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Dr. Saul M. Bergmann  
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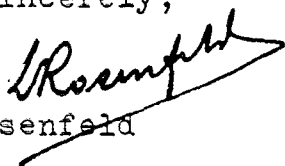
Dear Dr. Bergmann,

Thank you for your letter of the 9th December, in which you ask for an opinion about Everett's point of view on the presentation of the principles of quantum mechanics. This work suffers from the fundamental misunderstanding which affects all attempts at "axiomatizing" any part of physics. The "axiomatizers" do not realize that every physical theory must necessarily make use of concepts which cannot, in principle, be further analysed, since they describe the relationship between the physical system which is the object of study and the means of observation by which we study it: these concepts are those by which we give information about the experimental arrangement, enabling anyone (in principle) to repeat the experiment. It is clear that in the last resort we must here appeal to common experience as a basis for common understanding. To try (as Everett does) to include the experimental arrangement into the theoretical formalism is perfectly hopeless, since this can only shift, but never remove, this essential use of unanalysed concepts which alone makes the theory intelligible and communicable. In quantum theory, this point is absolutely crucial, of course, in view of the occurrence of complementary experimental situations, for the description of which different sets of concepts are needed, which are mutually exclusive.

The fact, emphasized by Everett, that it is actually possible to set up a wave-function for the experimental apparatus and a Hamiltonian for the interaction between system and apparatus is perfectly trivial, but also terribly treacherous; in fact, it did mislead Everett to the conception that it might be possible to describe apparatus + atomic object as a closed system. This, however, is an illusion: the formalism used to achieve this must of necessity contain parameters such as external fields, masses, etc., which are precisely the representatives of the uneliminable residues of unanalysed concepts.

This, in short, would be my reply to your question. I hope it may satisfy you, but if it doesn't, please do not hesitate to write again.

Yours sincerely,

  
L. Rosenfeld