

TENSED SENTENCES AND FREE REPEATABILITY¹

PHILOSOPHERS often distinguish *tensed* from *tenseless* sentences, and with the aid of this distinction go on to make a variety of claims about such topics as the status of temporal becoming, subjective versus objective time, thing-ontologies versus event-ontologies, and perspicuous languages. In this paper I shall criticize the most prominent accounts of tensed and tenseless sentences, and then offer a novel and (I hope) correct analysis of this distinction.

INTRODUCTION

The distinction between the classes of tensed and tenseless sentences is presumed to systematize a distinction which we might roughly and intuitively draw as follows. On the one hand there are such ordinary sentences as

- (1) John was fat
- (2) The guests are drunk
- (3) Mary is frowning
- (4) John will be late for dinner

as well as sentences in more complex tenses like the future perfect (for example, "The glass will have been full") and extended tenses (for example, "John was going to be sick"). On the other hand, there are such expressions as

- (5) 2 plus 2 [is] 4
- (6) $(\exists t)(t$ [is] earlier than 1/9/73 & John [is] fat at $t)$
- (7) S 's ϕ ing [is] later than S 's ψ ing
- (8) All bachelors [are] unmarried
- (9) Red [is] a color

¹ I am greatly indebted to Bruce Aune, Gareth B. Matthews, and Roderick M. Chisholm for many enlightening and constructive discussions of this topic. I would also like to thank Arnold B. Levison and the editors of the *Philosophical Review* for help in preparing the final draft of this paper.

which are held not to exhibit certain kinds of variability characteristic of sentences in the first group. The brackets around the verbs in these last sentences indicate that those words are supposed to be deprived of temporal significance or temporal import. That is, they should not be understood as meaning, for example, "is (are) *now*." These verbs are known in the literature as *tenseless* verbs,² and should be distinguished from morphemically identical verbs not so deprived, such as the inflections of "to be" in (1)-(4).³

Philosophers do not all regard the same linguistic units as tensed or tenseless. Although many consider *verbs* to be tensed or tenseless, there is little agreement concerning which larger linguistic units can have these properties. For some, *sentences* are said to be tensed or tenseless, while others place the burden on statements or propositions. To simplify matters, I will restrict my discussion to sentences, tensed and tenseless, since the properties in virtue of which statements or propositions are said to be tensed are properties that we might also comfortably ascribe to what I take to be sentences.

Henceforth a "sentence" will be understood to be an instance of a concatenation of morphemes, which is the bearer of a truth value, and whose visual or sound pattern may be replicated on various occasions.

What is perhaps the most popular distinction between tensed and tenseless sentences rests on the following sort of observation. Replicas of sentences like

- (1) John was fat
- (3) Mary is frowning

appear to take different truth values at different times. Replicas of (1), for example, are true only if produced after John is fat, while other replicas can be false, if produced earlier than either

² I shall assume in this paper that it makes sense to suppose that verbs are either tensed or tenseless, since, even granting this, the views I shall criticize can be shown to be seriously defective.

³ The mnemonic device of bracketing tenseless verbs will henceforth be employed only in those cases where the verb might be plausibly confused with a tensed verb.

John's birth or the onset of his girth. And replicas of (3) would be true only if produced while Mary is frowning. Some philosophers⁴ accordingly claim that tensed sentences generally are *context-dependent*, while tenseless sentences are *freely repeatable*. Thus, regardless of *when* we produce tenseless sentences such as (5)-(9), the truth value (or sense) of their replicas is constant. If replicas of such sentences are true (or false) or have a certain sense at one time, any other replicas will be true (or false) or have that sense whenever they happen to be produced.

Consider sentences from mathematics, like (5). Obviously, the truth or falsity (or sense) of such sentences does not rest on temporal considerations. Nor do the truth values (or sense) of (6)-(9) depend on the time of their production. (6) is widely regarded as a tenseless reformulation of (1) in the style of the lower functional calculus. By making explicit the covert temporal information in (1), the truth values (and sense) of replicas of (6) are not subject to the vagaries of time and temporal becoming. For this reason, locutions like (6) are regarded as suitable for logic and good philosophy, unlike (1).⁵ Moreover, if *S*'s ϕ ing is related to *S*'s ψ ing in the manner reported in (7), and if these events are not recurrent,⁶ then those two events are so related regardless of our temporal location with respect to them. If *S*'s ψ ing precedes *S*'s ϕ ing, then this relation holds whether or not the two events are both in our past, or both in our future,

⁴ E.g., R. Gale, "Tensed Statements," *Philosophical Quarterly*, 12 (1962), 53-59; "A Reply to Smart, Mayo, and Thalberg on 'Tensed Statements,'" *Philosophical Quarterly*, 13 (1963), 351-356; "Is it Now Now?," *Mind*, 73 (1964), 97-105; "The Egocentric Particular and Token-Reflexive Analyses of Tense," *Philosophical Review*, 73 (1964), 213-228; *The Language of Time* (London, 1968); N. Goodman, *The Structure of Appearance* (Indianapolis, 1966); G. J. Massey, *Understanding Symbolic Logic* (New York, 1970); J. F. Rosenberg, "Tensed Discourse and the Eliminability of Tenses," *Philosophical Quarterly*, 16 (1966), 146-150; J. J. C. Smart, *Between Science and Philosophy* (New York, 1968).

⁵ See, e.g., Goodman, *op. cit.*; Quine, "Mr. Strawson on Logical Theory," reprinted in *The Ways of Paradox* (New York, 1966); *Word and Object* (Cambridge, 1967); *Philosophy of Logic* (Englewood Cliffs, New Jersey, 1970); B. Russell, *An Inquiry Into Meaning and Truth* (Baltimore, 1967); *Human Knowledge* (New York, 1967); *The Principles of Mathematics* (New York, 1964); J. J. C. Smart, *op. cit.*; also *Philosophy and Scientific Realism* (London, 1963); "The River of Time," in *Essays in Conceptual Analysis*, ed. by A. Flew (London, 1966).

⁶ Which we may henceforth assume all events to be.

or whether they are temporally separated by the present (that is, when *S*'s ψ ing is in our past and *S*'s ϕ ing is in our future).

I shall call the view that tensed and tenseless sentences may be distinguished in this way the *Free Repeatability* thesis (hereafter known as the "FR" thesis). This view has taken several interesting forms, each of which warrants investigation, and none of which is free of serious difficulties. But before criticizing the most important versions of the *FR* thesis, a few more preliminary remarks will be useful.

I. REQUIREMENTS FOR A THEORY OF TENSED SENTENCES

Philosophers frequently argue that any sentence is tenseless provided that its sense is devoid of temporal import and its truth conditions are free of temporal restrictions. Let us call such sentences *atemporal*. Thus

- (5) 2 plus 2 is 4
- (9) Red is a color

are atemporal, since their truth in no way turns on temporal considerations, and since temporal information would either be irrelevant to our understanding of those sentences, or simply too restrictive. This position seems plausible enough, and we may henceforth regard the atemporality of a sentence as being a sufficient condition for its tenselessness.

Further general requirements for a theory of tensed sentences are needed as well. I suggest that any such theory must be compatible with each of the following—quite plausible—claims about tensed sentences.

(1) *Any sentence is either tensed or tenseless.* While there is little discussion of this issue in the literature, it seems reasonable to suppose that tensed and tenseless sentences divide the class of sentences without residue. Unlike the linguist, who typically regards a sentence as tensed so long as it is *grammatically* tensed—that is, so long as its verb is inflected—the philosopher typically identifies a tensed sentence on the basis of some semantical feature

(or set of features) of the sentence. And presumably either a sentence has this feature (or set of features) and is tensed, or it does not have this feature (or set of features) and is tenseless. Naturally, we can expect some syntactic variations within each of these classes. We have already seen that philosophers admit to a diversity of sentence forms within the class of tenseless sentences.

(2) *Tensed sentences exhibit some kind of semantical relativity or instability.* As far as I know, every writer on the subject agrees that tensed sentences, unlike tenseless sentences, are semantically variable in some way, and that this variability accounts for the familiar temporal restrictions on producing certain tensed sentences (for example, that one cannot appropriately talk in the past tense about John until John is born). It would be expected, then, that an adequate account of tensed sentences would explain how replicas of such sentences can have different truth values, or appear to differ in sense, since this is the sort of semantic variability in particular that is found to be undesirable by philosophers who advocate the abandonment of a tensed language in favor of a more rigorous tenseless language.⁷

(3) *Sentences in grammatically perfect tenses are (semantically) tensed.* Perfect tenses are, for example, the future perfect ("John will have ϕ 'd"), the past perfect ("John had ϕ 'd"), and extended perfect tenses, like "John will have been ϕ ing." While we are not likely to construe sentences with such complex tenses as tenseless, confusions do arise over simple tenses. There are, for instance, certain uses of the grammatical future tense which may be tenseless (for example, "Add 2 and 2 and you will get 4"), and Russell⁸ has used a grammatically past-tense sentence tenselessly, presumably for the sake of elegance. More often still, the grammatical present tense is used for tenseless sentences. Philosophers usually call this tense the "tenseless present."

(4) *Some analytic sentences are tensed.* Given only our rough grasp so far of tensed sentences, it seems plausible to suppose that there is a distinction in tense between

⁷ See Goodman, Quine, Russell, Smart, *op. cit.*

⁸ *Meaning and Truth*, p. 102.

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(10) No bachelors are married

and

(11) Nobody has been a married bachelor

similar to that between

(6) $(\exists t)(t$ [is] earlier than 1/9/73 & John [is] fat at $t)$

and

(1) John was fat.

Of course, both (10) and (11) do not change truth value with time. But if we rule that (11) is therefore tenseless, we shall have difficulty explaining the sense in which (11) differs from

(12) Nobody is a married bachelor

and

(13) Nobody will be a married bachelor

since one of the reasons we are inclined to regard (1) as tensed is that it can similarly be compared to

(14) John is fat

(15) John will be fat.

Let us now examine in greater detail the most prominent versions of the *FR* thesis.

II. TENSED SENTENCES AND *A*-DETERMINATIONS

One version of the *FR* thesis appears to be the result of interpreting McTaggart's remarks about temporal relations⁹ as a metalinguistic theory about tensed and tenseless sentences. McTaggart thought that a distinction could be drawn between sentences making *A-determinations* and sentences expressing *B-relations*.¹⁰ In the former class of sentences, events are said to be

⁹ In *The Nature of Existence*, Vol. II (Cambridge, 1927).

¹⁰ These are Gale's handy terms. McTaggart actually writes only of positions on, or sentences expressing positions on, the *A*- or *B*-series.

past, present, or future; and in the latter class of sentences, events are ordered according to the relations *earlier than*, *later than*, or *simultaneous with*. *A*-sentences—as members of the first class may be called—were thought to be context-dependent. An event can truly be said to be past only after it has occurred, present only while it is occurring, and future only before it occurs. If, for example, we say of a past event that it is present (or future), the *A*-sentence we utter will be false. But that *A*-sentence would be true if we uttered it while the event in question was present (or future). A *B*-sentence, on the other hand, once true (or false), will always be true (or false). If *E* is earlier than *E'*, we can assert their ordering no matter what our temporal position is with respect to those events.¹¹

McTaggart did not address himself to problems concerning tensed and tenseless sentences. Some modern authors,¹² however, have suggested that the class of tensed sentences is identical with the class of *A*-sentences, and that the class of tenseless sentences is identical with the class of *B*-sentences, and, presumably, that these classes are disjoint. This view is difficult to sustain, for a number of reasons.

First of all, McTaggart's *A*- and *B*-sentences take only event-expressions as arguments. But both tensed and tenseless sentences—given even our only rough understanding of them—do not. For example, neither

(1) John was fat

nor the tenseless

(16) John [is] fat on [date]

has an event-expression as a singular term. Thus, if we are to take this extension of McTaggart's view seriously, we should expect some account of how the classes of *A*- and *B*-sentences include sentences that do not have event-expressions as arguments.

¹¹ There are some problems (largely epistemological) about asserting *B*-relations between events at least one of which has not yet occurred. But we may ignore these given the scope of the discussion.

¹² E.g., Gale, *op. cit.*, esp. "Tensed Statements" (pp. 53-54), and "Is it Now Now?" (p. 104); also Rosenberg, *op. cit.*, (esp. p. 146).

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Although no such account has been offered by these authors, it is clear enough what needs to be done. With respect just to tensed sentences, proponents of this view must explain how sentences of the forms

- (17) S is ϕ ing (or is ϕ)
- (18) S was ϕ ing (or was ϕ) (or ϕ 'd)
- (19) S will be ϕ ing (or will be ϕ) (or will ϕ)

may be re-expressed as the A -sentences

- (17') S 's ϕ ing (or S 's being ϕ) is present
- (18') S 's ϕ ing (or S 's being ϕ) is past
- (19') S 's ϕ ing (or S 's being ϕ) is future.

What is needed, in other words, is an account of how thing-sentences can be re-expressed as event-sentences, and conversely.¹³ There may be no insuperable difficulty with this enterprise, but some sort of sophisticated theory of events would seem to be required to explain what events or kind of events are denoted in the following (apparently tensed) sentences.

- (20) John was old [where does this event begin?]
- (21) John hiccupped for the tenth time [what kind of events recur?]
- (22) John was a male [is this an event at all?]
- (23) John used to enjoy hiking [is this an event at all?]

What is perhaps a more serious problem for the view under consideration is that some tenseless sentences simply have no event-language analogues. Consider the paradigm tenseless sentences

- (5) 2 plus 2 is 4
- (8) All bachelors are unmarried
- (9) Red is a color

¹³ In "Time and the World Order," in Feigl and Maxwell (eds.), *Minnesota Studies in the Philosophy of Science*, Vol. III (Minneapolis, 1962), Sellars presents the most complete extant analysis of the relationships between A - and B -sentences and tensed and tenseless sentences. But he denies that the classes can be paired off and identified in the way just mentioned.

none of which can be plausibly construed as making a *B*-determination.

And what appears to be even more damaging is that many *B*-sentences are clearly tensed. Consider, for example, sentences of the form

(24) *S*'s ϕ ing was (will be) later than *S*'s ψ ing.

Such sentences are ordinary enough, as, for example,

(25) John's heart attack occurred after his lecture.

Moreover, many more examples can be found simply by translating certain thing-sentences into event-language analogues, a practice which proponents of this view would have to condone. Thus

(26) John will leave home after Mary returns with the car
would become

(26') John's leaving home will be later than Mary's returning
with the car.

(26') clearly expresses a *B*-relation between two events. But it is also apparently tensed, since it is true only after the events of John's leaving home and Mary's returning with the car have occurred, unlike a paradigm tenseless *B*-sentence, whose truth value is supposedly fixed.

It appears, then, that tensed and tenseless sentences cannot be identified, respectively, with the disjoint classes of McTaggart *A*- and *B*-sentences. Let us therefore consider another version of the *FR* thesis.

III. TENSED SENTENCES AND TRUTH-VALUE INSTABILITY

Another prominent version of the *FR* thesis links tensed sentences to truth-value variability between sentence replicas. As we saw earlier, replicas of many ordinary tensed sentences take different truth values at different times. Impressed by this phenomenon, we might initially be tempted to say that a tensed sentence is a sentence that is true at one time and false at another, and that a tenseless sentence is either always true or always false.

But this will not do, since some obvious tensed sentences have replicas all of which have the same truth value, as, for example,

(27) Napoleon won the Battle of Waterloo.

What is needed is a stronger thesis, and probably something like

*T*₁: Sentence *S* is tenseless (freely repeatable) *iff* it is necessary that there are no two different times such that *S* is true at one time and false at the other.

Sentence *S* is tensed (nonrepeatable) *iff* it is possible that there are two different times such that *S* is true at one time and false at the other.

*T*₁ is probably the most plausible way of stating this version of the *FR* thesis, but it also has its difficulties. The first of these is that some conjunctions of tensed with tenseless sentences will be tensed, while some hybrid disjunctions will be tenseless. That is,

(28) John was a bachelor & bachelors [are] unmarried

will be tensed, since it will be false prior to John's birth and true after his death. But

(29) John was a bachelor *or* bachelors [are] unmarried

will be tenseless, since the second disjunct, and hence the whole sentence, must be true whenever it is produced. Hybrid disjunctions with false tenseless components, of course, will be tensed, since the truth value of the whole disjunction will hinge on the truth value of the tensed component. And hybrid conjunctions with false tenseless components must always be false, and hence tenseless.

Misgivings about this situation would probably be due to a belief that, however we decide to classify compound sentences with tensed and tenseless components, we should not do so on the basis of the kind of connective in the sentences. That is, such hybrids may be called all tensed, or all tenseless, but they should fall within the same category. This is not a decisive objection to this version of the *FR* thesis, but it is a peculiarity we might want to avoid.

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In any case T_1 has more serious deficiencies than those just recounted. Consider the following sentences:

- (30) John was a married bachelor.
- (31) Nobody has squared the circle.
- (32) I do not exist.
- (33) John will have won the race before [*date*].

Each of these sentences counts as tenseless according to T_1 , since replicas of these sentences must all have the same truth value. (30) and (31) are necessarily false and true, respectively, but they are also apparently tensed. And while such sentences are admittedly unusual, that should in no way count against their being tensed.

The pragmatically paradoxical (32) is more than a bit unusual. But again, that is no reason for refusing to consider it, especially since we would not hesitate to count

- (34) I did not exist
- (35) I will not exist

as tensed.

(33) is considerably less extraordinary than (30)-(32). But it, too, turns out to be tenseless according to T_1 . Clearly, if (33) is true (or false) at one time, it must be true (or false) at all times, even though the temporal location of the event of John's winning the race with respect to the time of production of (33) changes with each successive replication. There cannot be one time at which it will be the case that it was the case that John wins the race before [*date*], and another time at which it will be the case that it was the case that John does *not* win the race before [*date*].

Against this, someone might argue that sentences in the grammatical future perfect are rather strange. A sentence like (33) cannot be uttered appropriately on as many occasions as a sentence in a simple tense, like "Caesar crossed the Rubicon." For this reason (so the argument would proceed), it seems pointless to talk about the truth values of replicas of sentences in the future perfect tense, since the contexts in which such sentences can be uttered coherently are so specialized that most of their replicas

are likely to be nonsensical. Although "Caesar crossed the Rubicon," if uttered indiscriminately, might occur as a *non sequitur* in most contexts, it can nevertheless be understood out of context. (33), on the other hand, cannot even be understood unless it is uttered before (or possibly on) [*date*] and is preceded by a remark like "I hope John will win the race before I leave the country."

But all tensed sentences, it seems to me, are in the same boat pragmatically, though of course not to the same degree, and this line of reasoning confuses some issues in the *pragmatics* of tensed sentences with semantical issues. In general, to determine the sense or truth value of a sentence *S* it is not necessary to determine first how *S* is understood within a specified context of production. For example, "Caesar crossed the Rubicon" might seem to be a strange remark to someone who did not know whether the name "Caesar" denoted, regardless of the time of its production relative to Caesar's lifetime. Of course, *before* Caesar's birth we are inclined to think that a replica of "Caesar crossed the Rubicon" is particularly odd, since Caesar is not yet born at that time. But it is a mistake to regard this interesting kind of epistemic impoverishment as a problem of semantics. We might be unable to understand or determine the truth value of a sentence for a variety of reasons, one of which might be that the state of affairs reported or mentioned in the sentence is in our future, or that the sentence contains the name of a not-yet-existent individual. But there are much more mundane circumstances in which we might not know or have access to the information required to determine a sentence's truth or falsity. And in none of these cases are we justified in supposing that such sentences are neither true nor false, simply because we are incapable of determining their truth value.

In general, then, although we may have difficulty understanding or determining the truth value of a sentence from within a given context of production, that sentence can nevertheless have a truth value at that time. Similarly, at some time *t* we may not know the truth value or even understand a sentence in the future perfect tense. But that sentence can nevertheless have a truth value at *t*. For example, (33) will seem ordinarily

intelligible to a person who does not know what the date is, while to a person who knows that the date before which the race is said to occur is itself in the past, the sentence may seem rather peculiar.

To anticipate another objection, some philosophers would argue that "Caesar crossed the Rubicon," produced before Caesar's birth, is neither true nor false, since at that time the name "Caesar" does not even denote. But we must guard against exaggerating the importance of our current positions in time. Names can denote and descriptions can pick out individuals that do not exist at the time of their production, and there is no semantic difference in principle between naming individuals that previously existed and naming individuals that do not yet exist.¹⁴ At a given time, of course, we may not know whether a name or description denotes or picks out some individual, and accordingly we may have difficulty determining the truth value of a sentence containing that name or description. It may be difficult now, for example, to determine that a past-tense sentence about an as-yet-nonexistent individual, like

(36) Nixon's oldest great-grandson was an atheist

is false, *if* we do not know whether the individual exists. But that sentence is false now irrespective of these epistemic considerations.

Another kind of sentence which appears tensed yet which counts as tenseless according to *T1* we may call "omnitemporal." An omnitemporal sentence is a disjunction consisting of three tensed disjuncts, which differ only in that one is in the past tense, one is in the present tense, and one is in the future tense. Such a sentence might therefore have the form

(37) $S\phi'd$ or S is ϕ ing or S will ϕ .

Alternatively, we might abbreviate this by prefixing the present-tense component with the disjunctive tensed operator, "It is,

¹⁴ I am aware that some philosophers would regard this claim as controversial, but I cannot undertake a defense of this position here. It is worth mentioning, however, that naming not-yet-existent individuals is rather commonplace. For example, the names of the first 21 hurricanes for at least the next five hurricane seasons are now known, even though it is not known at this time whether those names have any referents.

was, or will be the case that" Clearly, if an omnitemporal sentence S is true (or false) at one time, it is true (or false) at all times. But what suggests that at least some omnitemporal sentences are tensed, in addition to all the components of such sentences being tensed, is that these sentences exhibit a kind of semantical variability characteristic of tensed sentences and rather unlike that of what we have taken so far as paradigm tenseless sentences. Although omnitemporal sentences have stable truth values, some omnitemporal sentences are true at different times in virtue of the truth of different components. Thus, prior to S 's only ϕ ing, (37) is true because the future-tense component is true. But after S 's only ϕ ing, (37) is true because the past-tense component is true. Thus, while the truth value of an omnitemporal sentence never changes, any omnitemporal sentence that does not report an eternal or a perpetually recurring event is such that the truth values of its *components* change with time.

Consider, on the other hand, a tenseless disjunction of the form

(38) E_1 [is] earlier than E_2 or E_2 [is] earlier than E_3 .

If only the first disjunct (say) of (38) is true, (38) will always be true in virtue of the truth of that component. Not only do paradigm tenseless disjunctions have constant truth values but, unlike some omnitemporal sentences, the truth values of their components do not change with time.

IV. TENSED SENTENCES AND CHANGE OF SENSE

Another version of the *FR* thesis appears to have been endorsed by Goodman.¹⁵ According to this version of the thesis, a sentence S is freely repeatable if and only if every replica of S *translates* (or has the same sense as) S . Moreover, every tensed sentence "indicates" (this is Goodman's term) the time of its production. Thus a replica of

(1) John was fat

¹⁵ *The Structure of Appearance*.

would not be a translation of a previous occurrence of the sentence, since the sense of a particular occurrence of (1) would be exhibited more fully as

(1') John [is] fat earlier than t

where t is the time of production of that replica. And another replica of (1) would have the sense of

(1'') John [is] fat earlier than t'

where t' is the time of production of the new replica. Thus, since the sense of each replica of (1) is relativized to its time of production, only simultaneous replications of (1) can translate each other.

Every replica of the tenseless

(39) John [runs] on November 5, 1971

translates every other replica, however, since the tenseless verb does not indicate the time of its production. Thus (39) is freely repeatable.

Goodman seems to recognize (p. 368) that there might be non-repeatable sentences that are not tensed—namely, tenseless sentences with nontemporal indexical expressions like “here,” replicas of which will not translate other replicas if they are produced at different places. Moreover, if there are such sentences, this poses another problem for T_1 , since a tenseless sentence with a spatial indexical like “here” might be true at one place and time and false at another place and time.

In order to appreciate, however, the different sorts of problems raised by a Goodmanian account of free repeatability, let us simply ignore the very special case of tenseless sentences with nontemporal indexicals, and consider whether we can use such an account to distinguish the remaining cases of tensed and tenseless sentences.

Consider, then, the following thesis.

T_2 : Sentence S is tenseless *iff* it is necessary that $(x)[(x$ is a replica of $S) \supset (x$ translates $S)]$.

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Sentence *S* is tensed *iff* it is possible that $(\exists x)[(x \text{ is a replica of } S) \ \& \ \sim (x \text{ translates } S)]$.¹⁶

*T*₂ at least avoids most of the difficulties besetting *T*₁. Hybrids like (28) and (29) would be tensed, since at least one component changes its sense each time the sentence is replicated. Similarly, all of (27) and (30)-(33), as well as omnitemporal sentences, would be tensed, since their sense changes with each time of replication.

But there remains a very grave problem with *T*₂, and with a Goodmanian view of tensed sentences generally. This problem is that no form of a Goodmanian free repeatability thesis could be used to describe English. It is doubtful, in fact, whether any ordinary language would be properly described by such a view.

The difficulty is that, like a number of other philosophers,¹⁷ Goodman appears to think that tensed sentences contain—if not a genuine though perhaps tacit reference to time—at least something very much like this. Thus he says (p. 365) that tensed sentences “indicate” when they are produced and when what they describe or report happens. It is for this reason that replicas of a tensed sentence produced at different times are not supposed to translate each other; each replica indicates a different time of production.

This view has the disastrous consequence that replicas of a tensed sentence produced at different times cannot have the same sense, since, for example, if I say “Caesar crossed the Rubicon” and then later you say “Caesar crossed the Rubicon,” the sense of each sentence is relativized to a different time of production. This, of course, does not square with the brute facts of ordinary discourse. Nonsimultaneous replicas of tensed sentences *can* have the same sense.

¹⁶ Goodman's explanation of free repeatability employs no modalities, which is curious considering that it is free repeatability he wants to explain.

¹⁷ See Aristotle, *On Interpretation*; J. Buridan, *Sophisms on Meaning and Truth*, trans. by T. K. Scott (New York, 1966); B. Mayo, “Infinitive Verbs and Tensed Statements,” *Philosophical Quarterly*, 13 (1963), 289-297; Quine, “Mr. Strawson on Logical Theory,” *op. cit.*; Russell, *Meaning and Truth*; William of Sherwood, *Introduction to Logic*, trans. by N. Kretzmann (Minneapolis, 1966); Smart, *Philosophy and Scientific Realism*.

I suppose one might take a skeptical view about this and argue that although we may *think* that nonsimultaneous replicas of tensed sentences can have the same sense, an analysis of such sentences shows this to be illusory. It is not unusual for us to be wrong about many "facts" of ordinary life.

But this seems too high a price to pay for a Goodmanian analysis of tensed sentences, or any analysis according to which nonsimultaneous replicas of a tensed sentence must have different senses or meanings. If the semantic variability of tensed sentences can be explained only by denying that ordinary language is coherent, then we should be more willing to accept that result. Fortunately we are not faced with that problem. In Section VI I shall sketch an account of tensed sentences that adequately explains their variability or instability, and which also does not force us to take the above kind of skeptical view of ordinary language.

V. TENSED PREDICATES

An interesting variant of the aforementioned versions of the *FR* thesis is suggested by Massey's remarks on tensed sentences in his *Understanding Symbolic Logic*.¹⁸ Massey claims that the variability of truth values of tensed sentences is explained by reference to the *predicates* in such sentences. Massey calls these predicates "tensed" predicates.

The extension of the predicate "① is a Cretan," when that predicate is taken as tenseless, is the set of all persons who are now, have been, or will be Cretans. But if taken as tensed, the predicate "① is a Cretan" has the set of all Cretans who are now living as its present extension. Notice that the extension of a tensed predicate is relative to time and may differ from one moment to another. For example, Epimenides belonged to the extension of "① is a Cretan" in the sixth century, B. C., but he obviously does not belong to the extension which that predicate has now [p. 404].

¹⁸ *Op. cit.*

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Restricting our attention just to grammatically simple sentences, consider the following thesis:

- T_3 : Sentence S is tenseless *iff* its predicate is tenseless.
Sentence S is tensed *iff* its predicate is tensed.

T_3 has some attractive features. It appears to explain the temporal variability of many ordinary tensed sentences, including such sentences as

- (27) Napoleon won the Battle of Waterloo

all of whose replicas have the same truth value. Moreover, by extending this view to compound sentences, we could also classify tensed/tenseless hybrids. A plausible way to do this would be to say that a compound sentence S is tensed if and only if one of its components is tensed, and that a compound sentence S is tenseless if and only if all of its components are tenseless. Thus

- (28) John was a bachelor & bachelors [are] unmarried
would count as tensed, since the extension of the predicate of the left-hand conjunct can change with time. This would explain, moreover, why replicas of (28) can have different truth values.

The principal flaw with T_3 is simply that some tensed sentences have predicates with nontemporally relative extensions. In particular, we can find quite a few examples of tensed sentences whose predicates must have the null class as an extension. Two of these are

- (30) John was a married bachelor
(31) Nobody has squared the circle.

Clearly, the extensions of “① was a married bachelor” and “① has squared the circle” cannot change with time, since at no time can anyone be a married bachelor or square the circle. Thus the predicates in (30) and (31) and hence the sentences themselves count as tenseless.

More interesting, especially for those who still have qualms about taking analytic sentences as tensed, is that some sentences in the grammatical future perfect tense also turn out to be tenseless on this view. Consider, for example,

- (40) Elephants will have become extinct by the twenty-second century.

Presumably the extension of “① will have become extinct by the twenty-second century” must be the same at all times. In the twentieth century, the extension of this predicate includes all those things that become extinct by the twenty-second century, which is exactly the extension that predicate will have three centuries hence. There is, of course, an epistemological problem in determining the extension of “① will have become extinct by the twenty-second century” before the twenty-second century. But membership in the extension of that predicate is independent of the vagaries of historical research.

Moreover, if the extension of the predicate of (40) could change, then it would be possible that at some time elephants do not belong to the extension of “① will have become extinct by the twenty-second century” and at another time that they *do* belong to the extension of this predicate. Thus the truth value of (40) could change with time. But the truth value of (40) cannot change with time. If elephants become extinct before the year 2100 A. D., then any replica of (40) produced at any time will be true, irrespective of the peculiarity of uttering (40) in certain contexts (that peculiarity being a function of the context rather than the sentence). And if elephants still exist after 2100 A. D., then a replica of (40) will at any time be false. Thus the predicate of (40) is tenseless, even though (40) is tensed.

VI. THE TRUTH CONDITIONS OF TENSED SENTENCES

I should now like to offer what I regard as a satisfactory account of tensed and tenseless sentences. This account satisfies the requirements for a theory of tensed sentences discussed in Section I, and also avoids the problems of the views already considered.

Keeping in mind, then, that I am still considering only declarative sentence-events to be sentences, I shall say that a sentence *S* is tensed if and only if it is necessary that for any two moments of time *M* and *M'* (where $M \neq M'$) replicas of *S*

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produced at those times have different truth conditions. A sentence S will be tenseless if and only if it is not tensed.¹⁹

To see that it is necessary that nonsimultaneous replicas of a tensed sentence have different truth conditions, we need definitions of the truth conditions for the major forms of tensed sentences. There is a variety of ways in which we might state the truth conditions of tensed sentences, but they should not differ significantly from the following.

- (a) A past-tense sentence " S was ϕ " (or " S ϕ 'd") [is] true *iff* during the period of time prior to the time of its production S [is] ϕ (or [is] ϕ ing).
- (b) A present-tense sentence " S is ϕ " (or " S is ϕ ing") [is] true *iff* S [is] ϕ (or [is] ϕ ing) at the time of its production.
- (c) A future-tense sentence " S will be ϕ " (or " S will ϕ ") [is] true *iff* during the period of time after the time of its production S [is] ϕ (or [is] ϕ ing).

Here, the device of bracketing verbs does not indicate that those *verbs* are tenseless. Rather, it indicates that the truth conditions of the simple sentence formed in part by that verb are not relativized to the time of production of that sentence. We may thus retain bracketing as a handy mnemonic device, without embracing the view that verbs are tensed or tenseless.

Schemata (a), (b), and (c) obviously do not cover all the important forms of simple-tensed sentences. Where past-, present-, or future-tensed sentences contain adverbial clauses of the form "at t ," we can make minor adjustments in the above schemata. To take just the past-tense case, we could say

- (d) A past-tense sentence " S was ϕ at t " (or " S ϕ 'd at t ") [is] true *iff* t [is] a time during the period prior to the time of its production and S [is] ϕ at t (or [is] ϕ ing at t).

Obvious modifications of (d) would be required if, instead of the modifier "at t ," we had used "before (after) t ." For example,

¹⁹ The modality in this definition is best understood as *logical* necessity, where by "It is logically necessary that p " I mean that p is either a substitution instance of a logical theorem or is inferred from such by the use of explicit definitions for its nonlogical expressions.

- (e) A future-tense sentence “ S will be ϕ after t ” (or “ S will ϕ after t ”) [is] true *iff* during the period of time after the time of its production and also later than t , S [is] ϕ (or [is] ϕ ing).

The rather subtle respect, then, in which a tensed sentence changes truth conditions from moment to moment is that what counts as the time of (or the period of time prior to or later than the time of) a sentence’s production at M is not what counts as the time of (or the period of time prior to or later than the time of) production of that sentence of M' . Thus, for example, when M is earlier than M' , the truth conditions at M of the past-tense sentence “ S ϕ 'd” are not identical with the truth conditions of that sentence at M' , since the period of time in which S must ϕ for the sentence to be true varies from M to M' . In fact, if the only time S ϕ 's is at M , then “ S ϕ 'd” would be false at M , though true at M' . In some cases, therefore, not only the truth conditions, but the truth *value*, of replicas of a tensed sentence will differ. And, of course, this is a phenomenon which any satisfactory theory of tensed sentences must explain.

There may, of course, be nontemporal respects in which the truth conditions of two sentence replicas differ. If the sentence contains, say, a spatial indexical like “here” or the personal pronoun “I,” replicas of the sentences produced at two different places or by two different persons will have different truth conditions. If these replicas are further produced at different times and are tensed, then there must be another respect in which the truth conditions differ. Thus the truth conditions of

- (41) The murder took place here
 (42) I lost my shoe

can vary from place to place (in the first case) and from person to person (in the second). But what indicates that these sentences are tensed is that their truth conditions must change from moment to moment even if they are always produced, respectively, at the same location and by the same person. (41), for example, is true if and only if in the period of time preceding its production, a murder occurs at the place where it is produced. And since the

period of time counting as the time prior to the production of (41) changes from moment to moment, the truth conditions of (41) vary accordingly.

This view of tensed sentences also avoids the error of supposing that all nonsimultaneous replicas of a tensed sentence differ in sense. Although the truth conditions of, say, the past-tense " $S \phi'd$ " are such that S must ϕ prior to its production for the sentence to be true, it is not being claimed that " $S \phi'd$ " means " $S \phi$'s (tensed *or* tenseless) prior to t ," where t is the time of its production, and hence that nonsimultaneous replicas of " $S \phi'd$ " must differ in sense. Of course, this is compatible with the facts of ordinary discourse. If you say "Cincinnati lost the 1970 World Series," I can later produce a replica of that sentence having the same sense, even though the truth conditions of these sentence replicas differ in the minimal respect noted above.

Let us now examine some sentences that proved troublesome for certain of the previously considered accounts of tensed sentences. To begin with, tensed/tenseless hybrids are tensed on this view. For example,

(43) John was fat *or* 7 is a prime number

is tensed, since it is true if and only if during the period of time prior to its production John is fat, or 7 is a prime number. And since what counts as the time prior to the time of production at one moment is not identical with the time prior to the sentence's production at another moment, the truth conditions of (43) must change in the same way as do those of other tensed sentences.

We can also preserve, on this view, the distinction between tensed and tenseless analytic sentences. Consider

(30) John was a married bachelor.

Even though its truth value remains invariant through time, the truth conditions of its replicas vary in the same way as do those of more ordinary tensed sentences. If (30) is to be true at all, John must be a married bachelor prior to the time of its production, and this time changes with each moment of production. But of course John can never be a married bachelor. Thus (30) will be false whenever produced.

Moreover, it is important to distinguish sentences like

(31) Nobody has squared the circle

(44) Nobody is squaring the circle

from their tenseless modal variants, like

(45) Nobody can square the circle.

Our language is rich enough so that we can indicate not only that something *failed* to happen, or *is failing* to happen, but that it *cannot* happen at all, and we can make these distinctions both with respect to things which can happen and also to those which cannot.

But (31), (44), and (45) are all true, and it is tempting to say that (31) and (44) are true *because* (45) is true. But this is rather misleading, since it might be taken to suggest that all three sentences have the same truth conditions. (44) is true, however, because nobody is squaring the circle while it is produced, just as

(3) Mary is frowning

is true if and only if Mary is frowning while it is produced. Of course the reason why nobody is squaring the circle while a replica of (44) is produced is that nobody *can* do so. But this does not indicate that (44) and (45) have the same truth conditions. After all,

(46) Nobody has seen a live trilobite

(47) Nobody is seeing a live trilobite

are both true, given the facts of paleontology. In fact, these two sentences are true *because*

(48) The extinction of trilobites antedates Man's appearance on Earth

is true. Yet we would not say that (46)-(48) all have the same truth conditions, even though in this one sense they are true for the same reason. Nor, presumably, would we make the analogous claim with respect to (31), (44), and (45).

Another class of sentences, some members of which were problematical on earlier accounts, is the class of sentences in the

future perfect tense. All sentences in this class count as tensed on the view being considered. It is very difficult to state the truth conditions for future-perfect tense sentences in general, since such sentences seem incomplete without prepositional phrases like "before (by) *t*," and since the forms such truth conditions take will be determined by the substituends for "*t*." Often, *descriptions* of times, rather than names of times, serve as substituends, and the grammatical structure of these descriptions is typically correlated with the conditions under which the sentences containing those descriptions are satisfied.

Consider

(33) John will have won the race before [*date*].

(33') John will have won the race by the time I get to Phœnix.

(33), it seems, is true if and only if prior to some time after the time of its production, John wins the race before [*date*]. And irrespective of certain pragmatic problems regarding the oddity of producing (33) at certain times, (33) is satisfied so long as John wins the race before [*date*] at *any* time relative to the time of its production.²⁰ (33'), on the other hand, seems satisfiable only if my getting to Phœnix is later than the time of the sentence's production. (33') is true if and only if I get to Phœnix during the period of time after its production, and John wins the race by that time.

Nevertheless, I think we can see that the truth conditions of future-perfect tense sentences are relativized to the times of their production, like other tensed sentences. At some point in stating those truth conditions, reference will be made to the time of, or the period of time prior to or later than the time of, the sentence's production, and that time must change from moment to moment.

²⁰ Someone might be tempted to argue that these truth conditions are really those of the omnitemporal sentence

(α) John won, is winning, or will win the race before [*date*]

rather than the truth conditions of (33). But this would be a mistake, since the present-tense component of (α) fails to mention a victory. We cannot render a sentence like (33) omnitemporally, because a winning of a race cannot be reported in the present tense of "to win." The present-tense sentence "John is winning the race" says only that John is in the lead.

Omnitemporal sentences also count as tensed on this view. Since each disjunct in

(37) $S \phi$ 'd or S is ϕ ing or S will ϕ

is a tensed sentence, the truth conditions of these components must change from moment to moment. And since the truth conditions of the components of (37) must change, (37) is likely to be true at different times (if true at all) in virtue of the truth of different components, unlike a paradigm tenseless disjunction.²¹

This seems to indicate that the truth conditions of the entire sentence change. But unlike an ordinary simple-tensed sentence, whose changing truth conditions determine *when* it is satisfied, the changing truth conditions of an omnitemporal sentence determine *how* it is satisfied at the time of its production. (37) is true if and only if $S \phi$'s at the time of its production, or at some time prior to or later than the time of production. And since for each successive replica of (37), different periods of time will be the time of production and the times prior to and later than that, the periods of time in which what the sentence reports must occur for the sentence to be true must change from moment to moment.

But the manner in which a sentence like

(38) E_1 [is] earlier than E_2 or E_2 [is] earlier than E_3

is satisfied does not depend on *when*, relative to the time of its production in general, what it reports occurs. The temporal location of E_1 , E_2 , and E_3 relative to the time of production of (38) does not determine how or whether (38) and its replicas are satisfied.

Finally, it is interesting to observe that what many philosophers regard as paradigm examples of sentences appropriate for a revisionary tenseless language turn out to be tensed. Quine,²² for example, would regard either

²¹ Cf. pp. 200-201 above.

²² *Word and Object*.

(49) $(\exists t)(t$ [is] earlier than *now* & John [is] fat at t)

(50) John [is] fat earlier than *now*

as tenseless reformulations of

(1) John was fat.

And other philosophers have suggested similar translations, replacing "now" with token-reflexive expressions like "this utterance."²³

But the truth conditions of either version of (50) are just those of (1). Both sentences are true if and only if John is fat during the period prior to the time of the sentence's production, and this time changes from moment to moment. Moreover, the first conjunct in either version of (49) is tensed, since it is true if and only if t is a time during the period prior to its production (which time changes from moment to moment). (49) is therefore a hybrid, and thus tensed.

Furthermore, both (49) and (50) exhibit the truth value variability of (1). At a time prior to John's birth (or the onset of his girth), all three sentences are false, although they would be true after fat John's death. These sentences would be rendered tenseless, however, by substituting a date for "now" or "this utterance," as in (6).

These results should not be surprising, since it is by means of such temporal adverbs as "now" that tensed sentences are formed in languages without inflected verbs, like Chinese and Finnish (where there are no verb inflections for the future tense).²⁴

CONCLUSION

In addition to satisfying the requirements for a theory of tensed sentences presented in Section I, the above account appears to surmount the difficulties seen to beset the major versions

²³ See A. J. Ayer, *The Problem of Knowledge* (Baltimore, 1969), and Smart, *Philosophy and Scientific Realism*.

²⁴ See Y. R. Chao, *A Grammar of Spoken Chinese* (Berkeley, 1968); M. Aaltio, *Finnish for Foreigners* (Helsinki, 1966); M. Lehtinen, *Basic Course in Finnish* (Bloomington, 1963).

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of the *FR* thesis. Of course, as presented, the theory is by no means complete. I have avoided discussion of issues the adequate treatment of which would have required lengthy digressions to other thorny matters—for example, the tenability of a distinction between tensed and tenseless verbs, and the naming of not-yet-existing individuals. Nevertheless, the above presentation should enable us to see how we can explain the peculiar semantic behavior of tensed sentences without embracing untenable views on, notably, the variability of the sense of tensed sentences or the relationship of tensed sentences to truth-value variability.

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