

The price, however, is the abandonment of the concept of the uniqueness of the observer, with its somewhat disconcerting philosophical implications.

As an analogy one can imagine an intelligent amoeba with a good memory. As time progresses the amoeba is constantly splitting, each time the resulting amoebas having the same memories as the parent. Our amoeba hence does not have a life line, but a life tree. The question of identity or non identity of two amoebas at a later time must be rephrased. At any time we can consider two of them, and they will have common memories up to a point (common parent) after which they will diverge according to their separate lives after this point. It becomes simply a matter of terminology as to whether they should be thought of as the same amoeba or not, or whether the phrase "the amoeba" should be reserved for the whole ensemble.

We can get a closer analogy if we were to take one of these intelligent amoebas, erase his past memories, and render him unconscious while he underwent fission, placing the two resulting amoebas in separate tanks, and repeating this process for all succeeding generations, so that none of the amoebas would be aware of their splitting. After awhile we would have a large number of individuals, sharing some memories with one another, differing in others, each of which is completely unaware of his "other selves" and under the impression that he is a unique individual. It would be difficult indeed to convince such an amoeba of the true situation short of confronting him with his "other selves".

The same is true of one accepts the hypothesis of the universal wave function. Each time an individual splits he is unaware of it, and any single individual is at all times unaware of his "other selves" with which he has no interaction from the time of splitting.

We have indicated that it is possible to have a complete, causal theory of quantum mechanics, which simultaneously displays probabilistic aspects on a subjective level, and that this theory does not involve any new postulates, but in fact results simply by taking seriously wave mechanics and assuming its general validity. The physical "reality" is assumed to be the wave function of the whole universe itself. By properly interpreting the internal correlations in this wave function it is possible to explain the appearance of the world to us (classical physics, etc.), as well as the apparant probabilistic aspects.