

Core 390
Senior Seminar
The Building of the Atomic Bomb
Spring 2006

Instructor: Mr. Clayton Gearhart

Office: Peter Engel Science Center, room 105 (north side, on Science Center parking lot level)

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Office Hours: Whenever I am in, and by appointment. Details are given below.

Texts:

Richard Rhodes, *The Making of the Atomic Bomb*

Mark Walker, *German National Socialism and the Quest for Nuclear Power*

J. Samuel Walker, *Prompt & Utter Destruction: Truman and the use of atomic bombs*

Edward Corbett and Sheryl Finkle, *The Little English Handbook* (“Recommended”—but you should have easy access to this book.) If you prefer, you are welcome to use the Bedford Handbook instead.

book of your choice on ethics and “ethical frameworks”

Brief Course Description:

Scientists, engineers, and other professionals have ethical obligations to their employers, their professions, their societies, and not least, themselves. What can happen when these obligations conflict? What happens, for example, when a scientist’s research results in discoveries that raise ethical questions or conflicts? In this course we examine how these conflicts arose and to what extent they were resolved in the development of the atomic bomb. In 1939, just before the start of the second world war, it suddenly became apparent to physicists throughout the world that unanticipated developments in nuclear physics implied the possibility of a nuclear “chain reaction” that had the potential to produce large amounts of energy—and possibly, a bomb. In the United States, the Manhattan Project succeeded in developing an atomic bomb; it was used to compel the surrender of Japan. In Hitler’s Germany, similar efforts to develop nuclear energy did not succeed. We will examine the attempts to develop nuclear energy in both countries, and will try to understand why one effort succeeded and the other failed; how the participants in these projects perceived their ethical obligations; and what implications we can draw today. We will also talk about what influence these scientists had in how their work was eventually used by political leaders. In this course I emphasize the importance of placing oneself in the position of these scientists, and not simply analyzing and judging their actions from our perspective today.

Course Requirements:

- Attendance and participation in class discussion.
- Meet in small groups (four or five people) for about an hour, once a week. Each week, I will assign these groups to prepare to lead part of the class discussion for the next class. Usually I will suggest topics, but sometimes I will leave you free to formulate your own, as long as they relate to the course.

One person in each group (but a different person each time) should prepare a short (1–2 pages, double-spaced, with one-inch margins) summary of the meeting. These summaries should be turned in to me on Tuesday morning. This deadline is particularly important, since I will use them to help organize the class for that week.

- Outside reading: About 50 to 75 pages of reading per week, in addition to text assignments. No more than half of this outside reading should be done from books for which you write reviews (see below). I have placed a list of books on the course web site, and you are welcome to seek out your own.
- mid-semester and final examinations (open book, essay exams)
- three book reviews (each about 5–6 pages, double-spaced, with one-inch margins). I have placed a list of books on the course web site, and you are welcome to seek out your own. I will ask that if you want to review a book that is not on my list, you clear it with me first.

Use journals such as the *New York Review of Books* to get some idea of how to organize and write a book review. We will talk about them in class, of course.

- short “reflection” papers, due each Tuesday morning: Identify a particular issue or topic suggested by your reading, and use it as the basis for a short essay (1–2 pages, double-spaced, with one-inch margins) in which you take a position and argue it. When possible, pick topics that have an ethical component to them.

In these papers, please list your outside reading for the week, whether or not you use it for your paper.

If you are doing a group report, you may substitute it for your “reflection” paper.

I prefer printed copies if it is convenient, but will accept e-mail submissions if necessary.

- occasional oral reports

OFFICE HOURS

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1. whenever I am in, and by appointment. My schedule for this semester is still a bit unsettled, but initially I expect to be in most afternoons.

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I will often not be in on Friday afternoons, and I sometimes work at home on odd mornings. Otherwise, except for occasional faculty meetings, seminars, dentist appointments, etc., I am usually around. If I am not in my office, I will often be found in one of the shops or laboratories nearby; please feel free to look for me there. Questions and other messages can be sent via e-mail. (I check e-mail several times a day, and try to respond quickly. I also occasionally check voice mail, but e-mail is almost always quicker and more reliable.)

If you are coming from any distance, please feel free to call first and see if I am in. If you have any trouble in finding me, please say something before or after class, and we will schedule a time.