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Truth and Excluded Middle in *Metaphysics* Γ 7

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In chapters 7 and 8 of book Γ of the *Metaphysics*, the last two chapters of the book, Aristotle examines the Principle of Excluded Middle. He offers several arguments in its support. The purpose of this study is to reconstruct and evaluate the first of these arguments, which is based on a definition of truth and falsehood.

What principle is at stake? When in *Metaphysics* Γ he discusses a principle or principles which commentators normally call 'the Principle of Excluded Middle' (henceforth 'PEM'), Aristotle uses variants of two formulations:

> [a] It is not possible for there to be anything in the middle of a contradiction[1]

and

> [b] It is necessary either to affirm or to negate any one thing of one thing[2]

Elsewhere in the *Metaphysics* and in other works, Aristotle uses mainly variants of [b].[3] Only once, in the *Physics* (5.5, 235^b 15–16), does he employ the formulation 'Everything must either be or not be', which may be plausibly cashed out as 'Everything must either be so-and-so or not be so-and-so' (where 'so-and-so' can be replaced with any general term).

Formulations [a] and [b] might induce one to believe that in Aristotle's view PEM is a linguistic or 'logical' principle,[4] i.e. a thesis that concerns exclusively linguistic expressions or speech-acts: either the claim that there is no linguistic expression intermediate between affirmative and negative declarative sentences or the claim the only truth-evaluable linguistic expressions are affirmative and negative declarative sentences. Such an exegesis however sits uneasily with the fact that at several points of his discussion Aristotle appears to treat the denial of PEM as an ontological claim. (1) At the end of his first argument in support of PEM (1011^b 23–9), Aristotle describes (1011^b 28–9) the person denying it as committed to something that neither is nor is not, i.e. something that neither is so-and-so nor is not so-and-so. (2) In his second argument in support of PEM (1011^b 29–1012^a 1), Aristotle distinguishes two ways of understanding the position that there is something in the middle of a contradiction: either the thing in the middle of a contradiction is like something grey between black and white or it is like something that is between man and horse by being neither a man nor a horse. He goes on to argue that things in such a condition would be exempt from change and claims that such a conception is untenable. Here, the thing that is supposed to be in the

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[1] Cf. 1011^b 23–4; 1011^b 30; 1011^b 35; 1012^a 26.

[2] Cf. 1011^b 24; 1012^a 2–3; 1012^b 11–12; 4, 1008^a 3–4.

[3] Cf. *Int.* 13, 22b12–13; *APo.* 1.1, 71^a 14; 4, 73^b 23; 11, 77^a 22; 77^a 30; 32, 88^b 1; *Metaph. B* 2, 996^b 29; Frede (1985), 79–80.

[4] Cf. Cavini (2007), 147.

middle of a contradiction does not seem to be a linguistic expression intermediate between affirmative and negative declarative sentences; rather, it seems to be an entity in a condition that in some sense falls between those of being so-and-so and not being so-and-so. (3) In his fourth argument in support of PEM (1012^{a} 5–9), Aristotle argues that one cannot assert that the principle that nothing falls in the middle of a contradiction fails only for a restricted area: if one takes this principle to fail, one must go for a universal failure. The person defending such a position is therefore committed to the claims that one will neither be right nor not be right and that 'there will be something outside what is and what is not [*παρὰ τὸ ὂν καὶ τὸ μὴ ὄν*]' (1012^{a} 7–8). Again, the things supposedly in the middle of a contradiction seem to be entities in a condition that in some sense falls between those of being so-and-so and not being so-and-so. (4) In the chapters of *Metaphysics* Γ that precede those dealing with PEM, Aristotle examines the Principle of Non-Contradiction, which he expresses both by an 'ontological' formulation ('It is impossible for the same thing to hold and not to hold of the same thing at the same time and in the same respect')[5] and by a linguistic or 'logical' formulation ('It is impossible to affirm and negate truly the same thing').[6] It wold be surprising if in his discussion of PEM Aristotle were to adopt exclusively linguistic or 'logical' formulations.

Formulation [b], 'It is necessary either to affirm or to negate any one thing of one thing', undeniably concerns linguistic expressions or speech-acts. But the evidence just reviewed makes it reasonable to regard formulation [a], 'It is not possible for there to be anything in the middle of a contradiction', as an ontological principle. When he uses formulation [a], Aristotle probably does not mean that there is nothing in the middle of a contradictory pair consisting of an affirmative declarative sentence and the corresponding negative declarative sentence, but that there is nothing in the middle of a contradictory pair consisting of the situation that consists in something being so-and-so and the situation that consists in that thing not being so-and-so. If this is right, by employing formulation [a] Aristotle commits himself to all instances of the schema 'Everything either is so-and-so or is not so-and-so'. This solution is corroborated by a passage from *Metaphysics I* 4: '… there is nothing in the middle of a contradiction, but there is in the case of some privations: for everything is either equal or not equal, but not everything is either equal or unequal' (1055^{b} 8–10). In this passage, a claim expressed by means of a

[5] Γ 3, 1005^{b} 19–20, cf. 4, 1006^{a} 3–4.

[6] Γ 4, 1008^{a} 36–1008^{b} 1, cf. 1007^{b} 21–2; 1007^{b} 29–30; 1007^{b} 34; 6, 1011^{b} 20–1.

version of formulation [a] is justified by a claim expressed by an instance of 'Everything is either so-and-so or not so-and-so', which may be regarded as a mere stylistic variant of the corresponding instance of 'Everything either is so-and-so or is not so-and-so'. Note that in the *Categories* (10, 12^b 6–15) Aristotle holds that the relation of contradictoriness obtains not only between linguistic expressions like 'is sitting' and 'is not sitting', but also between what is 'under [ὑπό]' (12^b 6, 12^b 9, 12^b 14) these linguistic expressions.

The first argument for PEM, which is based on a definition of truth and falsehood, is as follows:

T1 ἀλλὰ μὴν οὐδὲ μεταξὺ ἀντιφάσεως ἐνδέχεται εἶναι 1011^b23
οὐθέν, ἀλλ᾽ ἀνάγκη ἢ φάναι ἢ ἀποφάναι ἓν καθ᾽ ἑνὸς ὁτιοῦν.
δῆλον δὲ πρῶτον μὲν ὁρισαμένοις τί τὸ ἀληθὲς καὶ ψεῦδος. $^b25$
τὸ μὲν γὰρ λέγειν τὸ ὂν μὴ εἶναι ἢ τὸ μὴ ὂν εἶναι ψεῦ-
δος, τὸ δὲ τὸ ὂν εἶναι καὶ τὸ μὴ ὂν μὴ εἶναι ἀληθές, ὥστε
καὶ ὁ λέγων[7] εἶναι ἢ μὴ ἀληθεύσει ἢ ψεύσεται· ἀλλ᾽
οὔτε τὸ ὂν λέγεται[8] μὴ εἶναι ἢ εἶναι οὔτε τὸ μὴ ὄν. 1011^b29

> Nor is it possible for there to be anything in the middle of a contradiction, but it is necessary either to affirm or to negate any one thing of one thing. First, this is clear to those who define what truth and falsehood are. For, to say that what is is not, or that what is not is, is false; to say that what is is, and that what is not is not, is true, so that it's he who says that something is or that it is not who will be right or wrong: but neither what is nor what is not is said not to be or to be. (Arist. *Metaph.* Γ 7, 1011^b23–9)

The difference between the 'or' in the definition of falsehood and the 'and' in the definition of truth is probably a purely stylistic matter.[9] The main difficulty posed by T1 is that it is hard to see how a definition, and in particular a definition of truth and falsehood, can serve the purpose of supporting a substantial thesis like PEM.

[7] The reading 'καὶ ὁ λέγων' is attested in E and J; A^b has 'ἐκεῖνο λέγων' (the reading printed by Brandis (1823), 83 and favoured, but not printed, by Schwegler (1847–8), III 182); Alexander (*in Metaph.* 328, 25) seems to have read 'καὶ ὁ λέγων το υτο' (printed and defended by Bonitz (1848–9), I 79 and II 212).

[8] E and J read 'λέγει', 'λέγεται' is in A^b.

[9] Cf. Bonitz (1870), 357^b 20–4; Cavini (1998), 12.

A pragmatic reconstruction. A first attempt at reconstructing the argument is based on the assumption that it has a rather pragmatic character, i.e. linked to the practice of conversation. The definition of truth and falsehood relies on the assumption that the only declarative sentences that can be true or false are affirmations and negations. For: to say of what is that it is not or of what is not that it is is to *negate* being of what in fact is or to *affirm* being of what in fact is not; to say of what is that it is or of what is not that it is not is to *affirm* being of what in fact is or to *negate* being of what in fact is not. Since the only cases contemplated by the definition are that of affirmation and that of negation, and since the definition presupposes that all possible cases are contemplated (for a definition that says nothing about some of the possible cases would be faulty), affirmations and negations are the only sentences that can be true or false. Thus, if anyone wants to produce a declaration, i.e. a truth-evaluable sentence,[10] he or she will have to produce either an affirmation or a negation. Hence there is no intermediate between an affirmative and a negative declaration. Such a claim may be regarded as supporting PEM, in particular of the principle expressed by the second of the two formulations mentioned at the beginning of T1: 'It is necessary either to affirm or to negate any one thing of one thing' (1011^b 24).

This reconstruction faces some objections. (1) It credits Aristotle with a defence of a version of PEM which is far from the ontological version which there are reasons to attribute to Aristotle (i.e. a claim to the effect that everything either is so-and-so or is not so-and-so). (2) It does not make much of the last part of the text, i.e. of the remark that 'neither what is is said not to be or to be, nor what is not [*sc.* is said not to be or to be]' (1011^b 28–9): this remark does not immediately lend itself to be read in a way that agrees with the reconstruction under consideration. (3) The version of PEM defended by Aristotle according to the reconstruction under consideration is disappointingly weak because it amounts to the claim that every declarative sentence is either an affirmative or a negative declarative sentence. This claim enjoys the double drawback of being false (because some declarative sentences, e.g. disjunctive and conditional ones, cannot be classified as affirmations or denials) and of clashing with Aristotle's own pronouncements in *de Interpretatione* (5, 17^a 8–9, 17^a 20–2), where he mentions affirmation and negation as the two types of *simple* declarative sentence while allowing for the existence of other declarative sentences (those which are one by composition and thanks to the presence of some connector).

[10] Cf. *Int.* 4, 17^a 2–7.

A reconstruction based on the Principle of Bivalence. Some commentators put forward an interpretation that does not incur the difficulties faced by the one which has just been considered and relies on a variant of the principle normally called 'the Principle of Bivalence' (henceforth 'PB').[11] PB states that every declarative sentence is either true or false.[12] The variant of PB on which the argument relies is the claim that 'he who says that something is or that it is not will be right or wrong' (1011^b 28), i.e. the claim that both someone who produces an affirmation by saying about something that it is so-and-so is either right or wrong and someone who produces a negation by saying about something that it is not so-and-so is either right or wrong (here 'so-and-so' can be replaced with any general term).

The easiest way to see how this interpretation goes is to present it as a reductio ad absurdum of the assumption that there is an exception to PEM in its ontological formulation, i.e. as a reductio ad absurdum of the assumption that there is an exception to the claim that everything either is so-and-so or is not so-and-so. Thus, suppose there to be such an exception, i.e. that there is an object x that neither is so-and-so nor is not so-and-so. Consider anyone who produces an affirmation by saying about x that it is so-and-so: this person will be neither right (because, according to the definition of truth and falsehood,[13] in order for him or her to be right, x should be so-and-so, while x by hypothesis is not so-and-so) nor wrong (because, according to the definition, in order for him or her to be wrong, x should not be so-and-so, while by hypothesis it is not the case that x is not so-and-so). This clashes with the version of PB on which the argument relies, which requires that someone who produces an affirmation by saying about something that it is so-and-so is either right or wrong. Consider then anyone who produces a negation by saying about x that it is not so-and-so: this person will be neither right (because, according to the definition of truth and falsehood, in order for him or her to be right,

[11] Cf. Alex. Aphr. *in Metaph.* 328, 19–329, 4; Schwegler (1847–8), III 182; Bonitz (1848–9), II 212; Ross (1924), I 284–5; Kirwan (1971/93), 117–18.

[12] Aristotle characterizes declarative sentences as the sentences of which truth and falsehood hold (cf. *Int.* 4, 17^a 2–3). This characterization may be taken to require merely that truth and falsehood hold *only* of declarative sentences; it need not be taken to require that either truth or falsehood holds of *every* declarative sentence (cf. Crivelli (2004), 86–7). Thus, the version of PB in the main text above need not be regarded as a logical consequence of the characterization of declarative sentences as the sentences of which truth and falsehood hold.

[13] The exegesis under consideration assumes that Aristotle's definition of truth and falsehood involves a predicative elliptical use of 'to be', i.e. a predicative use of 'to be' where the predicated general term is omitted for the sake of generality. Such a reading of Aristotle's definition is endorsed by several commentators: cf. Sommers (1969–70), 281–2.

x should not be so-and-so, while by hypothesis it is not the case that *x* is not so-and-so) nor wrong (because, according to the definition, in order for him or her to be wrong, *x* should be so-and-so, while *x* by hypothesis is not so-and-so). This also clashes with the version of PB on which the argument relies, which requires that someone who produces a negation by saying about something that it is not so-and-so is either right or wrong. Thus, the variant of PB on which the argument relies rules out an exception to PEM in its ontological formulation. In other words, the variant of PB on which the argument relies requires that everything either be so-and-so or not be so-and-so. The second branch of the argument, which concerns someone who produces a negation by saying about *x* that it is not so-and-so, is redundant: the first branch of the argument suffices. The second branch is offered merely because producing only the first would give the wrong impression that the argument can go through only by considering the case of affirmations.

This interpretation of Aristotle's argument has several strengths: it is close to the actual wording of the argument's second part and it yields as a conclusion an ontological version of PEM, i.e. the claim that everything either is so-and-so or is not so-and-so. But it also faces some objections. Specifically, the interpretation under consideration crucially relies on a variant of PB, which invites two objections. (1) Aristotle himself in chapter 9 of *de Interpretatione* denies PB while accepting PEM (at least according to the most widespread interpretation of this chapter):[14] it would be awkward on Aristotle's part to argue for PEM on the basis of PB. (2) It is not clear that Aristotle's argument would be effective against someone who denies PEM: such a person would probably have no qualms rejecting also PB.[15] The first criticism may perhaps be dealt with by noting that in *Metaphysics* Γ there is no indication of an exception to PB such as the one usually found in *de Interpretatione* 9: this might be an indication that *de Interpretatione* 9 is a late piece and that at the time when he wrote *Metaphysics* Γ Aristotle endorsed PB. As for the second criticism, one might try to answer it by claiming that the effectiveness of a defence of PEM based on PB can only be evaluated by taking into account the motivation that one's antagonist might have for rejecting PEM. Aristotle mentions three reasons that might induce someone to reject PEM (1012^{a} 17–28): giving in to eristic arguments, demanding a reason for everything, and a metaphysical view such as that of Anaxagoras (in a situation of complete mixture, things are allegedly neither good nor not good). In the case of the third

[14] I defended this interpretation of *de Interpretatione* 9 in Crivelli (2004), 198–233.

[15] Cf. Kirwan (1971/93), 117–18.

type of motivation, one might expect that someone rejecting PEM might still want to endorse PB (because bearers of truth or falsehood might be deemed to be foreign to the condition of complete mixture envisaged by Anaxagoras). This reply is however not convincing because it leaves the other motivations mentioned by Aristotle unaccounted for.

A new reconstruction. We have considered two reconstructions of Aristotle's argument in T1. The first reconstruction does not fit in well with the argument's final part; the second saddles Aristotle with an argument that relies on PB, a principle at least as controversial as PEM. It is reasonable to search for a new exegesis that fits the whole of Aristotle's formulation while crediting him with a plausible argument.

Suppose that there were a condition, call it 'M', which is 'in the middle of a contradiction' (1011^b 23), i.e. intermediate between the condition of being so-and-so and the contradictorily opposite one of not-being so-and-so. The opposition between the condition of being so-and-so and that of not-being so-and-so does not have to do with the attribute so-and-so: both conditions are ways of being related to the attribute so-and-so. The opposition between the two conditions depends on the fact that their constitutive relations to the attribute so-and-so are themselves opposed: things in these conditions are related to the attribute so-and-so in opposite ways. For this reason condition M, which is supposed to be intermediate between the two opposed conditions, consists in being related to the attribute so-and-so in a way that is different both from that of being so-and-so and from that of not-being so-and-so.

Given that condition M exists, there must also be a predicative expression, say 'neither-is-nor-is-not so-and-so', that corresponds to condition M in that it is used to say of things that they are in condition M. This predicative expression, 'neither-is-nor-is-not so-and-so', would then be truly applicable to any entity in condition M. We thus have three different conditions, namely being so-and-so, not-being so-and-so, and M, and three corresponding predicative expressions, namely the affirmative predicative expression 'is so-and-so', the negative predicative expression 'is-not so-and-so', and the intermediate predicative expression 'neither-is-nor-is-not so-and-so'. Just as the difference between the three conditions is determined (not by the attribute so-and-so, but) by their different constitutive relations that combine with the attribute so-and-so, so the difference between the three predicative expressions is determined (not by the general term 'so-and-so', but) by the predicative links that combine with the general term 'so-and-so', namely the affirmative pred-

icative link '… is …', the negative predicative link '… is-not …', and the 'intermediate' predicative link '… neither-is-nor-is-not …' Being constructed around the 'intermediate' predicative link '… neither-is-nor-is-not …', which is different both from the affirmative '… is …' and from the negative '… is-not …', the intermediate predicative expression 'neither-is-nor-is-not so-and-so' is neither affirmative nor negative. Thus, the intermediate predicative expression 'neither-is-nor-is-not so-and-so' is different both from the affirmative predicative expression 'is so-and-so' and from the corresponding negative predicative expression 'is-not so-and-so'. A clear indication of this difference is given by the fact that if something were in condition M, it could be truly described by 'neither-is-nor-is-not so-and-so', but would neither be so-and-so nor not be so-and-so and therefore could not be truly described by means of the affirmative predicative expression 'is so-and-so' nor by means of the negative predicative expression 'is-not so-and-so' (cf. 1011^{b} 28–9).

An application of the predicative expression 'neither-is-nor-is-not so-and-so' could then be described as an exception to the claim that 'it is necessary either to affirm or to negate any one thing of one thing' (1011^{b} 24). However, the only cases contemplated by the definition of truth and falsehood are those of affirmation and negation. Since the definition presupposes that all relevant cases are contemplated (for a definition that says nothing about some relevant cases would be faulty), affirmations and negations are the only sentences to be considered when issues of truth and falsehood come up: the definition entails that 'it's[16] he who says that something is [*sc.* affirms] or that it is not [*sc.* negates] who will be right or wrong' (1011^{b} 28). Hence, according to the definition, the only predicative expressions are affirmative ones and negative ones, so there is no place left for an intermediate predicative expression that is neither affirmative nor negative. Hence the definition of truth and falsehood tells against the existence of a condition M 'in the middle of a contradiction' (1011^{b} 23), i.e. intermediate between the condition of being so-and-so and the contradictorily opposite one of not-being so-and-so. Therefore everything either is so-and-so or is not so-and-so.

This reconstruction has the advantage of fitting the whole formulation of the argument and assigning a role to each of its clauses. Its drawback is that it relies on a premiss that does not appear in the text, i.e. the assumption that if there were a condition M which is different both from being so-and-so

[16] I regard the occurrence of '*καί*' at 1011^{b} 28 as emphatic: it indicates that it is just the person who is making an affirmation or a negation who speaks truly or falsely. For the emphatic use of '*καί*' (whereby it may also be rendered by 'just'), see LSJ *s.v.* '*καί*' B 6; Denniston (1954), 320–1.

and from not being so-and-so, then there would be a predicative expression 'neither-is-nor-is-not so-and-so' that could be used to offer a true description of any entity that enjoys condition M. The absence of this assumption from the argument is somewhat disturbing in view of its crucial importance within the argument it contributes to.

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