

The A-theory, the B-theory, and Temporal Counterpart Theory

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1. A-theory/B-theory: two questions
2. Propositional eternalism and temporalism
3. Temporal elitism and egalitarianism
4. The primordial objection to the B-theory
5. The argument from spacetime
6. Temporal counterpart theory
7. A new kind of A-theory

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Slogans

The A-theory	The B-theory
The present time is metaphysically special.	All times are "on a par".
There are facts about which times are past, present and future, over and above the facts about which times are before which.	There are no such further facts. Pastness, presentness and futurity "reduce" to beforeness and afterness.
Time genuinely "flows" and "passes". There is "objective becoming".	We live in a "block universe".
The facts themselves change.	Change is just a certain kind of pattern in the facts.

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My questions

T1: Are there temporarily true propositions?

- Yes: 'Propositional temporalism'
- No: 'Propositional eternalism'

T2: Is the unit class of the present instant much more natural than those of most instants?

- Yes: 'Temporal elitism'
- No: 'Temporal egalitarianism'

—Why put T2 this way?

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Modal analogues of these questions

M1: Are there contingently true propositions?

- Yes: 'Propositional contingentism'
- No: 'Propositional necessitism'

M2: Is the unit class of the actual world much more natural than those of most worlds?

- Yes: 'Modal elitism'
- No: 'Modal egalitarianism'

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A further question about 'flow'?

Fine: 'Even if presentness is allowed to shed its light upon the world, there is nothing in [A-theoretic] metaphysics to prevent that light being 'frozen' on a particular moment of time.'

1. For each instant t : at t , t is the only present instant.
2. Some instant t is after the present instant.
3. If there is an instant t after the present such that at t , ϕ , then it will be the case that ϕ .
4. So for some instant t that is not present, it will be the case that t is the only present instant.
5. So presentness is not "frozen".

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A further question about "primitiveness"?

The A-theoretic outlook is consistent with regarding 'At some instant t that is after the present, ϕ ' as a *reductive definition* of 'It will be the case that ϕ '.

- So, A-theorists need not regard tense operators as 'primitive' or 'fundamental'.
- If you are determined to construe A-theory as a thesis about fundamentality, it should be the thesis that the fundamental facts undergo change, not the thesis that "change" or any other particular bit of time-related vocabulary *is* fundamental.
- But this thesis is not an optional extra for *my* A-theorists, (assuming they go in for talk about fundamentality).

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Instants: the basic role

(At-F) It will be that ϕ iff at some future instant, ϕ	(At- \wedge) At t , (ϕ and ψ) iff at t , ϕ and at t , ψ
(At-P) It has been that ϕ iff at some past instant, ϕ	(At- \vee) At t , (ϕ or ψ) iff at t , ϕ or at t , ψ
(F-<) At t , it will be that ϕ iff at some t' after t , ϕ	(At- \neg) At t , not- ϕ iff not: at t , ϕ
(P-<) At t , it has been that ϕ iff at some t' before t , ϕ	(Permanence) If at t , ϕ , then always: at t , ϕ

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Elitists should be temporalists

Suppose you think that the proposition, concerning the present instant, that its unit class is more natural than those of most other times is true.

You would have to be mad to think that this proposition is eternally true!

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Temporalists should be elitists

t is accurate := every proposition that is true simpliciter is true at t

Claim 1: There is an accurate instant

- *Argument*: Every instant is accurate at itself. So it is always the case that there is at least one accurate instant). So whenever anyone says that there are no accurate instants, they are wrong.

Claim 2: If temporalism is true, no non-present instant is accurate

- *Argument*: Every instant is present at itself. So when t is non-present, the proposition that t is non-present is true but not true at t .

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Claim 3: Accuracy is the kind of property that makes for naturalness in the class of its instances.

- It is quite easy to refer to
- If you doubt this, take some other changeable natural property, like *being spherical*.
- The class of things that are spherical (*simpliciter*) is natural—more natural than the class of things that will be spherical 1.46 years from now.
- Say that t is *accurate with regard to sphericity* iff the things that are spherical at t are exactly the spherical things. *This* is a pretty natural property.

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Non-factualism and relativism

Non-factualism about non-eternal propositions:

- Propositions change their truth values, but PROPOSITIONS do not
- Some propositions are sometimes true and sometimes false, but no proposition is sometimes FACTUALLY true and sometimes FACTUALLY false.
- The facts change, but the $F^*A^*C^*T^*S$ don't change.

If you can make sense of this ideology, you can use it to resist the argument from temporalism to elitism: only properties whose instantiation is a factual matter make for naturalness.

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The horror of the modal B-theory

<shout, pound table, gnash teeth>

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Is the temporal B-theory horrible too?

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Is this 'the problem of temporary intrinsics?'

No.

- The "primordial objection" is an objection to anyone who denies (e.g.) that *I* am standing *simpliciter* (as opposed to standing at this or that t), or that the Earth is warming *simpliciter*.
- It makes no difference if we posit some *other* entities—our instantaneous temporal parts—and claim that *they* are standing *simpliciter*.
- Also, the problem has nothing to do with intrinsicness. It applies to obviously extrinsic properties like *being surrounded by bees*. It applies to properties which instantaneous temporal parts do not instantiate according to Lewis, like *being a child* and *being a kind person*.

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The manifold hypothesis

Every true proposition is entailed by

- Truths about which spacetime points and regions there are.
- Truths which characterise the (4d) topological and differential structure of spacetime.
- Truths which characterise the distribution of certain physical fields over spacetime.
- An appropriate “that’s all” claim.

AND: the spacetime manifold is *homogeneous*.

- There is no especially natural way to single out a 3d region.
- Thus, nothing like the ‘glow of presentness’, e.g. no natural ‘degree of futurity’ field.

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From the manifold hypothesis to the B-theory

Key Premise: If the manifold hypothesis is true, instants of time are hyperplanes.

1. If the manifold hypothesis is true, no hyperplane has a very natural unit class.
2. So, if the manifold hypothesis is true, no instant of time has a very natural unit class.
3. So, if the manifold hypothesis is true, temporal egalitarianism is true.
 - Officially, temporal elitism only requires the unit class of the present instant to be more natural than those of other instants. But there is no plausible way out here.
 - I’m interested in the strategy of denying the Key Premise.

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Counterpart theorists escape the primordial objection

Lewis escapes the primordial objection to the modal B-theory.

- For him, there is a perfectly good question whether Hubert Humphrey is ever president (absolutely, *simpliciter*), which is quite different from all the questions about whether he is ever president “at *w*”.

Likewise, temporal counterpart theorists escape the primordial objection to the temporal B-theory.

- There is a perfectly good question whether Herman is sitting (absolutely, *simpliciter*), which is quite different from all the questions about whether he is sitting “at *t*”.

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Basic temporal counterpart theory

BTCT

$F\Phi(a) := \exists x(C_F x a \wedge \Phi(x))$

$P\Phi(a) := \exists x(C_P x a \wedge \Phi(x))$

- ‘ $C_F x a$ ’ means ‘*x* is a future-counterpart of *a*’; ‘ $C_P x a$ ’ means ‘*x* is a past-counterpart of *a*’.
- These are placeholders which different proponents of BTCT can fill in in different ways.
- Φ must be qualitative except for one or more occurrences of the singular term *a*.

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What about purely qualitative claims?

The natural extension of BCTC to purely qualitative ϕ :

WILL $\phi := \phi$

WAS $\phi := \phi$

- *Argument:* let *a* be something that has a future-counterpart, and let *F* be a qualitative predicate.
- Then WILL ϕ
 \leftrightarrow WILL $(\phi \wedge (F a \vee \neg F a))$ [by tense logic]
 $\leftrightarrow \exists x(C_F x a \wedge \phi \wedge (F x \vee \neg F x))$ [by BCTC]
 $\leftrightarrow \phi$

All change is *de re* change

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What about multiply de re claims?

First bad idea:

WILL $\phi(a,b) := \exists x \exists y (C_F x a \wedge C_F y b \wedge \phi(x,y))$

WAS $\phi(a,b) := \exists x \exists y (C_P x a \wedge C_P y b \wedge \phi(x,y))$

- Singleton-Herman will fail to have Herman as a member.
- WAS (Herman is asleep and Prop is false), where Prop is the proposition that Herman is asleep.
- There are infinitely many people who have been mothers of Prince Charles.
 - There are infinitely many people who have been identical to Prince Charles.
 - There are infinitely many people who have lived in North America.

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Second bad idea:

WILL $\phi(a,b) := \exists x \exists y (C_F x a \wedge C_F y b \wedge H x y \wedge \phi(x,y))$

WAS $\phi(a,b) := \exists x \exists y (C_P x a \wedge C_P y b \wedge H x y \wedge \phi(x,y))$

- *H* might be something like ‘belongs to the same hyperplane’.
- This does not resolve the Prince Charles problem.
- Any two things, even if they are not *H*-related, will always be *H*-related, and will always have been *H*-related.

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Better idea:

WILL $\phi(a,b) := \exists x \exists y \exists R (FC(R) \wedge Rxa \wedge Ryb \wedge \phi(x,y))$

WAS $\phi(a,b) := \exists x \exists y \exists R (PC(R) \wedge Rxa \wedge Ryb \wedge \phi(x,y))$

- 'FC(R)' means 'R is a future-counterpairing'.
- If we have the notion of an 'n-second counterpart' (for real n), and think that each thing has at most one n-second counterpart, we could understand FC(R) to mean $\exists n > 0 \forall x \forall y (Rxy \leftrightarrow Cnxy)$.
- Suppose Herm1 is Herman's +60-second counterpart, and Herm2 is Herm's +60-second counterpart. Let H1 and H2 be Herm1's and Herm2's qualitative profiles. When Herman has H1, Herm1 will have H2.
- Herman will never be identical to anyone else.

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The picture:

The qualitative facts do not change. The haecceitistic facts do change.

- 'Each man in his time plays many parts'.
- There is some good sense in which it makes sense to think of ordinary objects as having "spacetime locations" which are medium-sized 3d regions. Each ordinary object is constantly "moving up the manifold".

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Counterparts and propositional temporalism

We must respect the temporal T-schema:

The proposition that $\phi(a)$ is such that ALWAYS, it is true iff $\phi(a)$.

- This is easy. Just say that for any qualitative ϕ , counterpairing R, objects x and y, and propositions p, q, if Rxy and Rpq , and $p =$ the proposition that $\phi(x)$, then $q =$ the proposition that $\phi(y)$.

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Counterparts and temporal elitism

What plays the instant role?

(At-F) It will be that ϕ iff at some future instant, ϕ	(At- \wedge) At t, (ϕ and ψ) iff at t, ϕ and at t, ψ
(At-P) It has been that ϕ iff at some past instant, ϕ	(At- \vee) At t, (ϕ or ψ) iff at t, ϕ or at t, ψ
(F-<) At t, it will be that ϕ iff at some t' after t, ϕ	(At- \neg) At t, not- ϕ iff not: at t, ϕ
(P-<) At t, it has been that ϕ iff at some t' before t, ϕ	(Permanence) If at t, ϕ , then always: at t, ϕ

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Not hyperplanes!

What could 'at h' mean when h is a hyperplane?

- Suggestion: 'at h, $\phi(a)$ ' means ' $\exists x(x$ is a temporal counterpart of a $\wedge x$ is "located" in $h \wedge \phi(x)$ '.
- But this will give us the view on which infinitely many people have been mothers of Prince Charles, etc. This is not the case on *our* version of temporal counterpart theory!

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A better answer: counterpairings

x is a future instant := x is a future-counterpairing

x is a past instant := x is a past-counterpairing

x is a present instant := x is the identity relation

- Provided that we require that $\forall x \exists y Ryx$ and $\forall x \forall y \forall z ((Ryx \wedge Rzx) \rightarrow y=z)$, this will give us all the role barring Permanence.
- And clearly, the unit class of the identity relation is much more natural than the unit classes of most counterpairings. So temporal elitism is vindicated.

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What about Permanence?

If we accept plausible essentialist claims about mathematical entities, then counterpairings (construed as mathematical functions) do not obey Permanence.

- If we want an ontology of instants, we need to posit them as something new: each instant "corresponds to" a counterpairing, but not always the same one.
- The present instant is the one that corresponds to the *identity* counterpairing. This looks like a natural feature!

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