"Advanced Temporalizing" by Daniel Deasy

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1 The B-Theory

Temporal Parity There is no fundamental distinction between present and non-present times.

Propositional Eternalism Every proposition is if true always true.

Remarks:

1. Strictly speaking, for B-theorists something is a time only relative to a frame of referencegiven the Special Theory of Relativity, there is no non-frame-relative foliation of spacetime into hyperplanes.

2. Propositional Eternalism is consistent with the view that there are 'temporary propositions', which are properties of times. Propositional Eternalism should be read as the view that for all x, if x is a proposition, then if x is true, always, x is true—where the predicate 'is true' expresses a monadic property, rather than a dyadic property such as the *true-at* relation between propositions and times.

3. According to the standard B-theoretic account, the predicate 'is the present time' as uttered at the present time n expresses the property of being identical to n, which is a permanent property.

By contrast, A-theorists accept *Temporal Disparity*, which implies *Propositional Temporalism*. (Otherwise, the presentness will be a permanent property 'frozen' at a certain time.) In other words, if you support *Propositional Eternalism*, you are already a B-theorist.

But here is another theoretical commitment by B-theorists:

Anti-tensism Tense operators are metaphysically non-fundamental.[1]

Typically, an important part of the B-theoretic project is to provide (as Sider 2011 puts it) a 'metaphysical semantics' for QTL in the B-theorist's fundamental, tense operator-free language.

Locator The standard tense operators ('P', 'F', 'S' and 'A') are implicit quantifiers over times which restrict the explicit individual quantifiers ('$\forall$' and '$\exists$') in their scope to things located at the relevant time(s). E.g.:

$$P\phi := \exists x(Tx \wedge x < n \wedge [\phi]^x)$$

(For it to be the case that it was that ϕ is for it to be the case that, restricting attention to things located at some past time t, ϕ.)[2]

Here comes the problem of *advanced temporalizing*:

(Non-instantmates) There are non-instantmates.

(Times) There are many times.

(Sometimes Introduction) $\phi \supset S\phi$

2 Redundancy

Deasy's favored view:

[1] But you can be an Anti-tensist while also being a Propositional Temporalist. (Deasy 2015) But you might also be a Propositional Eternalist while supporting that tense operators like 'S' is metaphysically fundamental.

[2] '$[\phi]^x$' is read as equivalent to ϕ but with all quantifiers in ϕ restricted to the occupants of x.

Redundancy For any qualitative sentence ϕ: $P\phi$ and $F\phi$ are equivalent to ϕ.

M-Redundancy For any qualitative sentence ϕ: $\Diamond\phi$ and $\Box\phi$ are equivalent to ϕ.

What is a qualitative sentence? Several explicative options:

- A qualitative sentence is a sentence that expresses a qualitative proposition, and a haecceistic sentence is a sentence that expresses a haecceistic proposition.
- Propositional aboutness
- Linguistic analysis (through examples of singular terms, etc.)

Besides, it is open for B-theorists to decide how to interpret the standard tense operators when the sentences in their scope are haecceistic. (Perdurantist, Endurantist, Exdurantist, etc.)

Problem for *Redundancy* is that it implies:

Qualitative Permanentarianism For any qualitative sentence ϕ, $\phi \supset A\phi$

RB-theory (*Redundancy* B-theory) implies that there is no *de dicto* change (i.e. change in qualitative states of affairs).

So, according to RB-theory, the following is true:

(19) It is always a fact that there are dinosaurs.

because the quantifier in (19) is read as *unrestricted*.

Deasy also claims that the following sentence is not contradictory:

(21) There used to be dinosaurs, but there are none now.

(22) $P(He) \wedge \neg He$

because the tense operator 'P' in (22) in non-redundant, because 'He' is haecceistic. (Question: it seems to require that we do not read a possible worlds themselves as individuals though.)

Deasy's moral: RB-theorists are not significantly worse off than B-theorists who accept Locator when it comes to making sense of ordinary tensed thought and speech. And when it comes to describing fundamental temporal reality, RB-theorists have exactly the same expressive resources as B-theorists who accept *Locator*.

3 Alternatives

3.1 Diver's Extraordinary analysis

Divers (1999, 2002) argues that Modal Realists should hold that the standard modal operators '$\Diamond$' and '$\Box$' are redundant when the sentences within their scope are 'extraordinary', where an *extraordinary* sentence is one whose subject matter is things not all of which are located in a single possible world.

So, a *temporally extraordinary sentence* is one whose subject matter is things such that there is no time at which they are all located:

$$P := (\phi \text{ is temporally ordinary } \wedge \exists x(Tx \wedge x < n \wedge [\phi]x))$$

$$\vee (\phi \text{ is temporally extraordinary } \wedge \phi)$$

But it will make both of the following two sentences true:

(31) Sometimes, it is not the case that I am a sibling.

(32) Always, I am a sibling and there is no time at which b and I are co-located.

3.2 Bricker's analysis

- $\Diamond\phi := \exists x(Fx \wedge [\phi]^x)$
  (For it to be the case that it is metaphysically possible that ϕ is for it to be the case that, restricting attention to things located in some fusion of possible worlds f, ϕ.)
- Interval analysis: $S\phi := \exists x(Ix \wedge [\phi]^x)$
- So, $A\exists xDx$ means that, for any interval of time i, there are dinosaurs located at i, which is false.

(I find the interval analysis (and the falsity of $A\exists xDx$) quite plausible. But Deasy thinks that, given B-theory, the analysis is implausible. But why assume B-theory in the first place in assessing plausibility?)

As Deasy points out, a more pressing issue is that, on the standard B-theoretic account of *truth simpliciter* for sentences, a sentence ϕ as uttered at a time t is true simpliciter just in case ϕ is true relative to t. But under the Brickerian analysis, for some (interpreted) sentences ϕ (e.g. the sentence 'There is [restrictedly speaking] an extended interval of time'), no utterances of ϕ are true simpliciter, even though some (in fact, all) utterances of 'Sometimes ϕ' are true simpliciter.[3]

In Footnote 31, Deasy compared such sentence to the sentence 'The standard metre stick is more than a metre long'. I think this comparison is important. All cases of advanced modalizing/temporalizing involve two different modal operators (and their interactions).

- A possible, supervaluationist treatment: a sentence ϕ as uttered at a time t is true simpliciter just in case ϕ is true relative to every interval i that contains t.
- But in that case, an utterance at the present time n of the sentence 'There are [restrictedly speaking] no dinosaurs' is false simpliciter, as some of the intervals that contain n also contain dinosaurs.
- Bricker's solution: *realism with absolute actualization*

3.3 Parsons's strategy

- $\Diamond\phi := \exists x(Wx \wedge [\phi]^x) \vee \phi$
- $\Box\phi := \forall x(Wx \supset [\phi]^x) \wedge \phi$
- So, $A\exists xDx$ means that, for any time t, there are dinosaurs located at t, and there are dinosaurs, which is false.

[3]The Brickerian analysis is somehow a reversed version of the redundancy analysis and the analysis that rejects sometimes-introduction. But the Brickerian analysis strikes me as more plausible, i.e. a qualitative sentence is never true simpliciter (due to its vagueness?).

But given the Parsons Analyses, the following sentences are both true:

(9) Sometimes, there are many times.

(41) Sometimes, there is exactly one time.

- The analyses imply that it is never the case that there are exactly n times for any n greater than 1. So given the Parsons Analyses, although the number of times varies over time, the number of times there is is never precise (except when it is 1).

3.4 Atemporalist B-theory

Atemporaist B-theory rejects *Sometimes Introduction* (which is the temporal analogue of the widely accepted modal axiom T ($\phi \supset \Diamond\phi$)).[4] This would lead to a stronger version of RB-theory.

But if it didn't matter which tensed sentences were true given the B-theory, there would be no good reason for RB-theorists to restrict Redundancy to qualitative sentences—they could instead accept the simpler thesis of *Total Redundancy*:

Total Redundancy For any sentence ϕ: $P\phi$ and $F\phi$ are equivalent to ϕ.

which implies

Permanentarianism For any sentence ϕ: $\phi \supset A\phi$.

This in effect distinguishes two different kinds of languages, tensed languages (as our natural languages) and tenseless, B-theorist *fundamental* language. If so, the advanced temporalizing challenge is trivial.

Tenseless languages contain 'tenseless quantifiers', i.e. quantifiers that carry no temporal information whatsoever, and so are not even equivalent to a disjunction of tensed quantifiers.

Problems:

[4]Cf. Halbach, V., H. Leitgeb, and P. Welch (2003). Possible-worlds semantics for modal notions conceived as predicates. *Journal of Philosophical Logic 32*: 179–223. Noonan, H. (1994). In defence of the letter of fictionalism. *Analysis 54*: 133–9.

1. Tensed Quantifiers implies that it is impossible for B-theorists to state their characteristic theses in English. Instead, one has to speak the *Eternalese*.[5]

2. But if we can understand and express unrestricted quantifiers, there seems to be no good reason to deny that unrestricted quantifiers can be understood and expressed in English. (Even if unrestricted quantification is in some sense an innovation, English can surely expand to encompass expressions that express the relevant notions.)

4 Some Associated Questions

1. Why does *Redundancy* have to be formulated as about sentences but not propositions? How important are the surface syntactic differences (e.g. when it comes to English vs. Eternalese)?

2. In what sense (if at all) is temporality (and the advanced temporalizing problem) special given a four-dimensionalist reading of time?

3. What are the ramifications of Deasy's redundancy analysis (as opposed to Atemporalist analysis)?

4. As regards the Ontologese / Eternalese: Can we resist such totalitarian Siderian monist semantic rule for quantifiers? If we can, how? It seems indeed *a priori* that, given a privileged system of joint-carving ideology (e.g. the Siderian physicalist, four-dimensionalist view of fundamental semantics), it follows that the (unrestricted) quantifiers must behave accordingly. But the ideology is still metaphysically contingent.

[5] To defend Eternalese, one can (following Sider and contra Hirsch) argue that the unrestricted sense of 'there is' is a highly eligible meaning, and that this eligibility outweighs the principle of charity.

Also, for a language whose most general unrestricted quantifiers (or quantifier-like expressions) do not range over Siderian objects (with unrestricted mereological composition of temporal parts), that language is, according to Sider, metaphysically impossible.