Replies to Deasy and Maudlin

Bradford Skow

Time is scarce and may be the most valuable thing each of us has (and I don’t mean this in a metaphysical way), so before saying anything else I’d like to thank Deasy and Maudlin for spending some of their time reading my book and writing about it. Reading their contributions was like seeing myself from the outside: I didn’t know my hair stood up that way in the back, and yes, I agree, I would have looked better if I’d worn the blue socks.

Deasy wants to defend the moving spotlight theory, and asks about a version of the theory that I don’t discuss. But let’s start at the beginning. The rough idea behind the moving spotlight theory of time is something like this: if you were to somehow sit next to God and observe the universe, you would see all the events that ever happen laid out in the three dimensions of space and the one dimension of time, and you would see one time shine with a special metaphysical glow, and as you watched you would see that the special glow was moving, in the sense that first one time glowed, and then later a different time glowed. Which time was glowing would constantly be changing.

So could this theory of time be correct? In Objective Becoming (Skow 2015) I said that you need to be careful when arguing against the moving spotlight theory, for really there is no such thing as “the” moving spotlight theory, there are several moving spotlight theories. I described at least three of them (the exact number depends on how you want to count), and said that the theory I called “MST-Supertense” was particularly good. Deasy asks why I prefer MST-Supertense to the theory he calls “Classic MST.”

Comparing the theories requires a clear view of their differences. So what, exactly, do the two theories say the world is like, and where, exactly, do they diverge?

Bradford Skow
bskow@mit.edu

1 Massachusetts Institute of Technology, Cambridge, MA, USA
Let me start with MST-Supertense. Speaking roughly, this theory says that if reality “currently” looks like the left picture in Fig. 1, then “later” it looks like the right picture. In each picture there is a circle that is white at times earlier than 2100, and black at 2100 and later times (it was impossible to draw a copy of the circle for each time, but the circle does indeed exist at every time); in the left picture the solid line at 2018 indicates that (the first instant of) 2018 is “objectively present”; in the right picture, a later instant, the first of 2150, is objectively present. (For simplicity, from now on I’ll use descriptions like “2150” to name, not entire years, but the first instant of the year.1)

But, again, this is only a rough characterization of what the theory says. What exactly does the theory say? It affirms these sentences (among others):

2018 super-is present.
2150 super-will be present.
The circle super-is white at 2018.
The circle super-is black at 2150.
The circle super-will be white at 2018.
The circle super-will be black at 2150.

Of course, this list is not complete by a long-shot. It doesn’t say anything about whether 2100 super-is ever present, or about what color the circle super-was at 2018. But you can see how to go on: in general, the picture on the left shows how things super-are; the picture on the right shows one way that things super-will be;

---

1 If you think that midnight is the last instant of the day that’s ending, rather than the first of the day that’s beginning, and so think that years lack first instants, perhaps on the ground that this view makes best sense of retailers’ preference for beginning sales at 12:01 am, take the descriptions to name the last instant of the year.
and every other way that things super-will be, or super-were, differs from these only in the location of the “line of presentness.”

If you’re new to the conversation, then this list of sentences, rather than helping you see more clearly what MST-Supertense says, might leave you more confused than ever. The verbs “super-is” and “super-will” obviously play an important role in stating the theory. “Super-is” is supposed to be a form of the verb “be,” a form inflected for “supertense.” But what is supertense, and how does it differ from tense, the phenomenon we might read about in a grammar book? What do “super-is,” “super-was,” and “super-will be” even mean? Do they mean anything at all?

It is supposed to be a virtue of Classic MST, the theory that Deasy prefers, that it avoids these questions. It has no truck with supertensed verb forms; it sticks instead with the (ordinary) tensed verb forms we have all been using since before we can remember. No need to learn any new vocabulary in order to understand the theory, and no room for suspicion that the new vocabulary is actually meaningless.

Presumably then if reality “currently” looks like the picture on the left, and “later” looks like the picture on the right, Classic MST affirms the following different list of sentences:

- 2018 is present.
- 2150 will be present.
- The circle is white at 2018.
- The circle is black at 2150.
- The circle will be white at 2018.
- The circle will be black at 2150.

One virtue of Classic MST, as I said, is that it doesn’t go in for any linguistic innovation, and so doesn’t take the chance that it’s new vocabulary fails to mean anything. So why did I decide that stating a good version of the moving spotlight theory required me to invent a new kind of tense (namely supertense)?

The answer is that ordinary tense just won’t do the job that a proponent of Classic MST wants it to do in the statement of his theory.

Look at the penultimate sentence on the second list, “The circle will be white at 2018,” and remember that this abbreviates “The circle will be white on the first instant of 2018.” As I am writing these words it is March, 2018, a time later than the first instant of 2018. Now it is part of how tense in English works that you can’t use “will” together with “at T” when the time “T” denotes is earlier than the time at which you’re using the sentence. “The circle will be white at noon tomorrow” could well be true, and “The circle will be white at 5 pm on New Years Day, 2019” could well be true (now, in March 2018), but neither “The circle will be white at noon yesterday” nor “The circle will be white at 5 pm on New Years Day, 1900” could be true (now). So one of the sentences that is supposed to state what Classic MST says about the situation in Fig. 1 is a sentence that couldn’t be true. Not good! Even if the pictures do not show what reality is actually like, believers in the moving spotlight theory think they show a way reality could be.

Now a natural thing to say about all this, if you like Classic MST, is that tense, in the sentences used to state Classic MST, doesn’t function in the same way it
functions in (ordinary?) English. The rules are different. In particular, the rule that says that time adverbials like “at noon on New Year’s Day, 1900” can’t be used with the so-called “future tense” when the time referred to by the adverbial is in the past (or at least can’t be used with it if you want a true sentence) does not apply.

But once you say that, it’s not clear that Classic MST has any advantage over MST-Supertense. Certainly it’s false that Classic MST, as I’m now interpreting it, has the advantage that it can be stated in English. Now both theories come prefaced with the claim that the tensed verbs in the language used to state the theory do not work in just the way that tensed verbs ordinarily work in English. Proponents of both theories say that English lacks the power to express their theory. Of course MST-Supertense marks the fact that it is not stated in English by using special spellings for the new tensed verb-forms, while Classic MST does not. But don’t be misled: Classic MST is doing the same thing.

Suppose this is right, that in fact the verb forms in the language used to state Classic MST differ in meaning from the English verb forms with which they share a spelling. The obvious next question is: do those verb forms mean the same as the supertensed verb forms used in MST-Supertense, or do they mean something different? If we’re going to compare MST-Supertense and Classic MST, this is the question that needs answering. After all, one possibility is that they’re the same theory, stated in different languages—that “super-is,” as it appears in MST-Supertense, means the same as “is,” as it appears in Classic MST. For my part I suspect that they do mean the same, and so that far from preferring MST-Supertense to Classic MST, I identify them, and so accept them both.

I’ve been talking about the moving spotlight theory, but of course the theory I actually defend is the block universe theory. Deasy accepts the moving spotlight theory, and rejects the block universe theory; I’m on the other side. But Deasy does not just think that I accept the wrong theory, he also thinks I’m wrong about which argument against the block universe theory is strongest. I hold that the biggest challenge for the block universe theory is to explain our experience of the passage of time. Deasy thinks there’s another good argument against the block universe theory, one that has nothing to do with experience. He calls it the Argument from Change. Here it is:

1. There is change over time if and only if there are temporary propositions.
2. If the block universe theory is true, then there are no temporary propositions.
3. There is change over time.
4. Therefore, the block universe theory is false.

To evaluate this argument the first thing I’d like to do is to re-cast it as an argument about a particular change, instead of an argument about change in general. (Partly this is to avoid writing “There is change over time,” the grammaticality of which I have doubts about.) So imagine that there is a ball that is changing color, say from green to blue. I think nothing will be lost by focusing instead on this argument:

---

2 Presumably this involves also saying that devices of time reference that relate to tense, like time adverbials, do not function in the same way either.
1. The ball is changing color only if there are temporary propositions.
2. If the block universe theory is true, then there are no temporary propositions.
3. The ball is changing color.
4. Therefore, the block universe theory is false.

Okay, now premise 3 is true, or so we may assume. What about premise 2? A temporary proposition is one that is sometimes, but not always, true. So are there such propositions, if the block universe theory is true?

Well, in my book I tried to avoid talking about propositions at all. For one thing, it seemed to me that there could be two philosophers, one who accepted the block universe theory, one who rejected it and instead liked the moving spotlight theory, who nevertheless agreed that there were no propositions at all. Those two philosophers aren’t going to think that a core part of their disagreement was a disagreement over whether propositions are temporary. I kind of wanted to formulate the theories of time I wanted to talk about so that those philosophers could accept them.

But for now let me throw my scruples aside. Let’s work with a version of the block universe theory that says that there are no temporary propositions. How can that be? Look at the ball: it’s now a certain shade S of bluish-green, but it is only sometimes that color, sometimes it is green (it was green, for example, a minute ago). Doesn’t it follow that the proposition that the ball is S is sometimes true and sometimes false? No: the version of the block universe theory we’re working with now says that the description “the proposition that the ball is S” denotes different propositions at different times. At a time T, it denotes the proposition that the ball is S at T. So while the description first denotes a true proposition, and later a false one, none of those propositions themselves are sometimes true and sometimes false. (In fact, to even ask whether a proposition is sometimes true and sometimes false is, on this version of the block universe theory, a kind of category mistake. Any given proposition IS either true or false, and if true it IS just plain true, true full-stop, true simpliciter. Truth for propositions is not relative to a time, and if it is not relative to a time, it makes no sense to ask whether a given true proposition is true relative to only some times, or is true relative to every time.)

So I’m going to accept premise 2. This brings us to the first premise of the argument: the ball is changing color only if there are temporary propositions. Why believe that? Deasy says that “it’s not clear that there are any non-question-begging arguments” for the premise. He just asserts the premise.

Okay, Deasy says that this argument is the best argument against the block universe theory. The argument is valid, which is certainly a feature that contributes to making an argument good. But typically good arguments are also arguments for which there is strong support for the premises. Deasy doesn’t offer any support for premise 1; so how can the argument be any good?

Well of course there are many things one might be doing in calling an argument good. Sometimes “that’s a good argument” means “that’s an argument that should

---

3 According to the theory, descriptions like “the proposition that X IS F at T” denote the same proposition at every time.
persuade your opponents,” or “that’s an argument that uses only premises your opponent accepts.” Deasy is clear that the argument isn’t good in either of these senses. In another sense, “that’s a good argument” can mean “that’s an argument the premises of which together are excellent reasons to believe the conclusion.” In this sense any sound argument is good, no matter how implausible the premises are (as long as they are true). If you are lucky enough to already know the premises, then you have excellent reasons to believe the conclusion. If don’t already know the premises, well, tough luck, you’re on your own. Maybe Deasy just means that the Argument from Change is good in this sense. But I think that arguments that are good in (only) this sense are of little interest. Nor are these the only two options. There’s a happy medium: an argument that is good in the sense that it could be used, not to trouble true-believers in the block universe theory, but, say, to persuade agnostics, or cause people who have never before considered the question of whether the block universe theory is true to take a dim view of it.

Deasy writes as if one of his bedrock disagreements with the block universe theory is over the truth of premise 1, but I actually think it lies somewhere else. Consider this “tensed analysis” of “the ball is changing color”:

The ball is changing color iff it is currently one color, was a different color at the time just before this one, and will be a different color at the next time.

Of course, there are problems here: there is no next time, or previous time. Time is continuous. But let’s ignore that complication. The issue of continuity aside, I’d be surprised if Deasy rejected this claim.

Now the block universe theory says that “the ball was color C at T” is true at a time S iff (1) T IS earlier than S, and (2) the ball IS C at T. If you like, we can take the right-hand side of this biconditional to be equivalent to: the proposition that the ball IS C at T IS true. Now this proposition is not a temporary proposition: the proposition IS true (simpliciter), so it IS not true at some times and not others. Analogous claims are true about “the ball will be color C at T.”

Now if we combine these claims with the analysis, we get

The ball is changing color iff certain propositions ARE true.

None of those propositions are temporary propositions. Since this is incompatible with premise 1 of the Argument from Change, Deasy certainly rejects it. Now this claim follows from two things: (1) the tensed analysis of “the ball is changing color”; and (2) the tenseless truth-conditions the block universe theory gives to tense sentences. As I said, I’d be surprised if Deasy rejected (1). So it must really be (2) that he thinks is false, and is the locus of his most basic disagreement with the block universe theory. His most basic objection is that what will be the case is not (to be identified with, or reduced to) what IS the case in the future (and, similarly, what was the case is not what IS the case in the past). Well, why not?

Deasy does at one point say that his objection to the block universe theory parallels an objection to Modal Realism. Ignoring some complications (mainly those arising from de re modal claims), Modal Realism says that
“Possibly, P” is true at spatiotemporal system S iff P is true at some spatiotemporal system or other.

A spatiotemporal system is a thing each of whose parts is spatiotemporally related to each of its other parts. I am part of one spatiotemporal system, and so on this theory when I say “Possibly, there are snoring worms” I say something true iff some spatiotemporal system or other contains snoring worms. Now I’m with those who want to reject this theory without much sophisticated argument. The goings-on in spatiotemporal systems different from the one we inhabit—if there are any!—have nothing to do with what is metaphysically possible; Modal Realism identifies the two; so Modal Realism is false. Calling spatiotemporal systems “possible worlds” makes the thesis look better, but is really a way to cheat: only if you’ve already given us reason to identify what is possible with what is going on in a spatiotemporal system should we think it a good idea to call spatiotemporal systems “possible worlds.”

But the parallel objection to the block universe theory is not nearly as strong; or anyway doesn’t seem very strong to me. To see what it looks like we need a term analogous to “spatiotemporal system.” So let a temporal system be a thing each of whose parts is instantaneous and is simultaneous with each of its other parts. Then the block universe theory’s claim about the past tense can be put like this: “It was the case that P” is true at temporal system T iff P is true at an earlier temporal system. (It’s assuming a lot to assume that things have instantaneous parts; I’m doing it just for convenience, the assumption could be avoided at the cost of complicating the argument.) Okay, here’s the objection to the block universe theory that most closely parallels the objection to Modal Realism that I like:

The goings-on in temporal systems earlier than this one have nothing to do with what was the case; the block universe theory identifies the two; so the block universe theory is false.

I just don’t think this argument is very good. Surely what is happening in a part of reality that is earlier than this part of reality is relevant to what was the case?

As I see it, there is an important difference between Modal Realism and the block universe theory. The block universe theory analyzes tense in terms of quantification over things (“times” the theory calls them, but maybe that’s question-begging terminology at this point) that bear fundamental temporal relations to each other. Modal Realism, on the other hand, analyzes modality in terms of quantification over things—spatiotemporal systems—between which there are no fundamental modal relations. So in Modal Realism, modality has been completely analyzed away. But in the block universe theory, temporality has not; tense has been analyzed away, but temporal relations remain. So maybe the charge that Modal Realism changes the subject is a good one; maybe you can’t analyze the modal in non-modal terms. Even so, the analogous charge does not stick to the block universe theory: while it does have a tenseless analysis of tense, it does not have an atemporal analysis of temporality.

In the book I introduced the terms “anemic passage of time” and “robust passage of time,” saying that if the block universe theory is true, then the passage of time is anemic, and casting about for what opponents of the block universe might want the passage of time to be like if it is to be robust. Maudlin was very distracted by this
terminology (Deasy too): I didn’t give explicit definitions of “anemic” and “robust” as they apply to the passage of time, and the things I said about these terms (and the things I said using them) leave it still unclear just what they mean. Maudlin accuses me of using this unclarity to execute some argumentative slight-of-hand:

Having shifted the burden of explicating “robust change” and “robust passage” off to the opposition, even though they never used this terminology, Skow can now score a victory by simply failing to make sense of a notion that he himself has invented. It’s nice work if you can get it.

Maudlin seems to regard me as a paradigm case of a philosopher who has raised a dust and then complained that I cannot see.

Nothing so sinister as this is going on, though. I accept the block universe theory, and I also think that time passes (and that my theory says that time passes). Various opponents of the block universe theory say that’s false: they say that if the block universe theory is true, time does not pass. I introduced the term “robust passage of time” to denote whatever features opponents of the block universe theory think that time must have in order to pass, features that (they say) time lacks according to my theory. Sure, I don’t give a definitive list of what those features are, but I do say what role those features are supposed to play (in the economy of theories I oppose), and that’s a fair way to introduce a new piece of terminology. Anyway, the “robust/anemic” distinction doesn’t bear much argumentative burden in the book, and I certainly don’t regard my trouble pinning down exactly what robust passage is supposed to be as any kind of victory. For the most part, what I argue for and against are particular theories, like the block universe theory, or the various versions of the moving spotlight theory, not against the existence of “robust passage” in general. (The only exception is my argument for not considering presentism in detail, on the ground that if presentism is true, the passage of time is not robust.)

Maudlin tells us a little about his views about time, and says he’s not sure whether his is a tenseless or a tensed view of time. Well I’m not sure either but maybe the question is worth exploring a little. Let’s say that a tenseless theory of time is one that says that every true tensed claim is true in virtue of a tenseless one; this may not fit every use of “tenseless theory of time,” but it is certainly one standard definition. The block universe theory, as I stated it, counts as tenseless on this definition. What about Maudlin’s view? Well, he writes that

I believe there is* [this is how Maudlin writes the tenseless “is”] a single unique determinate four-dimensional whole of physical events that serves as the truthmaker (together with indexical features of the utterance) for claims like “There were Woolly Mammoths [sic] but there aren’t any anymore” and “There will be fusion reactors supplying energy to houses.”

Well okay “truthmaker” is one of those contested terms in metaphysics, one that I don’t use in my theory. But if Maudlin takes what he says here to be paraphrasable as

(M) “There were woolly mammoths but there aren’t anymore” is true (at this time) in virtue of the fact that there ARE woolly mammoths at times before this one and there ARE no woolly mammoths at this time,
then it looks like he’s on his way to believing the block universe theory. Except for one thing: Maudlin gives us two tensed sentences, and says that they and “claims like” them are true in virtue of tenseless claims. Which are the claims like them? You only get to believe the block universe theory if you think that every tensed claim is true in virtue of a tenseless one. Is every tensed claim a claim like Maudlin’s two examples?

There is one tensed claim that begs for attention here: “Time is passing.” Does Maudlin think that “Time is passing” is true in virtue of some tenseless claim? He doesn’t address this question directly, but he does tell us that “The passage of time is a fundamentally asymmetric feature of time, in virtue of which all motion and change occurs,” and someone who says that strikes me as someone who will answer “no” to my question. If his answer really is no, then he does not accept the block universe theory, and does not have a tenseless theory of time.

I must admit, though, that I don’t understand how the parts of Maudlin’s theory hang together. I take it that if there were woolly mammoths but there aren’t anymore, then in virtue of this fact a change in the number of woolly mammoths occurred. Surely Maudlin accepts this. But Maudlin also seems to endorse (M). Chain together these two in-virtue-of claims and you get out

(X) A changed in the number of woolly mammoths occurred in virtue of the fact that that there ARE woolly mammoths at times before this time and there ARE no woolly mammoths at this time.

Now I derived this from two things that Maudlin seems to endorse, but he seems to explicitly reject it. Remember: “Time passage of time is a … feature of time, in virtue of which all … change occurs.” But in (X) the fact in virtue of which the change in the number of woolly mammoths is said to have occurred does not appear to be one that Maudlin would regard as a fact about the passage of time.

Maudlin writes that “[s]ince I maintain that temporal structure is intrinsically asymmetric and others try to argue against such asymmetry, it is easy to see that there is a real dispute about fact here. But does that make me an adherent of robust passage? I don’t know.” I do: no, it doesn’t. It is perfectly consistent with the block universe theory to say that the ordering of times (or of points along a timelike line in spacetime) into earlier and later is intrinsic. Saying this does not commit you to there being any true tensed claim that fails to be true in virtue of a tenseless claim.

Deasy in his comments offered me a definition of “anemic passage” that I like that maybe helps here. The definition says that the passage of time is anemic iff the following is true: if there is a time later than this one, then in virtue of this fact time is passing. If you want to know whether you are an adherent of robust passage, ask yourself if you think this conditional is true.

Reference

Skow, B. (2015). Objective Becoming. Oxford: Oxford University Press.