

Lajos Diósi

Robustness and Fragility



Born in Gyula (Hungary) in 1950. Undergraduate studies in physics at Eötvös University in Budapest until 1973. Since 1973, he has worked in the Research Institute of Particle and Nuclear Physics (RIPNP) of the Hungarian Academy of Sciences. Since 1986, he has been senior research associate. Obtained his Ph.D. in 1976 in high energy physics, his “Candidate of Science” degree in theoretical physics in 1986. His thesis for “Doctor of Science” degree in 1993 was rejected; his “Doctor of Academy” title is under current examination. Visiting scholarships: Technion (Haifa, Israel), Geneva University (Switzerland), International Centre for Theoretical Physics (Trieste, Italy), Niels Bohr Institute (Kopenhagen), Imperial College (London, England), Institute for Advanced Study (Jerusalem, Israel). He was Visiting Professor at Queen Mary and Westfield College (London, England). Author of 60 research articles. Main fields of interest: foundations of quantum mechanics, open quantum systems, Riemann geometry in thermodynamics, particle physics. Publications: “Emergence of Classicality: From Collapse Phenomenologies to Hybrid Dynamics”, *Decoherence: Theoretical, Experimental and Conceptual Problems*, eds. Ph. Blanchard, D. Giulini, E. Joos, C. Kiefer and I.-O. Stamatescu (Berlin: Springer, 2000). “On Hybrid Dynamics of the Copenhagen Dichotomic World”, *New Insights in Quantum Mechanics*, eds. H.-D. Doebner, S.T. Ali and M. Keyl (Singapore: World Scientific, 1999) L. Diósi, N. Gisin, and W.T. Strunz “Approach to Coupling Classical and Quantum Dynamics.” *Physical Review*. A61 (2000) – Address: KFKI Research Institute for Particle and Nuclear Physics, P.O.B. 49, H – 1525 Budapest.

I would call it a sentimental journey to Wiko-Deutschland. The co-travelling rational physicist, naive vain thinker, amused Fellow, and the stowaway Jew were not at all able to write a systematic itinerary. Read it, please, with empathy for all four travellers.

I became a theoretical physicist with the tacit intention that my career be independent of the Otherwise Relevant Circumstances like establishment, publicity, interdisciplinarity, local priorities and other criminal things. I did not trust them. I trusted in the autonomy of physics and of myself. I have built up a decent career and, regarding my scholarly work, I would have ignored most of the ORC. The bad thing was that I became isolated to an extent which I did neither really deserve nor desire. Though I travelled frequently abroad, the vacuum was annoying in Hungary. Then the Wiko's invitation to join John Briggs' focus group suddenly delighted me. A quick glance at the Wiko's yearbooks foretold that, after decades of voluntary secession, I could rejoice in the ORC on a golden bridge. Indeed, most Fellows from fields far from mine showed interest and tolerance in communicating their expertise to me. Regarding my field, I entered interpretational debates, translated physics terminology into and from common language, and talked about physics with nearly everyone. I was doing all the things which I had earlier considered flimsy self-propaganda, prostitution, or just populism. Surely, my research field must be so abstract for the non-experts!

Since my youth I have constantly been attracted by the peculiar features of quantum theory. That our world is described by a twofold model! One is classical Newtonian physics for the robust macroscopic phenomena. The other is that Heisenberg-Schrödinger quantum physics for the fragile microscopic phenomena. Yet, nowadays we think that quantum physics is the fundamental one and that it is valid for the robust as well as for the fragile phenomena. However, the present form of quantum theory can not work without the classical one. The quantum theory in itself cannot predict any objective physical event. Nor does the existence of time follow from pure quantum theory, since time would assume a sequence of objective physical events. If one could derive the existence of time from the quantum theory, then all the other robust classical phenomena could probably also be derived and we would not need a separate classical theory anymore. But this has not been done so far. Nonetheless, a number of issues related to the coexistence of the quantum and classical theories have been solved. Without the proper understanding of this coexistence, it would be hard to understand a possible priority of the quantum theory.

Well then, I wrote a few related essays and articles. And close to the end of the academic year, when preparing for a conference talk, I came up with new conjecture relevant to the relationship between time and quantum mechanics. Time can not be derived from quantum theory! I think that time-continuous phenomena (which include time itself) can not be derived at all, unless we violate the principle of physical causality. Namely, the effects may sometimes come a little bit earlier than their causes. For the

time being, such a compromising theory does not exist either. Still, if I'm right, one has to search in this direction.

During the year, I made many friends among the Fellows and staff, I got encouragement from them and I encouraged others. I can only confirm the testimony of the old Fellows, whose reports have already immortalized every stone on Wallotstraße and in Grunewald.

On a cloudy Sunday, not far from here, my mother and I were roaming in Reinickendorf to identify the stones of the "Außenlager", a station of her terrible journey in 1944–45. I was six when my parents first talked to me about the fate of Jews. I have never stopped learning this unspeakable history. I knew the horrible German past. Of course, I spoke some German, like everyone did in my family. Moreover, I respected this apparently undestroyable tradition, took Eva Hund's German courses and definitely improved. It would be fair to praise each member of the untiring cheerful staff, name by name. I dreamt that I would talk to them in fluent and creative German. Some day I will, indeed!