

ARISTOTLE ON THE NECESSITY OF THE CONSEQUENT

Aristotle's definition of a syllogism:

- (1) A deduction [syllogism] is a discourse in which, certain things having been supposed, something different from the things supposed results of necessity because these things are so. (*Prior Analytics* A.1, 24b18-22)

When Aristotle says there is a (valid) syllogism, does he mean:

- (2) From true premises you *cannot* have false conclusion (where that 'cannot' is a genuine modal)?

Or does he simply mean:

- (3) No matter how you choose the subject and predicate terms in a schema, you will *never ever in fact* have true premises and false conclusion?

Aristotelian essentialism at work in the logic:

- (4) 'All men are animals of necessity' is a true, modal proposition.

Is the necessity in (4) the same as the necessity in (1)?

Sorabji:

- "Aristotle's habit of jumbling together logical and non-logical necessities with apparent indifference" (1969, p. 134)
- "Modern philosophers have tended to be very parsimonious in their recognition of distinct kinds [of necessity]." (1980, p. 222)
- "In contrast with this parsimony, Aristotle recognizes a rich collection of cases. Moreover, his system of classification is refreshing to study, precisely because it does not mesh with ours." (1980, p. 223)
- "Aristotle did not regard logical necessity as a distinct kind of necessity." (1969, p. 133)

Aristotle: The 'lexicon' in *Metaphysics* V.5:

5 · We call the necessary (1) that without which, as a condition, a thing 20
cannot live, e.g. breathing and food are necessary for an animal; for it is incapable
of existing without these.—(2) The conditions without which good cannot be or
come to be, or without which we cannot get rid or be freed of evil, e.g. drinking the
medicine is necessary in order that we may be cured of disease, and sailing to
Aegina is necessary in order that we may get our money.—(3) The compulsory and 25
compulsion, i.e. that which impedes and hinders contrary to impulse and choice. For
the compulsory is called necessary; that is why the necessary is painful, as Evenus
says: 'For every necessary thing is ever irksome'. And compulsion is a form of 30
necessity, as Sophocles says: 'Force makes this action a necessity'.³ And necessity is
held to be something that cannot be persuaded—and rightly, for it is contrary to the
movement which accords with choice and with reasoning.—(4) We say that that
which cannot be otherwise is necessarily so. And from this sense of necessary all the 35
others are somehow derived; for as regards the compulsory we say that it is
necessary to act or to be acted on, only when we cannot act according to impulse 1015^b
because of the compelling force,—which implies that necessity is that because of
which the thing cannot be otherwise; and similarly as regards the conditions of life
and of good, when in the one case good, in the other life and being, are not possible 5
without certain conditions, these are necessary, and this cause is a kind of
necessity.—Again, (5) demonstration is a necessary thing, because the conclusion
cannot be otherwise, if there has been demonstration in the full sense; and the
causes of this necessity are the first premises, i.e. the fact that the propositions from
which the deduction proceeds cannot be otherwise.

Bach:

“Aristotle appears to hold that if C follows necessarily from A and B, then C is necessary.” (1995, p. 103)

Aristotle: Stage 1: (non-modal)

An Pr A.4, 26a2-10:

However, if the first extreme [A] follows all of the middle [B] and the middle [B] belongs to none of the last [C], there will not be a deduction of the extremes [C, A], for nothing necessary results in virtue of these things being so. For it is possible for the first extreme to belong to all as well as to none of the last. Consequently, neither a particular nor a universal conclusion becomes necessary; and, since nothing is necessary because of these, there will not be a deduction. Terms for belonging to every are animal, man, horse; for belonging to none, animal, man, stone.

All B are A	$\forall x(Bx \supset Ax)$	All men are animals	All men are animals
<u>No C is B</u>	$\forall x(Cx \supset \sim Bx)$	<u>No horse is a man</u>	<u>No stones are men</u>
C (?) A	C (?) A	All horses are animals	No stones are animals

Aristotle: Stage 2: (modal)

An Pr A.10, 30b31-40:

And moreover, it would be possible to prove by setting out terms that the conclusion is not *necessary without qualification*, but only *necessary when these things are so*. For instance, let A be animal, B man, C white, and let the premises have been taken in the same way (for it is possible for animal to belong to nothing white). Then, man will not belong to anything white either, but not of necessity: for it is possible for a man to become white, although not so long as animal belongs to nothing white. Consequently, the conclusion will be necessary when these things are so, but not necessary without qualification.

The syllogism he’s studying here is usually taken to be this:

Camestres LXX

All B are by necessity A	All men are necessary animals
<u>All C are not A</u>	<u>All white things are not animals</u>
All C are not B	All white things are not men

Proof through Realization of a Possibility:

Given a premise that something is possible, assume that the possibility is realized, and then reason non-modally. Any non-modal proposition obtained in this way may then be concluded to be possible.

Aristotle: Stage 2: (modal)

An Pr A.15, 34a25-27:

when something false but not impossible is assumed, then what results through that assumption will also be false but not impossible.

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