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# Cicero, On Invention 1.51-77: Hypothetical Syllogistic and the Early Peripatetics

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Cicero, *On Invention* 1.51-77  
Hypothetical Syllogistic and the Early Peripateticsby William W. Fortenbaugh  
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## I

In *On Invention*, a youthful work written perhaps as early as 90 B.C. and almost certainly no later than 80 B.C.,<sup>1</sup> Cicero discusses confirmation or proof (*confirmatio*). The discussion begins with a survey of various sources from which arguments may be drawn (1.34-43). After that arguments are classified as necessary or probable (1.44-50).<sup>2</sup> Finally Cicero considers two ways in which arguments proceed: either inductively or deductively (1.51-77). The treatment of induction is comparatively short. It runs six sections (1.51-6) and divides into several parts. Here are the parts in outline.<sup>3</sup>

1. An initial statement concerning the procedure of induction (1.51)
2. An example taken from a dialogue of Aeschines (1.51-2)
3. Mention of Socrates as a frequent practitioner (1.53)
4. Four precepts concerning the use of inductive argument (1.53-4)
5. An analysis of induction into three parts (1.54)
6. An example based on the trial of Epaminondas (1.55-6)

The treatment of deduction is not dissimilar,<sup>4</sup> but it is longer, running a full twenty-one sections (1.57-77). It, too, divides into parts.

1. An initial statement concerning the procedure of deduction (1.57)
2. Report of competing analyses: one into five parts and another into three; the analysis into five parts is set out in a lengthy example concerning the administration of the universe (1.57-60)

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<sup>1</sup> All scholars agree that *On Invention* is an early work of Cicero's, but how early is not certain. Kennedy (1972) p. 107-10 suggests that it was written between 91 and 89 B.C., when Cicero was fifteen to seventeen years old. Achard p. 5-10 argues for 84-3 B.C. and Kroll (1940) col. 1093 thinks the work may have been written as late as 80 B.C. For the purposes of this paper, it is not necessary to decide between these dates.

<sup>2</sup> Strictly speaking 1.50 is a transitional section in which Cicero refers both to what has been said concerning the discovery (*invenire, inventio*) of arguments from various sources or topics (*ex his locis*) and to what will be said concerning the ways in which arguments are advanced.

<sup>3</sup> In dividing the treatments of induction and deduction into parts, I am not suggesting that no other divisions are possible. Rather I offer divisions which are based on the text and suit the purposes of this paper.

<sup>4</sup> Several similarities between the treatment of induction and that of deduction are clear from the outlines. Each begins with a statement concerning the procedure under discussion (Ind. no. 1, Ded. no. 1). Philosophic predecessors are mentioned: Socrates for induction and Aristotle and Theophrastus for deduction (Ind. no. 3, Ded. no. 3). There is discussion of the number of parts into which each procedure divides (Ind. no. 5, Ded. no. 2-4). Each procedure is elucidated by examples; Epaminondas appears within an example in both treatments (Ind. no. 2 and 6, Ded. no. 2 and 5).

3. Endorsement of the five part analysis: it has been adopted by all who take their start from Aristotle and Theophrastus; a detailed argument in support of quinquepartite analysis (1.61-6)
4. Summary overview of the five parts (1.67)
5. Examples of arguments having different numbers of parts: not only five and four parts—examples based on the trial of Epaminondas—but also three—an example concerning the destruction of Carthage—and even two and one—examples based on the woman who has given birth—(1.67-75)
6. Consideration of the way an argument is handled, especially variation in the order of premises (1.75-6)
7. Recognition that philosophers offer many other analyses, followed by the claim to have written about argument in oratory more accurately and diligently than others (1.77)

In the course of this paper, I shall say some things about Cicero's discussion of induction, but my primary concern will be with his account of deduction. In particular, I want to call attention to Cicero's argument for a quinquepartite analysis of deductive reasoning (Ded. 3). It is remarkable in that it makes elaborate use of the mixed hypothetical syllogism, and also of some importance in that it supplements our evidence for early Peripatetic interest in syllogisms of this kind. Recent scholarship on the history of ancient logic has generally focused on later sources—like Alexander of Aphrodisias, Boethius, Philoponus and Simplicius<sup>5</sup>— and pointed to Theophrastus as a significant contributor to the development of hypothetical syllogistic.<sup>6</sup> Cicero, writing three centuries before Alexander, seems not only to confirm the importance of Theophrastus but also to indicate that his contributions were recognized as such by Hellenistic rhetoricians. In presenting this thesis, I shall not be accepting Cicero's claim to have written more accurately and diligently than others (Ded. 7), but I will suggest that the argument in favor of quinquepartite analysis (Ded. 3) is more coherent than what precedes (Ded. 2) and that this difference is largely attributable to Cicero's use of sources.

## II

The discussion of induction begins (Ind. 1) with a brief statement concerning the procedure. It is said to be "an argument which, through matters not in doubt, gains the assent of the person with whom one is arguing; and by this assent it wins his approval of a certain doubtful matter because of a similarity to those matters to which he has assented" (1.51).<sup>7</sup> The fundamental idea here is not in doubt: by adducing parallel cases which are different but similar, we establish the truth of whatever concerns us.<sup>8</sup>

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<sup>5</sup> Alexander's floruit is 200 A.D.; Boethius' dates are c. 480-524; Philoponus and Simplicius were both active in the sixth century A.D.

<sup>6</sup> See now the article (1985) by Jonathan Barnes. Interest in Peripatetic contributions to the development of the hypothetical syllogism has a long history. I mention only Carl Prantl and William and Martha Kneale, whose influential books were written in 1855 and 1962 respectively.

<sup>7</sup> 1.51: *inductio est oratio, quae rebus non dubiis captat assensionem eius, quicum institua est; quibus assensionibus facit, ut illi dubia quaedam res propter similitudinem earum rerum, quibus assensit, probetur.*

<sup>8</sup> See, e.g., Schweinfurth-Walla p. 147.

For the sake of clarity, Cicero follows this statement with an example (Ind. 2), in which Socrates reports a conversation between Aspasia on the one hand and Xenophon and his wife on the other.<sup>9</sup> Aspasia first gets Xenophon's wife to agree that she would prefer her neighbor's jewelry, clothing and other finery, should they be better than her own, and then asks whether she would prefer her neighbor's husband, should he be a better man than her own husband. Xenophon's wife responds by blushing, for she understands that her earlier admissions constitute an inductive argument leading to the conclusion that she would prefer her neighbor's husband, should he, like the other items, prove better. Aspasia then puts similar questions to Xenophon with the same result. She concludes that both husband and wife want the very best spouse. Unless they can bring it about that no better spouses exists in the world, they will always feel the lack of those they think best (1.51-2).

The example is clear and well illustrates what the initial statement concerning induction is intended to convey: through similar cases one establishes a different and doubtful matter. I offer only two comments. First, the example helps us understand a detail in the initial statement. I am referring to the use of the singular in reference to the person with whom one is arguing.<sup>10</sup> The singular suggests that the statement is oriented more toward dialectic than public oratory, and that impression is confirmed by the example of Aspasia questioning first Xenophon's wife and then Xenophon himself.<sup>11</sup> Second, this orientation toward dialectic fits the subsequent list of precepts (Ind. 4): most especially the third precept which warns against disclosing where one's questions are leading, and the fourth precept concerning possible moves, should the respondent deny or refuse to answer the final question (1.54). Such recommendations concern winning strategy and appear aimed at classroom exercises. They are not, however, directly relevant to the logical structure of inductive argument. That structure is unaffected by premature disclosure and obstinance on the part of the respondent.

The account of deduction, like that of induction, opens with a statement of the procedure (Ded. 1): Deduction is said to be "an argument which draws something probable from the matter itself, and when this is set forth and examined in itself, it confirms itself by its own force and reasoning" (1.57).<sup>12</sup> This statement is intended to establish a contrast with induction. A deductive argument, unlike an inductive one, does not adduce similar but different cases; rather it draws a conclusion "from the matter itself."<sup>13</sup> What Cicero means by "from the matter itself" is clear from earlier remarks within the discussion of proof, i.e., from what Cicero says concerning the discovery of arguments (1.34-43)<sup>14</sup> and their classification as either

<sup>9</sup> The example is taken from the lost dialogue *Aspasia*, written by the Socratic Aeschines = VI A fr. 70.4-26 (vol. 2 p. 615 Giannantoni).

<sup>10</sup> 1.51 eius, quicum ... illi ...

<sup>11</sup> Cf. 1.55, where Cicero feels constrained to give an example which is oratorical (it is based on the trial of Epaminondas).

<sup>12</sup> 1.57: *ratiocinatio est oratio ex ipsa re probabile aliquid eliciens, quod expositum et per se cognitum sua se vi et ratione confirmet.*

<sup>13</sup> Schweinfurth-Walla p. 155, Achard p. 107 n. 166.

<sup>14</sup> An argument is discovered (*inventum*) by searching (*quaerere*) the various topics (*loci*) surveyed in 1.34-43. For *invenire*, *quaerere*, and *locus* see 1.38, 44, 50. On 1.50, see above note 2.

necessary or probable (1.44-50). An argument like "If she has given birth, she has lain with a man" (1.44) is based on cause and effect (1.37), and one like "If I was abroad when the murder occurred, I did not commit the murder" (1.45) is based on the location of the act in question (1.38). In each of these examples, the argument is completed by assuming (or establishing) the truth of the antecedent: "In fact she has given birth" and "In fact I was abroad." In neither is proof accomplished by adducing similar cases. The two examples recur within the discussion of deduction (1.72, 74 and 1.63 respectively) and are typical of the deductive arguments under discussion by Cicero. Formally they are mixed hypothetical syllogisms of the if-then variety: "If P, then Q; but P; therefore Q."<sup>15</sup>

I shall have more to say about such syllogisms before concluding this part of my paper, but first I want to call attention to the fact that the initial statement concerning deduction is not immediately followed by an example, as is the case with induction. Instead, Cicero speaks of a controversy between those who advocate a quinquepartite analysis of deduction and those who prefer a tripartite analysis. We are told that the dispute does not concern the actual practice of oratory but rather how precepts ought to be given.<sup>16</sup> That sounds like a practical matter in which pedagogical method is the focus of controversy, but Cicero quickly indicates that it is also (or has become) a conceptual issue: While the one party says that there are five parts, the other holds that it is not *possible* to divide deduction into more than three parts?<sup>17</sup> Cicero tells us that he is going to set out the controversy along with the reasoning on both sides, but what follows is not as informative as might be hoped for. First, we get an example of quinquepartite deduction without any statement concerning the reasons for preferring five parts (1.58-9). After that comes a statement of the reasons for preferring three parts, but no example is offered (1.60).

There is an imbalance here which may be explained in part by Cicero's youth. The work *On Invention* is a juvenile effort, so that infelicities are to be expected. That is true enough, but it may not be the whole story. As I see it, Cicero has deliberately omitted the reasoning of those advocating five parts, because he wants to present their reasons as his own; and that is in fact what happens. After completing his report concerning competing analyses (Ded. 2), Cicero makes, as it were, a new start (Ded. 3), first stating his preference for five parts and then saying that he must explain this preference (1.61).<sup>18</sup> What follows is a well structured argument intended to

<sup>15</sup> There are, of course, other kinds of mixed hypothetical syllogisms. In Part IV of this paper, I shall have occasion to consider the "separative" variety.

<sup>16</sup> 1.57 *paululum in praecipienda ratione dissenserunt.*

<sup>17</sup> 1.57 *nam partim quinque eius partes esse dixerunt, partim non plus quam in tres partes posse distribui putaverunt.*

<sup>18</sup> 1.61 *quare autem nobis illa magis partitio probetur, dicendum videtur, ne temere secuti putemur; et breviter dicendum, ne in huiusmodi rebus diutius, quam ratio praecipienda postulat, commoremur.* "It seems necessary to say why I approve more of that (five part) division, lest I be thought to adopt it recklessly. And I must speak briefly, lest in matters of this kind I delay longer than is called for by the method of giving rules." In fairness to Cicero, it may be observed that these words do not explicitly rule out presenting an argument already advanced by others. But if Cicero is carefully choosing his words, then he is being coy. For what is said allows us to believe—or more strongly, encourages us to believe—that he will speak for himself and on his own. And that is certainly an impression which Cicero would welcome. Cf. 1.50, where Cicero speaks of the negligence of those who write *Artes*; 1.77, where he claims to have written more

demonstrate not only the possibility of a five part analysis but also the wrongness of three part analysis.<sup>19</sup> That is exactly what we expect to find, but do not find, in Cicero's report of competing analyses. I shall say more about the argument for five parts in Part III of this paper. For the moment, I want to stay with Cicero's initial treatment of the quinquepartite analysis.

Instead of reporting the reasoning of those who advocate five parts, Cicero lists the parts they recognize together with an illustrative argument concerning the order of the universe (1.58-9). The advocates are referred to each time a part is introduced ("they say," "they think," etc.), and the number of parts is emphasized by counting: "first," "then," "in the third part," "in the fourth place" and "in the fifth place." That gives an appearance of order to Cicero's remarks, but it cannot conceal certain difficulties. I mention three, of which the first two are closely related.

First, the technical terms by which the parts are known are not formally introduced. Rather they become clear in the course of the discussion: the first premise is called the *propositio*, the proof of this premise is the *propositionis approbatio*, the second premise is the *assumptio*, its proof is the *assumptionis approbatio*, and the conclusion is the *complexio*. At risky of being fussy, I want to point out that using technical terms before defining or explaining them may be confusing.<sup>20</sup> Consider *propositio*. The term does not occur where one expects to find it: i.e. at the very outset when the first premise is introduced (1.58). Instead, it makes its appearance later when the *assumptio* is introduced (1.59). That will create no difficulty for the educated reader, but the tyro may be puzzled.<sup>21</sup>

carefully and diligently than others; and 2.8, where he speaks of making contributions on his own (*ex nostro*). There may well be contributions by Cicero (see Achard p. 25-6); I am, however, suggesting that the argument of 1.62-6 is not one.

<sup>19</sup> Cf. 1.63 *sin autem ita est, falsum est non esse plus quam tripartitam argumentationem*; "But if that is so, it is false that there is no argument of more than three parts." Both Hubel p. 107 and Achard p. 111 introduce (im)possibility into their translations: "And if this is so, it is untrue that an argument *can* have no more than three parts" and "Mais, s'il en est ainsi, il est faux de dire que l'argumentation ne *peut* comporter plus de trois parties." Whether or not *esse* here implies possibility, the translations correctly reflect the position taken by the advocates of tripartite analysis. See note 17.

<sup>20</sup> The author of the *Rhetoric to Herennius*, probably Cornificius, does better than Cicero in that he begins his discussion of five part argumentation with a list of the parts followed by a brief explanation of each (2.28). The illustrative argument comes later (2.28-30). It may be that Cicero's source was organized in a similar way, and that Cicero moved the overview of parts to its present position (Ded. 4 = 1.67) when he took over the argument for five parts and made it his own (as I believe he did). But having said that, I do not want to suggest that the *Rhetoric to Herennius* is in other respects useful for interpreting *On Invention*. In particular, the five parts set forth are not the same as those found in *On Invention*, and attempts to relate them must fail (*pace* Matthes p. 206). Clearest is the fourth part, *exornatio*. It is said to be used for the sake of adornment and enrichment, once the argument has been established (2.28). That hardly fits *On Invention*, for there each of the parts is conceived of as a step in the argument. None is recommended for use after the argument has been completed.

<sup>21</sup> The Kneales p. 177-8 tell us that "Cicero did a useful service by inventing Latin equivalents for Greek technical terms." As an example, they cite *propositio* and refer to 1.57ff. That may be correct, but the fact that *propositio* occurs first in 1.59 and without explanation suggests to me that it was already a *terminus technicus*, at least in Cicero's "classroom." It is used more formally in 1.67, but there Cicero has concluded the argument for quinquepartite analysis and is surveying the resulting five parts. He appears to be following his source and/or teacher closely and not introducing new terms.

Second, when the first of the five parts is introduced, it is described simply as the “the summit (*summa*) of the argument” (1.58);<sup>22</sup> and when the third part is introduced, we are told “to add it from the force of the *propositio* (*ex vi propositionis*)” (1.59).<sup>23</sup> Again, the beginner may be puzzled. We can, however, find clarification in the later overview of parts (Ded. 4). For there the *propositio* is said to be that “which briefly sets forth the source, from which the entire force (*ex quo vis omnis*) of the argument ought to flow,”<sup>24</sup> and the *assumptio* is characterized as that “through which one assumes what is pertinent to showing (or proving the case), (deriving it) from the *propositio* (*ex propositione*)” (1.67).<sup>25</sup> Both the later passage, the overview, and the earlier one, the description of parts, are concerned with the hypothetical syllogism: i.e., the mixed hypothetical like “If P, then Q; but P; therefore Q.” In such a syllogism, the *propositio* does contain the “summit” and “force” of the argument: *if* the antecedent is granted, *then* the consequent follows.<sup>26</sup> And the *assumptio* is taken “from the *propositio*” with a change.<sup>27</sup> What was the antecedent in the conditional premise is asserted categorically in the *assumptio*. So much is clear, but it remains opaque how the parts relate to the illustrative argument concerning the order of the universe. For this example is not set out as a hypothetical syllogism; in fact its structure has become a matter of scholarly discussion.<sup>28</sup>

Third and last, the advocates of five parts are said to think that the first premise of a deductive argument should be proven “by a variety of reasons and with the greatest possible fullness of expression.”<sup>29</sup> In a rhetorical

<sup>22</sup> 1.58 *aiunt primum convenire exponere summam argumenationis.*

<sup>23</sup> 1.59 *aiunt, quod ostendere velis, id ex vi propositionis oportere assumere.*

<sup>24</sup> 1.67 *propositio, per quam locus is breviter exponitur ex quo vis omnis oportet emanet ratiocinationis.* I have translated *locus* here with “source” in order to strengthen the connection with *ex quo*: “from which” flows the force of the argument. Alternatively, “topic” might be preferred, since it may remind us of the earlier survey of *loci* in 1.34-43. We are to search through the *loci* in order to find an argument, after which the argument is fleshed out by stating the second premise, the *assumptio*, and the conclusion.

<sup>25</sup> 1.67 *assumptio, per quam id, quod ex propositione ad ostendum perinet, assumitur*

<sup>26</sup> In the categorical syllogism, the major premise does not contain the entire force (*omnis vis*) of the argument. Two premises including a middle term are needed before the power of the argument is revealed.

<sup>27</sup> See Prantl vol. 1 p. 383-5 on μεταλαμβάνειν and μετάληψις.

<sup>28</sup> For an interesting attempt to elucidate Cicero’s argument by introducing modern notation, see Schweinfurth-Walla p. 158. She correctly observes that Cicero has given little thought to the logic of the illustrative example. His concern is with the number of parts. The same can be said of the later (1.68-9) example of quinquartite deduction (i.e., the first illustrative argument in Ded. 5). It is based on the well known trial of Epaminondas (stock material: see the example of induction in 1.55-6 = Ind. 6, as well as that of four part deduction in 1.70) and satisfies the earlier call for fullness of expression in the *propositionis approbatio* (1.68 satisfying the recommendation of 1.58, on which see the next paragraph). Nevertheless, Cicero seems quite unconcerned with logical clarity. The *propositio* (1.68) needs to be reformulated, and the *assumptio* (1.69) is so unclear that scholars disagree where it is stated in the argument (see Kroll p. 4 and Achard p. 114 n.181 versus Schweinfurth-Walla p. 159-60, with whom I agree). My point is not that Cicero’s argument is hopelessly confused. It is rather that Cicero is not interested in logical structure. He is more concerned with elaborating the *approbationes*, thereby emphasizing those parts which turn a three part argument into one of five parts. See Klein col. 1253-4.

<sup>29</sup> 1.58 *rationibus variis et quam copiosissimis verbis.*

context such a recommendation may be in place. In fact, it may be thought to pick up and underline an earlier remark in Cicero's discussion of proof: "The *embellishment* of an argument, once it has been discovered, and the dividing of it into definite parts are (tasks) most agreeable (to the audience) and especially necessary" (1.50).<sup>30</sup> But having said that, I want to underline its irrelevance within the particular context. The recommendation throws no light on the logical structure of the illustrative argument, and has no direct relationship to the question at issue: five parts as against three. Indeed, an advocate of five parts might well reject fullness of expression in favor of brevity, or claim that either one may be desirable depending on the situation.<sup>31</sup>

### III

After reporting the competing analyses (Ded. 2), Cicero combines history and personal preference (Ded. 3). He declares himself in favor of the quinquepartite analysis and tells us that this analysis has been adopted by those who follow Aristotle and Theophrastus. He adds that his preference must be explained, lest he be thought hasty in opting for five parts (1.61). What follows is an explanation or argument in three steps (1.62-6), whose most striking feature is the use of mixed hypothetical syllogisms of the if-then variety.

Steps I (1.62-3) and II (1.64-5) of Cicero's explanation are not only elaborate mixed hypothetical syllogisms, but each of the steps also introduces a shorter hypothetical syllogism in order to illustrate an obvious premise which needs no proof: i.e., it needs no *approbatio*. In both the longer and shorter syllogisms, the major divisions are clearly indicated: "if" (*si*) introduces the *propositio*; "but" (*autem*) marks the *assumptio*; and "therefore" (*igitur*) signals the *complexio*.<sup>32</sup> Here are Steps I and II in outline.

Step I = *Inv.* 1.62-3

*Propositio*: If 1) in some argument the *propositio* is sufficient without an *approbatio* and 2) in another it is weak unless an *approbatio* is added, then the *approbatio* is separate from the *propositio*.

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<sup>30</sup> 1.50 *inventam* (*sc. argumentationem*) *exornari et certas in partes distingui et suavissimum est et summe necessarium*. The remark is part of a transitional passage, on which see above, note 2. The adjective *suavissimum* refers to the pleasure provided to the listener; see Achard p. 102 n. 152.

<sup>31</sup> Later in the discussion of refutation (1.89), Cicero takes account of the fact that orators may use many words to prove the *propositio* (*deinde hoc approbant plurimis verbis*), because they think that many words produce forgetfulness. The example takes the form of a mixed hypothetical syllogism: "If the inheritance was coming to him, it is probable that he committed the murder; But the inheritance was coming to him; Therefore he committed the murder." Many words cause the listener to forget that the consequent in the hypothetical premise was expressed as probable.

<sup>32</sup> In Step I, the first statement of the *complexio* has *igitur* (1.62). When the *complexio* is restated, *igitur* is replaced by *ex hoc et ex eo* (1.63). In Step II, *igitur* occurs in both statements of the *complexio* (1.64, 65). In neither of the shorter syllogisms is the *complexio* expressed, for it is not in doubt and not directly relevant to the point at issue: namely, the obviousness of one of the premises.



**Propositionis approbatio:** Whatever is able to be joined to and separated from something cannot be the same as that to which it is joined and from which it is separated.

**Assumptio:** But 1) there is some argument in which the *propositio* does not need an *approbatio*, and 2) there is another in which the *proposito* lacks force in the absence of an *approbatio*.

**Assumptionis approbatio** [postponed until after the *complexio* is stated]: 1) A *propositio* which is obvious does not need an *approbatio*, e.g., the *propositio* in the following argument:

**Propositio:** If I was in Athens on the day on which the murder was committed in Rome, I could not have been involved in the murder.

**Assumptio:** But I was in Athens on that day.

[**Complexio:** Therefore I was not involved.<sup>33</sup>]

and 2) that a *propositio* may be in need of an *approbatio* is obvious so that a demonstration would be pointless.

**Complexio** [stated before and again after the *assumptionis approbatio*]: Therefore the *approbatio* is something separate from the *propositio*.

Step II = Inv. 1.64-5

**Propositio:** If 1) in some argument the *assumptio* is sufficient without an *approbatio* and 2) in another it is weak unless an *approbatio* is added, then the *approbatio* is separate from the *assumptio*.

[**Propositionis approbatio:** omitted<sup>34</sup>]

**Assumptio:** But 1) there is some argument in which the *assumptio* does not need an *approbatio*, and 2) there is another in which the *assumptio* lacks force in the absence of an *approbatio*.

**Assumptionis approbatio** [postponed until after the *complexio* is stated]: 1) An *assumptio* which is obvious does not need an *approbatio*, e.g., the *assumptio* in the following argument:

**Propositio:** If one ought to wish to be wise, it is fitting to study philosophy.

**Assumptio:** But one ought to wish to be wise.

[**Complexio:** Therefore it is fitting to study philosophy.<sup>35</sup>]

and 2) it is obvious that some *assumptio* needs an *approbatio*.

**Complexio** [stated before and again after the *assumptionis approbatio*]: Therefore the *approbatio* is separate from the *assumptio*.

In contrast with Steps I and II, Step III (1.66) does not have a neatly articulated hypothetical form. The opening words, "And from these (arguments) the following is obvious,"<sup>36</sup> indicate dependence on the preceding two Steps; and what comes next, "that there is some argument in which neither the *propositio* nor the *assumptio* needs an *approbatio*," combines parts of the *assumptiones* of Steps I and II. In particular, it

<sup>33</sup> On the omission of the *complexio*, see note 32.

<sup>34</sup> The absence of the *propositionis approbatio* in Step II is not significant. The *propositionis approbatio* given in Step I holds for Step II and need not be repeated.

<sup>35</sup> On the omission of the *complexio*, see note 32.

<sup>36</sup> 1.66 *atque ex his illud iam perspicuum est.*

combines the first part of the two *assumptiones*. The conclusion, introduced by "from which it is recognized,"<sup>37</sup> is clear and in line with Steps I and II: "The *approbatio* is contained in neither the *propositio* nor the *assumptio*." By drawing further on Steps I and II, we easily obtain the following hypothetical argument.

Step III = *Inv.* 1.66

**Propositio:** [If 1) in some argument the *propositio* and *assumptio* are sufficient without an *approbatio* and 2) in another they are weak unless an *approbatio* is added, then the *approbatio* is contained in neither the *propositio* nor the *assumptio*.<sup>38</sup>]

[**Propositionis approbatio:** omitted<sup>39</sup>]

**Assumptio:** But 1) there is some argument in which neither the *propositio* nor the *assumptio* needs an *approbatio*, [and 2) there is another in which the *propositio* and the *assumptio* lack force in the absence of an *approbatio*.<sup>40</sup>]

**Assumptionis approbatio:** 1) From Steps I and II, it is obvious that there is some argument in which neither the *propositio* nor the *assumptio* needs an *approbatio*, e.g., the *propositio* and the *assumptio* in the following argument:

**Propositio:** If wisdom is to be sought above all, folly is to be avoided above all.

**Assumptio:** But wisdom is to be sought above all.

**Complexio:** Therefore folly is to be avoided above all.

[and 2) it is obvious that there is another in which the *propositio* and the *assumptio* lack force in the absence of an *approbatio*.<sup>41</sup>]

**Complexio:** From which it is recognized that the *approbatio* is contained in neither the *propositio* nor the *assumptio*.

Having completed Step III of his argument in favor of a quinquepartite analysis of deductive reasoning, Cicero, at the end of 1.66, states by way of conclusion: "And if this is so, those who have divided argumentation into five parts have divided in a suitable manner." The wording of this conclusion echoes Cicero's initial endorsement of the quinquepartite division in 1.61.<sup>42</sup> "Those" in 1.66 has the same reference as "all who take their start from Aristotle and Theophrastus" in 1.61. Apparently Cicero believes that the quinquepartite analysis goes back in some important way to the early Peripatos. The correctness of that belief will be discussed in Part IV of this paper. For the moment, I want to underline that Cicero has been not only using mixed hypothetical arguments to defend the five part

<sup>37</sup> 1.66 *ex quo cognoscitur*.

<sup>38</sup> The *propositio* is not stated, but it is easily supplied by combining the *propositiones* of Steps I and II.

<sup>39</sup> On the omission of the *propositionis approbatio*, see note 34.

<sup>40</sup> Part 2 of the *assumptio* is not stated in Step III, presumably because it is considered obvious. See the *assumptionis approbatio* of both Steps I and II. There it is said to be obvious that the *proposito* and the *assumptio* sometimes need an *approbatio*.

<sup>41</sup> Concerning the omission of part 2 of the *assumptionis approbatio*, see the preceding note.

<sup>42</sup> The wording at the end of 1.67—*quodsi ita est, commode partiti sunt illi, qui in quinque partes tribuerunt argumentationem*—recalls the beginning of 1.61: *commodior illa partitio videatur esse quae in quinque partes tributa est, quam omnes ab Aristotele et Theophrasto profecti maxime secuti sunt*.

division, but also defending a five part division of this mode of argument. That is clear both from the three examples he gives, one in each of the three Steps,<sup>43</sup> and from the summary overview of parts, which follows immediately (Ded. 4). I have already had occasion to refer to this overview (above, Part II) and repeat here what is significant. The *proposito* is described as that "from which the entire force of the argument ought to flow," and the *assumptio* as that "through which one assumes what is pertinent to showing (or proving the case), (deriving it) from the *propositio*" (1.67). That is characterization in terms of hypothetical syllogistic. The conditional statement of the *propositio* contains the force of the argument,<sup>44</sup> and the antecedent of the conditional is adopted in the *assumptio*, where it is asserted categorically.

#### IV

Cicero tells us that quinquupartite analysis has been adopted by all who take their their start from Aristotle and Theophrastus. If the argument of Part III is sound, it would seem that the analysis in question is a division of mixed hypotheticals. Can that be correct? The Stoics, after all, are known to have worked extensively on hypothetical syllogistic, and Cicero is likely to have been influenced by their work. I do not want to deny that. Stoic logic was important in the Hellenistic period; the young Cicero will have been exposed to it through his teachers. But granting that, I want to call attention to the evidence for early Peripatetic work on mixed hypothetical syllogisms. It is not insignificant; and taken together with passages in *On Invention*, it provides good reason to believe what Cicero says, at least in regard to Theophrastus. Here is the most important evidence.

In the *Prior Analytics*, after speaking about arguments based on agreement and those established *per impossibile*, Aristotle promises discussion of other kinds of hypothetical argument (1.44 50a39-b2). Aristotle does not say which kinds of hypothetical argument he intends to discuss, and it seems certain that he never fulfilled his promise. It fell to his successors to develop the subject. Alexander of Aphrodisias reports that Theophrastus made mention of the promised kinds in his *Analytics* and Eudemus did the same. Alexander goes on to list five kinds of which the first is the mixed hypothetical syllogism of the if-then variety (*In APr* p. 390.2-9 = 111E.4-12). Philoponus tells us that lengthy treatises were written on the subject by Theophrastus, Eudemus and others of Aristotle's pupils, and also by the Stoics (*In APr* 242.18-21 = 111B.5-8 FHS&G). That suggests a substantial discussion of hypothetical syllogistic by both Theophrastus and Eudemus, but Boethius says that Theophrastus only pursued the chief points or elements of the subject, while Eudemus followed a broader path, but in such a way that he seems to have sown the seed without harvesting the crop (*Hyp. syll* 1.1.3 = 111A.6-10 FHS&G). What Boethius says may be taken to cast doubt on Philoponus' reference to lengthy treatises,<sup>45</sup> but it seems quite possible that Boethius is either

<sup>43</sup> The first two examples are incomplete in that the conclusion is not stated. In the third it is stated. For our purposes, the difference is unimportant. Each of the arguments is a crisp, clear mixed hypothetical syllogism, which is used effectively to illustrate a detail in the larger argument.

<sup>44</sup> Hence the argument "from one part," in which "since" replaces "if": "Since she has given birth, she has lain with a man" (1.74). See below, Part IV.

<sup>45</sup> Pohlenz vol. 2 p. 29, Michel p. 182-3 and Graeser p.92-3.

uninformed or disingenuous concerning the work of Theophrastus and Eudemus.<sup>46</sup> In any case, setting forth the elements of hypothetical syllogistic need not, and should not, be thought of as child's play. What Theophrastus and Eudemus wrote, whether comparatively brief or lengthy as Philoponus reports, will have constituted an important contribution to the field of hypothetical syllogistic. It influenced the development of Stoic logic and was taken up by rhetoricians who placed themselves within the Peripatetic tradition or drew eclectically upon it. Either way, Cicero will be reporting a correct tradition, when he speaks of those "who take their start from Aristotle and Theophrastus."

Not only does Cicero make explicit reference to the founders of the Peripatos, but also much of what is said within the discussion of deduction has parallels in latter reports concerning Theophrastus. I shall mention four parallels. First, we know from Alexander that Theophrastus concerned himself with hypothetical syllogisms in which either the conditional premise or the additional premise is doubtful and therefore in need of proof (*In AP* p. 263.11-25 = 112A.22-37 FHS&G). That is, of course, a major consideration in Cicero's argument in favor of quinquartite deduction, especially in Steps I and II (1.62-5). Moreover, Alexander tells us that the additional assumption may be posited through induction, or hypothetical argument, or as obvious, or through a (categorical) syllogism (p. 388.17-20 = 112B.1-3 FHS&G). We may compare Step II of the argument for five parts. Here Cicero asserts that an *assumptio* which is obvious needs no *approbatio* and then supports the assertion by adducing a particular example in which the assumptio, "But one ought to wish to be wise," is said to be obvious (1.65).

Second, Alexander reports that the older men, i.e. the early Peripatetics, characterized the additional premise as μεταλαμβανόμενον. It is not posited "from outside" (ὀν ἔξωθεν); rather it appears in the conditional premise, but not in the required form. There it is part of a hypothetical and a sequence; it must be changed into an assertion when adopted as the additional premise (p. 263.26-36 = 112A.38-49 FHS&G). The idea is the same in the Ciceronian description of the *assumptio*: it does not come "from outside," but rather "from the *propositio*" (*ex propositione* 1.67).

Third, Simplicius reports that "since" (ἐπεὶ) is used instead of "if" (εἰ) in hypothetical arguments in which the antecedent is not only true but also obvious and undisputed. We are also told that the younger men, i.e. the Stoics, call this kind of proposition "parasynaptic" and that Theophrastus, in his *Prior Analytics*, made clear the reason for using "since" (*In De caelo* p. 552.31-553.4 = 112C.1-5 FHS&G). Concerning the Stoics we are well enough informed. They distinguished between the synaptic conjunction, "if," which announces sequence, and the parasynaptic conjunction, "since," which announces both sequence and fact (Diogenes Laertius 7.71).<sup>47</sup> In regard to Theophrastus we are less well informed; but if Simplicius has not misrepresented him, he will have offered a reason for using "since." Perhaps he emphasized economy, pointing out that "since" introduces the

<sup>46</sup> Here as elsewhere in this paragraph I am drawing on Barnes p. 125-9. His fuller statement should be consulted, as should that of Prantl p. 375-89.

<sup>47</sup> D.L. 7.71: ἐπαγγέλλεται δ' ὁ σύνδεσμος (sc. ἐπεὶ) ἀκολουθεῖν τε τὸ δεύτερον τῷ πρώτῳ καὶ τὸ πρῶτον ὑφ' ἐστῆναι: "The <parasynaptic> conjunction <'since'> announces that the second follows the first and the first is fact." I.e., the consequent follows on the antecedent, and the antecedent is fact. Diogenes cites the Stoic Crinis as his source (*SVF* vol. 3 p. 269.1-6).

antecedent as fact, so that the additional premise of the conditional hypothetical argument need not be stated. If he did say that, he may have added that the use of "since" also removes the need to state the conclusion separately. For what would be the consequent in a conditional hypothetical (i.e., in the synapctic) now expresses the conclusion. Be that as it may,<sup>48</sup> we have in Cicero a clear example of "since" replacing "if."<sup>49</sup> It is not found within Cicero's argument in favor of five parts (Ded. 3), but in the later list of illustrative arguments, each of which has a different number of parts (Ded. 5). I am thinking of the last example, i.e., that of an argument with one part: "Since she has given birth, she has lain with a man" (1.74).<sup>50</sup> In expression (diction), the argument differs little from the conditional *propositio* "If she has given birth, she has lain with a man." The only difference is that "since" (*quoniam*) has been substituted for "if" (*si*). But "since" announces the truth of the antecedent, i.e. she has *in fact* given birth, and that makes the complex statement a clear argument which needs no supplement.<sup>51</sup>

Fourth, we should remember that mixed hypothetical syllogisms come in several varieties. In Alexander's list of kinds passed over by Aristotle but mentioned by Theophrastus and Eudemus, the conditional hypothetical comes first and the separative comes second (*In APr* p. 390.9-10 = 111E.6-

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<sup>48</sup> In his *Introduction to Logic* 3.3 = 111D.1-13 FHS&G, Galen tells us that the older Peripatetics called a conditional premise "hypothetical by connection." He also comments that either εἰ or εἴτερ may introduce the antecedent. We can say confidently that Theophrastus belongs among the older Peripatetics who spoke of "hypothetical by connection." Less clear to me is whether Galen's comment concerning the use of εἰ or εἴτερ would be endorsed by Theophrastus in all contexts. In a logical treatise, he might well treat εἰ and εἴτερ as identical and contrast both with ἐπεὶ, but in a rhetorical context he may have taken note of the fact that εἴτερ can be used in two different ways: either as a strengthened form of εἰ or as a subtle synonym for ἐπεὶ. I.e., εἴτερ may be used in order to imply, without announcing, the truth of the antecedent. See LSJ&M s.v. II, and Galen's own use of εἴτερ at the end of 3.3 = 111D.12 (assuming Keiffer's emendation is correct).

<sup>49</sup> I cite the example found within the treatment of deduction (1.74). If we consider earlier remarks on arguments which are probable, we may cite a second example. For there (1.47) a distinction is drawn between a "true" argument and a plausible one. The former is illustrated by "Since there is a scar, there was a wound," and the latter by "If there is much dust on his shoes, he must have come from a journey." In the former case, we have an argument which has been discovered (inventum) by considering causation (cf. 1.37), and it is called "true" because the antecedent is announced as fact. That does not change the status of the argument from probable to necessary. It still may be that no wound (understood to be damage inflicted by an external agent) occurred (or was inflicted). The scar may be the result of, e.g., a disease which caused the skin to erupt.

<sup>50</sup> 1.74 *quoniam peperit, cum viro concubuit.*

<sup>51</sup> Schweinfurth-Walla p. 162 explains the argument as a two part inference, whose *propositio* is not expressly formulated and whose *assumptio* and *complexio* are brought together in a single sentence. Out of all context, I have no quarrel with this analysis, but for our purposes it is important to underline the fact that Cicero is introducing a complex proposition which was formally recognized by the Stoics (it belongs among τὰ οὐχ ἀπλῶς ἀξιώματα and is labeled παρασυνημένον, Diogenes Laertius 7.71) and discussed by the early Peripatetics including Theophrastus. Moreover, a close relationship between the synapctic and parasynapctic proposition was recognized. In Diogenes Laertius, they are discussed one after the other (7.71); and Simplicius, having introduced the synapctic to elucidate the parasynapctic, refers to the first part of the parasynapctic proposition as the antecedent (*In De caelo* p. 553.1 = 112C.1 FHS&G and p. 553.11 which is not printed in FHS&G).

8 FHS&G). According to Galen, “separative” is the term used by the older philosophers, i.e. the Peripatetics. The more recent philosophers, i.e. the Stoics, called it “disjunctive”.<sup>52</sup> Both schools were concerned with arguments in which the hypothetical premise has the form “either—or” (ἢτοι—ἢ). Galen’s example opposes day and night: “Either it is day, or it is night” (*Introduction to Logic* 3.3-4 = 111D.3-18 FHS&G). Put schematically, the argument in its entirety runs as follows: “Either P or Q, but P, therefore not Q” (“but not P, therefore Q”). This kind of hypothetical argument appears in Cicero’s list of illustrative arguments (Ded. 5). His example is “Either we ought to fear the Carthaginians, if we leave them unharmed, or we ought to destroy their city; but assuredly we ought not to fear them; it remains, therefore, that we ought to destroy their city” (1.72).<sup>53</sup>

These four parallels, in combination with two references to those who take their start from the Aristotle and Theophrastus (1.61, 66), are, I think, reason to say that the discussion of deduction in *On Invention* contains evidence for early Peripatetic work on hypothetical syllogistic and its influence throughout the Hellenistic period. That is not to claim direct knowledge of Theophrastus (and Eudemos) on the part of the young Cicero. Whether in his teens or early twenties,<sup>54</sup> Cicero was not reading difficult Peripatetic texts, which in any case may have been unavailable, or largely so, in Rome at that time.<sup>55</sup> Rather Cicero was dependent on his teachers of rhetoric and the handbooks they recommended. These sources were, however, influenced by the early Peripatetics and that influence was acknowledged. When Cicero names Aristotle and Theophrastus, he is following his source(s), teacher or handbook, and the argument which occurs between the first and second reference to these Peripatetics reflects early Peripatetic thinking.<sup>56</sup> The argument is well structured and in that regard quite different from the illustrative argument of the preceding report.<sup>57</sup> My guess is that this difference is attributable to Cicero’s handling

<sup>52</sup> Strictly speaking “separative” and “disjunctive” characterize the hypothetical premise: for the Peripatetics it is a πρότασις ὑποθετικὴ κατὰ διαίρεσιν; for the Stoics, a διεξυγμένον ἄξιωμα (Galen, *Introd.* 3.4 = 111D.17-18).

<sup>53</sup> 1.72 *aut metuamus Carthaginienses oportet, si incolumes eos reliquerimus, aut eorum urbem diruamus. at metuere quidem non oportet. restat igitur, ut urbem diruamus.*

<sup>54</sup> See note 1.

<sup>55</sup> We may regard with scepticism the story of Theophrastus’ library—i.e. his books and those of Aristotle were carried off to Scepsis, then back to Athens and finally to Rome where they were eventually published by Andronicus some time after the middle of the 1st c. B.C. (Strabo, *Geography* 13.1.54 and Plutarch, *Sulla* 26.1-3 = 37-8 FHS&G)—and still hold that the writings of Aristotle and Theophrastus were largely unavailable in Rome, when Cicero composed *On Invention*, i.e., between c. 90 and 80 B.C. But certainty here is elusive, so that differing views are to be expected. Cf. Schmidt p. 18-19, who believes, partly on the basis of *On Invention* 1.61, that Theophrastus’ rhetorical works were known to educated men in Rome before Sulla brought the Library of Theophrastus to the city in 83 B.C.

<sup>56</sup> In the example within Step I, Rome is paired with Athens. The pairing is not early Peripatetic; mostly likely the rhetorical source followed by Cicero contained the pair, but it is possible that Cicero introduced it himself. In any case, what is being illustrated, an obvious premise, and the form of the illustration, a mixed hypothetical, are entirely in place in a source which claims roots in the early Peripatos.

<sup>57</sup> In this way it differs also from the illustrative argument which follows in 1.68-9. See above, note 28.

of sources. The reasoning of the advocates of five parts—reasoning which we might expect to occur as part of the preceding report (Ded. 2)—has been carefully reproduced under the guise of Cicero's own explanation for preferring quinquartite analysis (Ded. 3). But whether or not Cicero is disingenious, his explanation is evidence both for early Peripatetic work on hypothetical syllogistic and for its influence among rhetoricians of the Hellenistic period.

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