

Chapter 10

“Objections”



Credit – Frank & Ernest: “Klepto” (need permission)

Pros

The hypothesis of Quantum Temporal Paradox (QTP) is the idea that nonlinearity can be introduced into the quantum mechanics formalism in a natural way through the agency of self-reference. It envisions cyclic entanglements constructed out of spacelike causes. An isolated quantum system that becomes cyclically entangled self-collapses, and naturally collapses any other quantum system entangled with the cycle. This offers an objective measurement process, one that formally delineates the line between quantum and classical systems.

The current distinction (courtesy of the Copenhagen interpretation) treats the system of interest as a quantum system and the measurement apparatus as a classical one. While practical, this distinction is clearly ambiguous and ad hoc. It sweeps the core difficulty under the rug, because the measurement apparatus is, in fact, just a large quantum system. Treating it as classical is an idealization, not an explanation.

Worse, it prevents the new paradigm from freeing itself from the old: quantum mechanics remains conceptually tied to classical mechanics. Special relativity is not tied to the ether, oxygen is not tied to phlogiston, and general relativity is not tied to action-at-a-distance. Perhaps this is why—alone among modern theories—quantum mechanics still suffers from an interpretation problem. If quantum mechanics is indeed the new paradigm, then Einstein was right: it is incomplete. Something is missing.

QTP would explain how nature chooses which basis collapse occurs in; the one that is not paradoxical. Given that self-reference implies multivalued-ness, it would explain the source of quantum randomness. It would resolve the interpretation problem. But at this stage of development, it is a little short on details.

Cons

Given a new idea, there will be objections. Dealing with them is how the original idea gets refined or rejected, and often enough, how more new ideas are generated.

So, while the pros are the motivation, it is the cons that will drive the story. The objection list is a living document; we start it now with our best guesses. As resolutions are developed, items will be checked off, as new objections are uncovered, they will be added. It's a quest.

Therefore, here is the initial list.

Initial Table of Objections to QTP		
Item	Label	Description
1	Relevance of self-reference	Why should self-reference be relevant to the measurement problem?
2	No privileged observers	Determining which events connected by a spacelike cause are cause and effect require a privileged frame of reference.
3	Relativistic consistency	We know instantaneous collapse is wrong, but it is benign unless FTL signaling is real.
4	Space is isotropic	Time is not isotropic, past and future are different, but space is isotropic, earlier and later are preserved quantities for timelike intervals, but not for spacelike ones.
5	Temporal paradox	Temporal paradox is a <i>logical</i> argument against spacelike causality, a more fundamental objection than any of the physics objections. Causality must be consistent.
6	Randomness	Nonlocality correlates noise, but randomness denies sending a signal.
7	Collapse by self-reference is ill-specified	Show a causal cyclic entanglement, a closed loop in spacetime, that is paradoxical in one basis but indeterminate in another.

To my mind, #5 is the most damning objection. Taming temporal paradox is critical – can't justify spacelike causes without first resolving this threat to causality. We save it for later only because addressing the other objections provide context, tools, and options for addressing the logical objection to closed causal loops in spacetime.

But make no mistake, any one of these could refute QTP.