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Pride and prejudice

Science and religion are two separate fields, as Dawkins clearly states in his book ‘The God delusion’¹. His crystal-clear and critical analysis shows that religion hinders the development of an independent mind in young people. More specific, it is the church with its clerics that is most guilty of this negative role. In a recent paper by Polkinghorne, the interplay of physics and religion is considered on a more philosophical basis, emphasizing the role of searching for a wider context for understanding the intelligibility of the structure of physics².

Is physics free from this pitfall of the church and its clerics? The answer is yes, most of the time, not always. When ‘believing’ hinders the dissemination of ground-breaking physics, we should investigate its cause and learn to avoid it in the future. The tale of a brilliant PhD student Hugh Everett III at Princeton University (1957) and his many-world or multi-(uni)verse interpretation of quantum mechanics is a compelling story told by Peter Byrne in Everett’s biography³.

The story of Hugh Everett III starts in 1954 in Princeton. The main characters are his advisor John Wheeler and Niels Bohr, as the proponent of the Copenhagen interpretation of quantum mechanics. Along comes an excellent student, with an out-of-the-box idea for devising a ‘universal wave function’. This approach eliminates the special treatment of observation of a system by an external observer and the corresponding collapse of the wave function. In January 1956, he submits his thesis to his advisor. At first, John Wheeler is exhilarated by this idea. With minor revisions, a final bound copy of ‘Wave mechanics without probability’ is ready and sent to a select group of physicists by Wheeler. Most likely, to probe their opinion on this new approach, as can be read in his accompanying letter³ to Niels Bohr.

Then the PhD train starts to derail. Bohr and his circle strongly oppose Everett’s approach, as becomes clear during a visit of Wheeler to Copenhagen. It is too distant from the ‘religion’ of the Copenhagen school. When you do not like the message, don’t kill the messenger. Instead of keeping in mind that a PhD thesis should be the proof that the student can perform independent research that is well documented, Everett’s work is tested on its merit to please everybody.

With an appreciable delay, in February 1957, Wheeler and Everett sit down together to rephrase the thesis. The final version ‘On the foundations of quantum mechanics’ is officially accepted on April 15, 1957.

In the meantime, Hugh Everett had left university to pursue a career with the government in Washington DC. His interest in a scientific career had been strongly damped by the unpalatable process regarding his thesis work. He had lost faith in the scientific community. Everett’s capabilities in modeling landed him in the Weapons Systems Evaluation Group at the Pentagon. Here, he worked on scenarios relating to the Cold War. One of the most important conclusions of the group is that nuclear war is fatal for *both* parties involved. A balanced capacity of mutual destruction is

the only feasible option. Again, an out-of-the-box answer was generated, which was not appreciated by the military.

In my career at university, I have seen too many research groups where the advisor insisted on running experiments and analyzing data up to the last day of the contract of the PhD student (four years in the Netherlands). In these cases, the student had to finish his thesis and related papers in his own time, writing his thesis in parallel to a job or surviving on unemployment benefits. Pride or ego of the advisor – I need as many data or papers as possible – and prejudice or self-interest – I pay for him, so he has to work for me – then play a rather negative role in educating young scientists. As senior scientists, we should know better! And behave accordingly. ■

¹ Richard Dawkins ‘The God delusion’ (Bantam Press, 2006);

² John Polkinghorne *EPN* 45, 29 (2014);

³ Peter Byrne ‘The many worlds of Hugh Everett III’ (Oxford, 2010).

