Fragments of Aristotle's Modal Syllogistic in the Late Medieval Theory of Consequences: the Case of *consequentia ut nunc*

PAOLO FAIT*

Summary: The paper attempts to show how the customary medieval distinction between as-of-now and absolute consequences was borrowed by medieval logicians from a difficult passage in Aristotle's *Prior Analytics* I 15. After discussion of some of the problems of modal logic raised by this controversial Aristotelian text, an attempt is made to highlight the persistence of the same problems in the framework of the 14th century theory of consequences.

Concluding his examination of the tradition of the *Topics*, Niels Jørgen Green-Pedersen suggested that the role the *Topics* played in the creation of the theory of consequences had been previously overestimated by scholars.[1] In his opinion, late medieval doctrines of consequences were elaborated using material taken from Aristotle's *Prior Analytics* and Boethius' *De Hypotheticis Syllogismis*, while they were developed mostly in the context of the discussion of *sophismata*. No doubt, Green-Pedersen succeeds in showing that the kernel of the theory is already present in a number of texts devoted to *sophismata*, and I have very little if anything to add to this general explanation. In this paper I would like to explore the role played by Aristotle's *Prior Analytics* in the development of the important distinction between *consequentia simplex* and *consequentia ut nunc*. It can be shown that Aristotle's text is present in a significant number of discussions on consequences, not merely as a *fons remotus* – from which something is borrowed and yet so greatly trans-

1 See Green-Pedersen 1984. Green-Pedersen along with Stump (esp. 1989) were the first to engage in research on the sources of the late medieval theory of consequences.

formed that the debtor may be completely unaware of the debt – but rather as a perfectly identified source.

Several texts on consequences make the distinction between a consequence valid only as-of-now (*ut nunc*), i.e. at this time or at a certain time, and an absolutely valid consequence (*consequentia simplex*), i.e. one valid at any time. The first kind of consequence captured the interest of historians of logic because it reminded them of the modern notion of material implication. While today it is not widely held that these two notions are actually the same, the distinction makes an interesting subject of study in any case, because we can at least partially trace its history from its origins to its medieval use.

In the critical edition of Ockham's *Summa Logicae*[2] it is suggested that the distinction *simplex / ut nunc* is borrowed from a passage of the *Prior Analytics*:

(UN) Oportet autem accipere omni inesse non secundum tempus determinantes, ut nunc aut in hoc tempore, sed simpliciter; per huiusmodi enim propositiones et syllogismos facimus, quoniam secundum nunc sumpta propositione non erit syllogismus (I 15, 34b7-11).

The suggestion was that here, in the opposition between "*ut nunc*" and "*simpliciter*", is the origins of our distinction, even though the "*ut nunc*" in the Aristotelian passage clearly means "e.g. now" and not "as-of-now".[3] Green-Pedersen eventually gave his approval to this suggestion, but only with some provisos:[4] "Aristotle's text cannot fully explain the medieval distinction, but it may have provided the inspiration for its development. Anyway there is apparently no other place in the source-books of the medievals which is more closely related to the distinction."[5]

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2 Guill. Ockham *SL*, p. 587 n. 2.

3 For an English translation of this text see below. The expression *ut nunc* is a literal translation of the Greek *hoion nyn* which means 'as e. g., now'. The shift in meaning of the expression *ut nunc* can be accounted for by a shift of context, as for example in customary phrases such as: "rebus se habentibus *ut nunc* se habent".

4 In a first attempt to trace the origin of the *simplex / ut nunc* distinction, Green-Pedersen (1981a: 296) suggested that it goes back to Boethius' distinction between natural and accidental consequences; Green-Pedersen 1981b: 65 considers with circumspection the alleged influence of Aristotle's passage: "we cannot be sure of that as yet". An attempt to identify *ut nunc* with Boethian accidental consequences certainly did occur, see Green-Pedersen 1984: 285 n. 66, n. 67.

5 Green-Pedersen 1984: 287.

(UN) immediately follows a text in which Aristotle endeavours to demonstrate the validity of certain modal syllogistic combinations by a non-standard kind of *reductio ad impossibile*. What he works out is a quite peculiar method for assuming possibilities – so peculiar that scholars have often considered it controversial and sometimes simply flawed. I would suggest, on the contrary, that there is much to be said for it. I would even venture to claim that at *APr.* I 15 Aristotle gets to the heart of his modal theory. Thus, even if this passage is ostensibly devoted to the proof of a small number of syllogisms and not to the demonstration of an ambitious philosophical thesis, it should be ranked alongside more celebrated related texts, such as the discussion of determinism in *De Interpretatione* 9 or the demonstration of the eternity of the world in *De Caelo* I 12.

In late medieval logic, the distinction *simpliciter / ut nunc* was used in various contexts and within different conceptual frameworks. As I have suggested, it could be that there remained only a very loose and remote connection with the text in which this distinction was originally made. Nevertheless, I shall try to show that within the context of the theory of consequences the *simplex / ut nunc* distinction was used to deal with many of the same problems Aristotle tried to solve when using this distinction. Yet, notwithstanding a degree of fidelity to the source, the evidence I can marshal so far does not point to a real understanding of the Aristotelian passage: if I am right, medieval and modern interpreters seem equally prone to misunderstand the Philosopher. In view of the importance of the passage and of its legacy, I have tried first of all to make sense of it. In the next few sections the reader will find an attempt to vindicate Aristotle's argument and to explain the modal theory the argument is predicated upon. Only after having accomplished this task will we be in a position to survey some of the medieval discussions on this topic.

A controversial proof in the *Prior Analytics*

At *APr.* I 15, 34a34ff. Aristotle sets out to validate mixed modal first figure syllogisms with an assertoric major premiss, a problematic minor premiss, and a problematic conclusion. The proof is prefaced in the text (34a5-33) by the discussion of certain laws of

modal logic, the most important of which – henceforth called the Principle of the Possible (PP) – says:

If B follows from A, then if A is possible, B is possible.

Connected to this principle we find the statement of three further laws:

(PN) *If B follows from A, then if A is necessary, B is necessary;*

(PI) *If B follows from A, then if B is impossible, A is impossible;*

(PF) *If B follows from A, then if A is false but not impossible, B is not impossible.*[6]

(PP), (PN), (PI), and (PF) are introduced in order to provide ways of determining the modal status of the consequent *B*, given the modal status of the antecedent *A*, or vice-versa. It is important to notice that 'possible', 'necessary', et al. serve here as semantic predicates and not as operators qualifying syllogistic sentences.

(PP) and its cognate principles are intimately related to what Aristotle (at *APr.* I 13, 32a18-20) calls the *definition* of possibility: something is possible if, being not necessary, it can be posited without implying any impossibility. (PF) brings to the surface an aspect of this definition which, though only implicit in its version at *APr.* I 13, is clearly stated in other related passages (cf. *Metaph.* IX 4, 1047b12-15; *Cael.* I 12, 281b23-25): positing something in order to see if it is possible does not entail taking it to be *true*, it only entails assuming it and seeing what follows. Here in *APr.* I 15, in particular, (PF) should legitimize the *upgrading* of the minor problematic premiss, i.e. its transformation into an assertoric premiss.[7]

Consider the first example of this kind of proof (34a34-b6). Aristotle wants to validate[8]

(1) AaB; M_2BaC ⊢ M_2AaC.

The proof[9] he proposes can be summarized as a *reductio ad impos-*

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6 For the difficulties raised by (PP), see Hintikka 1973: 58ff.; Van Rijen 1989: 23. Actually, (PI) is not explicitly stated at *APr.* I 15, but see *Metaph.* XII 4, 1047b21; *Cael.* I 12, 281b15 and 282a1-3.

7 I borrow the term 'upgrading' from Flannery 1993, but use it in a different way. A defense of the interpretation of Aristotle's suppositional method that I have only sketched here would start from a discussion of *APr.* I 29, 45b9-11 and *APo.* I 6, 75a20-27, which seem to lend plausibility to my suggestion.

8 As usual, M_1 means possibility that includes necessity, M_2 means possibility incompatible with necessity, and N means necessity.

9 For the sake of brevity, I shall refrain from discussing the many details of textual exegesis that separate my interpretation from the others I have examined. See

sibile plus the downgrading of the major premiss (i. e. its transformation into an M_2 premiss[10]) and the upgrading of the minor premiss. The syllogism through which the *reductio* is performed can be better understood if split into two parts, even though Aristotle treats them conjointly:

(2) NAoC; BaC ⊢ NAoB;

(2') NAiC; BaC ⊢ NAiB.

Since as yet neither (2) nor (2') have been proved valid in the *Analytics*, Aristotle must supply a further *reductio* proof of (2) and (2').[11] For the sake of brevity, I shall not go into the details of this second proof. I shall also drop (2') and concentrate on (2). It is easy to see that (2) is half of a *reductio* proof of (1), since its major premiss, NAoC, is one of the two sufficient denials of the conclusion of (1); its minor premiss, BaC, is the upgraded minor premiss of (1); and its conclusion, NAoB, contradicts the major premiss of (1).

Comparison with standard cases of *reductio ad impossibile* will help us to understand what changes when an M_2 premiss is upgraded. A *reductio* is generally performed by showing that the premisses of the syllogism to be validated cannot be held true where the conclusion is false. This is done by proving that the denial of the conclusion together with one of the premisses yield by means of a recognized syllogism the denial of the other premiss. The need to assume the

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Flannery 1993 for a recent discussion. Even though it is not particularly clear, Colli 1955: 851ff. is by far the best and most charitable interpretation of this difficult text. It successfully defends several genuine Aristotelian lines of text from the 'razor' of other scholars.

10 The downgrading of AaB to M_2AaB occurs at 34a41. The substitutability of M_2p for p is asserted at *APr.* I 9, 30a23-28. Among modern interpreters, only Colli (1955: 851ff.) sees the importance of this move in our argument. It should be added that downgrading may explain the puzzling fact that negative syllogisms do not conclude an M_2 sentence, but only an M_1, according to a statement made at 33b29 and 34b27ff., and further at 35b33; 36b34; 39a11, where it is always implied that an assertoric negative sentence cannot be downgraded to the M_2 sentence corresponding to it. I hope to address this issue elsewhere, since here Colli's interpretation and mine part company.

11 This is done at lines 34b2-6. Again, Colli 1955: 858ff. gives the best explanation of this text. Other interpreters either delete it or take it as an alternative *reductio* proof of (1) which would be unsatisfactory in any case. Nevertheless, since a full exposition of Aristotle's proof of (2) and (2') would expose a confusion between a *de dicto* and a *de re* reading of modalities, Aristotle's proof of (1) canot be claimed to be a complete success. As I shall try to show in what follows, however, if (2) and (2') are granted, Aristotle's proof of (1) is sound and ingenious.

truth of both the premisses of the original syllogism is what makes the upgrading move logically questionable, for, as we saw above, Aristotle claims (34b1; 26) that to upgrade an M_2 premiss does not amount to assuming its assertoric *as true*, but only to asserting it "as false", that is, without any commitment to its truth.

Thus, let us reconsider (2) as a *reductio* syllogism. Under the hypothesis that AaB holds true, NAoB is false; therefore, since NAoB is the conclusion of (2), at least one of the premisses of (2), i.e. NAoC or BaC, must be false. But which one? As an attempt to disprove NAoC, this piece of reasoning is useless, for BaC – the upgraded premiss of (2) – is (*de jure* if not *de facto*) false, and so sufficient to explain the falsehood of the conclusion.

Aristotle's way out lies in the distin ction between what is false but not impossible and what is impossible. Since (PF) warrants that the impossible does not follow from what is false but not impossible, upgrading an antecedent should never be held to be the cause of an impossible consequent. Aristotle seems to have in mind an ingenious strategy based on sound principles, but when he comes to the application of these general ideas to the proof of (1), he seems to get into trouble.

According to the standard interpretation of this argument, the impossibility on which Aristotle insists is the contradiction between the result of (2),[12] i.e. NAoB, and the major premiss of (1), i.e. AaB. Thus we may briefly represent the *reductio* argument as follows:

(3) AaB; BaC; NAoC ⊢ AaB & NAoB.

The standard interpretation of the argument lays the blame for the impossible contradictory result of (3) on NAoC, since AaB is true *ex hypothesi* and BaC, being false but not impossible, cannot be held responsible for an impossibility (in virtue of PF).

On the basis of this interpretation of the *reductio* argument, the charge is brought against Aristotle of basing this reasoning on a serious logical fallacy. In fact the impossibility of the total antecedent of (3) i.e.,

(4) impossibly (AaB & BaC & NAoC),

together with the assumption that AaB is the case and that BaC though false is not impossible, does not yield the desired impossibility of NAoC. In fact (4) may be a consequence of

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12 It should be said here that several interpreters correct the text at 34a39 and take AoB to be the conclusion of (2), see e. g. Flannery 1993: 202 n. 2, n. 12.

(5) impossibly (AaB & BaC);

or a consequence of

(6) impossibly (NAoC & BaC).

If (5) and (6) cannot be excluded, the impossible conclusion of (3) may depend on an 'incompossibility' rather than on the impossibility of NAoC. Albrecht Becker, the first among modern interpreters to raise this objection, concluded that what Aristotle's argument in fact proves is not (1), but the weaker[13]

(7) BaC $\rightarrow$ (AaB & M_2BaC $\rightarrow$ M_1AaC).

A presupposition that can plausibly be ascribed to Aristotle, however, would exculpate his argument from this charge. The presupposition is that modally qualified sentences (N, M_1, M_2 sentences) do not admit contingency, that is, that they are either necessarily true or necessarily false.[14] This being granted, the proof of (1) is perfectly sound. In fact the conclusion of (2), i.e. NAoB, is an N sentence and therefore, under the hypothesis that AaB holds, it is not only false, but *impossible*. This means that from the truth of AaB we can infer the impossibility of the antecedent of (2), namely (6). By the same token, we can rule out any possible conflict between NAoC and BaC in (6). In fact, if NAoC is true, it is necessary, and so, if it conflicts with BaC, the latter is impossible, in contrast to the hypothesis that it is at worst false but not impossible. The only remaining alternative, therefore, is that (6) holds only if NAoC is impossible.[15]

Further controversies

The possibility of making sense of Aristotle's uncommon suppositional method, albeit with the help of an unstated presupposition, suggests that interpreters may be too quick to accuse Aristotle of

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13 See Becker 1933: 54. The formula (7) does not correspond literally to Becker's statement, but it represents his point, and besides that corrects a misprint.

14 Among modern logicians, Von Wright and Hintikka take this feature as the most plausible characteristic of the notion of *logical* modality (the logic of logical modalities would then be at least as strong as the system S5). I do not know if there are hints in Aristotle's text sufficient to decide whether or not he shared an analogous view; in any case, this issue cannot be explored here. Of course, my contention only becomes plausible if one accepts my interpretation of Aristotle's non-standard *reductio* method.

15 For a different attempt to save Aristotle's proof, see Mignucci 1972.

logical errors analogous to the one allegedly exposed by Becker. According to Lindsay Judson (1983: 230), for example, Aristotle makes the same mistake in his famous argument of *Cael.* I, 12. In order to test whether a sentence p is possible or not, according to the 'definition' of possibility of *APr.* I 13, Aristotle seems to assume that p is the case in the actual course of events without caring whether, in the circumstances of its realization, it happens to be the case that p is false. If such is the case, the contradictory of p being true, an impossibility will ensue and p will thereby fail the test of possibility. Judson dubs this error the *insulated realization manoeuvre* (IR). Mario Mignucci (1990) has argued that the attribution of an analogous mistake to Aristotle is not hermeneutically uncharitable on account of the occurrence of the same mistake in the chapter of *APr.* being examined here. We have seen, however, that Aristotle's method for testing possibilities does not require the realization of a candidate for possibility, but only the assertion of this candidate (no matter whether truly or falsely), without implying any impossibility. The pivotal reference to falsehood in contrast to impossibility is also explicitly stated along the same lines in the disputed passage from *Cael.* (281b23), and so, whatever the upshot of the argument there proposed, it is hardly credible that it is marred by such a blunder as the IR.

We find a different interpretation of Aristotle's suppositional method among interpreters who ascribe to him (among other modal paradigms) the so-called statistical interpretation of modalities. Hintikka, first among the advocates of this interpretation, admitted that Aristotle's testing method may concern the assertion or assumption of a possibility candidate rather than its realization, but then maintained that the Philosopher tends to conflate the two criteria (1973: 109). The statistical interpretation saves Aristotle from the shortcomings of the IR at the price of making him endorse a version of the so-called 'principle of plenitude'. According to the statistical model, in order for a sentence to be a genuine possibility, it must pass a test which can be considered an iterated realization manoeuvre: by iterating the realization of our would-be possibility throughout the whole chronological series, we must be able to find at least one temporal niche, so to speak, where our candidate turns out true.[16] On this interpreta-

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16 See Hintikka 1973: 110; Hintikka *et al.* 1977: 32.

tion, Aristotle's appeal to the falsehood of the possible is glossed over as an implicit appeal to its truth at a different time.[17] In order to evaluate this interpretation, even if only with respect to the proof of (1), we must first consider what Aristotle says immediately after this proof.

Simpliciter / *ut nunc* and Aristotle's modal theory

Having completed his proof of (1), and before facing the proof of the analogous *Celarent* syllogism (34b19ff.), Aristotle makes a proviso which is intended to restrict the general validity of the theorem just demonstrated. This is (UN) which I have already quoted in Latin:

We should understand 'that which holds of all' with no qualification with respect to time, e.g. now or at this time, but absolutely; it is in fact from premisses of this latter kind that we make syllogisms. For there will be no syllogism if the premiss is taken as holding now (34b7-11).

The general claim is proved by two cross-counter-examples (34b11-18):

(8) (a) every moving thing is a man at *t*;
     (b) it is possible that every horse is moving;
     (c) it is necessary that no horse is a man.

(9) (a) Every moving thing is an animal at *t*;
     (b) it is possible that every man is moving;
     (c) it is necessary that every man is an animal.

(8) and (9) are intended to show, according to a customary method, the syllogistical sterility of the pair of premisses AaB at *t* and M_2BaC. Since an instance of this pair of premisses (i.e., [8a] and [8b]) is compatible with NAeC (i.e., [8c]) and another instance (i.e., [9a] and [9b]) is compatible with NAaC (i.e., [9c]), and since every possible syllogistic conclusion is either incompatible with NAeC or incompatible with NAaC, we have no valid syllogism.

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17   See Knuuttila 1981b: 168-169, 235; 1993: ch 1.

These counter-examples raise a difficult question: how can we say that (8) and (9) are only a restriction and not a general rejection of (1)? Aristotle does not prove his claim, namely that (1) fails *because* (i.e. only when) its major premiss has a temporal character.

In my opinion, Aristotle's claim becomes more convincing once it is supposed that he is not warning against temporal restriction, but against temporal qualification, or, more precisely, against temporal indexing. If this is so, his choice of examples may be guided by deeply rooted insights (noticed by Hintikka) about the different logical behaviour of temporally indeterminate sentences as against temporally determinate ones. The difference can be clearly seen in *Cael.* I 12, where Aristotle distinguishes the 'hypothetically false' from the 'hypothetically impossible'. Given two incompatible sentences p and q, from

(*) impossibly $(p \ \& \ q)$

and p, we can infer only that q is false, but from (*) and p at t we can infer that $(q$ at $t)$ is impossible.[18] To avoid an unnecessary multiplication of examples, let us simply state that according to Aristotle temporally determinate sentences involve a kind of determinism: they are either necessarily true or necessarily false.

With this distinction, we are in a position to see, and to explain, what is wrong in (8) and (9). In (8) Aristotle may well notice a phenomenon that we would explain (following the medievals) by saying that (8a) and the assertoric counterpart of (8b) are 'incompossible', but he tries to explain it in the framework of *Cael.* I 12, i.e. not by resorting to the idea of incompossibility, but by introducing temporal coincidence as responsible for the impossibility of the conclusion. I therefore take Aristotle to have followed this line of reasoning: the major premiss of (1) holds with reference to a time, say AaB at t. This means that, in order to make sense of the syllogism, the second premiss, M_2BaC, must also refer to the same time, and so this second premiss amounts to M_1(BaC at t), which is no less deterministically settled than AaB at t.[19] Giv-

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18 For different interpretations of this distinction, see e. g. Judson 1983: 228-229; Williams 1965. Among the passages bearing on this distinction the most well known are *Int.* 9, 19a25-26 and *APr.* I 10, 30b38-40.

19 Of course, the determination of the time when the minor premiss of (1) gets upgraded spoils the upgrading method. In fact, since (BaC at t) is impossible if false, and necessary if true, it makes no sense to assume it as "false but not impos-

en the modal collapse determined by their temporal qualifica-
tion, (8a) and (8b) along with (9a) and (9b) are equivalent to the
premisses of two plain *Barbara* syllogisms, with the peculiarity that
if a temporally determinate version of (8b) is false, it is impossible,
and so can justify an impossible conclusion (recall [PI]); and that
if (9a) and (9b) are true, they are necessary and so imply a neces-
sary conclusion (recall [PN]).

This interpretation receives further support when we consider
another alleged Aristotelian blunder exposed by Peter Geach
(1981: 26) and by other scholars. Earlier in the chapter (34a21),
Aristotle explicitly infers, contravening an elementary rule of
propositional modal logic, the possibility of a conjunction of two
sentences from the possibility of its conjuncts. This is hard to justi-
fy, but if, as I maintain, Aristotle thinks that the testing of a possi-
bility never requires the verification of this possibility somewhere
(in time, in a possible world or situation, etc.), it is difficult to
imagine the meaning of a possible conjunction except as a simul-
taneous possession of possibilities. If, on the other hand, the pos-
sibility of this conjunction is intended as the possibility of a simul-
taneous *exercise* of possibilities, then the possibility of the conjunc-
tion *does* follow from the possibility of the conjuncts, because in
this case the conjuncts are taken to refer to the same index of
time, and therefore if they are incompatible, they cannot both be
possible: one of them must be impossible, the other.

If I am right here, Aristotle's modal theory, though in no way fa-
miliar to the mind shaped by modern logical theory, is not so con-
fused as it may seem; his general idea of possibility, as it emerges
from *APr.* I 15, can be briefly recounted as follows.

Possibilities are tested in time, there is no temporal vacuum in
which possibility candidates can be assumed. But their temporal
assumption must refer to any time whatsoever; it cannot refer
specifically to a given instant, because what happens at a given
time is not irrelevant to evaluating what is possible at that time.

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sible". Moreover, the downgrading of the major premiss of (1) (see above) is also
impeded by its temporal determination. About my contention that by asserting
BaC at *t* we are not upgrading M_2BaC but M_1(BaC at *t*), much more should be said
than there is space for here. Elsewhere, I hope to provide further evidence by
showing, through a detailed comparative examination, that the same line of argu-
ment occurs in *Cael.* I 12 and *Metaph.* IX 4.

This does not mean that we cannot distinguish, with respect to a fixed time, what is false at that time from what is impossible. Quite to the contrary, the most important difference between the interpretation outlined here and the statistical interpretation of modalities is that the latter cannot distinguish what is false from what is impossible within a single determinate time, whereas on my interpretation, at the same time t, and without any reference to what happens at other times, we can say for example that $M_2 p$ is necessary, p is either true or false, and that p at t (as well as $M_1[p$ at $t]$) is necessary or impossible.

The upshot of this discussion is that, in so far as it can account for possibilities which never get realized in time, Aristotle's theory differs substantially from the statistical interpretation. As a matter of fact, it is just in order to account for this kind of barren possibility that complexities such as the upgrading technique and the non-standard *reductio* method were invented by Aristotle.

Simpliciter / *ut nunc* and the statistical interpretation of modalities

The statistical interpretation cannot account for Aristotle's strategy in proving (1), nor can it accept the interpretation I have put on the limitation of its validity. In discussing the text before us, Hintikka understands upgrading in (1) as the realization of BaC at a time when it is actually the case. But at that very same time at which BaC is true, the truth of the major premiss of (1), AaB, must also be secured. In this way we have AaC as the conclusion of a plain *Barbara* syllogism, and as a consequence of AaC we get the desired MAaC. This is the alleged reason for Aristotle's requiring that the major premiss be taken *simpliciter* and not now or at a determinate time. But here *simpliciter* does not mean 'without temporal indexing', but 'without temporal restriction'.[20] This amounts to saying that the assertoric major premiss must hold always, which in turn means, given the statistical interpretation of modalities, that it is necessary. To accept this consequence one

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20   See Hintikka 1957: 81-83; but Hintikka 1973 is not consistent on this subject: at pp. 137, 138, 144, 166 n. 26, and 190 the *simpliciter* character of assertoric sentences stated in (UN) is taken as absence of temporal *restriction*, but at p. 158-159, (UN) is interpreted (correctly, in my opinion) as absence of temporal *qualification*.

should agree with Hintikka when he insists on Aristotle's tendency to obliterate the distinction between assertoric and apodeictic propositions.

An attempt to soften Hintikka's interpretation, following a hint found in Alexander of Aphrodisias, is Kevin Flannery's interpretation of the *simpliciter* clause as the requirement that the assertoric counterpart of the premiss MBaC in (Flannery's reading of) (1) be realized only in possible worlds where AaB is true. This means, as Flannery himself agrees, evaluating the major premiss AaB "as if it were necessary" (1993: 211).

The medieval legacy of *APr.* I 15: some Buridanian examples

To give a preliminary idea of the extent to which the nest of problems raised by *APr.* I 15 held interest for medieval logicians, I shall quote four passages of John Buridan. They show how the triplet of propositions that constitute (8), though rearranged, became a stock example. With the exception of the first of the following passages, (8) is certainly taken out of its Aristotelian context, but it is used for making related points. Let us start then by noticing that Buridan rejects (1) (whether the minor premiss is M_2 or M_1). Here is a counter-example he offers:

> Quia si *omne currens est equus et omnis homo potest currere* non sequitur quod *omnis homo potest esse equus* (*Cons.* IV 2, 137-139. My italics).

Elsewhere, in his treatise on consequences Buridan considers the same slightly modified version of (8) as a counter-example to the principle "ex possibili non sequitur impossibile" (namely [PP]):

> Tamen contra hanc quintam conclusionem obicitur sophistice. Quia hic est bona consequentia syllogistica "omne currens est equus; omnis homo est currens; ergo omnis homo est equus" et tamen utraque premissarum est possibilis cum conclusio sit impossibilis.
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> Solutio. Neutra illarum praemissarum est totale antecedens ad dictam conclusionem. Immo antecedens est una copulativa ex illis duabus praemissis composita, scilicet haec *"omne currens est equus et omnis homo est currens"* et haec copulativa est impossibilis sicut conclusio (*Cons.* I 8, 130-138, p. 35. My italics).

In the same work, in order to exemplify the thesis that "in omni figura ex ambabus de possibili vel de contingenti compositis nihil sequitur" he rearranges (8) as follows:

Sed si ambae premissae sint possibiles, non propter hoc oportet totale antecedens esse possibile; ideo nec sequitur quod consequens sit possibile. Verbi gratia, non sequitur: haec est possibilis (vel contingens) *"omne currens est equus"* et haec similiter *"omnis homo est currens"* ergo haec est possibilis (vel contingens) *"omnis homo est equus"* quoniam praemissae erant verae et conclusio falsa (*Cons.* IV 1, 85-90. My italics).

Perhaps, however, the most interesting use of (8) can be found in Buridan's commentary on Aristotle's *Cael.* I 12; I shall quote the passage where he refutes Aristotle's famous argument to the effect that if A exists always it is not capable of not existing.[21] Here is Buridan's interpretation of the *modus arguendi* employed by Aristotle:

Consequenter queritur: *Utrum omne generabile generabitur.* Et arguitur quod sic sicut Aristoteles saepe in isto tractatu videtur arguere. Supponimus enim quod numquam ex possibili, quantumcumque falsum, sequitur impossibile; et ideo, si conclusio alicuius syllogismi est impossibilis, oportet alteram praemissarum esse impossibilem; et nisi ista concederentur syllogismus ad impossibile nullius esset utilitatis (*Quaest. super libris IV De Caelo et Mundo,* I Q. 25, p. 120, 17ff.).

And here is Buridan's refutation:

Ad primam dico quod ille modus arguendi non valet, quamvis Aristoteles videtur saepe uti eo in isto tractatu; nec ego scirem sustinere processum et rationes eius quantum ad hoc. Saepe enim contingit quod utraque praemissarum est possibilis et tamen conclusio est impossibilis propter incompossibilitatem praemissarum. Verbi gratia, *"omne currens est homo"*, *"omnis equus est currens"*; sequitur in primo modo primae figurae quod *"omnis equus est homo"*; et haec est impossibilis cum tamen utraque praemissarum esset possibilis. Et tamen bene concedendum est quod, consequentia existente bona, si consequens est impossibile oportet antecedens, ex quo sufficienter sequebatur illud consequens, esse impossibile. Sed neutra praemissarum est tale antecedens, imo copulativa composita ex ambobus praemissis est sufficiens antecedens. Et illa copulativa est impossibilis, scilicet ista copulativa *"omne currens est homo et omnis equus est currens"* quamvis quaelibet categorica secundum se esset possibilis (*ibid.*, p. 124, 20-36. My italics).

If we grant that Buridan is here aware of his source and not merely repeating a stock example committed to memory, the last quotation is of special interest, because (8), which as we have seen is part of Aristotle's warning against some logical pitfalls lurking behind his suppositional method, is here nicely twisted against the Philosopher. This calls to mind Mignucci's above-mentioned detection of the same persistent mistake in *Cael.* I 12 and in *APr.* I 15.

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21 See Williams 1965: 101.

The third passage should be compared to Geach's contention about Aristotle's understanding of conjunction. The second example deals directly with (PP): its importance will be clear in a moment. All the uses of (8) are intimately related to controversial aspects of *APr.* I 15. Taken together, they show that, in reading their Aristotle, Becker, Judson, Mignucci, and Geach experienced perplexities already experienced by medieval logicians.

Consequentia simplex vs. *consequentia ut nunc*

In order to see how this discussion bears on late medieval texts on consequences, let us start by considering an anonymous text edited by Green-Pedersen which shows the theory of consequences *in statu nascendi*. Here we find some applications of the distinction *simplex / ut nunc*, as, for example, in the following case.

> Ostendo quod haec consequentia non valet 'Antichristus est, ergo falsum est verum'. Quia antecedens est possibile, hoc enim est possibile 'Antichristus est', et consequens impossibile, scilicet 'verum est falsum'; et ex possibili non sequitur impossibile; ergo non sequitur 'falsum est verum' (Anon., "In omni consequentia bona", § 25, p. 16).

This is a *ratio* for a thesis the author wants to deny, and here is his answer:

> Tunc ad rationes in oppositum: quando arguitur: ista consequentia non valet 'Antichristus est, ergo falsum est verum', quia antecedens potest esse verum sine consequente. Dicendum quod ista consequentia est bona loquendo de consequentia ut nunc. Et non valet 'antecedens potest esse verum sine consequente' loquendo de consequentia ut nunc, sed in consequentia simplici, ideo ratio probat bene [unde *ms. & ed.*] quod consequentia non est bona loquendo de consequentia simplici (*Ibid.*, § 28, pp. 17-18).

This author explains why the existence of the Antichrist implies only *ut nunc* that a false proposition is true by appealing to the rule "ex impossibli quodlibet sequitur". Walter Burleigh's *De consequentiis*, a text in many respects germane to our anonymous one, gives us a different clue:

> Sciendum quod consequentia semper est bona quando tenet per medium verum. Sed consequentia ut nunc tenet per medium ut nunc verum, sicut ista 'si Antichristum esse est, falsum est verum' tenet per hoc medium 'Antichristum esse est falsum'. Sed consequentia simpliciter bona tenet per medium intrinsecum necessarium (W. Burleigh, *Cons.*, § 116, p. 141).

Consider the syllogism:

(10) 'Antichristum esse' est verum
(11) 'Antichristum esse' est falsum
(12) verum est falsum

(10) is false but not impossible, (11) is a middle "ut nunc verum" (an intrinsic middle is a missing premiss), and (12) is an impossible sentence. Even if in this case we do not have a modal syllogism, the example partly fits Aristotle's case. In fact the anonymous text clearly states that the problem with the Antichrist argument is that it threatens (PP) ("ex possibili non sequitur impossibile; ergo non sequitur 'falsum est verum'").

Other treatises introduce *ut nunc* consequences in connection with the Antichrist example. There is an interesting passage in William of Sutton's influential treatise:

Est autem condicionalis duplex, quaedam ut nunc et quaedam simpliciter. Condicionalis simpliciter est cum consequens intelligitur in antecedente et simpliciter necessaria. Condicionalis ut nunc est ista quae tenet ut nunc, ut 'si Antichristus est, falsum est verum'; Contra: videtur quod ista condicionalis non valet, quia antecedens potest esse verum sine consequente. Hic dico quod ista condicionalis non valet: 'est consequentia bona ut nunc, ergo est consequentia bona'. Dico quod non sequitur, sed est fallacia consequentis.[22]

The example is important insofar as it links the familiar Aristotelian use of the label *ut nunc,* as qualifying a syllogistic premiss, with its use as qualifying a conditional proposition or a consequence. But the link with Aristotle's text is not lost, as is witnessed by a commentary on Ockham's *Consequences* belonging to the first half of the 14th century and attributed in one manuscript to Thomas Bradwardine.[23]

Alia divisio consequentiarum ponitur ab aliquibus, quae talis est: consequentiarum alia simplex alia ut nunc. Simplex est secundum illos quando impossibile

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22 Ms Wien ÖNB, VPL 4698: 136v. Almost the same words in the *Consequentiae secundum usum Oxoniae* found in ms Vat. Pal. lat. 1049: 107vB-108rA. M. Bertagna and N. J. Green-Pedersen kindly lent me their transcriptions of the respective texts. On the texts, see Green-Pedersen 1985: 297, 300.

23 Bradwardine(?), *Textus Consequentiarum,* § 6, p. 93. Green-Pedersen, the editor, has reservations about the attribution of the treatise to Bradwardine, on account of Bradwardine's acceptance of *consequentia ut nunc* in his authentic treatise on insolubles: see the editor's preface, p. 88. See further Boh 1991.

est antecedens esse verum consequente existente falso, et hoc retenta primaria vo-
cabulorum significatione. Sed consequentiam ut nunc dicunt quando antecedens
pro nunc non potest esse verum nisi consequens sit verum, potest tamen aliquan-
do esse verum quando consequens non sit verum.

Sed ista divisio non valet, quod probatur sic: si esset talis aliqua consequentia, ex
mere possibili sequitur impossibile, tale scilicet quod esset impossibile respectu
cuiuscumque sui significati. Consequens falsum, ergo etc. Falsitas patet per Aris-
totelem: possibili posito in esse nullum sequitur impossibile, quia sicut ex vero ni-
hil sequitur nisi verum, sic ex possibili etc. *Et hoc inferius manifestius ratione probatur,*
quia posito quod non currit nisi asinus, tunc sic 'omne currens est asinus; omnis homo est
currens; ergo omnis homo est asinus'. Pro nunc impossibile est antecedens esse verum
nisi consequens sit verum, quia tenet per hanc propositionem veram 'omne cur-
rens est asinus', que vera est per casum. Sed antecedens est possibile et consequens
impossibile. Sequitur ergo quod consequentia ut nunc non valet, quia simpliciter
sequitur ex possibili impossibile, quod est contra Aristotelem (my italics).

In this passage there is an explicit citation of Aristotle's 'defini-
tion' of possibility, i. e. *APr.* I 13, 32a19-20: *possibili posito in esse nul-*
lum sequitur impossibile. But when Bradwardine(?) says "et hoc in-
ferius manifestius ratione probatur" he refers to a further Aris-
totelian passage, and from what he says directly afterwards we can
conclude without a shadow of doubt that he has our very (UN)
passage in mind. Once again, in fact, the case is proved by a rear-
rangement of example (8).

Pointing out the conflict between *ut nunc* consequences and
(PP), as Bradwardine(?) did, did not automatically lead to the
wholesale rejection of the notion of *consequentia ut nunc.* In fact,
there are authors so favourably disposed towards this kind of con-
sequence, that they prefer to impose a restriction on the validity
of (PP) rather than expel this consequence from their system.
This is, for example, the case with Ockham:

Alia regula est quod ex necessario non sequitur contingens.
Alia regula est quod ex possibili non sequitur impossibile.
Istae duae regulae intelligendae sunt de consequentia simplici, quia ex necessario
non sequitur contingens consequentia simplici, nec ex possibili impossibile,
tamen consequentia ut nunc bene poterit sequi; sicut bene sequitur 'omne ens est,
ergo omnis homo est', et tamen antecedens est necessarium et consequens contin-
gens. Similiter bene sequitur 'omne coloratum est homo, igitur omnis asinus est
homo', et tamen antecedens est possibile et consequens impossibile, et conse-
quentia solum est bona ut nunc.[24]

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24 Guill. Ockham, *SL* III-3, c. 38, 73ff (p.730); see further: *SL* III-3, c. 2, 111-112
(p. 595); c. 10, 18-25 (p. 631).

Walter Burleigh shows the same point of view in his *De puritate artis logicae* (p. 62, l.1): "ex contingenti non sequitur impossibile in consequentia simplici". The same can be said of the author of the *Liber consequentiarum* edited by Franz Schupp.[25] The conflict between *ut nunc* consequences and (PP) is not something that immediately springs to mind if one has no (at least habitual) knowledge of Aristotle's text and its problems.

Let us briefly examine what some of the continental logicians thought about *consequentia ut nunc*. Buridan accepts without exception this class of inferences; but, as we saw, when he discusses the principle *ex possibili non sequitur impossibile* he takes (8) as a sophistical counter-example. Albert of Saxony says that some people rejected the *ut nunc* consequence in order to save (PP):

> Contra illam consequentiam ut nunc aliqui arguunt volentes nullam consequentiam esse ut nunc, quia aliquotiens ut ipsi dicunt ex possibili sequeretur impossibile; et illa ratio erit una instantia contra sextam regulam ponendam et ibi solvetur (*Perutilis Logica*, IV 1: 24rB).

This *instantia* is simply Aristotle's (8):

> Sed diceret aliquis hic ex possibili sequitur impossibile sic arguendo: '*omne currens est asinus, omnis homo est currens, igitur etc*'. Consequens est impossibile, antecedens autem possibile. Patet, nam hec est possibilis '*omne currens est asinus*', possibile est enim quod nihil currat nisi asinus. Similiter hec est possibilis: '*omnis homo est currens*', sicut patet de se, ergo <etc.>.
>
> Respondetur negando quod antecedens predicte consequentie sit possibile, eo quod antecedens predicte consequentie est una propositio copulativa composita ex maiore et minore et illa coniunctione copulativa 'et', ut '*omne currens est asinus et omnis homo est currens*', modo hec copulativa est impossibilis; non quod aliqua eius pars sit impossibilis sed quod partes eius sunt incompossibiles. Modo sicut prius dicebatur de propositionibus hypotheticis quod ad impossibilitatem copulative sufficit eius partes esse incompossibiles (*ibid.*, IV 2: 24vB. My italics).

In a paper dealing with Marsilius of Inghen's denial of *consequentia ut nunc*, Egbert Bos (1976: 68) referred to the quoted passage of Albert as an example of the difficulties raised by this kind of inference. It seems, however, that Marsilius's denial was based more on general constraints on the definition of consequence than on the

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25 Anon., *Liber consequentiarum*, p. 114, l. 13.

conflict between *ut nunc* consequences and (PP). Marsilius[26] mentions no conflict, and glosses over, in due course, the difficulty raised by (8) in exactly the same manner as Buridan and Albert.

Thus, there are authors who impose a restriction on the validity of (PP) and there are authors who manage, by resorting to the notion of the 'compossibility' of a pair of premisses, to reconcile (PP) and *ut nunc* consequences. This different attitude depends, I submit, on the different interpretation of an enthymematic argument. Take Buridan, for example: in his classification, an *ut nunc* consequence is a material consequence. In this class he includes arguments with a tacit premiss which should be made explicit. After the completion of the argument, there is no question of a conflict with (PP). According to Ockham, on the other hand, enthymematic arguments are formal consequences and so it is by no means obvious that they *require* to be completed with the lacking premiss. Compossibility can work only after both premisses have been made fully explicit, so it is not surprising if it can work only within a Buridanian framework.

From what has been said it is clear that the *simpliciter* qualification was attached to a consequence in order to stress its necessary character. In medieval modal syllogistic, the *ut nunc / simpliciter* distinction was used in a large variety of controversial cases. After Albert the Great, it was customary, for example, to apply this distinction to the famous problem of the two mixed apodeictic assertoric *Barbaras*.[27] As far as I can tell, however, the fact that an assertoric premiss holds *simpliciter* was generally interpreted to mean that it obtains necessarily. So, the typical medieval interpretation of this notion fits very badly with that proposed in this paper. But the same does not hold for my reading of the *ut nunc* qualification. There are many texts, in fact, that support my interpretation. In these

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26   I have used ms Vat. Lat. 3065; see f. 86vA for Marsilius's denial of *ut nunc* consequences, and f. 87vA for his discussion of (PP). Ralph Strode (p. 7-8) is another author who almost explicitly denied *ut nunc* consequences, though he was not worried by the conflict with (PP), see Schupp 1988: 68.

27   See Knuuttila 1982; Normore 1991. From the discussion of mixed Barbara syllogisms our distinction became, during the 13th century, a tool for the discussion of the sophism "omnis homo de necessitate est animal". An interesting example, which helps to chronicle the transition of contexts, is in the *Dialectica Monacensis* (De Rijk 1962-1967, II 2: 588, 3-9).

texts the label *ut nunc* is used in accordance with its Aristotelian meaning to signify a kind of necessity – the necessity, that is, of a temporally determinate sentence.[28] Ernest Moody (1953: 75ff.), who noted the pivotal distinction between temporally determinate and indeterminate sentences, resorted to this distinction in order to explain the nature of *ut nunc* consequences. But he then tried to get rid of this logically hybrid idea by making the medieval as-of-now consequence coincide with the modern material implication. The same path was followed, for example, by McDermott (1972: 293), who took the idea of *ut nunc* impossibility as "no more than a rather Pickwickian way of referring to what in twentieth century parlance is said to be 'contingently false'". This is not true, as more recent research has amply shown.[29]

I am confident that a systematic study of the medieval creative misreading of Aristotle's (UN) passage will prove worthwile. Much research waits to be done before we can tell the whole story of the technical term *ut nunc*. I have culled passages where Aristotle's influence looms large, but not all the uses I have come across can be traced to Aristotle's text. In any event, I think we now have a key that can enable us to understand in which cases and to what extent Aristotle's text is involved. The method I have tried to use, though only for a small portion of texts, consists in paying attention to the examples used and seeing whether (PP) is involved in some way.[30]

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28 A case in point is the notion of an *ut nunc* contradiction used in 14th century Parisian theological debates in order to pinpoint the necessity (present irrevocability) of the past. See Friedman 1994: 109-110. This idea occasionally filtered into the theory of consequences, as in the case of Peter of Mantua, see the part of his *Logica* printed in Pozzi 1978: 292.

29 See Knuuttila 1982: 349; Schupp 1988: 67; and Stump 1989: 266, all criticizing McCord Adams 1973; Bertagna 1989: 40. Moody himself (1967: 532), however, took a different stance.

30 This is also testified by one of the earlier occurrences of the *ut nunc* qualification: in a passage of the *Ars Meliduna* (see de Rijk 1962-1967, II 1: 349), to which Pinborg called attention, the technical term *ut nunc* occurs in a classification of five kinds of equivalent term (*paria*). *Paria ut nunc* are defined in this passage: "quidem enim termini ex accidente sibi invicem parificantur, idest ex accidentali rerum eventu, ut 'homo' et 'currens', posito omne currens et solum esse hominem". Here again, the example is reminiscent of Aristotle's.

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