscript{49} We know that Theophrastus worked on hypothetical syllogisms, taking his lead from Aristotle’s discussion of syllogisms from a hypothesis in the \textit{Prior Analytics}.\textsuperscript{50} For example, Theophrastus sought to reduce a certain class

\textsuperscript{47} See also Alexander in \textit{APr}. 265.3–5.

\textsuperscript{48} Pseudo-Ammonius in \textit{APr}. 66.2.

\textsuperscript{49} Barnes (1983: 287 n. 3) comments on Alexander’s argument: ‘In all that, Alexander is probably following Theophrastus’. Similarly, Bobzien 2002a: 384 n. 66.

of hypothetical syllogisms known as ‘wholly hypothetical syllogisms’ to the three figures of categorical syllogisms.\textsuperscript{51} According to Alexander, Theophrastus maintained that wholly hypothetical syllogisms are reduced to the three figures of hypothetical syllogisms in a different way from Aristotle’s syllogisms from a hypothesis.\textsuperscript{52} This shows that Theophrastus reflected on the way in which Aristotle’s syllogisms from a hypothesis are reduced to the three figures of categorical syllogisms. In particular, Alexander reports that Theophrastus discussed the epistemic status of the substituted assumption, or co-assumption, in Aristotle’s syllogisms from a hypothesis:

In the first book of his \textit{Prior Analytics}, Theophrastus says that the co-assumption is posited either through induction or because it too is from a hypothesis or because it is obvious or through a syllogism.\textsuperscript{53} (Alexander of Aphrodisias, \textit{Commentary on Aristotle’s Prior Analytics} 388.17–20)

This passage shows that, in his \textit{Prior Analytics}, Theophrastus was concerned with the same issues that are under consideration in the arguments given by Ammonius and Pseudo-

\textsuperscript{51} Alexander in APr. 326.20–2, Philoponus in APr. 302.14–19; see Bobzien 2000: 103–7.

\textsuperscript{52} Alexander in APr. 326.20–2; see also Alexander in APr. 325.33–326.12, Pseudo-Ammonius in APr. 67.24–31.


\textsuperscript{53} This passage is from Alexander’s commentary on Aristotle’s treatment of syllogisms from a hypothesis in \textit{Prior Analytics} 1.44. It is clear from the context that the ‘co-assumption’ referred to by Alexander is the substituted proposition of a syllogism from a hypothesis.
Ammonius. It is clear from the passage that Theophrastus acknowledged the possibility that the co-assumption of a hypothetical syllogism is established by another hypothetical syllogism, thus giving rise to the regress of hypothetical syllogisms described by Ammonius and Pseudo-Ammonius.54 While this regress is not mentioned by Alexander in the passage quoted above, it is acknowledged by him in his discussion of Aristotle’s treatment of syllogisms from a hypothesis in Prior Analytics 1.44.55 Given this, it is plausible that the possibility of such a regress of hypothetical syllogisms is part of the argument intended by Alexander in the passage quoted above.56

These considerations suggest that the arguments given by Alexander, Ammonius, and Pseudo-Ammonius ultimately derive from Theophrastus.57 They are versions of one and the same argument for the priority of categorical over hypothetical syllogisms which was originally put forward by Theophrastus in his discussion of Aristotle’s treatment of syllogisms from a hypothesis in Prior Analytics 1.23. The argument employs the second and fourth of the Five Modes of Agrippa. As we have seen, Aristotle discusses and rejects skeptical arguments

54 This is in accordance with the view that Aristotle allowed for the substituted proposition of a syllogism from a hypothesis to be established by another syllogism from a hypothesis see n. 20 above.

55 In this part of the commentary, Alexander allows for the substituted proposition of a syllogism from a hypothesis to be established by another syllogism from a hypothesis (Alexander in APr. 387.5–11, 387.28–388.13; cf. Philoponus in APr. 241.32–242.13). See n. 20 above.

56 Barnes 1983: 287 n. 3.

57 Bobzien (2000: 106 n. 30) has shown that Pseudo-Ammonius in his discussion of wholly hypothetical syllogisms at in APr. 67.24–31 reports material that goes back to Theophrastus. If I am correct, the same is true of his argument for the priority of categorical over hypothetical syllogisms at in APr. 67.11–15.
based on these modes in Posterior Analytics 1.3. If I am correct, these modes came to play a more positive role in the logical writings of the Peripatetic school after Aristotle. In a tradition that goes back to Theophrastus, these modes were used by Peripatetic and Neo-Platonist logicians in arguments supporting Aristotle’s claim in Prior Analytics 1.23 and thus establishing one of the central tenets of Peripatetic logic, the priority of categorical over hypothetical syllogisms.

Of course, Alexander’s argument relies on the view that, if both premises of an argument of the form modus ponens are evident and familiar, the conclusion is familiar without any syllogistic reasoning. According to Alexander, such an argument fails to be a syllogism because a syllogism ‘must prove something that would not be familiar without syllogistic reasoning’. For this argument to be successful, the same must not be true for categorical syllogisms. There must be categorical syllogisms in which the two premises are familiar to the reasoner, but the conclusion is not familiar. In fact, Aristotle countenances such categorical syllogisms in Prior Analytics 2.21, when he states that it is possible for a reasoner to believe the two premises of a categorical syllogism in Barbara and at the same time to believe the contradictory opposite of the conclusion. For example, someone may believe that every female mule is infertile and that this animal is a female mule while believing that this animal is pregnant.\footnote{APr. 2.21 67a33–7; cf. Smith 1989: 215.} Alexander contends that such cases are excluded for hypothetical syllogisms of the form modus ponens. In these syllogisms, the conclusion is immediately familiar whenever both premises are familiar.
How is this difference between categorical and hypothetical syllogisms to be justified?

While Alexander does not explicitly address this question, an answer may be found in Peripatetic conceptions of conditionals. As we have seen, Aristotle’s syllogisms from a hypothesis rely on an agreement (ὁμολογία, 1.23 41a40) or convention (συνθήκη, 1.44 50a18) to the effect that, if the substituted proposition is established, then the original demonstrandum may be inferred. In Aristotle’s view, this agreement does not count as a premise of syllogisms from a hypothesis.59 Rather, the agreement functions as a contract that allows one to assert a certain proposition once another proposition has been established.

Thus, Susanne Bobzien argues that the agreement plays the role of ‘a contract that is ‘cashed in’, as it were, once \( p \) is proved. It would then have a pragmatic dimension to it. In any case, the agreement seems to differ from a conditional statement or sentence in that it has no truth-value’.60 On this account, the statement of the agreement in a syllogism from a hypothesis does not express a proposition that may be true or false, but a contract regulating the assertions made in the syllogism.

The same account of the agreement, or hypothetical proposition, appearing in syllogisms from a hypothesis was adopted by Theophrastus.61 Subsequently, such accounts of hypothetical propositions became standard among logicians working in the Peripatetic


60 Bobzien 2002a: 369; see also Crivelli 2011: 147. A similar pragmatic account of conditionals in hypothetical syllogisms seems to have been adopted by Pseudo-Ammonius at in APr. 67.21–3 (see n. 32).

61 Frede 1974a: 16.
tradition.\textsuperscript{62} For example, Alexander maintains that conditional hypothetical propositions do not assert ‘that anything is or is not’.\textsuperscript{63} Similarly, Ammonius maintains that hypothetical propositions, unlike categorical ones, do not assert ‘in a complete way’ but only ‘on a hypothesis’:

> Some propositions are categorical, some hypothetical. Categorical are those which assert in a complete and undoubted way, such as ‘The soul is self-moving’. Hypothetical are those which do not assert in a complete way, but on a hypothesis, such as ‘If it is day, it is light’; for someone who speaks in this way does not assert in a complete way that it is light, but taking as a hypothesis ‘if it is day’ he says that, if it is day, it is light. (Ammonius, Commentary on Aristotle’s Prior Analytics 17.19–24)

In this passage, Ammonius draws a distinction between asserting in a complete way and asserting on a hypothesis. Someone who states a categorical proposition asserts ‘in a complete and undoubted way’ (τελείως καὶ ἀδιστάκτως ἀποφαίνομαι). By contrast, someone stating a hypothetical proposition does not assert in this way, but only ‘on a hypothesis’ (ἐν ὑποθέσει). For example, someone stating a hypothetical proposition If $P$, then $Q$, thereby asserts on a hypothesis that $Q$. More specifically, $Q$ is asserted on the hypothesis that $P$. Crucially, $Q$ is not asserted in a complete way, nor does Ammonius say that the entire hypothetical proposition is

\textsuperscript{62} For example, Bobzien (2002a: 391–2) attributes such an account of hypothetical propositions to Galen.

\textsuperscript{63} Alexander in APr. 326.14; see Barnes 1983: 308.
asserted in a complete way. On the contrary, the passage suggests that someone stating a conditional hypothetical proposition does not thereby assert this proposition in a complete way. Thus, the statement of a conditional does not amount to the complete assertion of a proposition that can be evaluated as true or false.\textsuperscript{64}

While Ammonius does not provide an account of what it means for someone to assert \(Q\) on the hypothesis that \(P\), his notion of asserting on a hypothesis corresponds to modern conceptions of conditional assertion. For example, in his \textit{Methods of Logic}, W. V. O. Quine characterizes conditional assertions as follows\textsuperscript{65}:

Now under what circumstances is a conditional true? Even to raise this question is to depart from everyday attitudes. An affirmation of the form ‘if \(A\) then \(B\)’ is commonly felt less as an affirmation of a conditional than as a conditional affirmation of the consequent. If, after we have made such an affirmation, the antecedent turns out true, then we consider ourselves committed to the consequent, and are ready to acknowledge error if it proves false. (Quine 1950: 12)

\textsuperscript{64} For this interpretation of Ammonius' account of asserting on a hypothesis, see Bobzien 2002b: 113.

A similar account may be given of Ammonius’ notion of asserting on a hypothesis. If you assert Q on the hypothesis that P, and if you then assert P in a complete way on the grounds that P is ‘evident and familiar’, then you count as having asserted Q in a complete way. No further step of syllogistic reasoning is required. The assertion of Q on the hypothesis that P in combination with the complete assertion of P together constitute a complete assertion of Q. Nothing else beyond the first two assertions is required in order for the third assertion to come about. If you make the first two assertions, you have thereby made the third.

As we have seen, Alexander maintains that conditional hypothetical propositions do not assert ‘that anything is or is not’. Based on this, Jonathan Barnes has argued that Alexander took conditional hypothetical propositions to express conditional assertions along the lines of Ammonius’ assertions on a hypothesis. If this is correct, it helps to fill the last remaining gap in Alexander’s argument that the co-assumption of a hypothetical syllogism

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66 Bobzien (2002b: 115) suggests that ‘for Ammonius hypothetical assertoric sentences have no truth-value, but rather have the status of rules of permission that can be employed for drawing conclusions in hypothetical syllogisms’. The present proposal agrees with Bobzien’s in that conditional hypothetical propositions have no truth-value, at least in the absence of an assertion of their antecedent. However, it differs from Bobzien’s proposal in that these propositions are not analyzed as rules of permission but as conditional assertions.

67 Edgington (1995: 290) suggests that ‘a conditional assertion If A, B is an assertion of B when A is true, and an assertion of nothing when A is false’ (similarly, DeRose & Grandy 1999: 407). On this account, whether the consequent is asserted depends on whether the antecedent is true. For the purposes of Alexander’s argument, however, it is preferable to adopt an alternative account of conditional assertion according to which whether the consequent is asserted depends on whether the antecedent is asserted.

68 Barnes 1983: 308.
must not be familiar but doubtful. To see this, consider a hypothetical proposition of the form

*If* $P$, *then* $Q$, in which both $P$ and $Q$ are categorical propositions. For this proposition to be

‘familiar’ to a reasoner is for her to conditionally assert $Q$ on the hypothesis that $P$. If $P$ is

‘familiar’ to her as well, she asserts $Q$ in a complete way. Thereby she has asserted $Q$ in a

complete way. No syllogistic reasoning is involved in bringing about this last assertion. ‘There

is’, as Pseudo-Ammonius puts it, ‘no need (χρεία) for a hypothetical syllogism at all’.

This brings to completion the Theophrastean argument presented by Ammonius, Pseudo-Ammonius, and Alexander.\(^6^9\) By analyzing conditional hypothetical propositions as conditional assertions, the argument makes a strong case for Aristotle’s claim that every syllogism from a hypothesis ultimately makes use of a categorical syllogism.

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**References:**


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\(^6^9\) On this interpretation, there is no need to think that the argument presented by Alexander at *in APr.* 263.7–21 is ‘badly confused’ (Barnes 1983: 287 n. 3).


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