



Part A

Human vs. Physical time, or, the
Manifest vs. the Scientific image
of time.

Moral


There is only one time – time as it figures in experience.

Physical time and human time are not two times. Rather, time, the one time, time as it figures in experience, can be studied in more than one way, phenomenologically, and scientifically. And all is well as long as we don't get in each other's way and try to do each other's job.

No issue of reconciling experienced time with physical time. There aren't two times – human and physical.

Time flows. If this is controversial, the controversy is not a scientific one.

If there's a controversy regarding the so called "block-universe", it is not a scientific one.





The essence of Human time is passage, the becoming of future events present and of present events past.



Human time is essential for much of what is significant to us:


- Our emotional attitude toward events is almost invariably dependent on their tensed location.
- Our moral attitude toward events is almost invariably dependent on their tensed location.
- We are concerned not only with our longevity but also, if not more, with not dying soon.

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- Tense/passage is part of (the fundamental structure?) of reality.
 - Change/motion ≠ Cambridge/Russell change.
 - Temporal Direction is intertwined with passage.



Physical time, the time of physics, block-universe time, is tenseless, static, it does not flow, events in physical time are neither future, present nor past.

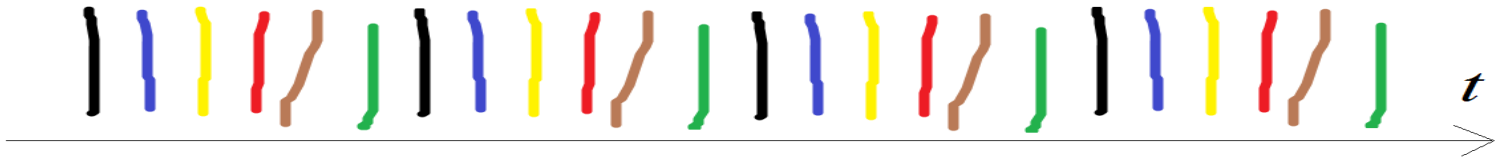
(From the viewpoint of physical time, only longevity matters, and giving weight to the tensed location of events (whether the root-canal process will happen tomorrow or was completed a month ago) is irrational)




It is debatable whether time as it figures in physics is temporally directed (and not due to TRI).

Internal direction *of* time

External direction of events *in* time





Direction is notionally inextricable from passage, and passage does not figure in any way in physics, so, in some sense, direction (internal and external), cannot be captured by physics.


“On the elementary level nature is not organized in terms of evolution in time”.

Part B

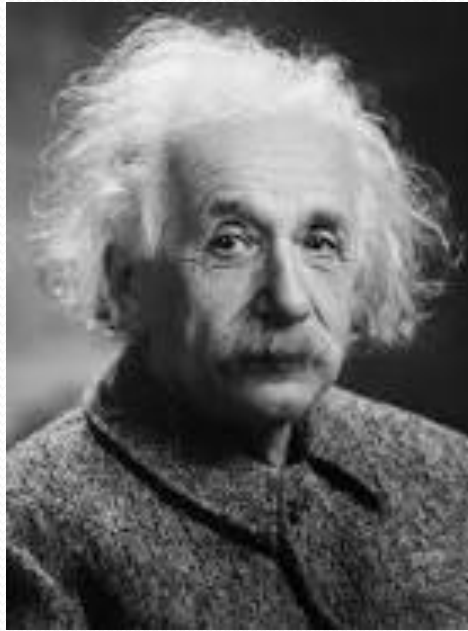
Physical time



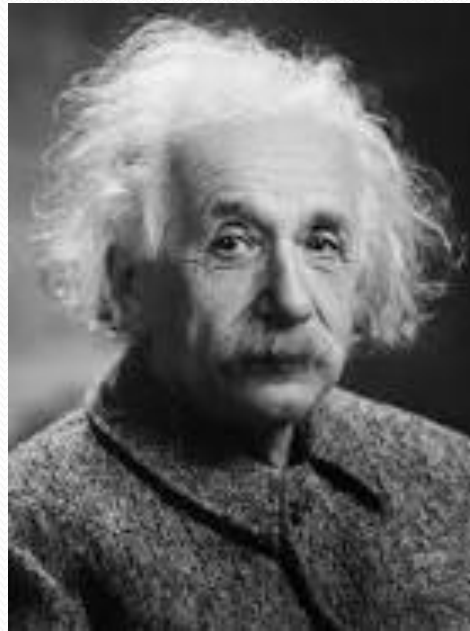
Human time



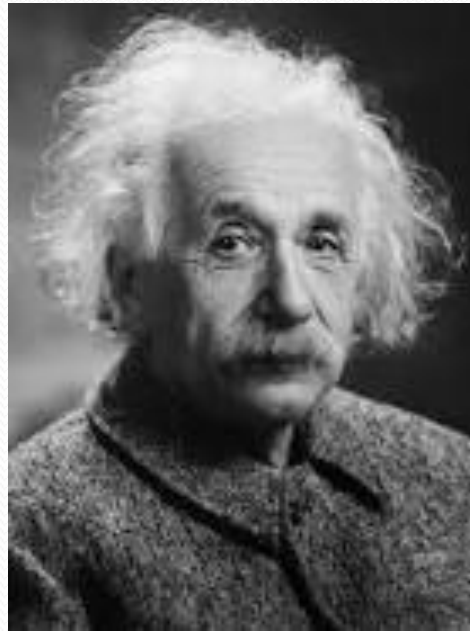
Supposedly there's a tension between the tenseless, static time of physics (not physical time) and the tensed, flowing character of experienced time.



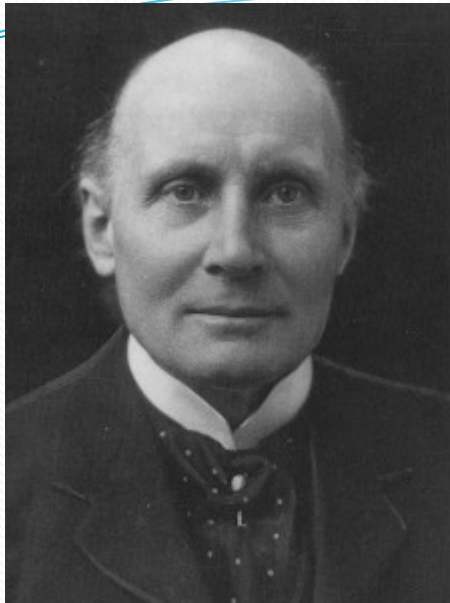
“Il n’y a donc pas un temps des philosophes.”



“There remains only a psychological time that differs from the physicist’s.”



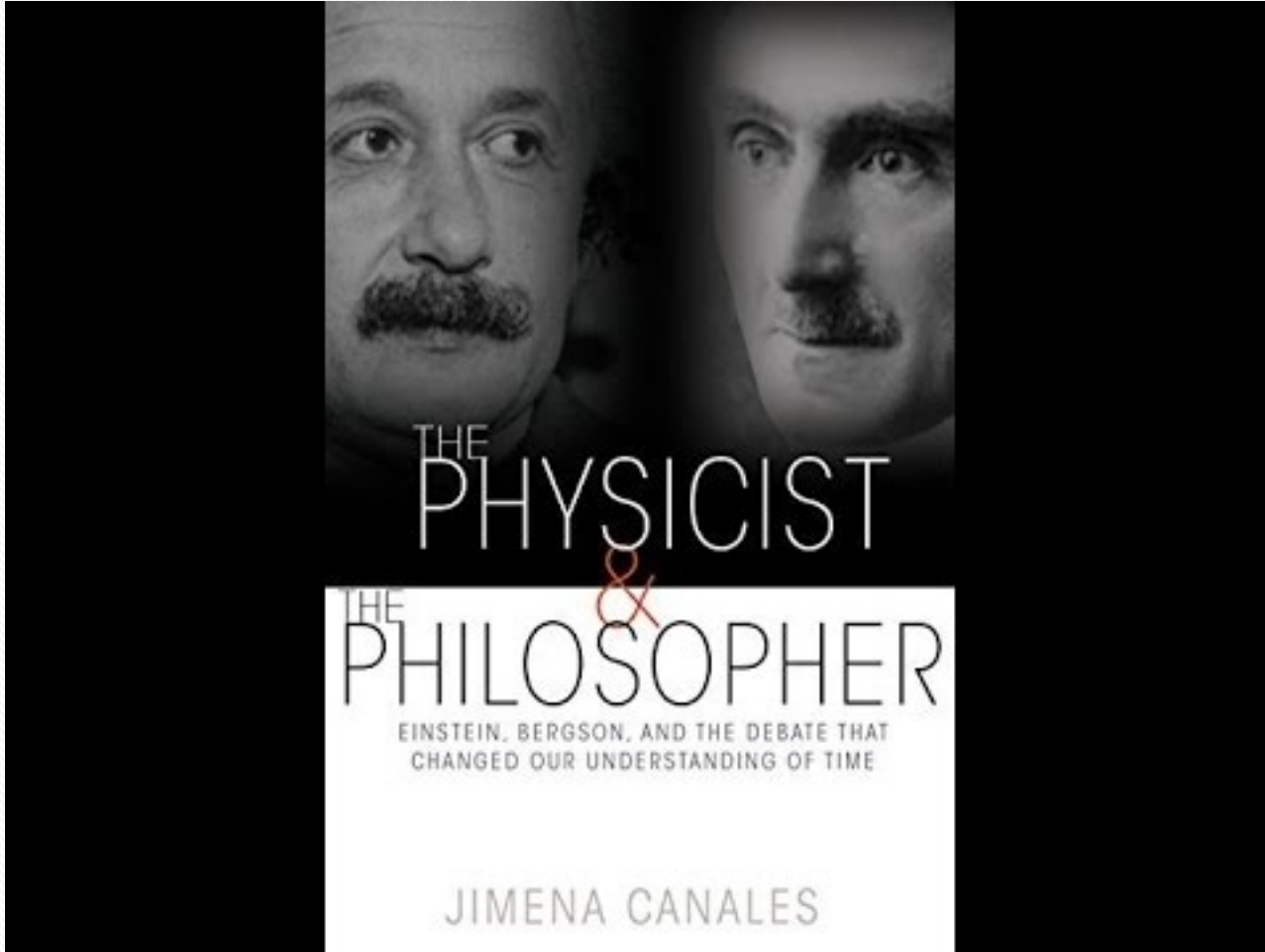
“The distinction between the past, present and future is only a stubbornly persistent illusion”




"But, for myself, I cannot reconcile [Einstein's interpretation of his theory] with the given facts of our experience" (*Science and the Modern World*).



Real time, which plays the leading part in any philosophy of evolution, eludes mathematical treatment. Its essence being to flow, not one of its parts is still there when another part comes along (*The Creative Mind*).





Supposedly there's a tension between the tenseless,
static time of physics and the tensed, flowing
character of experienced time ...

... and it is assumed this tension must be relieved.

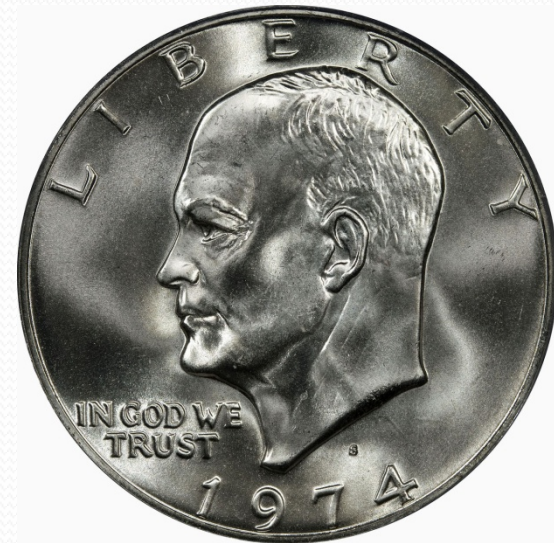


Jenann Ismael relies on a spatial analogy to explain why experienced time is not in conflict with physical time.

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The view from somewhere / the view from nowhere



The view of History from the perspective of a particular moment.



Vs.

The view of History *sub specie aeternitatis*
 (“the temporal analogue of the view from nowhere”)

Perspectival  Block universe


 Experienced world (perspectival)

“there’s a transformation that takes a static image of a four-dimensional manifold into an evolving image of a universe in the process of Becoming”.

Perspectival  Block universe
 Experienced world (perspectival)


Perspectival \neq not real.

- Direction
- Flow/flux
- Passage/tense
- The asymmetry between the fixity of the past and the openness of the future



"If we decided to scrap the term 'simultaneity' from our theoretical vocabulary, no problem would arise for doing justice to our observations. This ties in with the fact that relativistic theories can be given completely local formulations—simultaneity plays no role in the dynamical laws of relativity theory." (Dieks, 2006, 160)

"It is the purpose of the four-dimensional spacetime picture, which the block universe is, to represent *all* events that actually take place in the universe, complete with *all their properties and mutual relations*. An adequate block universe representation therefore also contains all events in the lives of individual human beings, with all the impressions and experiences that (partly) constitute these events. For example, that I now remember past events and do not yet know much about what is to come is part of my experience at this instant of my life and should be part of the four-dimensional picture; the same applies to my conviction that exactly *now* it is now. All actual events, experiences and intuitions must be there in the block representation, exactly at the spacetime position where they actually occur. **So there cannot be any conflict between experience and the block universe.**" (2006, 169. Last emphasis is mine)



There's no tension between the experienced image and the scientific image of the world.

There's no tension between the experienced image of the worlds and the scientific image, because:


1. Scientific image captures objective reality, including the “subjective”/”psychological” (**absorbism**).
2. Both the scientific and the manifest images capture reality, one non-perspectival reality, the other perspectival reality, and the two are in harmony (though the scientific but not the manifest captures the fundamental structure of reality (Quine)) (**reconciliation**).



Dieks and Ismael differ on how motion should be conceptualized and understood.

- Problems with the particulars of each proposal, e.g., with Ismael's notion of "the view from nowhere" (no sense attached to it in either the spatial or temporal case; Merleau-Ponty's "view from everywhere" – just as problematic), or with Dieks' conception of motion and change.


The problems stem from the "block-universe" view, to which both are committed.

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- But the real problem is with the joint agenda – harmonizing experienced time with the time of physics.
 - This problem is not because there should be disharmony, but because it is not always the case that we have to choose between harmony and disharmony. There's got to be a tension, for the choice to come up.




And there's no tension between passage and physics.
The reason is that **passage is not part of the vocabulary of physics.**

Flowing time and the block universe never meet, so they do not clash, nor do they have to get along, “be reconciled”.
(It's like reconciling Bach's “coffee cantata” with actual milk).



An event's tensed location (its being past, or present or future), is as an objective property of it as any other property.

There's nothing perspectival about the presentness (or the pastness, futurity) of an event, e.g., of this talk.



Events that are present are not distinguished from those that are not by being “more real”. Nor is it the case that all events are on an ontological par.

Tense just is not an issue of ontology, it cannot be analyzed in terms of reality claims, or existence claims.

There is no forced choice between presentism and eternalism, both of which collapse under scrutiny.

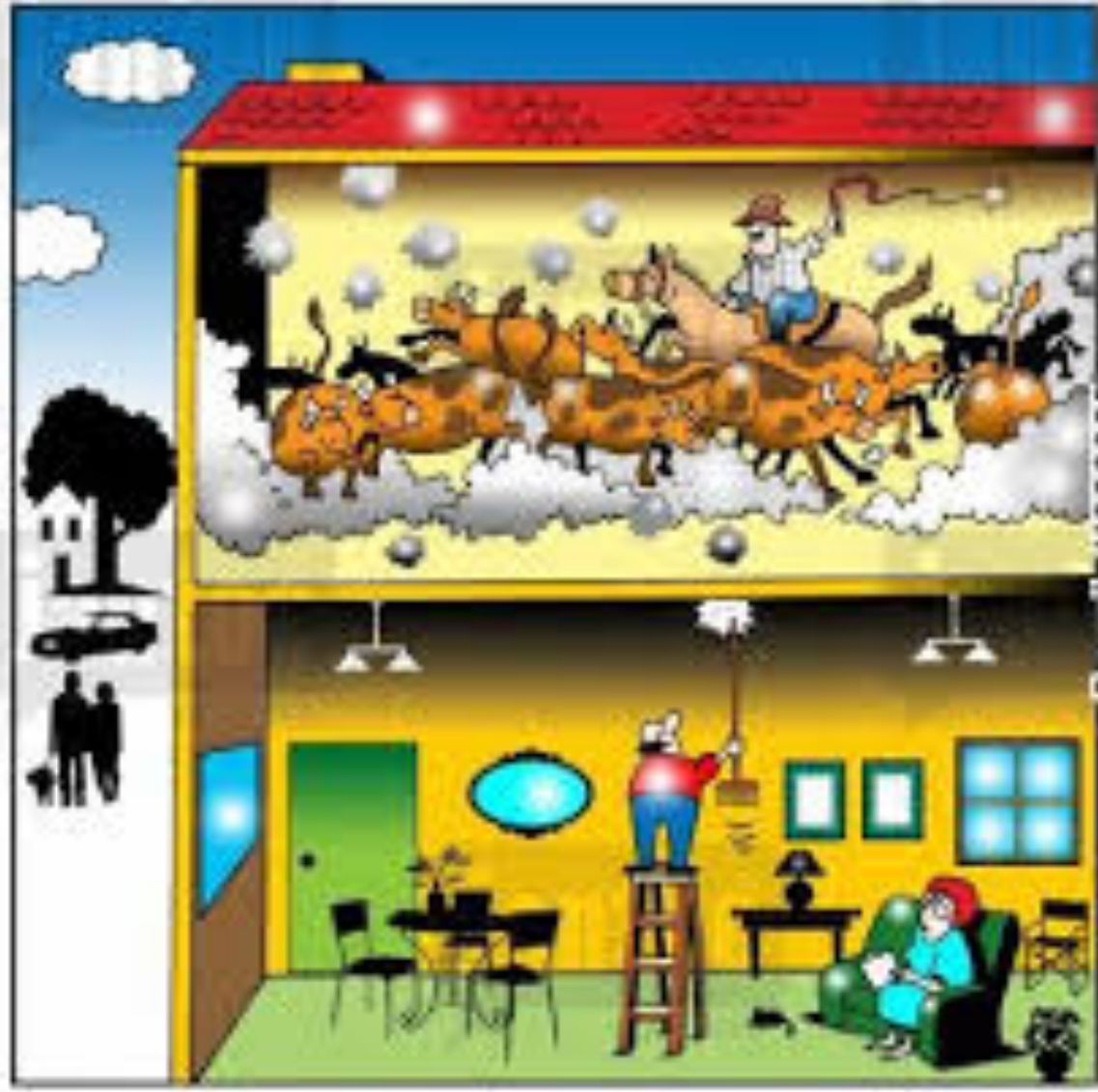
- The real, objective present is given to us solely via its experiential manifestations.
- For event *e* to be present (past, future) is for it to be experienced as such (if it were experienced). But this is an *objective* property of *e*.
(compare – for a coin to be round is for it to look round)
- This definition, which has a local element in it (insofar as we only experience what is in our proximate vicinity), is applicable globally, to any event, anywhere, at anytime.



At what rate does time flow? $1 \text{ s}/1 \text{ s}$?

Where does it flow time and where to?

Along what bank does it flow?



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We must appeal "(1) to the immediate presentation through the senses of an extended universe beyond ourselves and *simultaneous* with ourselves, (2) to the intellectual apprehension of a meaning to the question which asks what is *now immediately happening* in regions beyond the cognisance of our senses" (*Science and the Modern World*, 127, italics in the original).

- Sometimes it is asked: is "the now" frame dependent or not? Answering negatively would be problematic because that would imply a notion of absolute simultaneity. And saying that tense is not frame dependent seems to render it subjective, psychological (though this of course requires an argument, such as Putnam's).
- This is an ill framed question. It is meaningless to "add" tense to physics.

(Dieks – an inflation of “nows”/Carlo – pointing to the “now” which is now NOW).



There is no question of “squaring”/”reconciling” tense with physics, of harmonizing passage with relativity, because the “now” never enters physics, and cannot be added to it. Flowing time and physical time never meet, so they do not clash, nor do they have to get along, “be reconciled”.



Experience is not deceptive, to the contrary, it is very reliable, also when we do science (though, of course, we are not infallible).

No specious present, not because the present is pointlike, but because present events have duration.

Simultaneity is crucial in experience.

Flow – not an illusion.



Physics does not yield a new description of all ordinary experience, it leads to a new understanding of some experience (looking at the stars).

Time dilation – revolutionizes how we use calendars.

That's the revolution of relativity, not the elimination of tense/passage.

(Calendars do not represent time, or capture its essence)



Perception of motion – does not corroborate the at-at theory of motion.

To the contrary, phenomenology of the experience of motion undermines the theory.

(Problems with the argument from illusion).

THE INSTITUTE FOR ADVANCED STUDY
PRINCETON, NEW JERSEY

May 13, 1952

SCHOOL OF MATHEMATICS

Miss Ruth Levitova
434 Briar Pl.
Chicago 14, Ill.

Dear Miss Levitova:

Your conception of time is the only one possible
in accordance with physics- for the following reasons:

1): Physics knows only different values of time but
has no possibility of expression for "now"(present), for "past"
and for "future".

2): Even if one adds to physics the (psychologically so
impressively given) "I-now" there exists - according to the
theory of relativity - no possibility to coordinate with this
"I-now" unequivocally a "present state of the universe".

This feature of exact science was keenly felt and attacked
by Henri Bergson (in my opinion without justification).

Sincerely yours,

A. Einstein

Albert Einstein.

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TELEGRAPHIC ADDRESS "INICHO TOKYO"

TELEPHONE GINZA 4-001-4, 3367-9

Stilles bescheidenes Leben gibt
mehr Glück als erfolgreiches Streben,
verbunden mit beständiger Ruhe

Albert Einstein

November 1922. Tokyo.




That physics is voiceless about X, “has no possibility of expression for X”, does not automatically entail that X is not part of reality. The entailment requires further metaphysical, not scientific, assumptions, e.g., physicalism.

(Think of normativity, colors, perhaps direction, perhaps causation, math – are all these just “psychological”?)

- In the distinction between "fundamental" and "real", flow is fundamental.
- If temporal direction is inextricable from passage, then the time used in physics assumes human time.
- Direction is not given by the past-hypothesis (physics should be not asked to explain what is not in it).

“Additional wheels without added empirical content. The only motive is to tell a story that is pleasing to our physicalist ears”.

- The experience of direction/passage should not be sought in biology, brain-science, etc.
- The experience of passage is not a by-product of natural selection.



How do we experience flow? No antenna in our brains that detects it. The A theory does not explain this better than the B theory.

To experience, is to experience passage. Not obvious what notion of “explain” can be invoked here.



Part C

What now, and is this important?




Two issues:

1. Real time – tensed or not?
2. Experienced time and physical time – is there a tension?

These questions are not scientific and will not be settled by science.

It is not easy to say what can decide between them, or why some people are drawn to one and others to the other (Einstein/Bergson).

Real time is Manifest Scientific	tensed	not tensed
tension	J. Ismael	Einstein
no tension	me	Dieks



Once Einstein said that the problem of the Now worried him seriously. He explained that the experience of the Now means something special for man, something essentially different from the past and the future, but that this important difference does not and cannot occur within physics. That this experience cannot be grasped by science seemed to him a matter of painful but inevitable resignation. I remarked that all that occurs objectively can be described in science But Einstein thought that these scientific descriptions cannot possibly satisfy our human needs; that there is something essential about the Now which is just outside the realm of science. We both agreed that this was not a question of a defect for which science could be blamed, as Bergson thought.

Real time is Manifest Scientific	tensed	not tensed
tension	J. Ismael	Einstein
no tension	me	Dieks



Is it important to decide whether time is tensed or not?

Is it important to explore the relationship between the manifest and scientific images?

A "yes" could operate on three levels:

- An actual impact of philosophy and physics on the actual development of theories (bare theories).


“philosophy is not an independent source of knowledge of space-time; our ability to conceive of or to reason about space has always depended on principles borrowed, explicitly or implicitly, from physics. But this is not to say that physics simply provides answers to philosophical questions from its own sources ... Rather it says that [there are times] at which philosophical analysis has become an unavoidable task for physics itself” (Disalle).




An impact on the interpretation of theories.

(back to the Einstein/Bergson debate -

“A metaphysics grafted upon science, it is not science (Mais c'est là une métaphysique greffée sur la science, ce n'est pas de la science”).

- 
- Quantizing space/time
 - Space-time emerge from something that is neither.
- (On the face of it incoherent, (Where does the pregeometric theory "live"?) but perhaps can be made sense (Sebastian), but if so, only under constraints of comprehensibility that come from experience).

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- An impact on a our general view of reality and of our place in it. Passage, like normativity, aesthetics, ethics, colors, causation, etc. are central to our general view. We all take these things seriously, and in many contexts give them more weight than to our scientific theories. Perhaps there is something to be said in favor of articulating a view of reality which gives the significance they enjoy in our lives rather than be cornered into apologetics.

Moral

There is only one time – time as it figures in experience.

Physical time and human time are not two times. Rather, time, the one time, time as it figures in experience, can be studied in more than one way, phenomenologically, and scientifically. And all is well as long as we don't get in each other's way and try to do each other's job.

No issue of reconciling experienced time with physical time. There aren't two times – human and physical.

Time flows. If this is controversial, the controversy is not a scientific one.

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