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Prior's Turn to Medieval Logic

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Abstract

The peculiar aspect of medieval logic, that the truth-value of propositions changes with time, gradually disappeared as Europe exited the Renaissance. In modern logic, it was assumed by W.V.O. Quine that one cannot appreciate modern symbolic logic if one does not take it to be tenseless. A.N. Prior's invention of tense-logic challenged Quine's view and can be seen as a turn to medieval logic. However, Prior's discussion of the philosophical problems related to quantified tense-logic led him to reject essential aspects of medieval logic. This invites an evaluation of Prior's formalisation of tense-logic as, in part, an argument in favour of the medieval view of propositions. This article argues that Prior's turn to medieval logic is hampered by his unwillingness to accept essential medieval assumptions regarding facts about objects that do not exist. Furthermore, it is argued that presentists should learn an important lesson from Prior's struggle with accepting the implications of quantified tense-logic and reject theories that purport to be presentism as unorthodox if they also affirm Quine's view on ontic commitment. In the widest sense: philosophers who, like Prior, turn to the medieval view of propositions must accept a worldview with facts about individuals that, in principle, do not supervene (present tense) on being, for they do not yet exist.

Keywords

tense-logic – medieval logic – time and existence – Barcan – A.N. Prior – W.V.O. Quine

1 Introduction

The aim of this article is to evaluate A.N. Prior's turn to the medieval view of propositions in order to reject Quine's view that modern logic must be tenseless. Prior initially seems to have won that discussion with his invention of

tense-logic, by which he demonstrated that there is no formal reason why modern logic, like medieval logic, should not accept tensed propositions as well-formed. On close inspection, however, Prior's own subsequent struggles with accepting the medieval solutions to the problems raised by quantified tense-logic strengthen Quine's case in a wider, metaphysical sense. It turns out that Prior's acceptance of tenses as well-formed challenged him to accept views concerning time and existence that question widely held modern assumptions. His search for an alternative solution led him to invent a series of theories, none of which have received a noticeable following. Since the plethora of views now identified as presentist stands in a similar situation, the question is raised whether contemporary presentists, like Prior, should ask themselves if they are able to take tenses seriously without accepting certain facts about non-existent entities.

2 Taking up Quine's Challenge

William of Ockham (1285–1349) was one of the most important logicians of the Middle Ages (Adams and Kretzmann 1983, 1). In Book II of *Summa Logicae*, he devotes space to a treatment of temporal propositions, working from the commonly shared assumption amongst medieval logicians that the truth-value of propositions changes with time. The assumption that truth conditions essentially involve what *was*, *is* and *will be* the case meant that all logic, to the medieval logician, was temporal logic (Uckelman 2013, 485). This assumption lost its influence at the hands of a growing humanistic criticism of scholastic logic (Øhrstrøm and Hasle 1995, 85); the development of modern logic seemed initially to put the nails in the coffin of the medieval view of propositions. As late as 1953, in his response to Peter Frederick Strawson's criticism of formal logic, Willard Van Orman Quine suggested that Strawson's inability to appreciate the tenselessness of quantification over temporal entities could explain why he underestimated the scope of modern logic. Indeed, Quine seems to have suggested a litmus test on this matter with regard to modern logic: 'I should like to go further and say that I do not see how, failing to appreciate the tenselessness of quantification over temporal entities, one could reasonably take modern logic very seriously' (Quine 1953, 443). But Quine's view was about to be seriously challenged the following year. Prior, following a cue from Findlay (1941), treated 'it will be' and 'it has been' as two adverbial ways of modifying present-tense propositions so that they express facts about the future or the past. Thus, we can treat as well-formed such propositions as

1) 'It will be the case that man is walking on the moon.'

or

2) 'It has been the case that man is walking on the moon.'

The first, which before 1968 was true, can be formalised as

3) Fp , where F is a future modal operator and p has the meaning 'man is walking on the moon.'

And the second, which at present is true, can be formalised as

4) Pp , where P is a past operator and p has the same meaning as above.

In 1954, Prior presented his idea at a congress in New Zealand and continued working on it towards his presentation of tense-logic in Oxford at the John Locke lectures in 1957. Despite the warnings of his good friend, the Australian philosopher John Jamieson Carswell 'Jack' Smart, who did not think Oxford would like Prior's new logic of tenses, it became a huge success (Jakobsen 2017). From the perspective of philosophical logic, it gave Prior a platform to disprove the view of Quine that modern logic must be tenseless. Prior argued, on the contrary, "there are no grounds of a purely logical character for the current preference, and ... 'propositions' in the ancient and medieval sense lend themselves as readily to the application of contemporary logical techniques and procedures as do 'propositions' in the modern sense" (Prior 1958, 105).

Indeed, Prior's turn to medieval logic was connected with a vision of what logic is about. For Prior, "logic is not really about inference but about implication, i.e. about the truth that makes inference valid" (Prior 1968, 7). The core of his studies in tense-logic was thus about the intrinsic tensed nature of truth itself. Truth, Prior wrote, "is [on the face of it] a property of propositions which is liable to alter with the time at which they are put forward" (Prior 1958, 105). Prior's turn to the medieval view of propositions was a turn to the way things are. Tense-logic, understood as pure logic, is not a study of semantics but a study of the implications of holding the medieval view of propositions. It turns out, however, that his approach to formal logic forced Prior to investigate the important relationship between time and existence; it quickly became evident that finding an acceptable alternative to the medieval view of *ampliatio* would prove difficult.

3 A Futile Investigation?

At this point one could perhaps argue that it does not make sense to involve the medieval theory of *ampliatio* in order to evaluate Prior's attempt to formalise quantified tense-logic. Indeed, acknowledging the distinction between modern and medieval logic with regard to the issue of formalism and realism, Bos and Sundholm (2013, 5) caution us against applying quantification theory to the study of supposition theory. While they are right, in general, in drawing this distinction, exception must be made with regard to Prior for three connected reasons. First, Prior recognised the value of formalisation but was a realist in his approach to logic and philosophy, in the sense that he viewed language as being about reality. Assessing his turn to the medieval view of tenses as something that should be a proper part of modern logic entails an application of quantification theory to the study of supposition theory when it comes to *ampliatio*. Furthermore, Prior clearly wanted to demonstrate that Quine was wrong in drawing a line between modern logic and medieval logic on the question of whether tenses could be formalised using symbolic logic. In other words, he wanted to challenge the distinction made in 1953 between modern and medieval logic, and he could hardly do this, in a wider sense, without a discussion of how quantification theory can be applied to past and future objects. As will be evident from the current analysis, this meant butting heads with the medieval ideas of *ampliatio*. Finally, Prior was generally dissatisfied with the influence of Russell's attitude towards ancient and medieval logic. In *The Craft of Formal Logic*, Prior writes the following:

Neither Russell nor, I think, [Alfred North] Whitehead brought to their work on mathematical logic any very close or detailed acquaintance with the logic of Aristotle and the Schoolmen. Toward Aristotelianism and scholasticism [Russell's *sic*] attitude has always been one of contempt; and his example has helped to make it customary in English-speaking countries for modern mathematical logic and the Aristotelian logical tradition to be set in sharp contrast to one another.

PRIOR 1951, 46

There can be no doubt that tense-logic, to Prior, constituted a spearhead into the ranks of the Russell-inspired contempt for medieval logic. The question evaluated here is whether that line of attack were successful. But this requires a deeper look at Prior's treatment of the philosophical problems that medieval logicians solved with the theory of supposition. It turns out that Prior's turn

to medieval logic was easier said than done. As Prior began applying tense-logic to metaphysical problems concerning time and existence, he found it difficult to accept the solutions offered by the medieval logicians. This calls for an evaluation of Prior's appeal to medieval logic and invites the question of whether Prior's formalisation of tense-logic may be an argument in favour of the medieval view of propositions or whether Quine were not right after all.

4 Prior on Time and Existence

Prior's discussion of time and existence take centre stage in his treatment of tense-logic in *Time and Modality* (1957) as well as in *Past, Present and Future* (1967). Indeed, its importance was only superseded by the topic of determinism and free will. Prior had clear commitments to and strong convictions about his view on the matter, but he also considered it "the untidiest and most obscure part of tense-logic" (Prior 1967, 172). Prior's invitation to give the annual John Locke lectures in Oxford was the perfect launchpad for his ideas about tense-logic. As he prepared for the lectures, he discussed thoughts and drafts with his good friend Smart who, after Prior's wife Mary, was the first philosopher to whom Prior presented his ideas of tense-logic. Judging from the content of Smart's letter to Prior dated 17 November 1954, Prior seems to have shared (in a previous letter which we unfortunately do not have) some considerations concerning quantification and tense-logic that Smart struggled to understand:

To say that Prior is sempiternal is to say he has always existed and always will, and this is false because he was born in 1914. Do you mean to say that 'Prior didn't exist before 1914' can't be translated into quantified tense logic? Surely not. So what do you mean by saying that the sempiternality of Prior is implied by quantified tense logic?

Letter from SMART to PRIOR, Nov. 17, 1954, The Prior Collection, Box 3

In light of Prior's discussion of sempiternality in *Time and Modality* (1957), the reference in Smart's letter is most likely related to Prior's discussion of the Barcan formula. From Quine's and Smart's tenseless paradigm of logic, quantifying over entities at any time is unproblematic. Prior, however, found this perspective on existence problematic and called it "a timeless tapestry with everything stuck there for good and all." (Prior 1996, 1). It turns out that even though tense-logic takes tenses seriously with regard to past, present and future, the Barcan formulae threaten to bring back an equally problematic

sempiternality in quantified tense-logic. Prior attempted to explain this to Smart with the following proposition:

- 1) 'Prior did not exist before 1914.'

Prior's problem was not that this could not be spelled out in quantified tense-logic, as Smart wondered, but rather that proposition 1 implies that there are facts about Prior before he existed. Prior clearly perceived this to be an argument against his view of tenses and an argument in favour of accepting Quine's view. His work on the Barcan formula was first published without a reference to tense-logic in *Modality and Quantification in S_5* (1956); but it is likely that he was aware of the importance for tense-logic when he for the very first time presented his tense-logic in August 1954. Judging from his correspondence with Smart, and from his subsequent treatment of the Barcan formula in *Time and Modality* (1957), it is evident that his errand was connected to tackling what he perceived to be a huge problem for tense-logic. In *Time and Modality* (1957), Prior frames the discussion with a different example but with the same implication:

For example, if it either is or has been or will be the case that someone is flying to the moon, then there is someone who either is flying or has flown or will fly to the moon. And it is not easy to be quite happy about this. For suppose that in fact someone will fly to the moon some day, but not anyone who now exists. Then it will be true that it either is, has been, or will be the case that someone is flying to the moon; but it will not be true that there is someone who either is flying or has flown or will fly to the moon.

PRIOR 1957, 26

Prior gives his example in terms of a modal operator \diamond , with the meaning, 'it either is, was or will be', but it is easy to change the example so that it applies to the future operator F , with ϕ being the property of flying to the moon. Then, what Prior says is the following:

- 1) $F\exists x:\phi(x)$ 'it will be that there is someone who is flying to the moon,'

from which it is possible to prove that

- 2) $\exists x:F\phi(x)$ 'there is someone who will fly to the moon.'

To prove the Barcan formula in the tense-logical system K_t we need to introduce the following rules for the quantifiers:

- ($\forall 1$) If $\vdash \phi(x) \supset \beta$, then $\vdash \forall x:\phi(x) \supset \beta$.
 ($\forall 2$) If $\vdash \alpha \supset \phi(x)$, then $\vdash \alpha \supset \forall x:\phi(x)$, for x not free in α .

To these two rules correspond two rules for the existential quantifier:

- ($\exists 1$) If $\vdash \phi(x) \supset \beta$, then $\vdash \exists x:\phi(x) \supset \beta$, for x not free in β .
 ($\exists 2$) If $\vdash \alpha \supset \phi(x)$, then $\vdash \alpha \supset \exists x:\phi(x)$.

In K_p , we have the following axiom schemes:

- (A1) p , where p is a tautology of the propositional calculus.
 (A2) $G(p \supset q) \supset (Gp \supset Gq)$
 (A3) $H(p \supset q) \supset (Hp \supset Hq)$
 (A4) $PGp \supset p$
 (A5) $p \supset Gpp$

And the rule of modus ponens:

- (MP) If $\vdash p$ and $\vdash p \supset q$, then $\vdash q$.

And the rules RG and RH, for introducing tense operators:

- (RG) If $\vdash p$, then $\vdash Gp$.
 (RH) If $\vdash p$, then $\vdash Hp$.

In K_t it is possible to prove the thesis T6:

- (T6) $H(p \supset q) \supset (Pp \supset Pq)$

In this system, as Prior demonstrated, it is now possible to prove that $F\exists x:\phi(x) \supset \exists x:F\phi(x)$:

- (1) $G\phi(x) \supset G\phi(x)$
 (2) $\forall x:G\phi(x) \supset G\phi(x)$ (1 and $\forall 1$)
 (3) $H(\forall x:G\phi(x) \supset G\phi(x))$ (2 and RH)
 (4) $P\forall x:G\phi(x) \supset PG\phi(x)$ (3, MP and T6)

- (5) $P\forall x:G\phi(x) \supset \phi(x)$ (4 and A4)
- (6) $P\forall x:G\phi(x) \supset \forall x:\phi(x)$ (5 and $\forall 2$)
- (7) $G(P\forall x:G\phi(x) \supset \forall x:\phi(x))$ (6 and RG)
- (8) $GP\forall x:G\phi(x) \supset G\forall x:\phi(x)$ (7, MP, and A2)
- (9) $\forall x:G\phi(x) \supset G\forall x:\phi(x)$ (8 and A5)
- (10) $\sim G\forall x:\phi(x) \supset \sim \forall x:G\phi(x)$ (9 and Transposition)
- (11) $F\exists x:\phi(x) \supset \exists x:F\phi(x)$ (10 and $F = \sim G\sim$)

Prior's discussion of Barcan's formula in *Time and Modality* (1957) leads him to conclude, somewhat dismally with regard to tense-logic, "The dubiety of the Barcan formula is ... transmissible to the entire structure of the tense-logic we have so far erected" (Prior 1957, 27). And if '∃x' is understood as indicating the existence of the object 'x', then (11) apparently means that if something is going to exist, then it will in some sense exist already.

To Prior – and this is what he attempted to make clear to Smart – it means that we are left with a view on time that leans heavily towards accepting Quine's perspective of tenses, because, as Prior writes, "If, on the other hand, we can accept the basic assumptions of what we may call the Quine-Smart way of handling time distinctions, we are not subjected to these tensions" (Prior 1957, 27).

Thus, in 1957, it was clear to Prior that the Barcan formula constituted a strong challenge to accepting tense-logic, because "the only ground one can think of for assenting to it would be a conviction that whatever is going to exist at some future time exist[s] already" (Prior 1957, 29). At this point, one might say that Prior's view would remain unharmed, since it still holds that modern logic does not have to quantify over tenseless entities, such as times or dates. But that would miss the overall point that Prior was trying to make. When Prior saw the Barcan formula as having a fatal potential, it is, to a large part, because he considered the tenseless view of time to be an 'event' view of time and the tensed view of time to be part of a substance view of reality, where talk of events are logical constructions out of talk about substances (Prior 2003). "Strictly speaking," for Prior, "events do not 'exist' at all; only **things** exist – events are just what things do and what happens to them" (Prior 1996). Tense-logic, to Prior, was not about future and past entities such as times or dates, but ultimately about the objects that were, are or will exist endowed with various capacities. That is why it ultimately was a choice between accepting Quine's and Smart's way of handling tenses, rejecting Barcan's formula or revising the original postulates for tense-logic to make them better fit a tensed perspective on time and existence, so "we may be in a better position

to compare tense-logic and tenseless logic and to make our choice between them" (Prior 1957, 28). Prior's first sketch of a re-examination of tense-logic was made in *Time and Modality* (1957) and is based on two points:

- 1) that 'x exists' is equivalent with 'there are facts about x' (Prior 1957, 32), and
- 2) the truth-conditions for future and past tense propositions depend upon the stateability that these *will* or *have* had (Prior 1957, 32).

Prior's discussion of these points comes with a clear rejection of the medieval idea of *ampliatio*, essential to the medieval logician's view of the truth-conditions of tensed propositions. Prior describes the medieval view with these words:

The idea of a permanent pool of objects, some now existing and some only having existed or going to exist, seems to be presupposed in the medieval theory of *ampliatio*, according to which what things a general term can stand for depends in part on the tense or mood of the verb with which it is used. In 'Some man is running', the word 'man' can stand for any man now existing; but in 'Some man will be running' it can stand also for a man who merely will exist, and in 'Some man could be running' it can stand for a man who merely could exist – in the one case, *supponit pro futuris*, and in the other *pro possibilitibus*, and not only *pro praesentibus*. The metaphysics involved in this way of talking is apt to strike the modern reader as weird.... But let us not exaggerate this queer-ness. What this comprehensive objecthood amounts to is simply that *there are already facts about these objects*, even if they are not yet existent.

PRIOR 1957, 30–31

To Prior, this weird, medieval view is closer to that of Quine and Smart than to what he believes modern logicians should accept. It is, however, only so because Prior assumes that 'x exists' is equivalent with 'there are facts about x', which definitely would be rejected by medieval logicians. Indeed, medieval logicians would most likely use tense propositions as counterexamples against Prior's point 1. In general, the medieval ideas of *suppositio* did not assume a straightforward rule of existential import. Contrary to Prior's point 1, the medieval logician would, as Moody (1953) points out, deny the idea that "This term stands for something, therefore it stands for something which exist[s]" (Moody 1953, 57).

Turning to Ockham's discussion of truth-conditions for past- and future-tense propositions, it is evident that Ockham treats *was* and *will be* on an

equal footing with *is* in his explanation of the truth-conditions of past- and future-tense propositions. What is required in terms of truth-conditions for an affirmative past- or future-tense proposition in which ϕ is predicated for some x , is that “it is truly predicted – by means of a verb of the appropriate tense of that for which the subject supposits.” Explaining this further, Ockham adds the following:

Thus, it is required that a proposition in which the predicate is predicated of a pronoun referring precisely to that for which the subject supposits was true at some time (if the proposition is past-tense) or will be true at some time (if the proposition is future-tense).

OCKHAM 1998, 106

In other words, a past-tensed proposition ‘S *was* P’ is true if, and only if, S supposits for Q and ‘Q is P’ *was* true at some time. In explaining *suppositio* for past- and future-tense propositions, Ockham writes the following:

For the subject can supposit either for that which is such-and-such or for that which was such-and-such, if the proposition is past-tense; or it can supposit either for that which is such-and-such or for that which will be such-and-such, if the proposition is future tensed.

OCKHAM 1998, 106

Ockham’s use of supposition (which, with regard to future- and past-tense propositions, has to do with *ampliatio*) in describing the truth-conditions for tensed propositions speaks against Prior’s point 1. We cannot treat ‘ x exists’ as equivalent with ‘there are facts about x ’ and take tenses seriously in the same sense as Ockham does. To Ockham, the subject ‘Bucephalus’ in ‘Bucephalus was Alexander’s horse’ supposits for that which *was* such-and-such and does not have any greater existential import than do, for example, roses when one merely thinks of them. For this reason, it speaks against Prior’s turn to the medieval view of propositions that he rejects the metaphysics behind the central medieval ideas used to lay down the truth-conditions of tensed propositions.

The modern reader might agree with Prior that the metaphysics behind the theory are odd. However, would the modern reader not also, for the same reason, find Prior’s turn to the same logicians’ view of tensed propositions equally strange, not because it is not useful, in the sense defined above, but in light of Prior’s view of logic as being about truth-implications? When Quine said that one fails to appreciate modern logic if one takes it to be tenseless, he could have thought in the following manner:

- 1) If modern logic can take tenses seriously, then there are truth-conditions for tensed propositions.
- 2) The use of truth-conditions for tenses requires either an acceptance of facts about objects that do not exist or an acceptance of tenses as a loose way of talking about timeless relations between objects in all space-time regions.
- 3) Modern logic cannot accept facts about objects that do not exist.
- 4) Hence, modern logic must accept tenses as a loose way of talking about timeless relations between objects in all space-time regions.

It would appear from Prior's reasoning in *Time and Modality* (1957) that he, forced by the Barcan formula and his rejection of the medieval ideas of *ampliatio*, would base his rejection of 4 solely upon a rejection of 2. That is, it must be possible to define truth-conditions for quantified tense-logic that do not entail facts about non-existent objects or assume timeless relations between objects in all spacetime regions. In *Time and Modality* (1957), Prior began his most elaborate attempt to solve these problems with his system Q; he continued to work on it in *Past, Present and Future* (1967). The crux of the system Q is an acceptance of a dual requirement for truth-conditions for propositions including the idea of stateability. It turns out that it is actually quite difficult to revise tense-logic to allow it to deal with the temporal aspects of being stateable; it is a serious difficulty in Prior's system Q that we cannot treat the statement, 'It is necessarily true that p ' as being equivalent with, 'It is not possible that not p .' Even when it is necessarily true that p , it may still be possible that p were not stateable, because there may not be a fact about p . It is of course very difficult to see how such an approach would have been acceptable to a medieval logician, since it would imply severely limiting God's omniscience with regard to the existence of future and counterfactual entities.

5 Evaluating Prior's Appeal to Medieval Logic

How should we evaluate Prior's appeal to medieval logic? On the one hand, it is evident that Prior considered himself in the business of bringing back to modern logic what was long overdue: an acceptance of the medieval view of propositions. Uckelman (2012) is most certainly right in her claim that Prior's debt to and high respect for the scholastic logicians of the Middle Ages is not often discussed nor well known. His philosophical importance with regard to the ontological discussion of presentism and the dynamic view of time rests upon the shoulders of important medieval logicians. Prior must certainly be given credit for rejecting the view that modern logic, from a formal perspective,

cannot take tenses seriously. Only prejudice, from a formal perspective, could defend Quine's and Strawson's rejection of modern logic's ability to formalise tensed propositions; indeed, if there ever were a point proven in philosophy, then Prior's argument against the two philosophers is a good candidate. Bearing Prior's view of logic in mind, however – that it is not purely formal but is about reality – then it appears to be the case that Prior, with the discovery of tense-logic, had joined a medieval choir with whom he could not sing in harmony. He did not share the essential metaphysical view behind the medieval ideas of the truth-conditions for past- and future-tense propositions. Priorian presentism, for that reason, constitutes a halfway house between medieval and modern logic. In 1967, tensed ontology was, to Prior, the most untidy and disorderly aspect of tense-logic, and Oaklander (2002) is definitely right in pointing out how divided among themselves presentists are to this day. They all acknowledge their debt to Prior but for one reason or another find his particular explication of presentism wanting (Oaklander 2002). Recently, Tallant (2016) has argued, on the basis of seemingly incoherent versions of presentism, that there *is* no such thing as presentism. Indeed, Tallant and Ingram have gone so far as to argue that there is no theoretical core to presentism (Tallant & Ingram 2020). Tallant and Ingram take their criticism too far. How can it meaningfully be argued that there is no such theory as presentism without the assumption that what they talk about is just that theory – presentism? That said, we do indeed need to talk about heterodoxy at some moment: separating the wheat from the chaff, daring to dismiss some theories as not really being presentism. One of the key heterodox-creating ideas, is the insistence upon Quine's idea of ontic commitment, that we should be committed to the existence of the entities we quantify over with our most unrestricted quantifiers. A strong case has recently been made by Craig (2017) that presentists should not find this problematic, since there are good reasons to reject Quine's idea of ontic commitment. It is interesting that it was apparent to the earliest reviewers of Prior's *Time and Modality* that the weakest point in his attempt to gather philosophers around the medieval logicians' view on tensed propositions was Prior's unwillingness to tamper with quantification theory. Those who wished the project well, such as Hamblin, who found Prior's presentation of the problem of time and existence excellent, were nonetheless troubled with Prior's attempts to solve the challenges caused by Barcan's formula without "tampering with quantification theory" (Hamblin 1958). Cohen was more critical, and found Prior's attempt to defend the medieval and ancient view on propositions 'extremely weak' (Cohen 1958, 266). The reason was again related to Prior's attempts to solve the problems to which the Barcan formula seems to

give rise. To Cohen it was clear that the defence of the medieval view on propositions required a wider acceptance of the mind-set of the medieval logicians:

If we insist on having a 'tense-logic' we must assume that some form of discourse is sempiternal; and perhaps such an assumption would have seemed a commonplace to many theologically-minded ancient and medieval logicians. Or, if we reject any such assumption, we must also reject the idea of 'tense-logic' and fall back on the timeless truth-evaluations of ordinary logic. What we can be sure about is that 'it is not good logic' to try and have it both ways, as Professor Prior seems to do – to adopt a 'tense-logic' but to repudiate the sempiternity-assumptions.

COHEN 1958, 268

I surmise that presentists will beat around the bush until – in a way¹ – they accept the sempiternity assumptions inherent in tensed quantification, acknowledging that there are facts about entities that do not exist, but will or have existed, which we are simply able to quantify over without ontic commitment. To use Prior's own imagery (Prior 1959): Prior's discovery of tense-logic delivered presentists out of Egypt; but his work on quantified tense-logic has left them stranded in the desert of trying to remain faithful to modernist assumptions in a house build by medieval logicians. Presentists should perhaps wonder whether that journey was supposed to take them all the way to those medieval logicians who did not believe that when a term stands for something, then it stands for something that exists.

Prior's appeal to medieval logic therefore came with a metaphysical price tag, which he was keen on demonstrating that modern minds – like those of Quine – did not have to pay. It stands to reason that it is, at best, questionable whether Prior achieved this goal. He most likely did not. Current logic does not take tenses seriously to the degree that Prior had hoped. The logician who may wish to accept the medieval view of propositions – in a sense true to a dynamic theory of time – must assume a worldview involving facts about future individuals that, in principle, do not supervene (present tense) on being, for they

1 I am grateful to an anonymous reviewer for pointing out that this caveat must be made. Why? Because emphasis on the Barcan formula and on a sempiternity assumption in the strict sense of the word presuppose (temporal analogues) possibilist quantifiers. It may be argued, however, that, with (temporal analogues) to actualist quantifiers, similar problems arise – which problems cannot be discussed in detail here.

do not exist yet; or, he must add to the plethora of attempts to affirm that truth supervenes (present tense) on being.

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