Of Time and the Two Images

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ABSTRACT

In this paper I argue that the clash of the Sellars' two images is particularly acute in the case of time. In *Time and the World Order* Sellars seems embarked on a quest to locate manifest time in Minkowski spacetime. I suggest that he should have argued for the replacement of manifest time with the local, path-dependent time of the "scientific image", just as he suggests that manifest objects must be replaced by their scientific counterparts.

1. Two Tables

Sir Arthur Eddington began the Introduction to his 1927 Gifford Lectures, *The Nature of the Physical World*, with a classic, but now little read, presentation of a philosophical puzzle:

> I have settled down to the task of writing these lectures and have drawn up my chairs to my two tables. Two tables! Yes; there are duplicates of every object about me – two tables, two chairs, two pens....
> One of them has been familiar to me from earliest years. It is a commonplace object of that environment which I call the world. How shall I describe it? It has extension; it is comparatively permanent; it is coloured; above all it is *substantial*. By substantial I do not merely mean that it does not collapse when I lean upon it; I mean that it is constituted of "substance" and by that word I am trying to convey to you some conception of its intrinsic nature. It is a *thing*....
> Table No. 2 is my scientific table. [...] My scientific table is mostly emptiness. Sparsely scattered in that emptiness are numerous electric charges rushing about with great speed; but their combined bulk amounts to less than a billionth of the bulk of the table itself. Notwithstanding its strange construction it turns out to be an entirely efficient table. It supports my writing paper as satisfactorily as table No. 1; for when I lay the paper on it the little electric

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> particles with their headlong speed keep on hitting the underside, so that the paper is maintained in shuttlecock fashion at a nearly steady level....
> [T]here is a vast difference between my scientific table with its substance (if any) thinly scattered in specks in a region mostly empty and the table of everyday conception which we regard as the type of solid reality... (Eddington, 1928, p. ix)

The philosophical puzzle can be stated in a simple, almost Seussical, way. Which table is real, Table 1 or Table 2?

In grappling with this question, Wilfrid Sellars constructed a grand and imaginative metaphilosophy, presented in *Philosophy and the Scientific Image of Man* (Sellars, 1963).[1] There are, according to Sellars, two global conceptual frameworks or "images". One, the "manifest image", is the venerable world-view of common sense, augmented by non-postulational scientific reflection. Table 1 finds its home in the manifest image.

Table 2 is a denizen of the "scientific image", an emerging, evolving, unified framework based on (but of course not restricted to) the postulational science that arose in the 19th century. This image differs radically from the manifest image. It paints a different picture of things (broadly construed), as Eddington so colorfully indicated above, and it tells a different story about time, as I will suggest below. But before getting to that topic, we should not neglect the question that is on the floor – which table? That is, which image?

When this question arose, Sellars noted that:

> Three lines of thought seemed to be open: (1) Manifest objects are identical with systems of imperceptible particles in that simple sense in which a forest is identical with a number of trees. (2) Manifest objects are what really exist; systems of imperceptible particles being "abstract" or "symbolic" ways of representing them. (3) Manifest objects are "appearances" to human minds of a reality which is constituted by systems of imperceptible particles. Although (2) merits serious consideration, and has been defended by able philosophers, it is (1) and (3), particularly the latter, which I shall be primarily concerned to explore. (PSIM, p. 26)

Eddington seemed to accept *both* (3) and (1). «I need not tell you», he wrote, «that modern physics has by delicate test and remorseless logic assured me that

[1] I will refer to this essay as PSIM. PSIM was originally given as two lectures at the University of Pittsburgh in December, 1960. My page references will be to the reprinted version in *Science, Perception, and Reality* (1963).

my second scientific table is the only one which really is there...» (1928, p. xiv). Yet later on that page he imagines someone asking him:

> You speak paradoxically of two worlds. Are they not really two aspects or two interpretations of one and the same world?

And he replies:

> Yes, no doubt they are ultimately to be identified after some fashion.

Sellars rejects this second line of thought, his (1), which I heard him once characterize as "the kid-in-the candy-store approach". At first sight, this rejection is mildly puzzling, for after a brief initial description of the two images Sellars says:

> [T]he philosopher is confronted not by one complex many-dimensional picture, the unity of which, such as it is, he must come to appreciate; but by *two* pictures of essentially the same order of complexity, each of which purports to be a complete picture of man-in-the-world, and which, after separate scrutiny, he must fuse into one vision....
> The Philosopher, then, is confronted by two conceptions, equally public, equally non-arbitrary, of man-in-the-world and he cannot shirk the attempt to see how they fall together in one stereoscopic view. (PSIM, pp. 4–5)

Would not a genuine *fusion* of the two images retain the objects of the manifest image as systems of "particles" of the scientific image? Tempting as this idea may be, Sellars thought there was a decisive objection to it. First, systems of objects had to conform to a certain principle, which I will call (R):

> If an object is in a strict sense a system of objects, then every property of the object must consist in the fact that its constituents have such and such qualities and must stand in such and such relations or, roughly, every property of a system of objects consists of properties of, and relations between, its constituents. (PSIM, p. 27)

Sellars famously thought that a (manifest) pink ice cube, an object that is coloured pink through and through, a pink continuum, could not be a system of imperceptible "particles" of the scientific image in a way that satisfied (R).[2] (PSIM, p. 27) Fusion or no, when it comes to ontology, one of the two images must predominate, and it is clear to Sellars which one it has to be.

> [*S*]*peaking as a philosopher*, I am quite prepared to say that the common sense

[2] To appreciate the complexity of this argument, the reader might well consult Hooker (1977).

> world of physical objects in Space and Time is unreal – that is, that in the dimension of describing and explaining the world, science is the measure of all things, of what it is that it is, and of what is not that it is not. (PSIM, p. 173)

What I will suggest in the rest of my essay is that Sellars failed to carry his metaphilosophical ideal through for a central philosophical topic, time. From here on out my discussion will be more speculative and venture into areas that are less well-known, but are no less fundamental, than the familiar territory sketched above.

2. Two Times

The clash between the manifest view of time and the emerging scientific picture of time is, as I see it, stark. In the manifest image the present is a distinguished global hyperplane of simultaneous events. The passage of time is the successive occurrence of such presents.[3] Contrast this with the following remark in Einstein (1949):

> We now shall inquire into the insights of definite nature which physics owes to the special theory of relativity.
> There is no such thing as simultaneity of distant events... (Einstein, 1949, p. 61)

If Einstein is correct, then the legs are simply cut out from under the pre-relativistic concept of time. If there is no distant simultaneity, there are no distinguished 3-dimensional, global sets of simultaneous events. If the passing of time is the successive occurrence of such sets of events, then there is no temporal passage as well.

Here, if anywhere, the two images clash. Here, if anywhere, there is need for philosophical attention. Can the two disparate images of time be fused? It is by no means easy to see how. If «science is the measure of all things, of what it is that it is, and of what is not that it is not» (Sellars, 1956, p. 173), should not commonsense time be consigned to the "what is not" bin and replaced by its emerging, austere scientific successor concept?[4] This is the question I believe

[3] I argue that this is indeed the folk or commonsense picture of time and passage and that it evades the usual *metaphysical* objections in Savitt (2002).

[4] One might also wonder how this replacement could possibly be reconciled with our ostensible experience of time passing. I explored this question in Savitt (1994).

we should have in mind as we turn to Sellars' major treatment of time, *Time and the World Order* (1962, henceforth referred to as TWO).

Sellars acknowledges the centrality of time at the beginning of his essay.

> I have "taken time seriously" since I cut my philosophical teeth on McTaggart's well-known paper on the unreality of time and the attempts of Broad and others to refute him. I soon discovered that the "problem of time" is rivaled only by the "mind-body problem" in the extent to which it inexorably brings into play all the major concerns of philosophy. Here, if anywhere, analysis without synopsis must be blind. (TWO, p. 527)

After indicating the range of topics Sellars thinks is involved in dealing with the "problem of time", he adds a warning:

> As is implied by the dialectical character of the treatment, these topics make multiple appearances, and the "conclusions" of one section are often radically recast in another.

It will be all-too-easy, then, to mistake a provisional dialectical ploy for a final conclusion, so I offer my thoughts on TWO tentatively, even if I express them bluntly, hoping that those with a deeper grasp of Sellars' views will find it worthwhile to explore more deeply, and perhaps more accurately, the topics to follow.

3. Time 1

The first curious things to note is that, despite the fact that Sellars "takes time seriously", the problem of time make no appearance in PSIM. Conversely, the terms "manifest image" or "scientific image" do not appear at all in TWO, even though internal evidence indicates that TWO was written in 1958,[5] just two years before the lectures of PSIM were given in 1960.

Although the terminology of PSIM does not appear in TWO, the paper can be read as structured in terms of its leading ideas. Sections 1–4 of TWO deal with what Sellars calls *the thing framework*, whereas sections 4–8 deal with *the 'event' framework*. Sellars consistently used single quotes to distinguish the 'events' of the second framework from the events in the first.

The basic entities of the thing framework are, naturally enough, things (or substances). The basic way we speak of these things is tensed. We speak about

[5] See the first three numbered sentences in TWO, for instance.

what things are doing, have done, or will do. Given this bedrock tensed discourse about things, we can introduce "episodes". For instance, following a schema developed in Reichenbach (1947, §48), one can introduce events (one kind of episode) by noting the equivalence of, for example,

(1) George VI was {is, will be} crowned

with

(1′) The coronation of George VI took {is taking, will take} place.

Sellars insists that the thing language is basic, the event language derived, though Reichenbach, noting that that there is an equivalence between the two sentences, seems willing to admit either form of discourse as equally basic (in the last paragraph of his 1947, §48). To assert that there are past or future episodes is merely to assert sentences like (1), which are basic to the tensed discourse of the thing framework. But to move from this simple, non-relational tensed discourse to sophisticated, metrical time, we need, according to Sellars, "such locutions as"

(2) Nero fiddled *while* Rome burned.[6]

Unfortunately, Sellars does not say directly what other locutions are like (2) in the relevant way. Since (2) seems to assert that two episodes are simultaneous, one might suppose (following a hint on p. 573 of TWO that will be quoted below) that the other locutions might look like

(2′) Nero fiddled *before* Rome burned

and

(2′′) Nero fiddled *after* Rome burned

yielding the traditional crop of statements expressing McTaggart's B-relations. But Sellars may be *blocking* precisely this way of looking at (2) et al. when he says that «we must not equate statements involving temporal connectives such as "while" with statements formulating temporal relations between episodes» (TWO, p. 522).

Time, and times, are not built up from events or episodes, but rather they are «introduced as a metrical framework» (TWO, p. 552) in which events are then ordered. The framework is, perhaps, overlaid on events, thought there is no discussion of sentences like

[6] This sentence appears as numbered sentence (92) on p. 552 of TWO. Unfortunately, there is another sentence with the same number on p. 549.

(3) The sun is overhead here today 24 hours later than it was overhead here yesterday,

which might have clarified Sellars' intent.[7] What is clear, though, is at the final step things and their activities find their places in the framework of time, so that we can move from statements like

(4) S was Φ_1

to

(4′) S was Φ_1 at t

or

(4′′) S was Φ_1 in 1957.

The picture that Sellars is working with in the framework of events, it would seem, looks something like this.

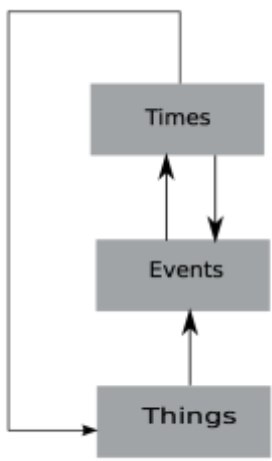

Diagram 1.

[7] But he does later point out that «all metricizing in the framework of things is a matter of the location of *events*...» (TWO, p. 572). As I understand TWO, Sellars maintains that the distinctive contribution of the special theory of relativity is to expand the space of possible metricizings. When this is properly understood, he thinks that the apparent gulf between the two frameworks is bridged.

4. Time 2

In sections 5 through 8 of TWO Sellars discusses the framework of 'events', which is in essence the framework of the special theory of relativity (STR). In thinking of the philosophical aspects of STR, philosophers (and physicists too) often suppose that it requires that 'events' are ontologically basic and that the "real" relations between these events are the relations that are invariant under the Lorentz transformations; but a philosopher who adopts these views is, according to Sellars, «seriously confused» (TWO, p. 567).

Just as in the thing framework, relations between 'events' depend ultimately on our activities and the activities of things about us. We are urged not to lose sight of the fact that

> [T]opologically characterized events, instead of being the concrete reality of the world process, are simply abstract features common to all metrical pictures of the world. The temptation to think of the continuum of events topologically conceived apart from specific metrics as the basic reality which includes these metrics as specific patterns of topological relationship is a mislocation of the fact that the metrical discourse about events is rooted in premetrical tensed discourse in which we talk about doing this or that *while* (*before, after*) other things do this or that in our immediate practical environment. (TWO, p. 573)

I am not quite sure what Sellars means by "metric" in the passage above and by "metrecizing" in the passage to be quoted soon, but I would like to hazard a guess, based on his various uses of the term. Since he uses the plural "metrics", I don't think he is referring (as one would assume nowadays) to the standard Minkowski metric (say, h_{ab} = (-1,1,1,1)). I suspect he is simply thinking of the various was of coordinatizing Minkowski spacetime, using standard Einstein synchrony, relative to different "inertial observers".

Given the well-known basic results of STR like the relativity of simultaneity, length contraction and time dilation, it is often argued that the "real" quantities in Minkowski spacetime are (or are defined in terms of) the invariant quantities like the invariant spacetime interval between points or events in the spacetime. A particularly elegant and influential expression of this point of view was to come a few years after TWO in Stein (1968).[8] Sellars will have none of it.

[8] Though I do not wish to imply that Stein ever makes much ado about the term "real".

> In what sense are space-time intervals "more real" than lapses of time and spatial distances? Only in the sense that the space-time interval between two events is an invariant quantity with respect to the Lorentz transformations, that is, with respect to all the metrecizings into a temporal order of spatially related events. To suppose that it is in any other sense "more real" is, as we shall see, analogous to supposing that events as standing in the earlier-later relations (with respect to a given metrecization) are "more real" than events as past, present, or future (in a given metrecization) because earlier than is invariant with respect to "the changing location of the 'now'".

On this issue I will not take sides. My own laissez-faire view of "is real", expressed at some length in Savitt (2006), is that as long as one is clear as to what the term is meant to include and – most importantly, following Austin (1962, ch. 7) – to exclude, and as long as one uses the term consistently, a given item might wind up in the *real* box given one way of understanding "is real" or in the *unreal* box on another. What is far more important is the fact that Sellars wishes to minimize the difference between the thing and the event framework. Consider the following remark a bit later on in TWO:

> If these considerations are sound, then the idea that, in an 'event' framework, events have a *timeless* existence in which they stand in objective *temporal* relations and constitute a system which includes the perspectival distinctions of pastness, presentness, and futurity as properties relative to points of view located within the system is a mistake. it is the mistake of assuming that a primary temporal picture of the world can be one which does not *use* but only *mentions* the term "now". (TWO, p. 590)

The fact that there are many "nows" in Minkowski spacetime is less a problem for Sellars than the fact that there seem to be no "nows" therein when only the light-cone structure is considered. Put in terms of the diagram we offered above, the 'event' framework in Sellars' view is just like the thing framework except that there will be more reciprocal pairs of arrows connecting the level of events with the level of times, the pictorial manifestation of the multiplicity of new "metrecizings" made available by STR.

This line of thought is reinforced, I believe, by a surprising suggestion that Sellars makes at the end of Part I of TWO[9], when he writes:

> The more one appreciates the systematic character of the difference between

[9] Part II, *Determinism and Truth*, examines fatalism and three-valued logics, a topic I will neglect here *in toto*.

> the framework of things and the framework of 'events', the more one comes to realize that the latter framework is *in the first instance* simply a reaxiomatization of the former, and differs from it only as a Euclidean geometry axiomatized with one set of primitives differs from one which has been axiomatized with another set of primitives. (TWO, p. 594)

While the hedge "in the first instance" is cashed out later in the paragraph by some speculation that matters might be different at «deeper levels of physical theory», the view is misguided even "in the first instance". If theory T′ is a reaxiomatization of theory T, then the two must have the same set of theorems or truths, aside from the fact that a theorem in one theory might be called axiom in the other, and *vice versa*. *This is simply not true for "folk" time or Newtonian time as opposed to special relativistic time*. In particular, time is path-dependent in STR whereas it is not pre-relativistically. In STR the time difference between two timelike separated points as measured by an ideal clock whose worldline contains the two points depends upon the path taken between them, the time difference being longest for a path that represents the trajectory of an unaccelerated object. The path dependence of time is the conceptual basis for the so-called "twin paradox"[10], and it has been measured experimentally.[11] It is a perennially startling feature of STR.

This difference between Time_2 and Time_1 in turn suggests that the guiding idea of Sellars, that primary temporal pictures must contain a "now", a global hyperplane of simultaneous events (or, perhaps, episodes) is not correct. It may indeed be at the root of temporality in the framework of things, but time in STR is a local, path-dependent notion, not a global one. The ideal of fusing these two images seems to underestimate the gap between them. If one has to choose between them, then the relativistic notion must prevail, and jettisoning globality seems to the right way to approach philosophy of time in a Sellarsian fashion, even though it runs counter to Sellars own approach. Time_1 must go the way of table_1.

There is much else in TWO – many subtle reflections on the existence of the past and future and on the intricacy of tensed language. I have focussed here only on the themes in it most relevant to the metaphilosophy of PSIM, hoping that it may stimulate others to think more either about TWO or about philosophy of time in Sellarsian manner.

[10] See Arthur (2010) for a thorough explanation.
[11] See, for example, Hafele and Keating (1972a, 1972b).

But I will add one final reflection. During the time that Sellars was writing TWO, Adolf Grünbaum was composing his long essay, *Geometry, Chronometry, and Empiricism* which appears immediately before it in Volume III of the Minnesota Studies series. Sellars adds in footnote 26 that Grünbaum provided «many helpful comments and criticisms» during the writing of TWO. Since Grünbaum would doubtless differ with Sellars about STR and relativity in general, any notes or records of their discussions could prove illuminating.

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