

Heroes, monsters and people: When it comes to moral choices, outstanding physicists are very ordinary

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Members of the Nazi Youth participate in burning books, Buecherverbrennung, in Salzburg, Austria, on April 30, 1938. Stark and Lenard would have included Einstein's work; Heisenberg and Planck would have demurred. But was that really enough?
Photo by: AP Photo

Last week, on the plane back from Chicago, I finished Philip Ball's book about physics in Germany in the nineteen-thirties and -forties. I'm still thinking about it, and I'm trying to work out why it has left such a strong impression. I think it is because the compromises, recriminations and judgements formed have echoes, weak but clear, in so many other arguments going on today.

It is difficult to be nuanced about Nazis. There are obvious reasons for this, but it is nevertheless sometimes important to try. That genocidal ideology came from somewhere, and looking back on the period through a lens which colours everyone as hero or monster is not necessarily helpful for gaining understanding, and therefore not necessarily a good approach to the prevention of such abominations in future.

Even that previous paragraph is fraught with difficulty, of course. When the Murdoch media ran a video of the six-year-old future Queen giving a Nazi salute, I thought it defensible to show the film - not as an attack on the Royal Family, but as a reminder that such things could be deemed acceptable at that time. The Nazis didn't come pre-equipped with the political and moral pariah status they deserved. When I said as much on facebook, at least one German friend of mine thought I came very close to the kind of apologia made too often in postwar Germany, that "ordinary people" just didn't know how bad the Nazis were. Well, if they had read "Mein Kampf" they would have known. As George Orwell put it in his 1940 review of Hitler's 1926 manifesto:

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it is difficult to believe that any real change has taken place in his aims and opinions. When one compares his utterances of a year or so ago with those made fifteen years earlier, a thing which strikes one is the rigidity of his mind, the way in which his world-view *doesn't* develop.

So how can anyone who worked within such a system be anything other than evil? Surely any stance other than total opposition makes one a villain, and to argue otherwise make one an apologist for murder?

The way Ball navigates these dangerous waters makes "Serving the Reich" immensely impressive. His book is a study of the lives and actions of some of the great 20th Century physicists who stayed in Germany throughout the thirties, and in some cases throughout the war.

Ball focuses on Max Planck, Werner Heisenberg and Peter Debye, all brilliant, and Nobel prize winners (even though the Nazis officially boycotted the prize from 1935). The first two were founders of quantum mechanics who remained in Germany throughout the war. The third, Debye, was a brilliant scientist on the border with chemistry, who led the Third Reich's premier physics institute until he left for America in 1940.

To be honest there is little else good to say about Heisenberg. The best is that he never joined the Nazi party, even though that would probably have helped his career. Other than that he seems to have been an arrogant opportunist, whose post-war attempts at self-justification do him more harm than good in light of the secret recordings the British secret service made of interned German physicists after the war at Farm Hall. Perhaps even the distance he retained between himself and the party was calculated - his colleague Pascual Jordan was probably the most distinguished founder of quantum mechanics not to receive a Nobel Prize, possibly because he was an enthusiastic Nazi.

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Planck comes across as a rather tragic figure, an elderly German patriot whose reaction to a regime he disliked was to try to protect German physics from political interference. Like Heisenberg he had a very high opinion of his own importance and his ability to moderate the excesses of the Nazis - an opinion that eventually became unsustainable. In 1935 he stepped down, under pressure, from the presidency of the Kaiser Wilhelm Gesellschaft (KWG - later renamed after him). It seems impossible not to feel sympathy for him - even those driven out of German physics under his watch seem to have held him in high regard, and his son was killed by the Gestapo for involvement in a plot to assassinate Hitler. However, Max Planck himself is no simplistic hero.

Debye is arguably the most confusing, and probably the least discussed to date. A Dutch citizen who rose to lead the Kaiser Wilhelm Institute in Berlin, he left when it was set to become so militarised that he was told that in order to continue his leadership, he would have to give up his Dutch citizenship and become German. He refused, but it is not clear this was due any moral objection to working for the Nazi war effort. He moved

to Cornell University, and the until-then largely uncritical assessment of his war record was suddenly attacked in 2006, 40 years after his death, when he was controversially accused of being a keen anti-semitic who probably moved to the US in order to spy for the Nazis. Such extreme accusations seem unconvincing, especially given that Debye was, for example, instrumental in helping Lise Meitner escape.

Meitner herself, discoverer of nuclear fission and one of the greatest nuclear physicists in the world, was in danger because of her Jewish heritage, but continued working within German physics until the very last moment - long after others such as Einstein and Schrödinger had left. Without Debye's help, she probably would not have made it out alive.

Ball's assessment of all three individuals is neither uncritical nor totally condemnatory. His harshest words are for the almost total lack of anything we would recognise as a moral standpoint in "German Physics" before and during the war, and the hasty postwar "de-Nazification process" in which much was swept under the carpet. Much of the guilt was hung upon Johannes Stark and Philipp Lenard and their crazy "Aryan Physics" movement. Mediocre physicists who rejected relativity and quantum mechanics as "decadent Jewish science", they were clearly culpable; but the fact that the German physics establishment resisted them does not provide it with absolution. Even the Nazi hierarchy were not stupid enough to confuse science and racist ideology completely, especially when potentially war-winning technologies were at stake. The Nazi leadership seem to have treated the proponents of 'Aryan Science' like an enthusiastic but incontinent puppy; tolerated, sometimes indulged, but slightly embarrassing and not taken at all seriously.

Ball concludes that the physicists in general had a complete lack of a plan, or even of moral position. This seems to be consistent with Meitner's attitude to her colleagues after the war, too. She knew most of them personally, and was acutely aware of the pressures they were all under, as well as the consequences of inaction. Her moral authority is higher than most. I want to read a book about her now.

A book I am reading now is "Geons, black holes and quantum foam" by the American physicist John Archibald Wheeler. Wheeler describes a "misjudgement" he made in the thirties, being initially of the opinion that a German-dominated Europe might be best chance for peace. He changed his mind, partly influenced by conversations with Jewish friends. That a man who later went on to work enthusiastically for the allied war effort against the Nazis could make such a mistake is illustrative of the times. His frank acknowledgement of his error is something that is disturbingly lacking from many of those in Ball's book. Even the story concocted by Heisenberg and others, that they weren't really trying to make an atomic bomb for Hitler, seems as much an attempt to protect their reputations as great physicists as it is to salvage any standing they might have as moral human beings.

In her recent autobiography, the particle physicist Mary K Gaillard describes a remarkable life full of great breakthroughs - she predicted the mass of the charm quark before it was discovered, predicted the existence of "gluon jets", and was one of the first to provide a manual for the different ways a Higgs boson might appear in experiments. She also describes the obstacles she and other female physicists face in making a career in a "Singularly Unfeminine Profession". Colleagues in the story sometimes help, are sometimes indifferent, and sometimes overtly sexist. It is remarkable how often these are the same person. Like Ball, Gaillard manages to critique the actions while holding back on condemning individuals.

This again illustrates the ideas that have stuck with me and kept Philip Ball's book in my mind. Some actions and attitudes are definitively right or wrong; but people themselves are complicated. Heroes are fallible, and

there are few unmitigated monsters. And whatever its strengths, science is not very useful for sorting them out, and not very good at providing moral guidance.

Signing “Heil Hitler” to the letter expelling Jews from the German Physical Society (DPG) was despicable. Helping Lise Meitner escape was good. Peter Debye did both.

Jon Butterworth's book Smashing Physics is available as “Most Wanted Particle” in Canada & the US. He is also on Twitter.

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