

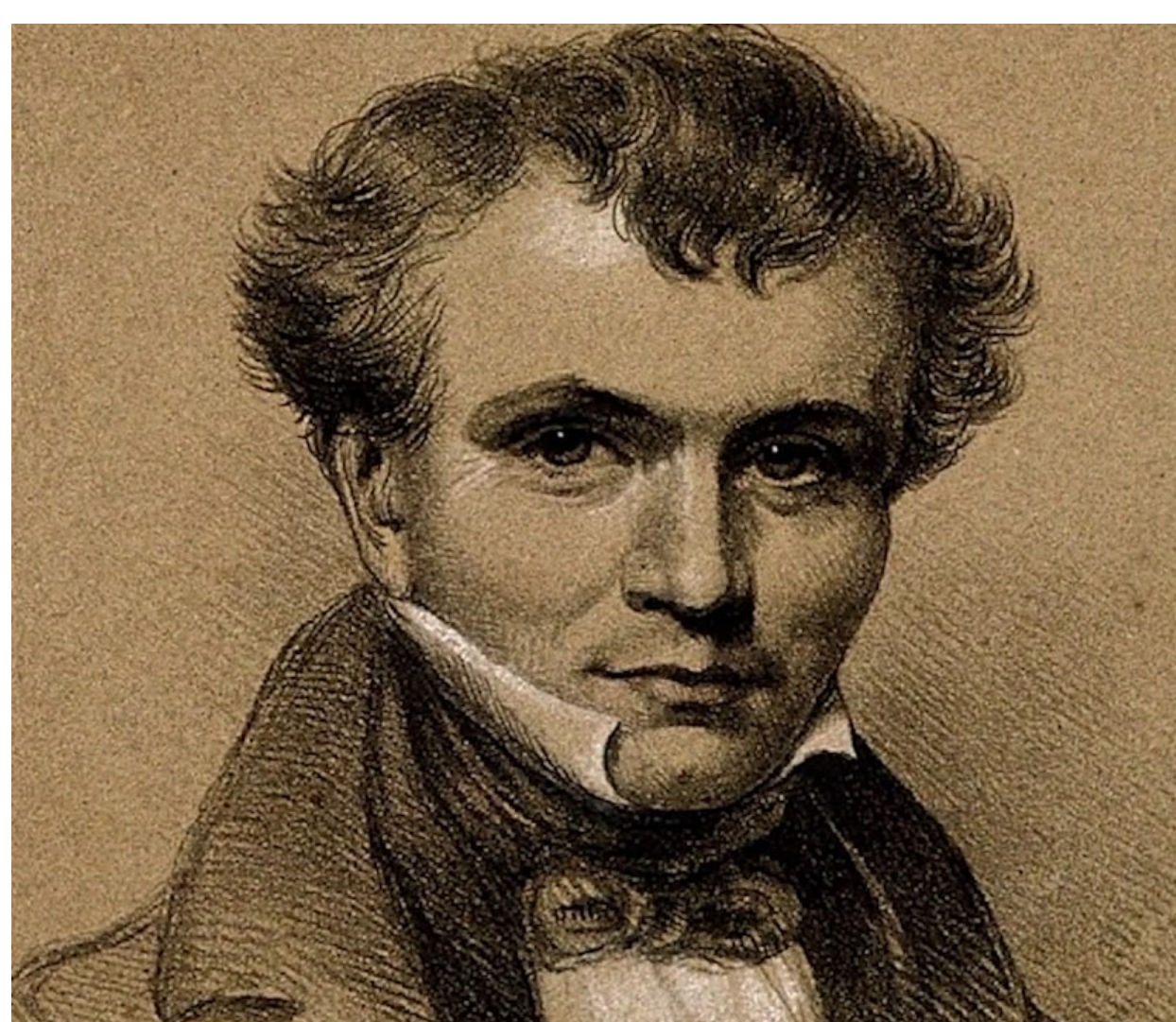
Science and Humanities at the University of Scranton

Dr. Paul E. Sampson
University of Scranton

Abstract

Since Spring of 2021, the University of Scranton has offered a course in the history of science. This poster will talk about the development of the discipline of history of science and the structure of University of Scranton's history of science class. It will also discuss topics covered in the class that relate to radio science and will provide a sample assignment for a classroom discussion.

The Development of History of Science



- **The first history of science** – In 1837, William Whewell (image top left) published *The History of the Inductive Sciences*. This book introduced the word “scientist” into popular use, and traced the development of science from ancient Greek philosophy to early 19th century English chemistry.
- **The Internalist Narrative** – Whewell and other historians emphasized the importance of scientists’ “true” ideas (for example: Isaac Newton’s laws of physics) rather than their methods of experiment, the labor involved in gathering data, or the many “false” theories that had influenced scientific inquiry in the past (for example: Newton’s alchemical ideas).
- **The Externalist Narrative** – Beginning in the 1960s, historians like Thomas Kuhn (image top right) posited that scientific work is driven by **paradigms** – sets of assumed beliefs that guide scientific inquiry. Crucially, the acceptance of these new ideas was not dependent on their “truth”, but rather on social and historical factors.
 - **Example:** Copernicus’ theory that the sun was the center of the universe required over a century to be accepted, and this **paradigm shift** required a reorientation of theological, philosophical and political beliefs as well as scientific work.

WELCOME TO HIST 250: SCIENCE AND SOCIETY!

This Class:

1. Syllabus and introductions
2. The “Scientific Revolution” narrative
3. Why study the history of science?



HIST 250 - History of Science and Society

Course Description

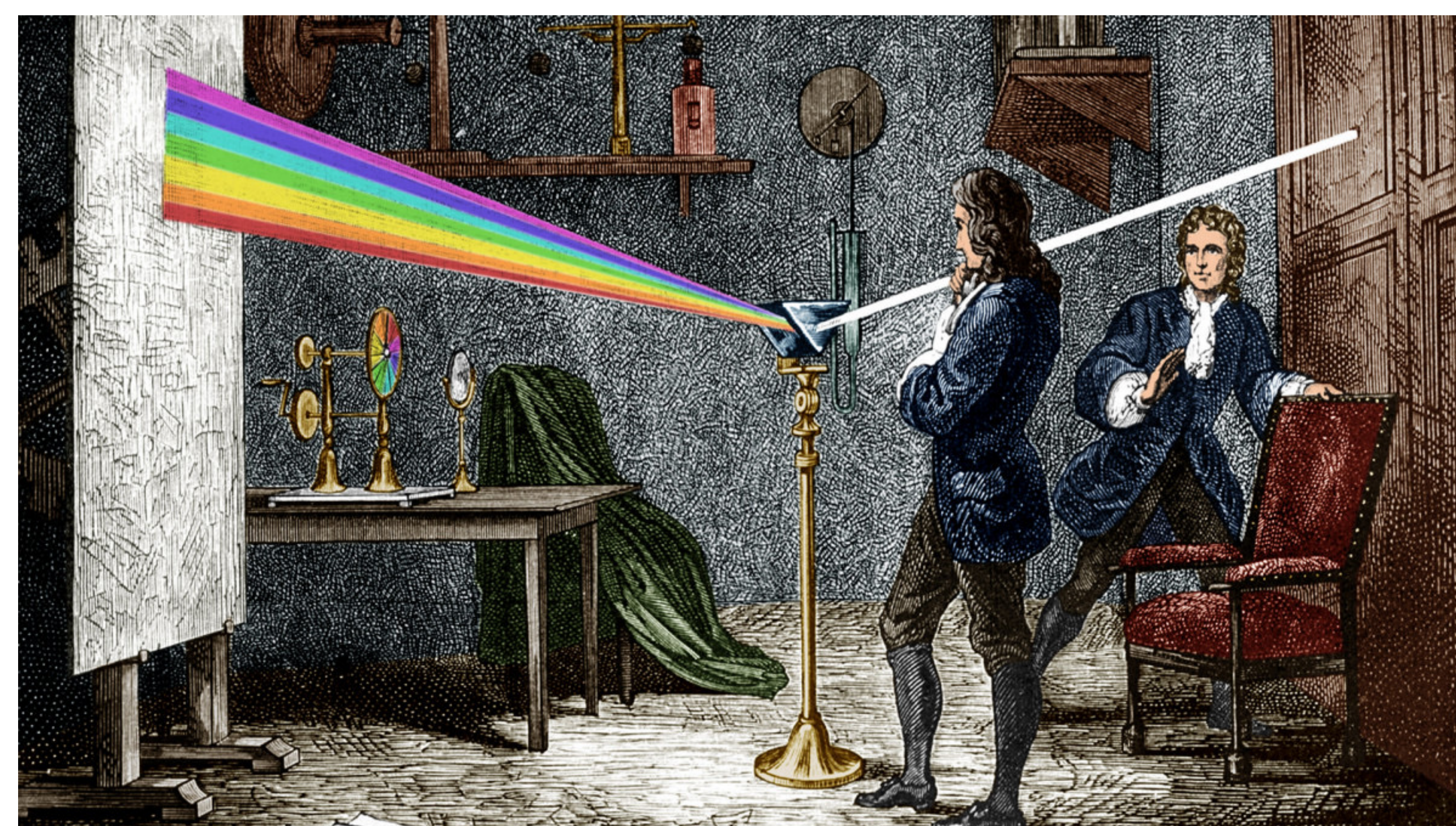
- **Follows an externalist approach.** Examines how global encounters and non-western traditions of studying nature (for example: Indian astronomy and meso-American botany) interacted with the development of Western science.

Learning Objectives

- Students become acquainted with the role of global networks, paradigms, and collecting in the development of science.
- We explore the role of labor, race and gender in scientific work.
- Students are introduced to central issues and debates within global history, for example the **Great Divergence debate** (see next column).

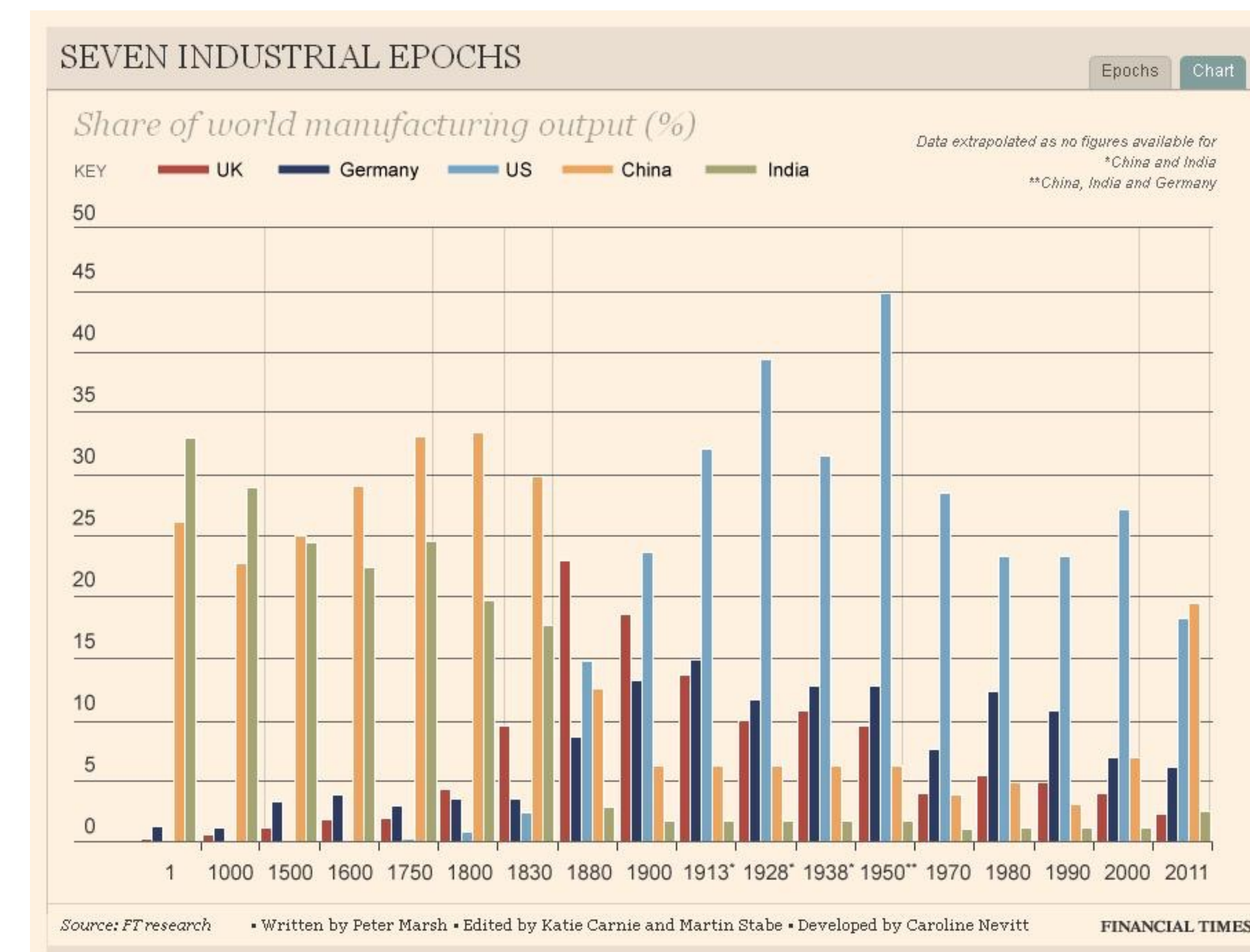
HIST 250 - Topics Related to Radio Science

- **Electricity** – What were the first uses of electricity? How did this mysterious force inspire scientists to look for other invisible forces in the environment?
- **Rays, Waves and Particles** – How was the electromagnetic spectrum discovered? How did scientists use photography, chemistry and radios to study the invisible rays, waves and particles that surround us? (Iage Below: Isaac Newton’s prism experiment)



Sample Assignment

The Great Divergence: By looking at the chart below, students can see that European economies drastically *diverged* from the rest of the world during the 19th century.



Students are asked: What role did science play in the Great Divergence?

Possible Factors:

1. **Colonization of the Americas** – Europeans gain access to new plants, medicines, enormous natural resources.
2. **Global Trade increases** – Europeans learn new manufacturing techniques from Asia, use enslaved labor in American colonies.
3. **Coal availability** – Access to a new energy source is enabled by new mining techniques and development of industrial technologies.

References

- Michael Aaron Dennis, “Historiography of Science: An American Perspective,” in Dominique Pestre and John Krige, eds. *Companion to Science in the Twentieth Century* (Routledge, 2003): 1-26.
- Jan Golinski, *Making Natural Knowledge*, (Cambridge: Cambridge UP, 1998).
- Peter Marsh, Caroline Nevitt, Katie Carnie and Martin Stabe, “The Seven Ages of Industry,” *Financial Times*. June 10, 2012: <http://ig-legacy.ft.com/content/97d77036-b0c4-11e1-a2a6-00144feabdc0#>

Acknowledgements

I would like to gratefully acknowledge Dr. Nathaniel Frissell for inviting me to HAMSCI and for his help in creating and formatting this poster.