

REVIEWS

Numerical cross references are to previous reviews in this JOURNAL or to *A bibliography of symbolic logic* (this JOURNAL, vol. 1, pp. 121–218), or to *Additions and corrections* to the latter (this JOURNAL, vol. 3, pp. 178–212).

References beginning with a Roman numeral are by volume and page to the place at which a publication has previously been reviewed or listed. When necessary in connection with such references, a third number will be added in parentheses, to indicate position on the page. Such a reference is ordinarily to the publication itself, but when so indicated the reference may be to the review or to both the publication and its review. Thus "XXXI 253" will refer to the review beginning on page 253 of volume 31 of this JOURNAL, or to the publication which is there reviewed; "XXXI 287" will refer to one of the reviews or one of the publications reviewed or listed on page 287 of volume 31, with reliance on the context to show which one is meant; "XXXI 283(5)" will refer to the fifth item listed on page 283 of volume 31, i.e., to Peirce's *Insolubilia*; and "XXXI 284(7)" will refer to the seventh item listed on page 284 of volume 31, i.e., to the second edition of Łukasiewicz's *Elementy logiki matematycznej*.

References such as 24718, 3825 are to the entries so numbered in the *Bibliography*. Similar references preceded by the letter A or containing the fraction $\frac{1}{2}$ or a decimal point (as A5481, 21 $\frac{1}{2}$, 3210.2) are to the *Additions and corrections*. A reference followed by the letter A is a double reference to an entry of the same number in the *Bibliography* and in the *Additions and corrections*.

RICHARD M. GALE. *The language of time*. Routledge & Kegan Paul, London, and Humanities Press, New York, 1968, viii + 248 pp.

This book is concerned with the clarification of certain philosophically significant features of "our ordinary or common-sense concept of time" (p. 3). The author's method throughout is that of "linguistic analysis or ordinary language philosophy" (ibid.). He suggests that rather than ask what time is, we should ask how temporal language is used in ordinary discourse. His avowed concern is with "declarative speech acts" and the pragmatic conditions of such speech acts (p. 208). His resulting analysis might accordingly best be understood for the readers of this JOURNAL as an informal study in pragmatics, i.e., that extension of semantics where the truth conditions of a sentence are relativized to a "context of use," as well as to an interpretation, the context perhaps including presuppositions (of a language user in that context) which, if false, render a sentence neither true nor false (relative to that context of use). The author does not formulate any formal language which might be construed as an idealized fragment or a partial "deep structure" analysis of the temporal language of ordinary discourse. This is to be regretted, for it leaves a certain amount of indeterminacy as to how to understand and assess some of his arguments. E.g. in his analysis of McTaggart's argument for the unreality of time, the author indicates "two fundamentally different ways in which we conceive of and talk about time. On the one hand, we conceive of time in a dynamic or tensed way, as being the very quintessence of flux and transiency . . . of temporal becoming. . . . This conception of time finds expression in our tensed way of talking." (p. 7) One might accordingly understand the author as proposing here a tense logic in which "temporal references" are made adverbially by means of tense sentence operators designating *temporal modalities*. The temporal facts related in this way are to constitute McTaggart's "A-Series of events," where an event *qua* temporal fact is the semantical correspondent of a sentence and is thus construed propositionally. As the semantical correspondents of tenses, A-determinations, such as pastness, presentness, and futurity, are accordingly to be construed as temporal modalities of propositional events. On the other hand, "the very same events which are continually changing in respect to their pastness, presentness or futurity are laid out in a permanent order whose generating relation is that of *earlier than*."

This is the static or tenseless way of conceiving time. . . . This way of conceiving time finds expression in our tenseless way of talking, in which *temporal relations* of precedence and subsequence between events are described by timelessly true or false statements." (Page 7, italics added.) Here one might understand the author to be proposing merely an applied form of standard predicate logic with events construed as individuals between which there are posited to be certain (timeless) relations such as *earlier than*. These individuals constitute McTaggart's "*B-Series* of events." The *B-Theory* of time maintains (among other things) that *A-determinations* are analyzable in terms of *B-relations* between events, one of which involves a perceiver or language user, and that therefore the *A-Series* is "reducible" to the *B-Series*. The *A-Theory* argues conversely that the *B-Series* is "reducible" to the *A-Series* and that temporal becoming is intrinsic to all events.

But can "the very same events" be construed as temporally modalized propositions on the one hand and as individuals on the other? It may perhaps be done for a realist version of the *B-Theory* where propositional forms are allowed to occur in subject as well as propositional positions. (It is not clear whether the author's nominalizations of sentences are intended in this way or not. E.g. one variant of the *B-Theory* analysis of '*S* is now φ ' is '*S*'s being φ is simultaneous with *theta*,' where '*theta*' is a metalinguistic proper name or definite description of the token event in the *analysandum* (p. 54). On the other hand, if nominalization is a term-making syntactical operation, is it to be applied to all sentences of the *B-language* and can this be done without paradox, or are type distinctions part of the grammar of the *B-language*? And are tensed sentences also sentences of the *B-language* or do they occur only in nominalized forms? And how are we to understand nominalizations of sentences with complexly iterated tenses?) But it is not clear how the *A-Theory* understood as a tense logic might handle this. If '*earlier than*' were a binary connective, the *A-Theory* could give the following analysis (where '*P*', '*F*' are the past and future tense operators and ' $\phi_t\varphi$ ' abbreviates ' $P\varphi \vee \varphi \vee F\varphi$ ' which may informally be read as '*at some time*'): $(p < q) =_{df} \phi_t[(Pp \& q) \vee (p \& Fq)]$. This formal analysis accords well with McTaggart's own informal version, viz., "the term *p* is earlier than the term *q*, if it is ever past while *q* is present, or present while *q* is future." (Page 10, italics added.) But this analysis of course in no way analyzes the sense of *earlier than* as a binary relation between events as individuals. Notice however that, since sentences beginning with ' ϕ_t ' or its dual are either *always true* or *always false*, one might find in this an explanation of why the *B-theory* construes *earlier than* as *timeless*. Thus Broad's claim that "there is no incompatibility between temporal becoming and the '*permanency*' of *B-relations* between events" (p. 31) is quite understandable, as is the *B-Theory*'s denial of any asymmetries between the past and the future (cf. p. 29), since, on this analysis, all "atomic" *B-sentences* begin with ' ϕ_t ' or its dual.

But in the end the reviewer does not think the author intends that "our tensed way of talking" is to be represented by a tense logic where *A-determinations* are temporal modalities and events are construed propositionally. For one thing, the propositional events of tense logic may occur (be the case) and reoccur intermittently whereas the author's view of events seems to be that they occur once and only once. E.g. in contrast to the "Timeless Theory of Truth" held by most *B-theorists*, the author proposes only the "Temporalistic Theory," according to which a statement will be neither true nor false prior to some time at which it acquires a truth-value which it then "retains for ever after" (p. 137). In addition, the reviewer does not see how we can make sense of the author's distinction between a pure and an impure *A-Series* (p. 91ff) if *A-determinations* are temporal modalities, i.e., if *A-expressions* are tense sentence operators (adverbs). According to the author, McTaggart's *A-Series* "cannot be generated by the unqualified *A-expressions* '*past*,' '*present*,' and '*future*' since the *A-Series* involves not only that the events comprising it are past, present and future but also that they are past and future by varying degrees" (p. 88). A pure *A-Series* is determined by "an unqualified past, present and future" (p. 93), whereas an impure *A-Series* is "formed by a conjunction" of two different series whose generating *relations* are *more past than* and *more future than* (p. 95), and the *B-Series* is reducible only to an impure *A-Series* (p. 93). But note that if *A-expressions* are tenses (adverbs), they can be iterated and can occur within their own scopes, thereby representing "varying degrees" of pastness and futurity; and therefore in this regard '*more past than*' (and similarly '*more future than*') can be defined as a binary connective: $(p \text{ is more past than } q) =_{df} P(Pp \& q)$.

This would suggest that the distinction between a pure and an impure *A*-Series is spurious. But, as the author takes the distinction to be significant, it would seem then that *A*-expressions are not to be construed as tenses (adverbs).

The only syntactical account the author does give of *A*-expressions is that "they are not general terms. They are strange *singular terms* since, unlike non-indexical singular terms, they admit neither of being ostensively named nor of being ostensively identified." (*Sic.*, pp. 66-67, italics added.) "*A*-expressions, like all indexical terms, are peculiar singular terms, since they designate without describing" (p. 70). Nowhere is the implicit claim that all indexical expressions are singular terms explained or justified.

Regardless of the above difficulties as to how to understand the author's notion of a tensed language, it is clear that for him "the logic of ordinary temporal discourse is such that tenseless expressions are logically dependent upon tensed ones, and also that the fundamental concepts which we employ in talking about the world involve tensed concepts; they could not be expressed except in a tensed language" (pp. 7-8). His extensive discussion and criticism of the various *B*-theorists' claims are quite pointed and seem on the whole rather devastating, at least to those classical variants of the *B*-Theory described. He is quite concerned to show that "*A*-expressions are ineliminable because they do convey some kind of factual information" (p. 56), although that information is not in the form of sensible content since "*A*-expressions are not used to designate a *sensible* property or attribute, i.e., a property which is perceived through one or more of the senses" (p. 69).

The author's thesis is that "*A*-expressions are semantically objective but pragmatically subjective. . . . The statement made—the semantic content—in a declarative speech act involving the use of an *A*-sentence does not refer to a token or even entail the existence of a token; however, on the pragmatic level a *special* sort of reference must be made to the utterance token which occurs in this speech act." (p. 208) The standard maneuver made by the *B*-theorist is to try "to pack the pragmatic conditions which must be fulfilled for truly asserting an *A*-statement into the statement which is made" (p. 209). Thus, "the token-reflexive theory confounds the semantic and pragmatic dimensions of a declarative speech act" (p. 210). That is, the *B*-theorist's error is his attempt to formulate in his tenseless *B*-language sentences that are to be synonymous (or even merely logically equivalent) with tensed sentences, where the synonymy (or logical equivalence) relation is to capture the pragmatic as well as the semantical content of a tensed sentence used to make a statement. We might note, however, that the author does not consider that variant of the *B*-Theory which disavows synonymy (or logical equivalence) as its goal but which claims merely that the *B*-language can serve as an adequate semantic-pragmatic meta-language for tensed object languages and that it is only in this sense that we are rationally committed to provide an account of our "ordinary temporal discourse."

For the author, "the logic or meaning of ordinary temporal discourse . . . commits us to a realistic view of becoming" (p. 217). But since he also claims that "*A*-determinations are presupposed on the semantic level of physics, and not just on the pragmatic level of discovery and verification" (p. 225), this commitment in his view carries over to physics as well. Other commitments also carry over, e.g. the asymmetry between the past and the future and the status of future individuals as compared with past and present individuals. Regarding the latter issue, the author's thesis is that "we cannot *successfully* use a singular identifying expression—a proper name, definite description or demonstrative—to identify a future individual" (p. 183).

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C. GOEKOOP. *The logic of invariable concomitance in the Tattvacinśāmanī, Gaṅgeśa's Anumitinirūpaṇa and Vyāptivāda, with introduction, translation, and commentary.* D. Reidel Publishing Company, Dordrecht 1967, X + 162 pp.

This book is remarkable for its breadth and its penetrating insight into a fundamental concept of Navya-nyāya logic, viz. pervasion. Previously, only five definitions of pervasion from Gaṅgeśa's work had been subjected to analysis by Western scholars; Goekoop has translated, explained, and interpreted as many as twenty-nine. The book will surely serve for many years to come as the main sourcebook of Nyāya logic for Western scholars. The following points of criticism, then, must not minimize the great merit of the book.