

FYSICA 2025 – Leiden 11 April 2025

Focus session 1 of the NNV section for history and the foundations of physics

Physicists Shaping Innovation: Oppenheimer and the ambivalence of physicists towards the industrial relevance of their discoveries

It is sometimes said that the sciences determine what we *can* do, while the humanities decide what we *should* do. But this simplistic division entirely overlooks the role of the scientist in difficult ethical and philosophical questions development of new theories in technology. What has the role of physicists been historically, and what should it be? Two sessions, organized by the history and foundations of physics section of the NNV, aim to explore the ethical and societal challenges that arise as physicists push the boundaries of emerging technologies.

This first session consists of two historically-oriented talks. One is on Oppenheimer's development of the atomic bomb and the other on the attitudes of physicists towards technological innovation more broadly.

Speakers:

Fedde Benedictus (Managing Editor of *Foundations of Physics*): The Road to Oppenheimer

In 1939 Albert Einstein sent a letter to the US president Franklin Roosevelt. The otherwise pacifistically inclined scientist urged Roosevelt to start the development of an atomic bomb, because of disturbing news that the nazi's were close to making one of their own.

In this talk I will describe the slippery road of subatomic discoveries that ushered in a new era for humankind. These discoveries led to advances in medical science undreamt of before the 'nuclear age', while at the same time making it possible to unleash the most destructive power the world had ever seen.

Frans van Lunteren (Professor of History of the natural sciences, Leiden University): The Ambiguous Attitude of Physicists Towards Physics-Based Technology and Industry, 1870-1970

The emergence of modern physics as a discipline coincided with the establishment of the first university laboratories in the 1860s and 1870s. One of the driving forces behind the foundation of these laboratories was the growing industrial relevance of physics. The gradual electrification of society was closely linked to a series of discoveries and precise measurements in the burgeoning field of electricity and magnetism. This new social significance generated widespread unease among academic physicists, who preferred to view their mission as a cultural one. In this talk, I will explore the background of the physicists' ambivalence and examine some of the strategies they employed to both benefit from their perceived usefulness while distancing themselves from the stigma of commercialism and materialism.