

Prof. Orly Shenker

Short Bio:

After obtaining an LL.B from Tel Aviv University (1984) and working a few years as a lawyer, I did a BA in Physics and the Hebrew University (1991) and then a PhD in the Philosophy of Science (1997) with Itamar Pitowsky. After post doctoral fellowships in Cambridge (1997) and Oxford (1998) and then at the Hebrew University (1999) and Haifa (2000), I started a position as Lecturer at London School of Economics, department of philosophy (2000-2002). For personal reasons I returned to Israel, and spent a few years teaching in various colleges and at the Open University (2002-2010). During that period I continued my research, supported partially by a position of Senior Researcher at Haifa University and a grant from ISF. At 2010 I entered the Hebrew University's Program in History and Philosophy of Science as Senior Lecturer, and since 2015 I am an Associate Professor. Since 2013 I am also director of the Edelstein research center for history and philosophy of science, and Academic Director of the Bar Hillel International Colloquium for the History and Philosophy of Science. In these positions I organized in December 2014 an international workshop in Jerusalem on "The Aims of Brain Research: Scientific and Philosophical Perspectives", which brought together brain scientists and philosophers to discuss the future and prospects of the field.

Research Interests:

My active research is in two fields. One is the foundations of physics, with special interest in statistical mechanics and in the explanation of the time directedness of processes, in the framework of both classical mechanics and quantum mechanics. Most of my publications are in this field, including my book (with Meir Hemmo) *The Road to Maxwell's Demon* (Cambridge University Press 2012), which offers a new conceptual foundation for statistical mechanics. The book points out that the standard approaches to this theory (in both the Boltzmannian and Gibbsian traditions) there is an essential role for a non-physical observer; and our book shows how to make the theory fully physical in this sense. The result is a new concept of macrostates, which gives rise to a new understanding of the concept of probability, both in general and as it is used in classical and quantum physics. This concept is the basis of our rejection of the typicality approach, and to our conclusion that Maxwell's Demon is compatible with the principles of statistical mechanics.

My second active research is in the philosophy of mind. I believe that insights gained from the investigation of the foundations of physics shed light on traditional problems in philosophy, associated with the philosophy of mind. Here, my major project is defending strong reductive type physicalism as a coherent and viable approach. On the way to this aim I defend physicalism against two major attacks: one is by the idea of multiple realizability of the mental by the physical, and the other is by conceivability arguments. I claim that the so-called hard problem can be met by strong type physicalism, and so can the problem of freedom in a physical world.

I believe that these results have consequences with respect to the aims of brain research and the directions in which one can hope to make progress in this field. Therefore, communication between brain researchers and philosophers is of great interest to me.

I am also interested in attempts to salvage a notion of rationality in science, especially as compared to the rationality of other spiritual and intellectual approaches and currents.