

Book title: Einstein's Dice and Schrödinger's Cat

Author: Paul Halpern

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A Bad Night at the Academy

In January 1947, Erwin Schrödinger, Nobel laureate and Senior Professor of Physics at the Dublin Institute for Advanced Studies, announced at a seminar at the Royal Irish Academy that he had made an important breakthrough in unified field theory, a fearsome problem in modern physics that Einstein had grappled with for many years. The seminar was attended by the great and the good of Irish academia, including Taoiseach Eamon de Valera, who had persuaded the Austrian-born Schrödinger to take up a position at the Dublin Institute almost a decade before. Schrödinger's announcement was breathlessly reported in Irish media outlets such as *The Irish Press* and *The Irish Times* the next day, under headlines such as 'Scientist at Irish Institute succeeds where Einstein failed'.

The story was quickly picked by the international media, and Einstein was pressed by the *New York Times* to respond. Respond he did, pointing out in a rather brusque press release that Schrödinger's 'breakthrough' was merely a reformulation of ideas that had already been proposed, and scolding the press for inappropriate hype. Einstein's response generated further press coverage, not least from the *Irish Times* satirist Brian O'Nolan, who sardonically asked "What does Einstein know of the meaning of words? Very little, I should say". Meanwhile, Schrödinger accepted Einstein's criticism, but the incident – afterwards named the 'Einstein debacle' by Schrödinger - led to a temporary cooling of relations between the two great scientists and erstwhile colleagues.

This interesting media contretemps between Einstein and Schrödinger is the central scene of the book '**Einstein's Dice and Schrödinger's Cat**', by the American physicist and science writer Paul Halpern. Intrigued by his discovery of a box of press clippings describing the incident at the Albert Einstein Archive at Princeton, the author considers the dispute between the two giants of 20th century physics anew, setting it in the context of their lengthy collaboration in matters of science, not least their allied stance against the mainstream understanding of the quantum world.

Indeed, the title of Halpern's book refers directly to Einstein and Schrödinger's mutual rejection of the conventional view of quantum physics. While each played a seminal role in the discovery of the strange behaviour of nature on the quantum (or microscopic) scale, each distrusted the orthodox or 'Copenhagen' interpretation of quantum theory that emerged in the late 1920s. In Einstein's case, his "God does not play dice" mantra neatly summarized his rejection of the inherent randomness of nature implied by the Copenhagen interpretation. As for Schrödinger, a famous thought experiment involving a cat in a box

highlighted difficulties with the consensus view that a quantum entity only acquires a well-defined energy state on observation (what state is the cat in before it is observed?)

The reader is thus brought on a whirlwind tour of quantum physics, relativity and the search for a unified field theory (better known to modern readers as ‘the theory of everything’), enmeshed with potted biographies of Einstein and Schrödinger. Many aspects of this story have been told elsewhere, but Halpern’s account includes an unusual and interesting emphasis on the interaction between the two great scientists, from Einstein’s inspiration of Schrödinger as a young student to their common interest in general relativity, from their friendship as colleagues in Berlin during the golden years of the Prussian Academy to their gradual isolation from the physics community due to their stance on quantum physics. The author also traces the many points of intersection in the life stories of the two scientists, from their early careers in Switzerland and Austria to their work in Berlin, from their travails due to the rise of the Nazis to their exile at the Institutes for Advanced Study in Princeton and Dublin respectively.

A most original aspect of the book is the use of correspondence between Einstein and Schrödinger ranging over several decades, providing many illuminating insights into their approach to the philosophy of physics. Much of this material is new, even to historians of science, as it was translated by the author from handwritten letters on the Albert Einstein Archive that are not widely available.

Halpern also does a thorough job on the science, although it is not a light read for readers unfamiliar with fundamental concepts of quantum physics and general relativity. Indeed, it could be argued that the level of detail somewhat masks an important theme of the book, the great (and mistaken) excitement felt by Einstein and Schrödinger in turn as they mistook ever more sophisticated formulations of general relativity as important milestones in the quest for a theory of everything.

One puzzling aspect of the story is a noticeable difference in narrative style between the description of the central scene – the press spat between Einstein and Schrödinger - and the careful historical approach of the rest of the book. The author’s account of the build-up to the dispute seems rather speculative, peppered with unsupported statements such as “Schrödinger was a brilliant man but not a particularly brave one...he yearned to be admired...and faced immense pressure to justify his salary”. In addition, the description of the dispute itself relies heavily on contemporaneous newspaper reports, leaving the reader to wonder whether the incident was something of a media storm in a teacup. For example, it is known that Einstein wrote directly to Schrödinger soon after the latter’s ill-fated seminar at the Royal Irish Academy, outlining his view of the ‘breakthrough’; meanwhile, Schrödinger wrote to Einstein, apologizing for his hyperbole and the resultant press reaction. Such communication between the main actors hardly constitutes “a media war that tore apart their decades-long friendship”, as stated in the opening line of the book. It’s also worth noting that Einstein himself erroneously announced a ‘solution’ to the problem of unified field theory on several occasions over the years, so it is unlikely that he bore any lasting grudge against Schrödinger for similar hubris. Indeed, the two resumed their correspondence on matters of physics some time after the incident.

All in all, a well-researched tale of an intriguing kerfuffle between two of the greatest scientists of the 20th century, with an interesting angle for Irish readers. The story will be a

compelling read for anyone with an interest in how science is done, or with an interest in the interaction of scientists with the media.

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