

As I see it, QBism is a special application of perspectivism (phenomenalism) to quantum mechanics. Because QM is probabilistic and its theories are counterintuitive, it *forced* (some) physicists into doing philosophy.

I think the general principles of QBism apply to physics generally. Mathematical theories encode our expectations. These expectations are beliefs that we *act* on. We talk about the “laws” of nature, but this is just a metaphor. Hume made a strong case that our assumption of the uniformity of nature is not deductively justified. In other words, “causality” is a projection of a “pseudo-necessity.” We can’t help doing it, but it seems we cannot justify it. We mostly ignore this, since we all seem to share in this fundamental irrationalism that we tend to see as sanity itself.

So the “subjective probability” of Bruno de Finetti applies to “deterministic” physics too. I prefer to use “perspectival” for “subjective.” Different people expect different events from the same (co-intended) entity. QBism is a “single user theory” for this reason, in my view. But physics is a social construction. Perception is perspectival, but science is performed by a communal subject. We are forced to trust the reported measurements of others. In practical life, we trust witnesses. Our sense of how the world is largely dependent on what others tell us. Direct perception accounts for a small part of our belief, and yet em-

pirical science, as empirical, is founded on perceptual presence.

Phenomenalism is a radical form of empiricism. It is radical because it is rooted in perceptual presence. This is why projecting “matter” as something beyond all possible perceptual presence is rejected as a mystification.

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Would you say that QBism is the closest theory of physics to Ontocubism? How much of QBism is philosophy? And how much of Qbism, if any, is science?

To me QBism is basically an old, under-appreciated theory applied in a specific context. I think QBism is great, though, because I think phenomenalism-perspectivism is great. So QBism is at least very close, but perhaps no closer than related theories of physics.

Check out what Einstein wrote in 1936.

It has often been said, and certainly not without justification, that the man of science is a poor philosopher. Why then should it not be the right thing for the physicist to let the philosopher do the philosophizing? Such might indeed be the right thing at a time when the physicist believes he has at his disposal a rigid system of fundamental concepts and fundamental laws which are so well established that waves of doubt can not reach them; but, it can not

be right at a time when the very foundations of physics itself have become problematic as they are now. At a time like the present, when experience forces us to seek a newer and more solid foundation, the physicist cannot simply surrender to the philosopher the critical contemplation of the theoretical foundations; for, he himself knows best, and feels more surely where the shoe pinches. In looking for a new foundation, he must try to make clear in his own mind just how far the concepts which he uses are justified, and are necessities.

The whole of science is nothing more than a refinement of every day thinking. It is for this reason that the critical thinking of the physicist cannot possibly be restricted to the examination of the concepts of his own specific field. He cannot proceed without considering critically a much more difficult problem, the problem of analyzing the nature of everyday thinking.

On the stage of our subconscious mind appear in colorful succession sense experiences, memory pictures of them, representations and feelings. In contrast to psychology, physics treats directly only of sense experiences and of the "understanding" of their connection. But even the concept of the "real external world" of everyday thinking rests exclusively on sense impressions. Now we must first remark that the differentiation between sense impressions and representations is not possible; or, at least it is not possible with absolute certainty. With the dis-

cussion of this problem, which affects also the notion of reality, we will not concern ourselves but we shall take the existence of sense experiences as given, that is to say as psychic experiences of special kind. I believe that the first step in the setting of a "real external world" is the formation of the concept of bodily objects and of bodily objects of various kinds. Out of the multitude of our sense experiences we take, mentally and arbitrarily, certain repeatedly occurring complexes of sense impression (partly in conjunction with sense impressions which are interpreted as signs for sense experiences of others), and we attribute to them a meaning—the meaning of the bodily object. Considered logically this concept is not identical with the totality of sense impressions referred to; but it is an arbitrary creation of the human (or animal) mind. On the other hand, the concept owes its meaning and its justification exclusively to the totality of the sense impressions which we associate with it. The second step is to be found in the fact that, in our thinking (which determines our expectation), we attribute to this concept of the bodily object a significance, which is to a high degree independent of the sense impression which originally gives rise to it. This is what we mean when we attribute to the bodily object "a real existence." The justification of such a setting rests exclusively on that fact that, by means of such concepts and

mental relations between them, we are able to orient ourselves in the labyrinth of sense impressions. These notions and relations, although free statements of our thoughts, appear to us as stronger and more unalterable than the individual sense experience itself, the character of which as anything other than the result of an illusion or hallucination is never completely guaranteed. On the other hand, these concepts and relations, and indeed the setting of real objects and, generally speaking, the existence of "the real world," have justification only in so far as they are connected with sense impressions between which they form a mental connection.

This is explicitly phenomenalist and implicitly perspectivist. Because clearly Einstein believes that we live among the *same* objects. The "notions and relations" echo what Mill wrote. We end up taking the possibility of sensation to be *more real* than sensation itself. This gets us into Heidegger and our tendency to decide to call whatever endures "real" and whatever is transitory "unreal."

I think QBism as such is philosophy, in that the issue is just the interpretation of math that physicists otherwise agree on. But physics has to be "plugged in" to the lifeworld. I'm a perspectivist, an existentialist. Even physics is another entity that only manifests this face or that face in this stream or that stream. So physics without philosophy, such as the free floating math, stripped of interpretation, is a bit like the "Matter" of philosophers, who have stripped all perceptual

presence away. In other words, a science “purified” of philosophy is not even numerology. So, IMO, there’s no definite boundary between philosophy and physics. Einstein, Bohr, Schrödinger, and Mach (to name just a few) were great philosophers, IMO.

I relate to Fuchs as a fellow phenomenalist-perspectivist who happened to specialize in physics, so he applies phenomenalism *in detail* in that context. Integrating physics and philosophy and giving the math a more definite “lifeworld” meaning.

Of course I’m focused on trying to explicate basic concepts. Questions like : what *is* a physical object in the first place ?