



Beyond the Linear Model: Introducing Pasteur's Quadrant

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What is the Linear Model?

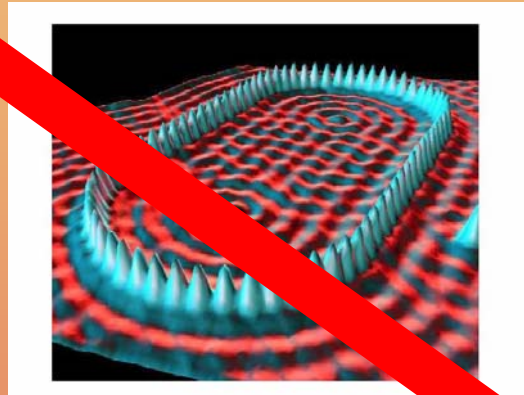
- Assumption about the process of scientific research and science's relationship with society
- Basic research is performed without consideration of any practical applications or products
- “Basic research is the pacemaker of technological progress” - Bush
- ‘Postwar paradigm’



Government Invests in 'Basic Research'



Basic Research Inspired by curiosity...adds to 'pool of knowledge'



Applied research and development...

Society benefits with cool technologies and sometimes...information for decision makers



iPod

The best just got better.

PC





Culture of the Linear Model

- “Basic”/“Pure” vs. “Applied”/“Practical” dichotomy
- Bohr vs. Edison
- Government should keep a “hands off” approach to basic science
- Fund basic research and the ROI will be worth it for society
- Embedded belief among scientists that they are the ‘elite’, and separate from society



Shortcomings of Linear Model

- Progress from science **to** technology **to** society is not one way
- Technological advances can be independent from scientific advances (Japan)
- ‘Faith’ in linear model unrealistic today, economically, environmentally, complexity, etc.
- Basic/Applied dichotomy excludes many disciplines (nano, biomedical, etc.)
- *Inhibits reconciliation of the supply and demand of information for decisionmaking*

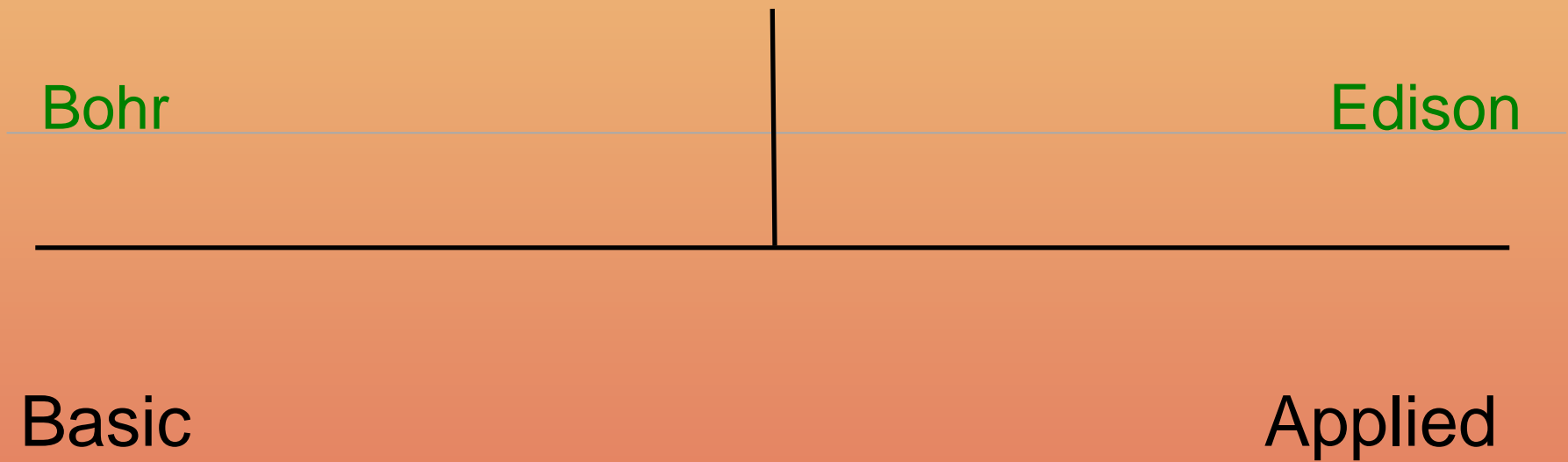


Beyond the Linear Model

- Growing support for new model that reconciles supply and demand of scientific information
 - ‘mission oriented’
 - ‘policy relevant’
 - ‘use inspired’
 - ‘purposive basic research’
 - ‘directed research’
- *‘Use-inspired Basic Research’* - Stokes

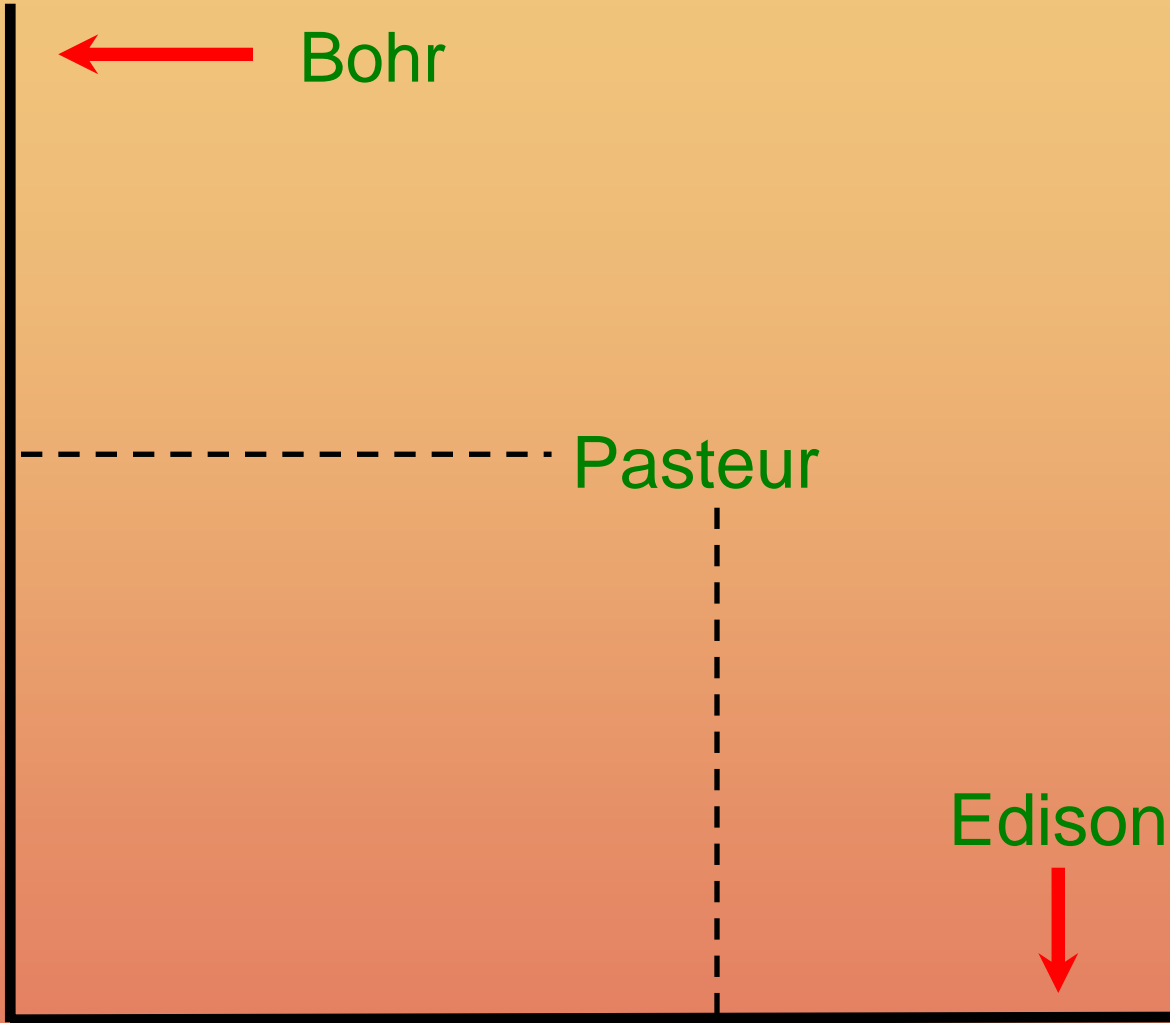


The Linear Model





Basic



Bohr

Pasteur

Edison

Applied



What Inspires Research?



Considerations of use?

No

Yes

Yes

Pure Basic Research (Bohr)

Use-inspired basic research (Pasteur)

Quest for fundamental understanding?

No

Exploration of particular phenomena but without having quest for fundamental understanding or consideration of use.

Skill development.

Pure Applied Research (Edison)

= "Pasteur's Quadrant"



So What?

- Creates an arena in which science and society can engage each other actively
 - More effective linkages between scientific promise and societal values
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- Enhances cross-fertilization of research and ideas across 'boundary' between applied and basic research
 - Lays foundation for enhanced linkages between science and decision making...



Questions?
