

English summary of my talk:

The never-ending mystery of “time”

by

Hans Jörg Fahr

Institut für Astrophysik der Universität Bonn,

Auf dem Hügel 71, D-53121 Bonn

The deep mystery of the time phenomenon in us and in nature will never be dissolved into the form of a pure static knowledge. Asking what really means the concept of time for our understanding of the outside world will thus always highly be in fashion amongst intellectual people. Why does this naturally have to be so? Why don't we have a firm and closed answer on time? Isn't it just enough to measure "time" and, in doing this correctly, to escape from all further problems? But what does it mean when physicists "measure time"? Is it a measurement like that of the mass, the momentum or the energy of a physical object? Is `time` a thinglike quantity appearing in real objects of nature?

Very much to the contrast, it turns out that "time" never is genuinely connected with the object which we are describing, rather it is our unavoidable transcendental view of non-subjective being, non-immanent to our consciousness. Thus `time` is a totally irrelevant coordinate in all physical laws written in differential or integro-differential equations which all have solutions independent on the time when these equations are solved. Hence studying the actual processes in a physical system will never enable physicists to determine the age of the system. To solve cosmological equations will not help us to find the age of the universe. Time is only transcendental view of the world outside of our mind! It does not appear in fundamental laws of nature. Neither it is intrinsic to any physical process nor to any clock, even though the latter indicates tick-marks for just that quantity which unavoidably seems to run from smaller to larger proper numbers. How then does time come into business?

If our human consciousness would be without memory, would then the experience of time at all occur to us? Time for us results from the fact that we can differentiate between what we were, what we are and what we shall be without losing our personal identity in these changes of our status. And in

sharing our identity with the pure awareness of the outside world we come to the feeling that time not only is in us but also in natural processes. Thus for many researchers in this field it appears that the three arrows of the time, namely the psychological time-arrow, the thermodynamical time-arrow and the historical time-arrow may have one common root. All evolutionary processes - within the cosmology of the universe, the cosmogony of the solar system, the creation of civilized mankind and as well of our own personal character orient the arrow of the time into the direction of production of more order and information. On the other hand, according to thermodynamical principles, all physical processes are known only to run under the strict auspices of creation of disorder, i.e. of a loss of information. How can this be understood? We describe systems which all generate order on the basis of processes which permanently convert order into disorder. - My talk is intending to find an answer why and how we are doing this!

Oct. 3, 2000 H.J.Fahr