Prior's Notion of the Present

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Four weeks before his untimely death in 1969, Arthur Prior gave a talk at Oberwolfach (Black Forrest) on *The Notion of the Present*. For the last time, he defended the redundancy theory of the present. He explained it in connection with the redundancy theory of the actual, which he took to be closely related. Indeed, in his view the present and the actual "are one and the same concept, and the present simply *is* the real considered in relation to two particular species of unreality, namely the past and the future." [Prior 1972, p. 320] He expressed his view on the redundancy of actuality in these words: "'Really', 'actually', 'in fact', 'in the real world' are strictly redundant expressions—that, and not any prejudice or provincialism, is their specialness." [Prior 1972, p. 321] Analogously, he suggested "that the reality of the present consists in what the reality of anything else consists in, namely in the absence of a qualifying prefix" [*ibd.*]. He illustrated his case with the following examples:

> To say that Withrow's lecture is past is to say that *it has been the case* that Withrow is lecturing. To say that Scott's lecture is future is to say that *it will be the case* that Scott is lecturing. But to say that my lecture is present is just to say that *I am lecturing*—flat, no prefixes. [Prior 1972, p. 321f.]

Taking the "at" sign, "@", as an abbreviation for "it is actually the case that" and the capital letter "J" as an abbreviation for "it is now the case that", we can symbolize the twin redundancy theories with the biconditionals (material equivalences) "$@p \leftrightarrow p$" and "$\mathsf{J}p \leftrightarrow p$".

As John N. Crossley and Lloyd D. Humberstone have pointed out in 1976, the first of these two biconditionals is not valid [Crossley/Humberstone 1977, p. 16]; and thus the redundancy theory of actuality fails. For analogous reasons the redundancy theory of the present fails, too. In his 1968 paper *"Now"*, Prior put forward a convincing argument to the analogous effect with respect to the present [Prior 1968b, p. 103]. Nevertheless, he could rightly claim that "to say that my lecture is [now] present is just to say that *I am lecturing*—flat, no prefixes". But it would be a gross mistake to think that this equivalence amounts to the biconditional "$\mathsf{J}p \leftrightarrow p$".

In order to show the nature of this mistake, I will consider Descartes' famous hendiadys "I am, I exist" as another example. Descartes claimed, and was right in claiming, that it is true whenever it is "proffered or conceived of in the mind" [Descartes 1641, p. 25]. From this, however, we must not conclude that the sentence "I am, I exist" is unconditionally or logically true. It is not. I was not there yet on July 14, 1789 which I should have been if "I am, I exist" were valid. Therefore, we must distinguish between (logical) validity and what I suggest to call "truth upon use" and what Crossley/Humberstone called "real-world validity" [Crossley/Humberstone 1977, p. 15]. No doubt, when Prior *is saying* that his lecture is (now) present he *is saying* that he is lecturing—flat, no prefixes. But this only holds true at the time of his saying it, that is, while he is *using* the sentences "My lecture is (now) present" and "I am lecturing". Whenever they are used, they are both true or both false. *To say* that it is now 4 p.m. is just *to say* that it is 4 p.m. *To think* that it is now 4 p.m. is just *to think* that it is 4 p.m. But this does not mean that "It is now 4 p.m." is equivalent to "It is 4 p.m." Otherwise the sentences "It is always the case that it is now 4 p.m." and "It is always the case that it is 4 p.m." should be equivalent, too, which they are not. Therefore, the biconditional "$\mathsf{J}p \leftrightarrow p$" is true upon use, but not valid. Nevertheless, truth upon use is not far away from validity. If a formula ϕ is true upon use, its indexicalization $\ulcorner \mathsf{J}\phi \urcorner$ is valid, and *vice versa.*

Having saved the J-Operator from redundancy, we can profit from it in the metaphysics of time. In his article *Tense Logic and the Logic of Earlier and Later* Prior addressed the topic of the unity of time [Prior 1968a, p. 132ff.]. He examined several formulae with which it can be expressed that something is always the case. The underlying idea was that no moment of time should be outside the range of the always-operator.

In his first definition, Prior symbolized the vernacular "always" by the capital letter "L", and took "$\mathsf{L}p$" as short for "$\forall a \mathcal{T} ap$" [Prior 1968a, p. 119]. In his final definition, he used ordinal number recursion to define the L-operator on the basis of the tense-logical system $\mathbf{K_t}$ and the numerically embellished operator "L^n" [Prior 1968a, p. 129]. Therefore, the resulting operator can have the force of the ordinary word "always" in countable models only. But what about the uncountable ones? Do they contain more than one time-series? Prior forestalls such questions by formulating the *proviso* "that we do not allow that there may be several distinct and independent time-series (in which case there would be 'times' which we could not locate from 'now' by any combination of 'will bes' and 'has beens')" [Prior 1968a, p. 128]. Of course, by the word "now" he did not mean the non-redundant idiomatic "now", but its redundant counterpart which he symbolized as "L^0". Prior's *proviso* amounts to admitting that he did not succeed in giving a general account of what we mean by "always".

The same admission can be found in his paper "Now". Taking "$\mathsf{I}ab$" as shorthand for "a is the same instant as b", he there uses the B-series formula "$(a < c \vee c < a) \rightarrow ((b < c \vee c < b) \rightarrow (a < b \vee b < a \vee \mathsf{I}ab))$" in order to state "approximately that every instant is either earlier or later than every other instant *in the same time system*" [Prior 1968b, p. 115; italics mine]. Indeed, if we are working within just one such system, we can use this formula to state the uniqueness of the time series. But this formula seems to go further in that it appears to be contaminated with the transitivity of the earlier/later relation [ibid.]. Its complete force is contained in the A-series counterpart "$(p \wedge \mathsf{G}p \wedge \mathsf{H}p) \rightarrow (\mathsf{GG}p \wedge \mathsf{GH}p \wedge \mathsf{HG}p \wedge \mathsf{HH}p)$" [ibid.]. Since, given $\mathbf{K_t}$, this counterpart implies "$(p \wedge \mathsf{G}p \wedge \mathsf{H}p) \rightarrow (\mathsf{GH}p \wedge \mathsf{HG}p)$" it holds in models only whose earlier/later relation is non branching [ibid.]. But since such models can consist of two or more non-branching, but unconnected time series, our counterpart formula does not mirror time's uniqueness.

By using the non-redundant J-operator, we can overcome this situation. Instead of assuming the uniqueness of the time-series as a precondition for the construction of a model for our tense-logical system, we can postulate it in the very system itself; and we can do so in a way that leads to a postulate uncontaminated by any other property of the the earlier/later relation. In order to bestow uniqueness upon it, we only need to state its pentachotomy, that is

$$\forall x \forall y (x = y \vee x < y \vee y < x \vee \exists z (z < x \wedge z < y) \vee \exists z (x < z \wedge y < z)).$$

This property of the earlier/later relation is captured in the tense-logical axiom:

$$(\mathsf{H}p \wedge p \wedge \mathsf{G}p \wedge \mathsf{HG}p \wedge \mathsf{GH}p) \rightarrow \mathsf{J}p.$$

Since a tense-logical system containing this axiom is satified in models with just one single time-series, we can use its antecedent without further ado as a definition for Prior's "L":

$$\mathsf{L}p := (\mathsf{H}p \wedge p \wedge \mathsf{G}p \wedge \mathsf{HG}p \wedge \mathsf{GH}p).$$

By using this definition, our uniqueness axiom can be rewritten as "$\mathsf{L}p \to \mathsf{J}p$", which in ordinary language reads: "What is always the case is now the case". It is then not surprising that Crossley/Humberstone use the related formula "$\mathsf{L}p \to @\, p$" in their modal system **S5A** for the actuality operator "@" [Crossley/Humberstone 1977, p. 14].

Having seen how we can express the uniqueness of the time-series, we can discuss the strength of this requirement. Pentachotomy is a rather weak form of uniqueness, trichotomy is stronger. The earlier/later relation can be made to possess this property by postulating

$$(\mathsf{H}p \wedge p \wedge \mathsf{G}p) \to \mathsf{J}p.$$

From here propositional logic will carry us to either of the following postulates

$$(\mathsf{H}p \wedge p \wedge \mathsf{G}p \wedge \mathsf{HG}p) \to \mathsf{J}p,$$

$$(\mathsf{H}p \wedge p \wedge \mathsf{G}p \wedge \mathsf{GH}p) \to \mathsf{J}p.$$

Either of them trivially implies "$(\mathsf{H}p \wedge p \wedge \mathsf{G}p \wedge \mathsf{HG}p \wedge \mathsf{GH}p) \to \mathsf{J}p$", the pentachotomy condition. Each of the intermediate postulates excludes one kind of branching: the first one branching to the past, the second one branching to the future; and they do so without doing harm to the uniqueness of the time-series. Thus the first postulate should be welcome to all those who do research on decision problems and, therefore, are dependent on indetermistic tense-logic.

References

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