Introducing Interaction Process Mapping Epistemology

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Abstract
[Suggested section: Philosophy]

I am neither a philosopher, nor a scholar of philosophy. However, I have been deeply dissatisfied with the methodology of thinking taught to us while trying to understand the physical behavior of nature presented through the mathematics of Relativity and Quantum Mechanics. Accordingly, as an experimental physicist, I have developed my own mode of thinking, which I call Interaction Process Mapping Epistemology (IPM-E). I will elaborate the importance of IPM-E using two examples of prevailing mis-interpretations of *interaction processes* in nature: (i) Non-Interaction of wave (NIW) amplitudes in the linear domain in the absence of interacting medium; and (ii) Non-Observability of Superposition Principle (NOSP) in the quantum world. I will illustrate them with experiments that are easy to reproduce, but the *interaction processes* are quite subtle and require some deep introspections. That is why we have been missing them. Recognition of these NIW and NOSP help us drop most of the unproductive and mystical interpretations and debates engineered by the Copenhagen Interpretation. Then the formalism of Quantum Mechanics becomes much more *realistic* than we have been allowed to appreciate; even though, in my view, the current QM is not the final theory of the micro-universe. However, the successes of QM can definitely guide us to build the next higher platform of revealing nature's reality; better than SR can. NIW and NOSP are mutually congruent once we recognize that the universe is a Complex Tension Field (CTF), in which, waves and particles are different kinds of excitations of the same tension field. They do not exist as separate and independent entities (see my other paper in the section, "UNIFICATION").

The currently successful evidence-based science is rooted in gathering data. Yet, this evidence-based approach has been retarding the advancement in physics for some time. Why? Evidence is data. Let me characterize the prevailing dominant approach to physics as Measurable Data Modeling Epistemology, or MDM-E. We collect data out of naturally occurring interactions or human-engineered interactions in our apparatus that constrains some desired interactions between the chosen interactants. Data always represent some quantitative *physical transformations* among the interactants, which take place via *energy exchange* between them, guided by some *allowed force* of interaction between them. All known forces are of finite range, from short-range strong nuclear force to long-range weak gravitational force. Therefore, all consumed-interactions have to be "local" (real and finite interaction range) by virtue of force-guided "entanglement". Thus, we cannot have "entangled particles" generating measurable data without the presence of some validate-able force of interaction between them. Further, we cannot gather *real physical data* using imaginary *non-local* or *interaction-free* mathematical algebraic symbols. We have been neglecting these understandings because we have been taught, through generations, to become oblivious to

the fact that all measureable data are generated through invisible, but real physical *interaction processes*.

Evidence-based science is the best scientific approach, which is correctly guided by MDM-E. However, data does not give us direct access to the interaction processes that are essentially invisible to our current technologies. [We can now "map" atoms and molecules, which was unimaginable during the times of Bohr and Heisenberg!] Human minds create logically self-congruent, but various "subjective" interpretations of the data available to them. MDM-E is not sufficiently strong to keep us anchored to seek out the ontological reality of nature, while guiding us to identify the limitations of working theories and lead us towards developing theories that are more advanced and realistic. We should recognize that human minds have invented the mathematical logics and the logics used by the creator of the universe are most likely different from our math. This is evident from the emergent, and yet perpetually evolving, biological intelligence through different species. Therefore, finding ontological realities is an eternal challenge for the human species. My proposal is that we apply MDM-E and IPM-E in tandem. In every step of anchored data and theory, visualize the invisible interaction processes as various possible maps, which could have guided by the interaction processes. Chose the logically most plausible one and refine it by applying to as many related phenomena as possible and down select the beast map. We are now *heading towards* ontological reality. In some cases, we may have to abandon some working theory in favor of a new theory. When applied systematically and iteratively, again and again, from the bottom up, we would be able to step up the ladder closer to ontological reality. This path, most likely, would be long and arduous.

To keep the paper short, I will show logical flow-chart regarding how many different physical phenomena in classical-, quantum- and astro- physics can be advanced when prevailing successful MDM-E is strengthened by using IPM-E.

REFERENCES

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2. C. Roychoudhuri, see Ch.12 in "Causal Physics: Photon by Non-Interaction of Waves", Taylor & Francis, 2014.