

## From Physics to Spirituality and Back: Reminiscences

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One day in the 1980s, in the French colonial mansion that now serves as the dining hall of the Sri Aurobindo Ashram, I was approached by a British lady, who greeted me with the words: “I have heard that you are studying Sri Aurobindo in the light of modern physics”. “Actually”, I replied, “I am studying modern physics in the light of Sri Aurobindo”.

Here is how this came about. In my teens I intended to study physics and to specialize in astrophysics. Then I got interested in consciousness, and before long I was reading books on Indian philosophy and yoga. This is how, one evening in 1972, I arrived in Pondicherry with the purpose – and the permission of the Mother, Sri Aurobindo’s spiritual collaborator – to join the Sri Aurobindo International Centre of Education as a student.

Realizing the extraordinary importance Sri Aurobindo attaches to the material world, my former interest in physics returned, but with a new perspective: I wanted to know what science had to contribute to Sri Aurobindo’s account of the manifestation of the material world. This is how, in the spring of 1974, I came to join the University of Göttingen and later the Indian Institute of Science in Bangalore. I moved back to Pondicherry in 1978, when it became clear to me that the pursuit of physics in an academic environment – a pursuit as mathematically sophisticated as philosophically naive – no longer had much of significance to contribute to my original quest. I was then helped along by C.F. von Weizsäcker, who described himself as “a politically active professor of philosophy trained as a physicist.” In his book *The Unity of Nature* he wrote, “In my opinion, those who really want to understand contemporary physics – i.e., not only to apply physics in practice but also to make it transparent – will find it useful, even indispensable at a certain stage, to think through Kant’s theory of science.”

Kant had conceived of a “pure physics” whose laws were “preconditions of experience”: they were a priori certain because there could be no empirical knowledge without them; they made science possible. Two hundred years later, von Weizsäcker speculated that this might actually be true of the whole of contemporary physics. This gave me the idea of an ontological transposition. While the physical description of nature (for instance, the choice of a spacetime metric) may owe much to the minds of physicists, “nature herself” also has a say in the matter (for instance, by making one choice more convenient than another). So could it be that the laws of physics are preconditions (conditions of possibility) of a certain kind of *world*?

Sri Aurobindo adopts the central idea of what he called “the original Vedanta of the Upanishads”, according to which the world – in fact, every one of an ascending series of worlds – is a manifestation of some intrinsically ineffable Ultimate Reality (Brahman or Sachchidānanda). Our world – the one we are aware of during our waking hours – is unique in that it is the scene of a

spiritual evolution. Could it be that the laws of physics are preconditions of an evolutionary manifestation of Sachchidānanda?

According to Sri Aurobindo, evolution presupposes involution, whose essential process is a multiple exclusive concentration, executed by the consciousness (Chit) that is one with Existence (Sat). When this process is carried to its absolute extreme, it results in the formation of matter. How does this square with the description of matter given by contemporary physics? This question might have been easier to answer had contemporary physics provided something like a coherent description of matter. But it has not.

The immediate task before me, then, was to find a coherent physical interpretation of the mathematical formalism of quantum mechanics. To be able to do this, I had to steer clear of a common error: that of trying to solve pseudo-problems. And before I could circumvent this pitfall, I had to identify those unwarranted assumptions that gave rise to the pseudo-problems in the first place. And there were many. What augmented the difficulty was that discarding just one or two of them did not yield a consistent picture; I had to find and discard a substantial number of them. It was startling to discover just how many barriers, both psychological and ideological, stood in the way of making sense of the fundamental theoretical framework of contemporary physics.

And yet, what I eventually came to understand seems obvious in retrospect. The root of the problem is what Whitehead has called the “fallacy of misplaced concreteness”. Quantum physics gives us tools to calculate the probabilities of (possible) measurement outcomes given (actual) measurement outcomes. In the classical limit, it degenerates into a set of tools by which we can calculate the effects of given causes. It does *not* turn into a description of physical processes by which causes *produce* effects. Today, it beats me how, generation after generation, teachers were able to bamboozle their students into believing that classical physics offered such descriptions. And yet one understands, for who can resist the desire to feel potentially omniscient – capable in principle of knowing the furniture of the universe and the processes taking place in it. Certainly not a materialist. In the groves of Academe, where the name of the game still is to save the materialistic appearances, attempts to reify calculational tools will continue. Apart from lending spurious support to wrong assumptions (for instance, the assumption that the physical world is differentiated “all the way down”) and, consequently, engendering pseudo-problems (for instance, the problem of explaining the collapse of the wave function), this policy ensures that the true ontological implications of quantum mechanics remain undiscovered.

The difficulty is compounded by the nature of mind, as distinct from the original creative consciousness, to which Sri Aurobindo gave the name “supermind”. While, according to Sri Aurobindo, supermind creatively experiences the world as structured “from the top down” but not “all the way down”, the tendency of the mind is to model reality “from the bottom up”, and hence to take it for granted that the world *is* differentiated “all the way down”.

The ontological implications of the only testable aspect of quantum mechanics – the correlations between measurement outcomes – are (i) in keeping with the creative outlook of the supermind and (ii) at odds with the mind’s inherent bottom-up approach. To find a coherent physical interpretation of the mathematical formalism of quantum mechanics, one must stop looking under the materialistic lamppost. Quantum mechanics only makes sense within a spiritual framework of thought.

What I mean by a materialistic framework of thought is an ontology that models reality “from the bottom up”, in contrast to a spiritual framework, which models reality “from the top down”. As

far as the significance of quality and value is concerned, this makes all the difference. In a materialistically conceived world, quality and value are strangers; what ultimately exists, is a multitude of intrinsically valueless particles or points of space or spacetime – which various traditions have fittingly referred to as “dust”. In a spiritually conceived world of the Vedantic kind, on the other hand, quality and value are at the very heart of reality.

Since the force at work in such a world is infinite, it would be self-contradictory to invoke a physical mechanisms or natural process in order to explain its workings. What needs explaining is why this force works under self-imposed constraints, as it obviously does, and why under the particular constraints that we call the “laws of physics”. Setting the stage for Sachchidānanda’s adventure of evolution requires, at a minimum, the existence of stable objects that “occupy space”. Since the stage has been set by carrying the process of involution to its absolute extreme, such objects will be made of – or manifested by means of – finite numbers of objects that do not “occupy space”. From this, quantum mechanics follows, as I have shown in some of my more technical papers and, more recently, in my textbook *The World According to Quantum Mechanics: Why the Laws of Physics Make Perfect Sense After All* (World Scientific, 2011). In addition, it is eminently plausible that quantum mechanics in turn requires all the well-established laws of contemporary physics for its consistency. The laws of physics, then, can indeed be regarded as preconditions – *mere* preconditions, I should stress – of an evolutionary manifestation of Sachchidānanda.