

TENSELESS CROSS-TEMPORAL RELATIONS

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Abstract

One of the oldest challenges to presentism—the thesis that everything that exists is present—is the claim that present entities may bear relations to past ones. Consider, for instance, the prima facie true statement ‘Clinton belongs to the same political party as JFK’. Some presentists reject the idea that every relation entails the existence of its relata (thereby endorsing a ‘non-serious’ version of presentism), but this seems to involve an ontologically suspicious commitment to Meinongian non-existent entities. An alternative option is to reject cross-temporality altogether: what looks like cross-temporal instantiation is just simultaneous instantiation of some sort. However, rejecting instantiation by non-existing entities is not always a good reason to do away with cross-temporality—consider claims such as ‘my son was shorter at two than my daughter was at two’, which is about two presently existing entities. In a recent article, Berit Brogaard proposes to construe cross-temporal instantiation in terms of irreducibly tensed relations—a position that presentists may be willing to accept. In what follows, I argue that Brogaard’s solution is both likely to be unsatisfying for a ‘serious’ presentist, and it has to face two major problems. Those problems can be solved only if we understand cross-temporality in terms of instantiation of tenseless ordinary relations by temporal parts of ordinary objects. This means that either presentism has to prove compatible with tenseless cross-temporal relations, or it has to be rejected.

I. Presentism and the argument from relations

In the recent literature on the metaphysics of time, there is a wide-spread revival of presentism, i.e. the thesis that, for every entity x

(P) x exists iff x exists at the present time

As a consequence, presentists have endeavored to defend their tenets against old and new objections¹. One of the oldest puzzles that presentism has to face is the so-called argument from relations. Here is how John Bigelow² has it:

Take as a first supposition that, in order for a relation to hold between two things, both those two things will have to exist. Call this the principle that all relations are existence entailing. Add as a further premise the supposition that relations sometimes hold between a present thing and something else which is not present. The conclusion follows ineluctably, that some things exist which are not present.

¹ See SMITH, 1993, HINCHLIFF, 1996, BIGELOW, 1996, MERRICKS, 1999, MARKOSIAN, 2004, CRISP 2005. See also PRIOR, 1970 and CHISHOLM, 1990.

² See BIGELOW, 1996: 37. See also CRISP, 2005.

The argument rests on two assumptions, firstly the principle that all relations are existence entailing (a.k.a. the Principle of Relations)³

(PR) If x, y, z, \dots stand in relation R , then $x, y, z \dots$ exist

and secondly the principle of cross-temporal instantiation, i.e.

(CI) Given a relation R , it is possible that its relata x, y, z, \dots enter R at different times

Consider, for instance:

(1) John admires Ramsey

(2) Clinton belongs to the same political party as JFK.

Certain presentists, such as Hinchliff and Adams, have suggested to abandon (PR), by endorsing a *unrestricted* version of presentism, according to which non-existing entities may nonetheless enter into relations with other entities (and exemplify properties). However, few presentists have turned out to be willing to accept in their ontologies non-existing objects⁴.

An ontologically more parsimonious option is to reject (CI), and to reduce all cases of apparent cross-temporal instantiation to simultaneous instantiation. Consequently, sentences such as (1) and (2) must be, strictly speaking at least, false. Ted Sider and Ned Markosian⁵ have proposed to treat (1) and (2) as quasi-truths—i.e. truths philosophical niceties aside—whose underlying truths—i.e. the truths on which (1) and (2) would supervene, were presentism false—are sentences concerning the properties of the world at different times. Thomas Crisp⁶ has argued that (1) – (2) do not provide very strong evidence for the existence of their non-present relata. Notice, however, that accounting for bearing the relation R to a past, and therefore non-existing object does not imply accounting for the cross-temporal instantiation of R . By rejecting (PR), the presentist is granting that a past entity x may stand in a relation R with a present entity y , and therefore, *one way or another*, x and y instantiate R each at a different time⁷. By rejecting

³ Intentional relations constitute a clear counter-example to (PR), take for instance: ‘Othello loves Desdemona’, or ‘Orson Wells loves Don Quixote’. However, as also Bigelow notice, the argument from relations may rest on a weaker (and far less controversial) assumption than (PR), i.e. the assumption (PR’) that at least certain relations are existence symmetric—namely if one of the terms exists, so do the others. For the argument to go through is enough that at least certain existence symmetric relations are instantiated by entities that exist at different times. Causal relations, for example, yield an instance of the latter.

⁴ See ADAMS, 1986. Moreover, BERGMANN, 1996 and 1999 argues that presentism entails serious presentism—i.e. the conjunction of (P) and (PR). But see also the counter-arguments in HUDSON, 1997.

⁵ See SIDER, 1999 and MARKOSIAN, 2004.

⁶ See CRISP, 2005. Crisp, however, do not think that for a singular proposition about objects $x, y, z \dots$ to be true $x, y, z \dots$ need to exist, therefore he also rejects (PR). Other philosophers that reject (CI) are BIGELOW, 1996 and CHISHOLM, 1990, who revises the logical form of sentences ascribing cross-time relations.

⁷ Indeed no theory of cross-temporal instantiation is presented by Hinchliff or Adams, let apart for the hint at the fact that cross-temporal instantiation is to be intended as an expansion of their favorite theory of instantiation at a time of properties and simultaneous relations.

(CI), the presentist does not need to say anything more on the matter of cross-temporality. However, consider (3), an example by Berit Brogaard

(3) My son was shorter at age two than my daughter was at age two

On the one hand, (3) seems to ascribe to my son and my daughter a cross-temporally instantiated relation, and therefore the presentist should deny that (3) is true. On the other, my son and my daughter are both presently existing entities, and therefore one cannot maintain that (3) is false *because* non-existing entities cannot exemplify properties or enter into relations. A presently existing entity x may have been at a past time t in relation R with a presently existing entity y , which in turn bears now (or at a different past time t') R to z . The problem for the presentist then, is not that something may be now in relation with something that does not exist, but that something may now be in relation with something in the past⁸. But if the presentist allows for there being past instantiations of properties and relations, why should not she allow cross-temporal instantiation?

The quasi-truth strategy partly bypasses this puzzle: in two different moments my son and my daughter exemplified certain properties that—were presentism false—would make (3) true. The presentist may still coherently maintain that no relation is cross-temporally exemplified then. However, a similar solution works possibly for relations that are reducible to the properties the *relata* instantiate at different times—such as (3)—but what about causal or perceptual relations—such as (4)—and in general “external” relations⁹?

(4) I am looking at the sun as it was eight minutes ago

Brogaard proposes a middle-way solution, modifying (PR) and keeping (CI): she proposes to restrict (PR) to ascriptions of *tenseless* relations, but to allow exceptions for ascriptions of *tensed* relations. In other words, she proposes to revise (PR) along the following lines

(PR*) If x, y, z, \dots stand in the tenseless relation R , then $x, y, z \dots$ exist.

Tenseless relations are existence entailing, but tensed relations, likewise tensed properties (such as *having-been-wise*), do not require the existence of the entities that exemplify them, since they do not require those entities to be present. By construing the relation ascribed in (3) as an irreducibly cross-temporally *tensed* relation Brogaard is responding to the presentist problem, and yielding a theory of cross-temporal instantiation at the same time. However, the theory she proposes does not look much appealing for the presentist who is not willing to drop (PR), and moreover has two major problems that are hard to solve. I think that a theory of cross-temporal instantiation in terms of tenseless

⁸ Or the future, but I let this option out in what follows.

⁹ See SIDER, 1999. VAN INWAGEN, 2000 suggests “doing away with” *all* cross-temporal relations by reducing them to the properties exemplified by the *relata* at different times. MARKOSIAN, 2004—following CHISHOLM, 1990—suggests that there is always a chain of simultaneous relations linking the present and the past object.

cross-temporal relations, together with a proper understanding of the metaphysics of persistence, can easily accommodate those puzzles. If tenseless cross-temporal relations are compatible with presentism, then the presentist may try to accommodate them within his metaphysics of time. But if they are not, then the presentist has to find some other solution, and if there is none, it is presentism that has to go.

II. The expressibility problem of the tense theorist

Brogaard takes the *surface* form of (3) to be ascribing a four-place tenseless relation between my son, the times at which he was two, my daughter, and the time at which she was two. The eternalist—who thinks that the past and the future are as real as the present—may be content with a paraphrase given in terms of this relation, but the presentist needs to express quantification over past time implicitly, i.e., *via* tense operators. However, if one can only avail oneself of binary tenseless relations between objects and with sentential tense operators, as also Sider (1999, 2001) and Bigelow (1996) have convincingly argued, then it becomes impossible to formulate a plausible paraphrase of (3). The problem is that standard tense operators cannot catch the fact that the relation *being shorter than* is cross-temporally instantiated, as their standard semantics is sensitive only to properties and relations simultaneously instantiated. To cope with this problem, Brogaard thinks the best solution is to treat cases such as (3) as ascribing irreducibly tensed binary relations. Consider a non-relational claim such as

(4) Sextus was wise.

According to the presentist, the tense in (4) is to be taken as a primitive that says—irreducibly—that *there is a past time at which* Sextus *is* wise. Similarly, then, the presentist would have to take the tensed expression in (3) as a primitive that says—irreducibly—that my son, as he exists at a time at which he is two, stands in the *shorter than* relation to my daughter, as she exists at a time at which she is two. The tensed relation ascribed by (3) can be expressed by use of lambda operators as

(TR) $\lambda x \lambda y$ [*x is shorter now than y was*]

However, this strategy presents us with a general worry and two specific problems. The general worry is that it is not clear how the proposal let us get rid of Meinongian non-existing entities—and therefore a presentist who prefers to reject (CI) instead of (PR) has no reason to endorse it. The friend of tensed properties willing to ground a singular claim such as (4) has to accept properties such as

(TP) λx [*x is a place where Sextus was wise*]

that something now present (the present world, in Bigelow's proposal) exemplifies. But if we do not take 'Sextus' to be an abbreviation for a description, then (RP) is a relational tensed property, namely nothing but a relation between a present and a past entity in disguise. And therefore if x_0 exemplifies (TP) now, x_0 is in relation with a non-existing

entity—Sextus unactualized *haecceitas* presumably¹⁰. The difference between cross-temporal relational cases such as (TP) and (TR) is that (TR) cannot be reduced with the aid of tense operators, whereas (TP) may be further reduced to what was true of the world in the past, for instance the property

(TP*) λx WAS [x is a place where Sextus is wise]¹¹.

But then the strategy of taking (TR) as irreducibly tensed risks to strike back badly. The presentist is free of the charge of admitting non-existing entities only if she further reduces (TP) to (TP*), and since Brogaard takes (TR) to be primitive, she has not got rid of the no longer existing entities that may exemplify (TR).

III. Brogaard's tensed relations

Let us focus now on Brogaard's proposal. A first problem with it is that (3) seems to ascribe a relation that is instantiated at different times by the terms, but (TR) is instantiated *simultaneously* by my son and my daughter. If (3) is true, then (TR) holds in the past between my son and my daughter. Let us call t the time at which my son is two and t' the time at which my daughter is two (with $t < t'$). When is (TR) instantiated by my son? The answer is straightforward: at t , when my son was two. When is it instantiated by my daughter? Not at t' when my daughter was two, because the relation is past-tensed in the second position, and at t' it may well be the case that further in the past she had been shorter than my son was at t' . It is rather at t again that my daughter was at t' such that she had been shorter than my son at t ; but then my son and my daughter instantiate (TR) at the same time, and Brogaard is committed to a denial of (CI) anyway¹².

Brogaard may still protest that she is not denying (CI), but rather she is giving a theory of cross-temporal instantiation in terms of relations that are cross-temporally *tensed*: (TR) takes the first and the second terms as they are in the present and in the past respectively, and it cannot be reduced to the properties instantiated by those terms at different times—this is all that it takes for a relation to be cross-temporally instantiated. However, understood in this way (TR) does not suffice to paraphrase (3) correctly, since it does not distinguish among the different moments in the past we have to consider the second term. My son at two (at t) may be (a) shorter than my daughter was at two (at t'), but (b) taller than she was at one (at t''). But if my son and my daughter both instantiate (TR) at t because (a) is true, then they also do not instantiate (TR) at t , if (b) is true. One may

¹⁰ See ADAMS, 1986 and the arguments in MARKOSIAN, 2004 against the postulation of unactualized *haecceitates*.

¹¹ This is a simplification of the strategy in CRISP, 2006 against Sider's objection that tensed properties are irreducibly hypothetical. Crisp reduces past-tensed properties to the properties of being included in earlier times—where the times are construed *ersatz-wise*. But, as also Brogaard stresses, cross-temporally tensed relations cannot be so reduced.

¹² Alternatively, we may take the relation in question to be (TR') $\lambda x \lambda y$ [x was shorter than y has been]. In this case, the relation is instantiated at the time of speech, but again simultaneously by the two terms. This general ambiguity of past tenses (See MARKOSIAN, 2004) does not affect my point here. This has become clear to me thanks to a discussion with Berit Brogaard.

protest that the expression ‘ x is shorter than y was’ is ambiguous with respect to the time we are considering the second term¹³. But then to disambiguate similar expressions and to paraphrase *unambiguous* expressions such as (3) we need to have qualified tensed relations such as

(TR*) $\lambda x \lambda y$ [x is shorter now than y was at t]

and admit for every t a tensed relation irreducible to the properties of the *relata*. (TR*) is then a schema yielding definitions of tensed relations. Definitions of properties or relations have a purpose if they allow us to explain relationships among those properties and relations that we would have to postulate otherwise. For instance, if we define tensed monadic relations in tense-logical terms, as in

(TP₁) λx [x has always been P]

(TP'₁) λx [x was P]

by endorsing a well-behaved theory such as Prior’s tense logic, we will be able to explain many relationships between properties and relations. For instance: whatever has (TP₁) at t also has (TP'₁) at t . Unfortunately, an analogous situation is unlikely to come for tensed cross-temporal relations. As Brogaard rightly remarks, cross-temporal tensed claims are not expressible in tense logic language, nor are qualified cross-temporal tensed claims¹⁴. We will have then to posit a postulate for every relationship among the cross-temporal tensed relations we define. For instance, the definitions cannot by themselves account for that fact that if x and y exemplify the following relation at a time t_0

(TR[#]) $\lambda x \lambda y$ [x is shorter now than y has always been]

they also exemplify at t_0 many instances of the schema (TR*). In order to account for that fact we would have to postulate it explicitly. But then we would have to face a proliferation of *ad hoc* postulates, one for each time instant t , making the theory explanatorily empty.

IV. Tenseless relations and cross-temporal instantiation

Let us see now how things work with tenseless relations. The main reason for Brogaard not to introduce tenseless relations to account for the truth of (3) seems to be that quaternary relations cannot be reduced to binary ones. Her argument goes along the following lines:

(a) A sentence like (3) has the form of a quaternary relational statement linking a time and an ordinary object to another time and ordinary object.

¹³ AS PARTEE, 1973 has noted, this kind of ambiguity is typical of tenses in general.

¹⁴ The problem does not vanish if we use *metric* tensed relations such as ‘ x is P n time-units ago’. Cross-temporal metric relations are not expressible in the language of metric tense logic. See PRIOR, 1967.

(b) An ordered pair consisting of an ordinary object and a time cannot be reduced to a single entity.

Therefore:

(c) The form of (3) cannot be reduced to a binary relational statement.

This argument is sound only if we reject the thesis that ordinary objects have temporal parts. If we allow ordinary objects to have temporal parts, we have a simple recipe to reduce an ordered pair consisting of an object x and a time t to a single entity, and therefore (b) is false. Here is the recipe:

$\langle x, t \rangle =_{df}$ the temporal part of x existing at t

Once we admit temporal parts, the reduction of quaternary relations such as (3) to binary relations is possible. By introducing a functor ‘...-at-...’ from objects and times to their corresponding temporal parts, we can paraphrase (3) using only tenseless binary relations and quantification over instances, i.e.

(5) There is a time t^1 such that my son is two at- t^1 and there is a time t^2 such that my daughter is two at t^2 , and my-son-at- t^1 is shorter than my-daughter-at- t^1

And more generally a claim ascribing a n -ary relation R to $x, x_1 \dots x_n$ at the (possibly distinct) times when certain conditions $\phi, \phi^1 \dots \phi^n$ hold true of each, respectively (e.g. ‘when she was a student’, ‘at five’) can be paraphrased as:

(6) There is a time t such that x is ϕ at t , and there is a time t^1 such that x_1 is ϕ at t^1 , ... and there is a time t^n such that x_n is ϕ^n at t^n , and $R(x\text{-at-}t, x_1\text{-at-}t^1, \dots, x_n\text{-at-}t^n)^{15}$.

According to those paraphrases, the relations ascribed in statements such as (3) are instantiated at different times by the terms. An ordinary object x instantiates a property P at a time t if the $x\text{-at-}t$ has (tenselessly) P . Analogously, a relation R^n is instantiated among n objects in different positions by holding among suitable temporal parts of those objects. For instance, a binary relation such as *being taller than* is instantiated by two persons insofar as it holds between a temporal part of the taller person in the first position and a temporal part of the shorter person in the second position. The *relata* need not be simultaneous: the same relation may be instantiated by different objects at different times, it will then hold among non-simultaneous temporal parts of the objects that instantiate it. In general:

¹⁵ The presentist may accommodate those quantifications over times—following PRIOR, 1969a and 1969b—embedding them in a tense operator such as ‘it is always the case that’. She would thereby solve the problem of non-existing entities exemplifying properties and relation in her usual way, since her modal talk is not usually taken to be ontologically committing. The use both of quantification over instants, and tense operators may sound a bit odd, but if we allow expression such as ‘at t ’ and/or ‘when I was a student’ in a *tensed* language, it is if not unavoidable, at least standard. See also PRIOR (1968).

(Inst) x_1, x_2, \dots, x_n instantiate R^n at t^1, t^2, \dots, t^n (in their respective position) iff $R^n x_1\text{-at-}t^1, x_2\text{-at-}t^2, \dots, x_n\text{-at-}t^n$

Tokens of tensed expression types are paraphrased by exploiting reference to the time of utterance and the ordering relation of earlier and after between time instants. For instance, (7) (uttered at t_0) is paraphrased as (7'):

(7) x is now taller than y was
(7') $\exists t' < t_0$ ($x\text{-at-}t_0$ is taller than $y\text{-at-}t'$)

The ambiguity with respect to the time at which we are considering the second term can be treated as a contextual restriction over quantifiers¹⁶. Tokens of qualified tensed expression types (uttered at t_0) are paraphrased analogously:

(8) x is shorter now than y was at t
(8') $x\text{-at-}t_0$ is shorter than $y\text{-at-}t$
(9) x is shorter now than y has always been
(9') $\forall t < t_0$ ($x\text{-at-}t_0$ is shorter than $y\text{-at-}t$)

We do not need to postulate the relationships among the relations ascribed. (8') logically implies (7'), and (9') logically implies both (7') and (8'), and in general it is clear that explicit quantification over times allows us to explain analogous entailments through the first order-theory of the earlier-than relation $<$ also in cross-temporal cases.

Once we allow for ordinary objects to have temporal parts, we can read cross-temporal claims as ascribing relations instantiated by the arguments at different times. Moreover, we do not need to posit an infinity of postulates to explain why certain relationships hold among them. If the existence of temporal parts is incompatible with presentism, then Brogaard's solution for the presentism is not good enough, given the problems it has. If it is not incompatible with presentism (as Brogaard herself seems to think¹⁷), then it turns out that the problems do not concern the way we conceive of past and future times, they concern, rather, the way we conceive of things persisting in time, and how we understand cross-temporal instantiation.

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¹⁶ See PARTEE, 1973.

¹⁷ BROGAARD, 2000.

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