

# Science as power

Scientific knowledge in the context of large-scale historical, political, cultural and economic forces

Preview of upcoming lectures:

- ▶ **Nov 7:** Science, colonialism, and postcolonial science studies: science as a result of and support for colonial projects
- ▶ **Nov 9:** Science, race, and health: role of science in defining racial categories
- ▶ **Nov 14:** Standardization, bodies and society: scientific objectification of bodies, especially in the context of gender and disability

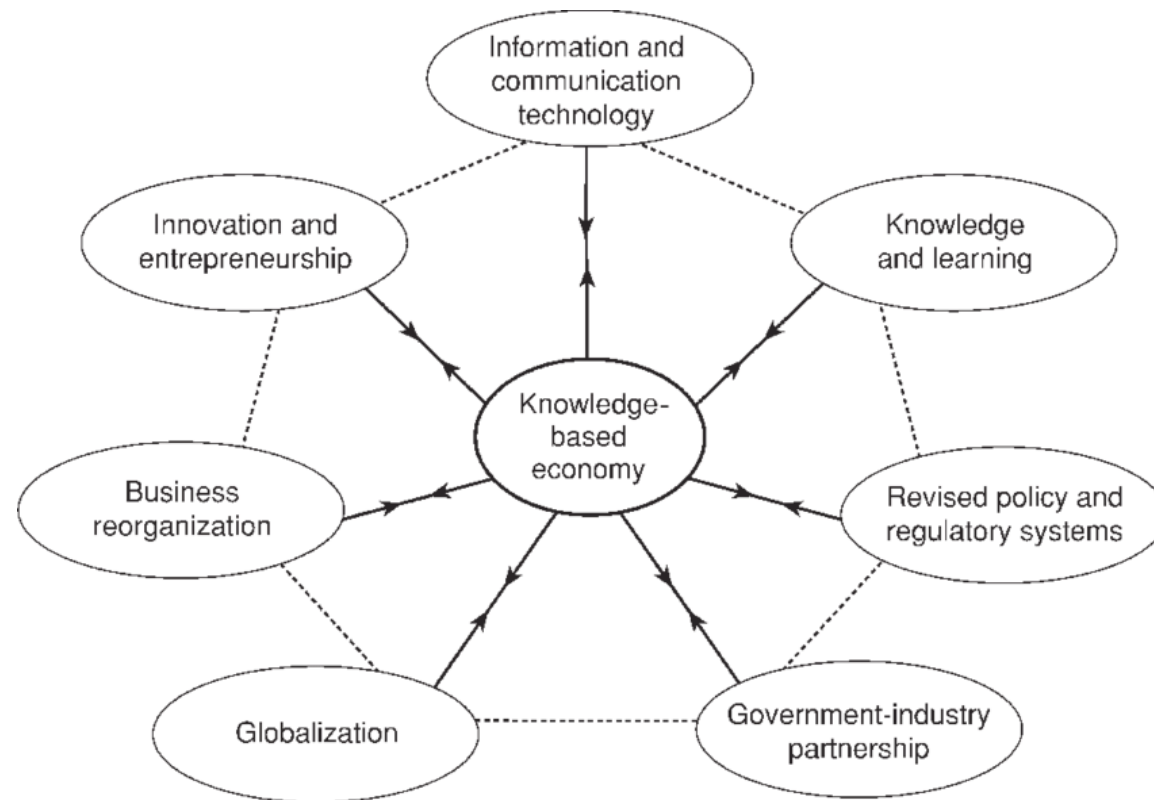
# The Political Economy of Science and Technology

SOCI 325: The Sociology of Science

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# What is the political economy of science and technology?

The influences of economic and political interests on scientific knowledge production and consumption



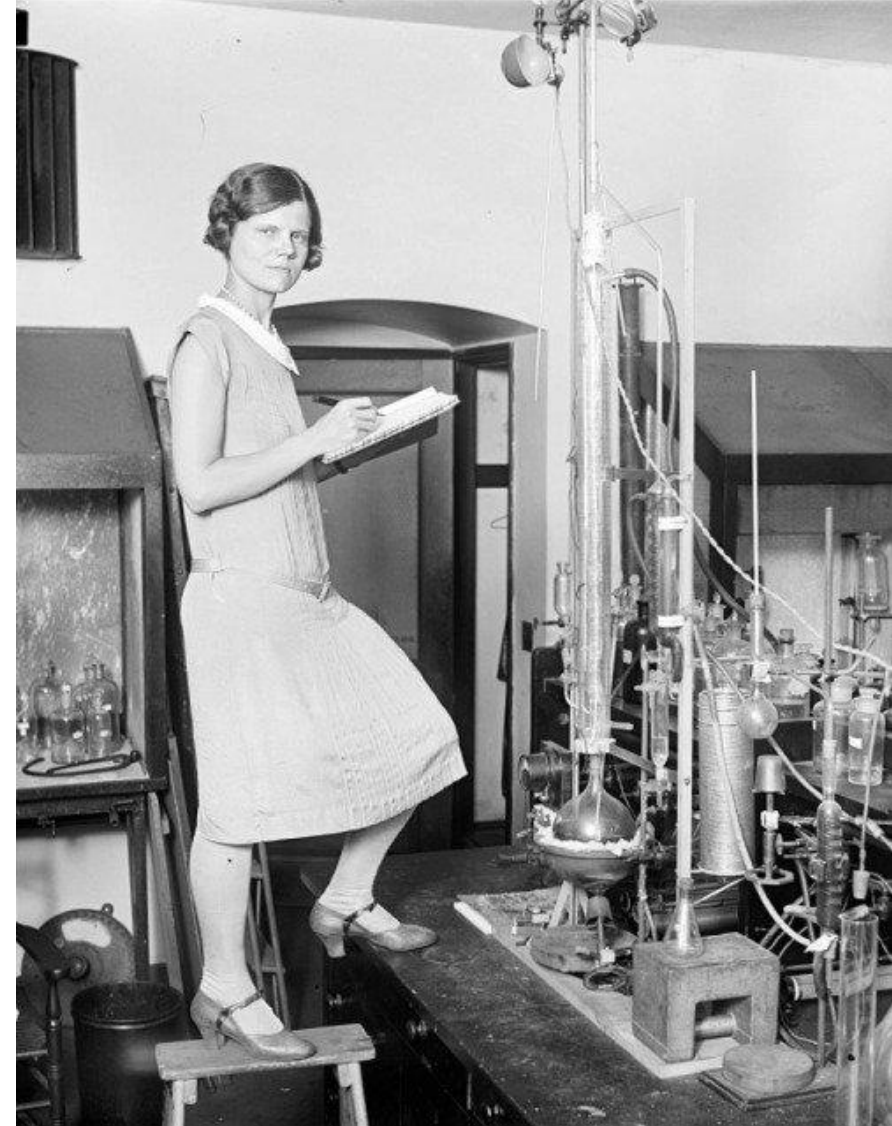
# The knowledge economy

- An economy based on highly developed technical knowledge
- The political economy of knowledge: the production, distribution and consumption of knowledge
- Knowledge is exchanged as a major good with market value; a resource to be controlled using intellectual property rights (IPRs)
- In a knowledge economy based on free market ideology, scientists are both the producers and consumers of knowledge
- Merton: incentive structures for the producers/consumers of knowledge (eponymy, awards, etc.) maintains skepticism and allows only “good” knowledge production to flourish
- In reality: the knowledge economy is at the whim of cultural, political, and legal frameworks

# Old Science vs New Science

## Old Science:

- ▶ Pre-1980s
- ▶ Focused on solving theoretical and technical problems
- ▶ Basis for existing scholarly disciplines
- ▶ Universities and their research are seen as contributing to the public good
- ▶ Science as “pure”, “disinterested”...knowledge for the sake of knowledge



# Old Science vs New Science

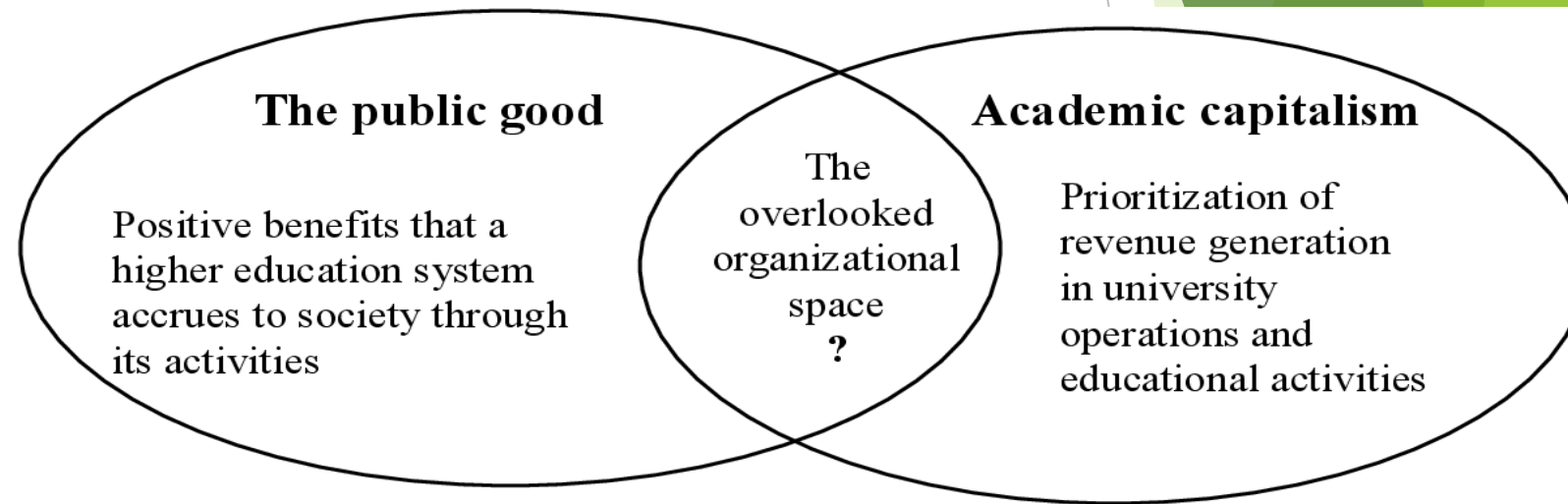
## New Science

- ▶ Current era
- ▶ Focus not knowledge for specific problem-solving: technical applications
- ▶ Industry, government and public play larger role in shaping the direction of research
- ▶ Cross disciplinary research with more scientists
- ▶ Science no longer “pure” and “disinterested”. Invested with interest



# Commercialization of Science

- ▶ 1980: Bayh-Doyle Act → patents on university research funded by Federal Government grants possible
- ▶ Patents and corporate partnerships are direct sources of revenue for universities
- ▶ Funding from not only government, but also industry. Change in the structure and direction of science
- ▶ Example: Academic capitalism



# Intellectual Property Rights

- ▶ Intellectual property rights (IPRs): patents, trademarks, copyright, etc.
- ▶ Allows knowledge to be proprietary
- ▶ Rationale: incentive for development
- ▶ IPRs are a recent invention, both theoretically and materially
- ▶ **What are some issues with IPRs?**





# Trade-Related Aspects of Intellectual Property Rights Agreement

- ▶ The standardization of an (Western) international property rights regime
- ▶ Historically (19<sup>th</sup> c), nations did not have strong IPR systems. Many European nations developed at a time without IPRs, where they could take advantage of ability to freely engineer, copy + sell foreign technologies
- ▶ TRIPS put an end to this: wealthy countries and patent holders placed pressure on developing countries to create patent systems

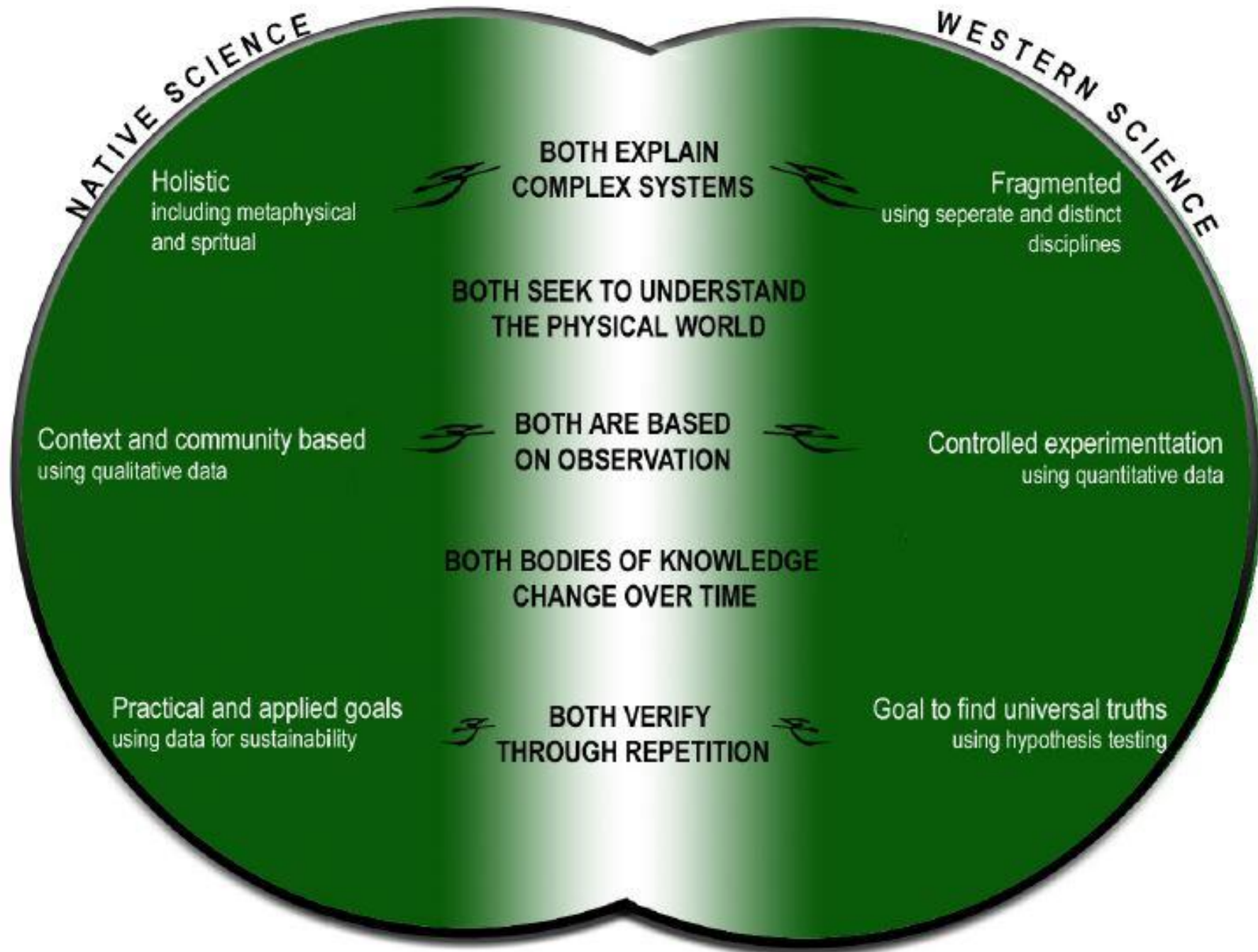
# STS & Global Development

- ▶ Technology as state-making: important tools of empire, implicated in imperialism and colonialism.
- ▶ Relationship between periphery and core: “dependent science”
- ▶ “What is considered scientific knowledge in a dependent context is only that which has been made legitimate in the centre. It is then imitated in the periphery through the operation of pervasive dependent social and cultural mechanisms...” (Goonatikale 1993 in Sismondo)
- ▶ Implications: dominant powers shape what is considered scientific knowledge

# Bioprospecting/Biopiracy

- ▶ Bioprospectors look for genetic material (commonly seeds, plants) that have commercial value, usually for agricultural or pharmaceutical products
- ▶ Require the help of local/traditional peoples to learn about the plants
- ▶ Materials are then patented, with supposed “benefit sharing”
- ▶ The case of Monsanto: making it illegal for farmers to replant their seeds





# IPRs and Traditional Knowledge

- ▶ Tension with IPRs and TK: knowledge as proprietary vs knowledge as collective
- ▶ Traditional groups do not prioritize, or even recognize property rights
- ▶ Clash between traditional and modern technologies.
- ▶ Clash between traditional and modern knowledge
- ▶ Local science for local problems: “Science and technology should be viewed in terms of context-specific forms of knowledge and practice that interact with a set of globally distributed social interests.”  
(Shrum & Shenhav 1995, in Sismondo 2009)