

## Book Reviews

T. EBERT and U. NORTMANN, *Aristoteles: Analytica priora, Buch I*. Berlin: Akademie Verlag, 2007. 924 pp. €98.00. ISBN 978-3-05-004427-9.

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This book presents a translation of, an introduction to, and a commentary on the first book of the *Prior Analytics*. U. Nortmann is mainly responsible for the commentary on the modal syllogistic (*APr.* I.3 and 8-22), T. Ebert mainly for the other parts of the book.

### 1. The translation

The translation is for the most part excellent. It is generally accurate and faithful to the Greek, all the while being clear and easily readable. There is no doubt that it will become the standard German translation of *Prior Analytics I*, thus replacing Rolfes's 1921 translation. Ebert and Nortmann (EN) are to be congratulated and thanked for this achievement.

Of course, there are also some controversial issues. Let me mention three examples. The first concerns the use of italics and quotation marks in connection with argument terms of categorical propositions. When categorical propositions contain concrete terms rather than schematic letters, EN usually write the predicate term in italics but not the subject term; for instance, '*animal* belongs to every man' ('*Lebewesen* kommt jedem Menschen zu' 25a25-6) or '*animal* follows man' ('dem Menschen das *Lebewesen* folgt' 43b31). This is meant to indicate a difference in use and mention. EN take the predicate term of such propositions to be mentioned, and the subject term to be used (pp. 214–215).

In some cases, EN do not write the predicate term in italics; for instance, 'reasoning possibly belongs to every man' ('jedem Menschen kommt das Überlegen möglicherweise zu' 34b35-6) or 'health belongs to no illness' ('Gesundheit kommt keiner Krankheit zu' 48a4-5). They appear to assume that the terms 'reasoning' and 'health' are used rather than mentioned in such propositions, while 'healthy' is mentioned in '*healthy* possibly belongs to every man' (cf. pp. 813–817). However, EN do not explain this view.

When concrete terms occur outside categorical propositions, EN usually write them in italics; for instance, 'let *B* stand for *triangle*' ('*B* stehe für *Dreieck*' 48a33-4). However, sometimes they use quotation marks instead of italics; for instance, 'let *B* stand for "things contrary to each other"' ('*B* stehe für "zueinander Gegensätzliches"' 48b6, similarly in 48a10-1, 49a36-8, 49b12-3, 50a15). Also, in phrases such as 'let *B* stand for *animal*', the letter *B* is

sometimes put in quotation marks (34a7-8, 34b33-4, 34b39, 38a31-2, 38a42, 38b20, etc.; cf. p. 546), and sometimes not (30a30, 31b28-9, 44a13, 47b21-2, 48a33-4, 49a15-6, 52a16-7, etc.).

In *Prior Analytics* I.27, Aristotle distinguishes between three kinds of beings (ὄντων 43a25). Firstly, individuals such as Kallias which are not predicated of anything else, but of which other beings are predicated. Secondly, universals which are predicated of other beings, but of which no other being is predicated. Thirdly, universals which are predicated of other beings, and of which other beings are predicated; ‘for example, man is predicated of Kallias and animal of man’ (43a31-2). EN put the term ‘animal’ and the first occurrence of the term ‘man’ in quotation marks (so wird etwa “Mensch” von Kallias und “Lebewesen” von Mensch prädiiziert). But what is the relevant difference between the two occurrences of the term ‘man’? Are the quotation marks meant to indicate that terms are mentioned rather than used? If so, why are quotation marks used and not italics?

In sum, EN’s prolific use of italics and quotation marks is more confusing than helpful. It does not seem to be based on a clear and consistent theory of the distinction between use and mention of terms. Nor is it obvious whether any such theory could be attributed to Aristotle. I would prefer Smith’s (1989) policy of using no italics or quotation marks in connection with argument terms of categorical propositions.

Let me now turn to the second example. It concerns two passages which are similar to each other: τὸ γὰρ Γ τῶν Β τί ἐστίν (25a17) and τὸ δὲ Γ τι τῶν Β ἐστὶ (30a22). Despite their similarity, EN translate the two passages differently. They translate the first as ‘for *C* is one of the *B*s’ (‘denn *C* ist eines der *B*’), and the latter – less accurately – as ‘but *C* constitutes a part of the *B*(-things)’ (‘das *C* aber einen Teil der *B*(-Dinge) darstellt’). The first passage is from Aristotle’s justification of the conversion of e-propositions. EN take the term Γ in this passage to be a singular term which stands for an individual, and the phrase τῶν Β to stand for a plurality of individuals (pp. 234–237). The second passage is from Aristotle’s justification of the modal syllogisms Barbara NXN and Celarent NXN. In this passage, Γ is the minor term of the two syllogisms, and can therefore not be assumed to be a singular term. If the phrase τῶν Β is assumed to stand for a plurality of individuals (which is debatable, though), the term Γ cannot stand for a member of that plurality. Instead, EN take it to stand for a part, or a subclass, of that plurality.<sup>1</sup> Thus, EN’s translation is based on the view that in the first passage Γ is a singular term which stands for an individual. However, this view is controversial and is rejected by several commentators (e.g., Ross 1949, pp. 293 and 318, Patzig 1968, pp. 162–164).

Finally, the third example concerns the following passage: εἰ οὖν τὸ μὲν Α μὴ ἐνδέχεται [παντί] τῷ Γ, τὸ δὲ Β παντὶ ὑπάρχει τῷ Γ, τὸ Α οὐ παντὶ τῷ Β ἐνδέχεται (34a38-9).<sup>2</sup> The standard translation is: ‘if it is not possible for *A* to belong to [every] *C* and *B* belongs to every *C*, then it is not possible for *A* to belong to every *B*’. EN accept that τὸ μὲν Α μὴ ἐνδέχεται [παντί] τῷ Γ means ‘it is not possible for *A* to belong to [every] *C*’. But they assume that τὸ Α οὐ παντὶ τῷ Β ἐνδέχεται means ‘it is

<sup>1</sup> Similarly, EN translate the singular κύκνος by the plural ‘swans’ in the following passage: ‘next take swans (κύκνος) and snow from among those white things of which *man* is not predicated’ (‘dann nehme man von den weißen Dingen, von denen *Mensch* nicht ausgesagt wird, die Schwäne und den Schnee’; εἶτα καὶ ὄν μὴ κατηγορεῖται λευκῶν ὁ ἄνθρωπος, εἰλήφθω κύκνος καὶ χιών 26b7-8, similarly 26b12-3).

<sup>2</sup> Unlike Ross (1949), EN athetize the bracketed ‘παντί’.

possible that  $A$  does not belong to every  $B$  ('ist es möglich, daß das  $A$  nicht jedem  $B$  zukommt'). This assumption is based on a specific interpretation of the passage. EN take the passage to indicate an assertoric Bocardo syllogism which involves reasoning about possible worlds (pp. 560–565):

Major premiss: there is an  $x$  which is  $C$  in the actual world  $w$  but is not  $A$  in a possible world  $w'$ .

Minor premiss: every  $x$  which is  $C$  in the actual world  $w$  is  $B$  in the possible world  $w'$ .

Conclusion: there is an  $x$  which is  $B$  in the possible world  $w'$  and which is not  $A$  in  $w'$  (in other words: there is an  $x$  for which it is possible to be  $B$  but not  $A$ ).

As EN themselves point out (p. 561), this is a forced interpretation. It is difficult to believe that Aristotle envisaged such instances of assertoric Bocardo syllogisms. It is unfortunate to base an unusual translation on such an interpretation.

EN's translation is followed by a detailed introduction (pp. 95–206). This includes an overview of Aristotle's syllogistic and of *Prior Analytics* I, a discussion of the transmission of the Greek text, a discussion of the *Wirkungsgeschichte* of the syllogistic from Theophrastus to Hegel, and an extensive bibliography. All this is presented in a clear manner, and should prove helpful to students and scholars alike.

## 2. The commentary on the non-modal syllogistic (*APr.* I.1-2, 4-7, 23-46)

This is the part of the commentary for which T. Ebert is mainly responsible. It is generally extensive and detailed, though more so on the first chapters than on I.23-46. Some topics are given special attention, for instance, Aristotle's formulation of categorical propositions (pp. 212–217), perfect syllogisms (pp. 292–296), indirect moods and the fourth figure (pp. 342–354).<sup>3</sup> However, a number of other topics are treated less carefully. Here are four examples.

Firstly, EN interpret a- and o-propositions in the assertoric syllogistic as follows (p. 333): an a-proposition ' $A$  belongs to every  $B$ ' is interpreted by the conjunctive formula  $\forall x(Bx \supset Ax) \wedge \exists xBx$ , and an o-proposition ' $A$  does not belong to some  $B$ ' by the disjunctive formula  $\exists x(Bx \wedge \neg Ax) \vee \neg \exists xBx$ . On the other hand, they reconstruct (p. 337) Aristotle's ecthetic proof of Bocardo by taking the major premiss ' $A$  does not belong to some  $B$ ' to imply  $Bn \wedge \neg An$  (with  $n$  being a fresh singular term). They do not mention that this implication is invalid according to their disjunctive interpretation of o-propositions. Nor is it obvious how the ecthetic proof of Bocardo might be reconstructed in accordance with that interpretation.

Secondly, EN hold (p. 776) that in chapters I.28-9,  $E$  is a term which stands for a set of individuals, while  $G$  stands for a set of terms each of which stands for a set of individuals. On the other hand, they state (p. 789) that  $E$  and  $G$  have the same extension in I.29 45b21-8. But they do not explain how a set of individuals can have the same extension as a set of terms each of which stands for a set of individuals.

The third example concerns chapter I.34, which deals with some fallacious modal arguments. The first fallacious argument is in the first figure:

<sup>3</sup> These passages are summaries of papers published by Ebert.

Mistakes frequently will happen because the terms in the premiss have not been well set out, as, for example, if A is health, B stands for illness, and C for man. For it is true to say that it is not possible for A to belong to any B, for health belongs to no illness, and again that B belongs to every C, for every man is susceptible of illness. It might seem to result, then, that it is not possible for health to belong to any man. (47b40-48a8)

This argument is usually taken to purport to be an instance of the modal syllogism Celarent NXN: health cannot belong to any illness, illness belongs to every man, therefore health cannot belong to any man. As EN point out (pp. 813–814), the phrase ‘susceptible of health’ might be taken to indicate that the minor premiss is not an assertoric a-proposition but a two-sided possibility a-proposition of the form ‘it is possible for B to belong to all C’ (Smith 1989, p. 163). In this case, the argument would purport to be an instance of Celarent NQN. However, Aristotle holds that Celarent NQN is invalid (35b34-6; cf. EN, p. 591). So, it is preferable to take the argument to purport to be an instance of Celarent NXN, which is held to be valid by Aristotle (30a15-23).

Aristotle holds that both premisses of the argument can be truly uttered while the conclusion appears to be false; and he explains how this difficulty should be solved (48a8-15). He goes on to discuss a fallacious argument in the second figure:

Next, there can be a similar mistake in the case of the middle figure: for it is not possible for health to belong to any illness, but it is possible for health to belong to every man, so that it is not possible for illness to belong to any man.<sup>4</sup> (48a15-8)

The phrase ‘it is possible for health to belong to every man’ seems to indicate that the minor premiss is a two-sided possibility a-proposition. In this case, the argument would purport to be an instance of Cesare NQN. However, Aristotle holds that Cesare NQN is invalid.<sup>5</sup>

There are two strategies to solve that problem. According to Alexander’s strategy (which I think is the correct one), the minor premiss is an assertoric a-proposition, so that the argument purports to be an instance of Cesare NXN (Alexander *in Apr.* 354.32-355.10). EN reject this strategy (p. 816), arguing that the phrase ‘possible’ (ἐνδέχεται, 48a17) rules out an assertoric minor premiss. However, as EN point out elsewhere (p. 442), the phrase ‘possible’ (ἐνδέχεται) is often used to justify the hypothetical assumption of the truth of assertoric premisses in the apodeictic syllogistic (I.10 30b35, I.11 31b6, 31b30, 32a3). According to Alexander, this is also the case in our passage; ‘possible’ serves the same function as the phrase ‘susceptible of health’ in the first fallacious argument.<sup>6</sup> Thus, EN’s only argument against Alexander’s interpretation is not convincing.

EN (pp. 816–817) prefer the second strategy, which goes back to Tredennick (1938, pp. 370–371). According to it, the conclusion is an assertoric e-proposition,

<sup>4</sup> This is how EN (p. 816) think the Greek of the passage, as it appears in the manuscripts, should be translated.

<sup>5</sup> As mentioned above, Aristotle holds that Celarent NQN is invalid. So given the conversion of necessity e-propositions (25a29-32), Cesare NQN is also invalid.

<sup>6</sup> In the Greek of 48a15-8, there is only one occurrence (48a17) of ἐνδέχεται (‘possible’). In connection with the minor premiss, this serves to indicate the hypothetical assumption of the truth of an assertoric proposition. In connection with the major premiss and the conclusion, on the other hand, it serves to indicate necessity e-propositions.

not a necessity e-proposition. Thus, the argument would purport to be an instance of Cesare NQX, which is held to be valid by Aristotle (38a13-26). However, taking the conclusion to be an assertoric e-proposition is not compatible with the Greek of the passage. So EN change the Greek in such a way that it becomes compatible, following Tredennick's conjecture to read νόσος instead of νόσον in 48a18. But there is no evidence for this reading in the manuscripts. Another problem for EN's interpretation is that the second fallacious argument would be less similar to the first (given that this purports to be an instance of Celarent NXN). Also, the second fallacious argument is easier to understand if the conclusion is not only assumed to be false (as the minor premiss is assumed to be true in the first fallacious argument), but if there is an obvious reason why the conclusion cannot be true. There is an obvious reason why the necessity e-proposition 'illness cannot belong to any man' cannot be true. But it is more difficult to see an obvious reason why the assertoric e-proposition 'illness belongs to no man' cannot be true.<sup>7</sup>

Now for the fourth example. It concerns Aristotle's discussion in I.41 (49b14-32) of propositions such as 'whatever *B* belongs to, *A* belongs to all of it' or 'whatever *B* is said of all of, *A* is said of all of it'. Since Theophrastus, such propositions are usually referred to as proleptic propositions (see, for example, *Lejewski 1961*, pp. 169–170). EN do not mention the notion of a proleptic proposition, nor the authoritative interpretation of I.41 49b14-32 by W. and M. Kneale (1972, pp. 202–205). EN's own interpretation is questionable. For instance, EN take (p. 849) the phrase 'whatever *B* is truly said of, *A* belongs to all of that' (49b23) to express the a-proposition '*A* belongs to all *B*'. However, as pointed out by the Kneales (1972, p. 204), the phrase means that for any *C* for which the indeterminate affirmative proposition '*B* belongs to *C*' is true, the a-proposition '*A* belongs to all *C*' is true. Further, EN take (p. 849) the phrase '*A* is said of whatever *B* is said of all of' (49b25-6) to express the indeterminate affirmative proposition '*A* belongs to *B*'. However, as pointed out by the Kneales (1972, p. 204), the phrase means that for any *C* for which '*B* belongs to all *C*' is true, '*A* belongs to *C*' is true. According to EN, 49b25-30 is basically a repetition of a point made already in 49b20-2 – a difficulty which the Kneales's interpretation does not have. Also, unlike the Kneales (1972, pp. 202–203), EN assume that the main thesis of the passage 49b14-32 is stated in 49b14-6. But it is unclear how the rest of the passage should be related to this thesis (pp. 850–851).

In these and other cases, EN's treatment does not give the impression of a careful and well thought through commentary.

### 3. The commentary on the modal syllogistic (*APr.* I.3, 8-22)

This part of the commentary, mainly written by U. Nortmann, constitutes nearly half of the book (pp. 240–286, 361–739). It draws heavily on the apparatus of modern modal predicate logic (MPL). Aristotle's modal syllogistic is analysed in terms of and evaluated with respect to several systems of MPL such as T, B, S4 or S5. In doing so, the commentary is closely following Nortmann's 1996 monograph. It also frequently refers to, and rejects, Schmidt's 2000 analysis of the modal syllogistic

<sup>7</sup> In the first fallacious argument, Aristotle accepts the truth of 'illness belongs to every man', and hence of 'health belongs to no man'. He could equally well have accepted the truth of 'health belongs to every man' and 'illness belongs to no man'.

in terms of MPL. The commentary will be of special interest to readers who think that MPL is an appropriate tool for analysing Aristotle's modal syllogistic.

For all its detailed and helpful discussions, the commentary has some weaknesses too. Here are three examples. Firstly, EN's analysis of modal categorical propositions in terms of MPL formulae does not give a uniform and adequate interpretation of Aristotle's apodeictic syllogistic (*APr.* I.8-12). It fails to be uniform in that the same modal categorical propositions are analysed by different MPL formulae in different contexts (pp. 410, 416, 372-373). It fails to be adequate in that it is not in accordance with Aristotle's statements concerning the validity or invalidity of syllogistic moods in the apodeictic syllogistic; for instance, it cannot account for Aristotle's statements of the validity of Camestres XNN (p. 419) and of the invalidity of Bocardo NXN (p. 461). EN do not mention that there are several uniform and adequate interpretations of Aristotle's apodeictic syllogistic (*Johnson 1989, Thomason 1993, Brenner 2000, Malink 2006*). Instead, they give a detailed discussion of interpretations which are not uniform and adequate (*Patterson 1995, Thom 1996, Nortmann 1996, Schmidt 2000*).

Now for the second example. Aristotle holds that Baroco NNN and Bocardo NNN can be proven to be valid by the method of ecthesis (30a6-14). EN reconstruct (p. 376) the ecthetic proof of Baroco NNN as follows: the minor premiss  $Bo_N C$  implies that there is a  $D$  such that  $Be_N D$  and  $Ca_N D$ .  $Be_N D$  and the major premiss  $Ba_N A$  imply  $De_N A$  by virtue of Cesare NNN.  $Ca_N D$  can be converted to  $Di_N C$ . Finally,  $De_N A$  and  $Di_N C$  imply  $Ao_N C$  by virtue of Festino NNN. However, EN do not mention that this ecthetic proof can easily be transformed into an ecthetic proof of Baroco XNN, namely, by using Cesare NXN instead of Cesare NNN as an auxiliary syllogism (cf. Alexander *in APr.* 144.23-145.4). But Baroco XNN is held to be invalid by Aristotle. Similarly, EN do not mention that their ecthetic proof of Bocardo NNN (p. 378) can be transformed into an ecthetic proof of Bocardo NXN by using Datisi XNX<sup>8</sup> and Ferison NXN instead of Datisi NNN and Ferison NNN as auxiliary syllogisms (cf. Alexander *in APr.* 151.22-30). But Bocardo NXN is held to be invalid by Aristotle. EN say (p. 461) that this seems to be a mistake on Aristotle's part. Oddly, however, they do not comment on Aristotle's statement of the invalidity of Baroco XNN in 31a15-7.<sup>9</sup>

The third example concerns Aristotle's distinction between two kinds of possibility, namely, one-sided possibility and two-sided possibility (or contingency). One-sided possible is that which is not impossible; two-sided possible is that which is neither impossible nor necessary. Aristotle regards two-sided possibility as the primary notion of possibility, whereas the one-sided notion is based on an equivocation of the term 'possible':

I use the expressions 'to be possible' and 'what is possible' in application to something if it is not necessary but nothing impossible will result if it is put as being the case; for it is only equivocally that we say that what is necessary is possible. (32a18-21)

<sup>8</sup> EN hold (p. 440) that Aristotle states the validity of Datisi XNX in 31b20-7. In any case, the validity of Datisi XNX follows from that of Datisi XXX if necessity propositions imply their assertoric counterparts – an implication accepted by EN (p. 271, note 26, and pp. 441–443).

<sup>9</sup> They mention it briefly (p. 407), but do not comment on it (cf. pp. 434–439).

Aristotle goes on to explain this as follows:

That this is what is possible is evident from opposed pairs of denials and affirmations. For 'it is not possible to belong' and 'it is impossible to belong' and 'it is necessary not to belong' are either the same or follow from one another, and thus their opposites 'it is possible to belong' and 'it is not impossible to belong' and 'it is not necessary not to belong' will also either be the same or follow from one another; for either the affirmation or the denial is true of everything. (32a21-28)

EN take this passage to be a justification and explanation of the two-sided, not one-sided, notion of possibility. Several commentators who share this view reject the passage as an inept interpolation (*Becker 1933*, pp. 11–14, *Ross 1949*, pp. 327–328, *Smith 1989*, pp. 125–126). The reason is that 'either the same or follow one another' appears to state the equivalence of the two phrases 'it is possible to belong' and 'it is not necessary not to belong' – an equivalence which is not valid for the two-sided notion of possibility. EN, on the other hand, are trying to make sense of the passage (pp. 474–475). They assume that the passage does not state the equivalence of the two phrases. Rather, they take it to state only that 'it is possible to belong' implies 'it is not necessary not to belong'. However, it is difficult not only to read the Greek in this way, but also to see how this would be a helpful explanation of the two-sided notion of possibility.

EN do not mention the view that the passage is a justification and explanation of the one-sided, not two-sided, notion of possibility (*Gohlke 1936*, p. 66, *Hintikka 1977*, p. 81, *Buddensiek 1994*, pp. 21–23, *Thom 1996*, p. 13). From Aristotle's point of view, the somewhat artificial one-sided notion may be more in need of explanation than the more natural two-sided one. Thus, Aristotle is arguing that the one-sided notion is a reasonable notion of possibility as well as the two-sided one. He does so by inferring the equivalence of 'possible', 'not impossible' and 'not necessary not' from the equivalence of 'not possible', 'impossible' and 'necessary not', this latter equivalence being more obvious and plausible to him than the former. If this is correct, then EN's interpretation of 32a21-28 is misleading.

There is a useful overview of syllogistic moods held to be valid by Aristotle in the assertoric and modal syllogistic (pp. 897–906). It would have been helpful to add an overview of moods held to be invalid and of premiss pairs held to be inconcludent by Aristotle.

To conclude, EN's commentary on the modal and non-modal syllogistic is, to my mind, sometimes disappointing. But this does not diminish the value of EN's translation of and introduction to *Prior Analytics I*.

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NINO B. COCCHIARELLA, *Formal ontology and conceptual realism*. Dordrecht: Springer, 2007. xxiii + 316 pp. £107.50. ISBN 978-4020-6203-2.

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The book is based on a series of lectures presented in Rome in 2004 at the Lateran Pontifical University. It is an essay in formal ontology. The purpose of the formalisation is to enable us to state ontological theories with sufficient precision so that they can be compared with one another. This is laid out in the first part of the book. Much of this formal material had been published already in journal articles; the author draws upon publications of his reaching as far back as the mid 1960s. It is good to have his important contributions so readily accessible in the present form. The formalisms include some of those most widely discussed and debated in the past 40 years, mainly modal and temporal logic, both propositional and first-order, with possibilist and actualist quantification spelled out, as well as extensional and intensional treatments of possible worlds. In addition, the author provides formal treatments of the notions of objecthood, sets, numbers, abstract objects and predication.

In the second part of the book, the author lays out a defense of a particular ontological framework, which he calls *Conceptual Realism*. There are two parts to this realism, natural realism and intensional realism, which the author regards as being separately developed and yet entirely consistent with one another. The former