

Schrödinger and Indian Philosophy

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Transcript of a conference given at the French embassy in India, New Delhi, January 1998

Published in: *Cahiers du service culturel de l'ambassade de France en Inde*, Allahabad, August 1999

1 Schrödinger's Life, and First Contacts with Indian Thought

The topic of my talk today is “Schrödinger and Indian Philosophy”. You certainly do have some knowledge about Erwin Schrödinger, the celebrated author of the “Schrödinger equation” of Quantum mechanics. But I think it would be better for me to assume that you need additional information. I shall then begin with a short biographical sketch of Schrödinger, putting special emphasis on his strong and early interest for Indian soteriological philosophies.

Erwin Schrödinger was born in Vienna (Austria) in 1887. After Secondary School, he began his studies of Physics at the University of Vienna in 1906. He already displayed at that time an extraordinary interest for philosophy, besides his taste for Physics. The first authors who attracted his philosophical attention were the Greek pre-socratics, Plato, Hume, the Viennese philosopher of science Ernst Mach and most remarkably, as a diary written in 1905 shows us, the main trends of Indian philosophy.

His training in Physics bore the mark of the disciples of Ludwig Boltzmann, which explains his own epistemological orientation towards clear pictures of physical processes. But he was also influenced by Ernst Mach's radical positivism and this explains in turn his constant criticism directed against a metaphysical realist construal of scientific objects or structures, which would go beyond the methodological realism that scientists find so useful.

His first scientific writings, between 1911 and 1922, deal with many topics such as the theory of fluctuations in statistical mechanics, the

general theory of relativity, the psycho-physiology of sensations, and last but not least, atomic physics. At that time, he did not make any discovery which can be seen as “momentous”. But each one of his papers in theoretical or experimental physics was admittedly quite good, and was associated with a striking philosophical overtone. During the first world war, when he served as an artillery officer in the Austro-Hungarian army, he worked on statistical mechanics and also had related thoughts on the irreversibility of time. After the end of the war, he did not really wish to pursue research in Physics; he rather dreamt of writing on philosophical issues, hoping that he could manage to do so in addition to his teaching duties in Physics. In 1918, he then spent the whole year studying philosophy in Vienna, reading Kant, Schopenhauer, Spinoza and many other authors. Schopenhauer was especially important to him because he shared exactly the same concern with Indian philosophies and the same post-Kantian views. At that time, he thus went back to the basic texts about Indian thought which were available in German or in English.

He borrowed from his father’s library and read carefully the books of Henry Warren (1896), Max Walleser (1904), T.W. Rhys David (1877), and Richard Pichel (1910) about Buddhism. He also studied books of Richard Garbe (1894) about the Sankhya doctrines, Paul Deussen (1906) about Vedânta, and Max Müller (1880) about the religions of India. But the strongest intellectual influence which was exerted on him, as we read in an entry of his notebook dated 2 July 1918, came from Lafcadio Hearn. As you may know, Lafcadio Hearn was a Greek-American writer of the turn of the century, who lived in Japan, and published several books on Zen Buddhism. So, let us retain at this point that Schrödinger’s most important reference was to a commentator of Buddhism, even though, as we will see, he mostly refers to the *Upanishads* and the *Advaita Vedânta*.

After this *Annus Mirabilis* 1918, he was given a position as a lecturer of Physics in Zurich in 1922. He then began a modest career as a Physicist, with a persistent and constant interest for Indian philosophies, which resulted in a short essay written in the summer of 1925, and later incorporated in his beautiful book entitled “My view of the World”. But, during the autumn of 1925, Schrödinger’s life took a completely new turn, after he had read Louis de Broglie’s

doctoral thesis which was sent to him by Einstein. Trying to make sense of de Broglie's ideas for the seminar of Physics of the University of Zurich, Schrödinger formulated what is now well-known as the *Schrödinger Equation*. Actually, this equation was nothing less than the basic element of an entirely new theory of the atomic phenomena, which Schrödinger called "wave mechanics", and which was later united to Heisenberg's Matrix mechanics in the broader framework of quantum mechanics. As a consequence of this celebrated advance, Schrödinger was given a position as Professor in Berlin, and he received the Nobel Prize in 1933. In July of that very year, he left Germany, due to his disgust for Nazism. He spent a few years in Oxford, England, then in Austria and in Belgium, and finally, from 1940 to 1957, in Ireland.

It was in Ireland that he wrote his most important philosophical essays : "What is life ?" published in 1944, "Science and humanism" in 1951, "Nature and the Greeks" in 1954, and "Mind and Matter" in 1956. Back in Vienna in 1957, he wrote an essay titled "What is real" in which he went back to Indian philosophy, and which is included (with the essay of 1925) in his book "My view of the World", published in 1960. Then, he died in Vienna in January 1961, and was buried in Alpbach, Tirol.

2 Against syncretism

Let me begin with qualifying the frequent assertion according to which Schrödinger had just adopted the main trends of the Indian view of the world. We must not forget that Schrödinger was also very critical of some elements of those views, and that whenever he endorsed them, it was not without many alterations which, he thought, were able to make them fit with Western philosophy.

Prudence is the key-word of Schrödinger's attitude with respect to the relations between Eastern and Western thought. He sees very well that there are philosophical antinomies that have been enhanced rather than solved by the development of Western science, and that they could easily be dissolved within the framework of Indian thought; but he remains reluctant because he is afraid of the loss of scientific efficiency which could result from such a compromise. A

first example of this ambivalent attitude has to do with the mind-body problem. Schrödinger stated a standard aspect of this problem in his book “Mind and Matter”, by quoting the neurophysiologist Sir Charles Sherrington : “Physical science (...) faces us with the impasse that mind *per se* cannot play the piano - mind *per se* cannot move a finger or a hand. Then the impasse meets us : the blank of the ‘how’ of mind’s leverage on matter”¹. Schrödinger accepted that the latter problem, which was created at the onset of modern science (with Descartes), due to the necessity for science to define a space of strictly *objective* events, is soluble neither by science itself, nor by the type of philosophy which has been a condition for the birth of western science. But what should we do, then? “To realise this is valuable,” Schrödinger writes, “but it does not solve the problem. (...) scientific attitude would have to be rebuilt, science must be made anew. Care is needed”². Care and prudence again. Ten pages later, still in his “Mind and Matter”, Schrödinger becomes even more explicit. He declares that the basic doctrine of the Upanishads, namely what he calls the *doctrine of Identity*, or the thesis that allegedly separated minds are identical with one another, and that our mind is identical with the absolute basis of the world as a whole, is the only credible solution to the apparent conflict between the experienced unity of consciousness and the belief that it is dispersed in many living bodies. Unfortunately, he then notices, we cannot just *adopt* the doctrine of the Upanishads and leave aside the method of science. Even though excess of objectivity “(...) is precisely the point where our present way of thinking does need to be amended, perhaps by a bit of blood transfusion from eastern thought” (...) yet, we must be aware of the fact that “That will not be easy, we must beware of blunders - Blood transfusions always need great precaution to prevent clotting. We do not wish to lose the logical precision that our scientific thought has reached, and that is unparalleled anywhere at any epoch”³.

¹ E. Schrödinger, *Mind and Matter*, in: *What is life & Mind and Matter*, Cambridge University Press, 1967, Chapter 3; see my comments in: E. Schrödinger, *L’esprit et la matière précédé de l’Elision* par M. Bitbol, Seuil, 1990

² *ibid.*

³ *ibid.*

Schrödinger did not wish one to bypass the difficult job of cultural synthesis, and use the facile tricks of syncretism instead. He feared that by just borrowing a whole complex of Indian thoughts, one would only be able to add more confusion to the current puzzles of Western philosophy. The reason is that, according to him, the deepest components of the Indian doctrine of identity is mixed up with many idiosyncrasic rituals which are unlikely to be accommodated within the Western culture (and which are probably not worth it). At the very end of his book “My view of the World”, he even insisted that the Vedântic doctrine of identity is especially liable to superstitious misunderstanding, at least when it is not pushed to its ultimate logical consequences.

Accordingly, Schrödinger’s own strategy, in so far as the relation between a certain domain of Indian thought and the Western outlook is concerned, was one of careful mutual adjustment rather than one of mere transposition. And he believed that this mutual adjustment could not be performed by means of cold comparative studies, but by going back to the very common source of experience from which the two types of attitudes, the Western and the Indian, are derived.

So, instead of just incorporating basic categories of Indian thought such as Karma, Samsâra (that he understood as metempsychosis) or Nirvâna, he redefined them. According to him, for instance, Nirvâna should be understood as “pure human intellection”, thus giving it a Neo-Platonic rather than a Buddhist flavour. In another text, he compares Nirvâna to a deep dreamless sleep, in agreement with a text borrowed from the Upanishads, but probably in contradistinction with the Buddhist idea of enlightenment. As for Karma, it should be tantamount, according to him, to “an *idea* which comes back again and again across generations”. He could not accept the more common meaning of Karma, namely that of an explanation of one’s present situation by the acts of previous incarnations. For, he said, this notion gives the world an appearance of justice in spite of its manifest injustice⁴. But here, may be, he missed a major difference between Western and Indian views: in the West, the categories of justice and injustice are absolutized (because the Creator is also the author of a

⁴ E. Schrödinger, *My view of the world*, Cambridge University Press, 1964 (Reprint available from Ox Bow Press), Chapter 4 of the 1960 essay

moral code), whereas in India, one rather tends to state what is the case, and what accounts for it (the concatenation of causes and effects).

Even more interesting is what Schrödinger wrote about metempsychosis. In his book “My view of the World”, he insisted that metempsychosis is to be eliminated from a proper Western use of Indian thought. One obvious reason for this is that it is by means of metempsychosis that the usual doctrine of Karma operates. Another, more subtle, reason is that Schrödinger could not accept what he took to be the substantialist implications of the doctrine of metempsychosis. After all, he asked, what is this “I” or this so-called “soul” which is supposed to travel from one living body to another one ? Schrödinger here followed very closely the ideas of the Viennese physicist and philosopher of science Ernst Mach. In the same way as Ernst Mach, and in good agreement with David Hume, he believed that the personal “I” is nothing more and nothing less than an artificial thread by means of which an otherwise dispersed sequence of thoughts and sensations is synthetised. As a consequence, there is nothing substantial to be transmitted from one living body to another.

At this point, we recognise a typically Buddhist way of criticising the popular way of understanding transmigration. What Schrödinger developed inadvertently with his attack against the substantiality of the personal “I” is very similar to the Buddhist doctrine (or rather anti-doctrine) of the *Anâtman*; and his idea according to which the personal “I” is nothing more than a way of conceptually uniting a complex of thoughts or sensations is very reminiscent of the original Buddhist doctrine of the aggregates. Did Schrödinger adopt half-unconsciously a Buddhist approach that he had read in the books of Lafcadio Hearn, or did he just transpose the Buddhist-like trends of Ernst Mach’s thought ? This is difficult to say. At any rate, just as the highest Buddhist teachings do not just discard the concept of transmigration after they have criticised its most naive version, Schrödinger did not eliminate any equivalent of transmigration from his own thought either. He rather gave transmigration an interesting abstract meaning, in good agreement with his intuition of the eternal present, and of the basic identity of all the selves. As he writes in the

first part of his book “My view of the World”, “It is certain that the earth will give birth to you again and again, for new struggles and for new sufferings. And not only in the future : it resuscitates you now, today, every day, not just once but several thousand times, exactly as it buries you every day several thousand times (...). (For) the present is the only thing which has no end”⁵.

With these sentences, Schrödinger shows quite clearly how it is possible that a Buddhist-like combination of the negative doctrines of *Anâtman*, of aggregates, and of impermanence, does not lead one to abandoning the idea of transmigration, but rather to broadening it and generalising its scope. However, his own *positive* reason for maintaining a generalized version of the concept of transmigration is not really close to Buddhism, for it is not tantamount to invoking a chain of interdependent events and actions, as it was advocated in *King Milinda’s questions*, or in Candrakîrti’s *Prasannapadâ*. Instead, Schrödinger combines Buddhist overtones in his criticism of the substantiality of the *personal* self with a strong Upanishadic belief in the substantiality of the *Universal* self.

3 The Basic Experience

As we know, the all-pervasive source of most trends of Indian philosophy is not pure discursive reasoning, but rather the fundamental experience of Yoga. Now, the problem is that we have no evidence that Schrödinger ever practised Yoga or any variety of Buddhist meditation. Should we then say that Schrödinger just took over some abstract and dry verbal elements of Indian thought, with no direct acquaintance with what they meant? I don’t think so. For, although Schrödinger did not practise Yoga in a systematic way, he described some fundamental human experiences which are definitely akin to the premises of deliverance as documented by Buddhist or Hindu masters. Even more clearly, he insisted that *philosophy arises from a basic existential experience*. According to him, “the human being who has never realised the strange features of his own condition has nothing to do with philosophy”⁶.

⁵ *ibid.*, Chapter 5 of the 1925 essay

⁶ E. Schrödinger, *My view of the world*, *op. cit.*, chapter 3 of the 1925 essay

Schrödinger also emphasised that reasoning alone cannot bring us to the very root of the philosophical problems. If anything, reasoning can only provide us with a clear (negative) knowledge of the impossibility of reaching the sought root by reasoning, for he writes, “(...) the reasoning is part of the overall phenomenon to be explained, not a tool for any genuine explanation”⁷.

So, what are Schrödinger’s ways of access to this pre-discursive and pre-rational experience which is the source of (his) philosophizing? The first way towards this type of experience concerns the obvious fact of the unity, and the manifestly felt unicity, of consciousness. As we will see later, Schrödinger thought that no scientific result could prevail against this primeval and universal observation. The second element of pre-discursive experience has to do with love. Love, true love, shows that individualism, distinction between individual human beings, is just a superficial construction which does not suppress the original feeling of basic identity we have towards other living beings.

As you may know, Schrödinger was an expert in love affairs. And he thus had an extended knowledge of what can be expected from love in terms of ecstatic experience, in a somehow Tantric spirit, or even earlier in the spirit of the Brihad Aranyaka Upanishad. Let’s consider this extensive quote from the latter Upanishad: “In the same way as a man in the arms of a beloved woman knows nothing of the difference between the internal and external world, somebody who is immersed in the fully lucid Âtman knows nothing of the difference between the internal and external world. He is in the blissful state wherein any desire is fulfilled (...) wherein there is no desire any longer”. Similarly, in a notebook of 1919, Schrödinger wrote the following sentence, meant as a direct phenomenological evidence in favor of the Kantian statement that space and time are nothing else than forms of our sensibility : “Love a girl with all your heart and kiss her on her mouth : then time will stand still and space will cease to exist”. No space, and therefore no distinction between something internal and something external.

⁷ ibid. chapter 5 of the 1925 essay

Many years later, in 1944, Schrödinger had one of his most serious love affairs with an Irish artist, Sheila May. After this affair was almost over, Sheila wrote a very beautiful and instructive letter to Schrödinger : “I looked into your eyes and found all life there, that spirit which you said was no more you or me, but us, One mind, One being (...) For two months that common soul existed. (...) You can love me all your life, but we are Two now, not One”⁸. Thus, not only did Schrödinger saw a clear evidence of the Vedântic doctrine of identity in the experience of love, but he also taught this doctrine to the beloved women. And discussions about it were often an integral part of his strategy of seduction.

Now, there is also a third element of pre-discursive experience which was used by Schrödinger in his philosophical inquiry. This third element has something in common with the Zen practice of KOANS, namely enigmas which provide the listener with a feeling of instability, astonishment, or absurdity which may trigger realization and enlightenment. But here, it was Schrödinger who formulated his own KOANS for himself. In the first part of “My view of the World”, which was written in 1925, Schrödinger asks himself questions such as :

- Why are you YOU and not somebody else?
- Why do you live NOW and not at any other time?
- Think of this man who was sitting here one century ago : was he another person, wasn't he identical to YOU?
- After all, what is your “I”?

It was only after a series of such questions that he noticed : “It is by observing and thinking this way that one may suddenly experience the truth of the fundamental idea of Vedânta. It is impossible that this unity of knowledge, of feeling and of choice that you consider as YOURS was born a few years ago from nothingness. Actually, this knowledge, this feeling and this choice are, in their essence, eternal, immutable and numerically ONE in all men and in all living beings (...). The life that you are living presently is not only a fragment of the whole existence; it is in a certain sense, the WHOLE”⁹.

⁸ W. Moore, *Schrödinger, life and thought*, Cambridge University Press, 1989

⁹ E. Schrödinger, *My view of the world*, op. cit., chapter 5 of the 1925 essay

So, it can be said that Schrödinger derived his own version of the Vedântic doctrine of identity from the very same type of experiential source as the Indian philosophers who first formulated it. Unlike them, however, he was not able to stabilize this experience by Yoga; he was only exquisitely sensitive to the short periods of time when it manifests itself to every human being.

4 Criticism of the Mâyâ veil (1): the many-minds illusion

From his reading of the *Advaita Vedânta*, and from the basic experience he associated with it, Schrödinger inferred that the basic illusion, in our naive and scientific view of the world is that of *multiplicity*. Multiplicity of minds in the living bodies, and multiplicity of things in the material world. About the first type of multiplicity, Schrödinger wrote : “what seems to be a plurality is merely a series of aspects of one thing, produced by deception (the Indian Mâyâ)”¹⁰. And about the second type of multiplicity, he was just as clear : “Myriads of suns, surrounded by possibly inhabited planets, multiplicity of galaxies, each one with its myriads of suns (...). According to me, all these things are Mâyâ, although a very interesting Mâyâ with regularities and laws”.

I’ll take these two sorts of illusions in turn, even though they are deeply related to one another in Schrödinger’s account of them.

To begin with, Schrödinger does not attempt to *demonstrate* the many-minds version of the illusion of multiplicity. He rather tries to show how it is possible that one is immersed in that illusion, despite the unity of the mind. As for this latter unity, it is obvious and manifest, according to him. Not only because it affords a plausible solution to the problems and enigmas of the philosophy of mind, but above all because it is directly *experienced*. “The doctrine of identity can claim that it is clinched by the empirical fact that consciousness is never experienced in the plural, only in the singular. Not only has none of us even experienced more than *one* consciousness, but there

¹⁰ E. Schrödinger, *What is life* (epilogue), in: *What is life & Mind and matter*, op. cit.

is no trace of circumstantial evidence of this even happening anywhere in the world”¹¹.

So, why is it that, notwithstanding this basic unity, we believe there are several minds and consciousnesses located in the bodies of living beings? As a preliminary, Schrödinger offers us a metaphor tending to show that this illusion of multiplicity arising in an otherwise unique consciousness is not unthinkable. This metaphor is that of the dream, which is common in Western and Eastern philosophies as well: “When in the puppet-show of dreams we hold in hand the strings of quite a number of actors, controlling their actions and their speech, we are not aware of this being so. Only one of them is myself, the dreamer. In him, I act and speak immediately, while I may be awaiting eagerly and anxiously what another will reply (...). That I could really let him do and say whatever I please does not occur to me (...)”. So, the one Mind could well be similar to a dreamer who just happens to dream its own plurality, and have each of us human beings as a character in its dreamt theatre.

But, once again, this is only a metaphor meant to illustrate the *possibility* of the illusion. Schrödinger also develops a detailed and thorough reasoning tending to demonstrate that the illusion of the plurality of minds *was bound to appear* as an unavoidable consequence of our urge for objectivity, first in everyday speech and then in science. Let us start again from our most basic experience, namely that of a sentient, percipient and thinking domain which is identical with the whole world “(...) and therefore cannot be contained as a part of it”. The problem is that in order to master “(...) the infinitely intricate flux” of appearances, we cannot content ourselves with mere adhesion to this all-pervasive experience of unity. We have to adopt a dramatic simplification of the situation. This simplification amounts to systematic elimination of the emotional, qualitative, aesthetic part of our experience from our picture of the world : “we step with our own persons back into the part of an onlooker who does not belong to the world, which by this very procedure becomes an objective world”. Now, once this is done, my own body becomes part of the objective world; and since I (an

¹¹ E. Schrödinger, *Mind and Matter*, Chapter 4, in: *What is life & Mind and matter*, op. cit.

embodied being) experience consciousness, I conclude that my objective body is the bearer of a consciousness. By symmetry, I also infer that similar objective bodies (essentially human bodies) are also the seats of foreign consciousnesses to which I have no direct access. By doing so, I so to speak project (my) consciousness into the very objective world which I had initially produced by excluding myself (*qua* conscious being) from it. And I project consciousness several times, as many times as there are human bodies in the objective world. This being done, says Schrödinger, we can obtain an internally consistent account of the objective observable phenomena. But this remarkable result of our Western science is obtained at the cost of what he calls a “pandemonium of disastrous consequences” for our global understanding of our existential status. Three such “disastrous” consequences are : the problem of *qualia*, the problem of the relation between mind and body, and the general issue of Ethics.

About *qualia*, Schrödinger writes that “colour and sound, heat and cold, are our immediate sensations. Small wonder that they are lacking in a world model from which we have removed our own mental person”. Any attempt at accounting for *qualia* by means of some variety of neurophysiological reductionism is thus doomed to failure from the very beginning. Indeed, neurophysiological objects, as any other objects of science, are the byproduct of the initial “removal” of the qualitative component of our experience from our scientific picture of the world. No advance of scientific research can help one to recover what science has left behind it as part of its most fundamental methodological decision.

About the problem of the relation between mind and matter, it is just as obvious that it cannot be solved within our discourse about the objective world : “The objective (material) world has only been constructed at the price of taking the self, that is, mind, out of it, remaking it; mind is not part of it; obviously, therefore, it can neither act on it nor be acted on by any of its parts”.

So, if this problem of the action of mind on matter cannot be solved within the framework of our scientific representation of the objective world, where and how can it be solved ? Schrödinger offered his own

solution, which has a distinctly Vedântic flavour, in the epilogue of “What is life?”. He first emphasises the two following points : “(i) My body functions as a fine mechanism according to the laws of nature. (ii) Yet, I know by incontrovertible direct experience, that I am directing its motions”. Then he concludes : “The only possible inference from these two facts is, I think, that I - I in the widest meaning of the word, that is to say every conscious mind that has ever said ‘I’ - am the person, if any, who controls the ‘motion of the atoms’ according to the laws of nature”.

Of course, this is not to say that it is the “I” in the most restrictive individual sense which in some way controls the world; this rather means that the individual “I” is but an aspect of the whole which is identical to the universal “I”, and hence not fully distinguishable from this whole of which the world is also an aspect. As Schrödinger writes, “An Indian metaphor refers to the plurality of almost identical aspects which the many facets of a diamond gives of a single object, say the sun”¹². If the sun represents the Brahman, if the diamond represents the very process of the illusion, and if each facet or aspect represents an individual self, then it becomes clear that, at the most fundamental level, “the personal self equals the omnipresent, all-comprehending eternal self”. Translated in the Sanskrit vocabulary of the Upanishads, this gives : “Atman equals Brahman”. The latter expression, which Schrödinger considered more appropriate than its Latin equivalent “*Deus factus sum*”, was taken by him as the central insight that his own philosophical views shared with the Advaita Vedânta. In the 1950’s, when he was less and less involved in the Physics of his time and tended more and more to come back to his earlier interest for Indian philosophy, his conferences invariably ended with a comment of the sentence “Atman equals Brahman” that he called, half-smiling, “The second Schrödinger equation”¹³.

As I told you previously, the multiplication of consciousnesses, according to the multiplicity of human bodies in the objective world has also “disastrous” ethical consequences according to Schrödinger. The basic reason of these ethical consequences is that if we accept

¹² E. Schrödinger, *My view of the world*, op. cit., Chapter 4 of the 1960 essay.

¹³ This anecdote was communicated to me by Bernard d’Espagnat, who attended some conferences of Schrödinger

the illusion of multiplicity, we lose the basic insight of our real identity with all the other beings. This loss of insight may easily result into a terrible conflict between our enduring feelings for other beings, and our purely objectivistic and mechanistic conception of what they are. Schrödinger puts in front of us a striking example of such a situation : “Dear reader”, he writes, “recall the bright, joyful eyes with which your child beams upon you when you bring him a new toy, and then let the physicist tell you that in reality nothing emerges from these eyes; in reality their only objectively detectable function is, continually to be hit by and to receive light quanta. In reality, a strange reality ! Something seems to be missing in it”. I’ll come back later to the ethical content of the Vedântic doctrine of identity as Schrödinger understands it; an ethical content which is given the power to counterbalance the ethical poverty of the Western purely objectivist view of the world.

5 Criticism of the Mâyâ veil (2): the many-bodies illusion

Let me turn at this point to the second component of the Mâyâ veil, namely the naive realist view that there are intrinsically existing objects out there that impinge on our bodily senses and that explain our intersubjective agreement about them. To Schrödinger, this common sense conception is but the result of our endowing with intrinsic existence those aspects of phenomena that we have *isolated* at first during the so-called process of objectivation, in order to provide them with some *fake autonomy* with respect to individual perceptions and emotions. But there is no real duality between these objects and ourselves. And accordingly, since our personal self is ultimately identical with the ONE all-comprehending universal self, there is no real distinction between them. This version of non-duality is repeatedly expressed in Schrödinger’s successive writings. In “Mind and Matter”, for instance, we read : “No single man can make a distinction between the realm of his perceptions and the realm of things that cause it, since however detailed the knowledge he may have acquired about the whole story, the story is occurring only once and not twice. the duplication is an allegory suggested mainly by communication with other beings and even with animals; which shows that their perceptions in the same situation seem to be very

similar to his own, apart from insignificant differences in the point of view”¹⁴.

In the second part of “My view of the World”, which was written in 1960, one year before his death, Schrödinger develops the basic insight of his criticism of the dualist theory of knowledge, by relying on some arguments which have become classical in Western philosophy after Kant. To begin with, the idea that there exists an object beyond our representation of the world, which somehow causes this representation in us, appears superfluous to him. It does not even explain our inter-subjective agreement about the world, because it just duplicates the mystery of this agreement by adding another mystery to it: the mystery of a thing-in-itself which is inaccessible, except by means of the very representation it is supposed to cause in us. Even if we are not deterred by the strange assumption of something to which our representation conforms, but whose conformity to this representation we will never be able to assess directly by comparing them, we must beware of the spurious use of the concept of *causality* when we refer to the relation between the thing-in-itself and the representation. For, as we know since Kant, says Schrödinger, causality is a category of understanding which only applies to relations between phenomena, namely to relations which are internal to our representation. It would be an abusive extension to apply it to the relation between this representation as a whole and something which completely transcends it.

Thus, to Schrödinger as to Schopenhauer, the world *is* the representation itself; it is not an elusive something *beyond* the representation, which is supposed to be *re-presented*. Even objectivity has been reached by a process which is immanent to representation; it has nothing to do with reference to a thing which transcends representation. On the other hand, we can say that it is just the remarkable success of objectification, and especially the efficient stabilisation of the objective construal of the world by language and science which favours the illusion of a transcendent world of intrinsically existing objects. Something like a collective dream prompted by the social conventions of language. This idea is of

¹⁴ E. Schrödinger, *Mind and matter*, op. cit. chapter 4

course akin to the Buddhist and Vedântic analysis of language as a powerful means of reinforcing the metaphysical ignorance, namely the *AVIDYA*.

6. Ethics

As I suggested earlier, the two motivations of Schrödinger's adhesion to so many insights of the Advaita Vedânta and Buddhism may well be an ethical one. In the second part of "My view of the World" Schrödinger compares, from an ethical point of view, Materialism, which has often been taken as a natural correlate of the advances of science, with the Vedântic doctrine of identity. To him, both doctrines have "mystical and metaphysical aspects". Materialism is just *as* mystical and metaphysical as the doctrine of identity. It is metaphysical because it relies on the idea of an entity, matter-in-itself, which transcends the phenomena; and it is mystical because it postulates that every element of the representation arises from this unobservable entity (namely unobservable *apart* from the phenomena which are construed as its effects). These two mystical and metaphysical doctrines are just as good in principle, says Schrödinger, from the standpoint of their ability to explain the abstract relations between the various parts of our experience. But the doctrine of identity is definitely better than materialism on two points. It allows one to make sense of the very fact of experience, and not only of the relations between its phenomenal contents. Furthermore, it is intrinsically ethical, whereas Materialism just happens to be neutral with respect to any ethical consideration. Schrödinger was very concerned by this lack of ethical contents of our scientific picture of the world and the associated materialist doctrine. As he wrote in "Nature and the Greeks", "(Science) gives a lot of factual information, puts all our experience in a magnificently consistent order, but it is ghastly silent about all and sundry that is really near to our heart, that really matters to us. It cannot tell us a word about red and blue, bitter and sweet, physical pain and physical delight; it knows nothing of beautiful and ugly, good or bad, God and eternity. Science sometimes pretends to answer questions in these domains, but the answers are very often so silly that we are not inclined to take them seriously".

Where ethics is concerned, the materialist outlook can only lead one to a sort of utilitarian book of recipes. By contrast, the Vedântic doctrine of identity, and the Buddhist critique of the substantial self as well, incorporates what Francisco Varela has called an “embodied ethics”¹⁵. For when you *know* by incontrovertible direct intuitive evidence either (a) that you are *one* with every sentient being or (b) that nothing substantial makes you distinct from the other sentient beings, being good with others is a matter of course. Even the fact that, until now, the materialistic outlook has shown more technological efficiency did not deter Schrödinger from asserting the metaphysical superiority of the Vedântic doctrine of identity. For its defects are nothing, he wrote, when compared to its much higher ethical contents.

One example of this superior ethical contents has to do with our attitude in front of death. As I noticed previously, Schrödinger had his own peculiar (non-substantialist and non-personalist) version of the doctrine of reincarnation, based on his analysis of the *Nunc Stans*, the eternal Now. Actually, this analysis was the basis of his very broad Schopenhauerian view of the incompatibility between Death and the fact of spiritual life : “I venture to call (the mind) indestructible, since it has a peculiar time-table, namely Mind is always now”¹⁶. For after all, time, projects, memories, are essentially constructs of our Mind according to Schrödinger’s post-Kantian view. And “(...) what we in our minds construct ourselves cannot, so I feel, have dictatorial power over our mind, neither the power of bringing it to the fore nor the power of annihilating it”. Now, of course the previous sentences only concern what in our Western individualistic conception we would call *my* death as opposed to the death of *other* beings. But here again, the Vedântic doctrine of identity helps us in our trouble. For if we know and feel that there is only one mind, that there are no separate individual minds in the bodies of our friends but only the single mind of which we all partake, then this may be a deep consolation when a friend dies : “If you have to face the body of a deceased friend whom you sorely miss, is it not soothing to realise that this body was never *really* the

¹⁵ F.J. Varela, *Ethical Know-How: Action, Wisdom and Cognition*, Stanford University Press, 1999

¹⁶ E. Schrödinger, *Mind and matter*, op. cit. chapter 4

seat of his personality, but only symbolically, ‘for practical reference’?”. Here, I think Schrödinger has clearly perceived, in a Buddhist or Vedântic spirit, the deep connections between two sets of attitudes which are usually taken as antinomic in the West: unconditional love and altruistic care on the one hand, and “detachment” on the other hand.

7 Science and Indian Philosophy

To conclude, I would like to make some further remarks about the relations between science and Indian philosophy. Indeed many of my (Western) colleagues often ask me : “How is it possible that one of the greatest physicists of the 20th century held such a mystical philosophical standpoint? How can this philosophy be compatible with a scientific approach of the world?” To some extent, I have already answered this question in a negative way, when I mentioned that according to Schrödinger himself, the Western science had to be protected from a straightforward adoption of the deepest and more original insights of Indian philosophy. The reason I gave for that was simple: the success of science relies on a deliberate impoverishment of the domain it is meant to rule. As soon as this domain is deprived of any emotional, sensitive, ethical and even directly experiential content, being limited to some inter-subjectively shared structural patterns, then it becomes comparatively easy to tackle. In some way, science enhances a tendency which is already implied by the use of ordinary language, namely the tendency to believe in the intrinsic existence of the objects and properties that are at the same time pointed towards and shaped by a set of intersubjectively communicable symbols. And it is by means of this trick that science favours the attitude consisting in taking so seriously the symbols which allow the collective improvement of our ability at mastering our environment. So, one could say, on the one hand science tends to amplify the basic metaphysical illusion which is typical of everyday life; but on the other hand this amplification is the very reason of its remarkable achievements. Illusion can somehow be useful, as a way to promote an attitude of strong commitment with the tools and objects by which we can transform this very illusory world. Hence Schrödinger’s prudence, hence also his tendency never to mix up his

own work in physics with his Indian-like philosophical insights and hence also his assertion in the preface of “My View of the World”, according to which there is no philosophical teaching at all to be obtained from modern physics. However, this prudence, that some may find excessive, had its limits. One may easily detect subtle marks of Schrödinger’s philosophical position in some of his reflections on quantum physics, and even, may be, in some of his fundamental options as a practitioner of theoretical physics. Let me just point out two of these marks.

The first one concerns Schrödinger’s position in the debate with the members of the Copenhagen school on the interpretation of quantum mechanics. In “Mind and Matter”, he reminds his readers that the members of the Copenhagen School considered that the main philosophical teaching of quantum mechanics is that the separation between subject and object has collapsed. Or, as Heisenberg would have it, that the barrier between the Cartesian *Res cogitans* and *Res extensa* has fallen down. But Schrödinger replies that the formulation of the problem must be entirely reverted to become acceptable. Indeed, he says, speaking of the collapse of the separation between subject and object is absurd because there *never* has been such a separation. Subject and object *are but one* in primeval experience, and the Vedântic doctrine of identity just expresses this oneness. The true fact is not that quantum mechanics has broken a pre-existing barrier between subject and object, but that it has established a situation wherein the old procedures of objectification do not work any longer (not to their fuller extent, at any rate); a situation wherein one therefore has to invent entirely new modes of objectification, starting again from the immanent experience, in order to extend the domain of efficiency of science. It is only when one has realised that objectivity is not a gift of nature, but that it is obtained at the cost of a process of abstraction, that one is no longer surprised when it appears that quantum mechanics needs a re-evaluation of this process.

Another mark of Schrödinger’s Vedântic-like philosophy on his physics has to do with Holism. From the very beginning of his reflection on quantum physics, in 1925, Schrödinger advocated a view according to which the particles and atoms should not be construed as individual little bodies isolated from one another, but as

modes of vibration of a single background that he later identified with the universe as a whole. In his paper of 1925, on the Bose-Einstein statistics, there are beautiful sentences which say, in short, that particles are but wave-crests, or a sort of froth on the deep ocean of the Universe. Many of you are certainly struck by the analogy between this metaphor and the Buddhist or Vedântic metaphors of waves on the ocean, or of bubbles in the air, when the relation between the (fluffy) individuals and the (oceanic) absolute reality is to be evoked.

So, I think that it is not wrong to say that in spite of his understandable prudence, Schrödinger was so deeply immersed in a non-dualist Vedântic-like view that this served as a broad framework, and as a subliminal inspiration, in all parts of his work, including in theoretical physics.