

**Reaction Paper: Ethics of Science in the Modern National Corporate State:
Some Key Values in Conflict in Copenhagen, as I See Them**

The refusal of people who were on the Los Alamos team to attend a reception for Heisenberg after the war had ended left a strong impression on me after reading *Copenhagen*. I cannot see how people who worked on a project that resulted in the deaths of thousands of people could claim the moral high ground. For me, the answer to the question “Does one as a physicist have the moral right to work on the practical exploitation of atomic energy?” is no, whether that physicist is working for Hitler or the United States.

The question becomes a bit fuzzier if you take into account that the practical exploitation of atomic energy could refer to building a reactor or a bomb. If a reactor is harmless, I think a scientist working on a reactor is more morally justified than one developing an atomic bomb. The problem is that even if a scientist is intending to conduct peaceful research, their results could be applied to develop weapons. However, presumably further research would be needed to go from building a reactor to building a bomb, so if all scientists refused to conduct that research on moral grounds, then no bombs would be made.

The problem is that just as all people do not always act morally, neither do all scientists. However, an amoral trash collector probably has less potential to do damage than an amoral scientist, as illustrated in sci-fi books and movies, as well as real life examples. Can morality be taught? If so, this would seem like a good subject to go alongside introductory physics in college. Even if morality cannot exactly be taught, there are lots of morally ambiguous situations that might come up when a primer on the ethics of science might be a useful reference.

One issue that is brought up in *Copenhagen* is the situation where a scientist is performing questionable research to prevent someone else who might do more harm from taking

over the project. This is suggested as possible motivation for Heisenberg conducting his research and making just enough progress to stay in control, so as not to have the project handed over to someone who would actually develop a bomb. Whether this was the case with Heisenberg or not, I think this is in general not a good idea. I might be thinking more idealistically here than practically, but if all scientists refrained from conducting research to develop weapons, then if one were to step down or be removed from his or her position developing weapons, there would be no one to take his or her place.

The problem is that governments and their militaries have lots of funding for scientists who are willing to develop weapons. Money is difficult to resist for people in all professions, regardless of the moral implications of the situation. As a pacifist who is against the military on a very basic level, I do not think scientists should be conducting military research, with the possible exception of developing ways to help wounded and injured people get better. However, with all the funding available, it is hard to imagine scientists refusing to conduct military research en masse. Perhaps a stronger ethical education for scientists would help, or more private donors to fund science. Of course, having private corporations fund research has its own moral implications. More funding from non-military sectors of the government would be also be an improvement.

In *Copenhagen* we get a glimpse of all the various justifications Heisenberg provides for his actions. If it is true that people tend to make decisions first and then try to think about why they made them, perhaps an ethics of science course would only provide excuses scientists could use to justify their decisions as moral rather than actually having an effect on the decisions that scientists make. In *Copenhagen* it is suggested that people are in a sense blind to their own thoughts and intentions. Margarethe and Bohr can see Heisenberg but he cannot see himself. Perhaps a stronger community where individuals critique the morality of other's choices and help each other to make the moral choice is the answer to more ethical science.