The Basic Reasoning in “Fragmental Presentism and Quantum Mechanics” 8 16 2021

We’ll give an outline of the basic chain of reasoning developed in the main paper. We’ll state the hypothesis, leaving most justifications, details, discussion, and implications for the main paper. This outline is meant to give only a rough idea of some of the main reasoning.

1. The basic hypothesis.

According to McTaggart (1908) one dimension of time is characterized by two series:

1.1 the A-series (which we’ll take to be): future-present-past.

1.2 the B-series: earlier-times to later times.

It is usually supposed that the A-series values change, while the B-series values do not change on time-like worldlines.

Now we bring another set of ideas into the theory. According to Dualism, your subjective states are inaccessible to me and *vice versa*. For example, if we both look at a collection of leaves, if I see green I cannot know that you see the qualitatively same green, and *vice versa*. Reality is fragmented this way.

Thus

1.3 from the fragment of my subjective experience there is no fact of the matter about certain aspects of your subjective experience and *vice versa*.

The A-series, as not reducible in any way to the B-series, is arguably phenomenal. Thus, putting 1.1 and 1.3 together we have the two tenets of the basic hypothesis:

1.4 from the present of the A-series of my fragment there is no fact of the matter as to (when) the present of the A-series of your fragment is, and *vice versa*.

and

1.5 two fragments come to share the same A-series when and only when there is a mutual measurement, at which time they form the same fragment and have the same A-series.

The problem of anthropocentrism is removed by supposing a kind of panpsychism:

1.6 each quantum system, no matter how small or non-local, forms a fragment and has its own A-series.

We’re done.

It’s worth outlining applications to Schrodinger’s Cat and Bell pairs. This is only an outline.

2. Two examples: Schrodinger’s Cat, Bell pairs

2.1 The Schrodinger’s Cat conundrum is that, during the running of the experiment, for the experimenter standing outside the box, the Cat is in the state

2.1.1 [psi> = [alive> + [dead>

Meanwhile, ‘at that time’ the Cat finds (so to speak) itself to be in either state

2.1.2 ‘alive’ or else ‘dead’

The issue is that 2.1.1 and 2.1.2 do not describe the same state. Thus, the conundrum.

It turns out this is easily resolved by fragmentalist A-series.

During the running of the experiment the experimenter standing outside the box forms one fragment and the Cat inside the box forms a different fragment. During the running of the experiment, at the experimenter’s present, there is no fact of the matter about the Cat’s present and *vice versa*. So during the running of the experiment there is *no single mutual moment of time* at which both the experimenter and the Cat must be in agreed-upon classical definite states.

Upon measurement, and only then, the experimenter and the Cat form one fragment, in which the A-series of the experimenter and the A-series of the Cat become one A-series, so that the ‘presents’ of the experimenter and the Cat become one ‘present’, at which time they are in either state

2.1.3 ‘Cat is alive and experimenter happy’ or else ‘Cat is dead and experimenter sad’

At 2.1.3 the experimenter and the Cat do not ascribe any system different states because there are not fragmented presents in which to do so. Instead there is only one fragment and one present in which states are mutual. That is how the Schrodinger’s Cat conundrum is resolved in this interpretation of quantum mechanics.

The non-locality of Bell pairs is resolved in exactly the same way. In fact we could suppose that the Schrodinger’s Cat system above names a Bell pair that is non-local in the fragment of the experimenter. During the experiment, the experimenter and the Bell pair form different fragments. In the fragment of the experimenter the Bell pair do not have definite spins *until* mutual measurement, since only then do they share the same A-series, the same ‘present’, and only then is there a necessity for agreement on the states of systems and a definite mutual state of reality.