

The Value of Science: Changing Conceptions of Scientific Productivity, 1869- circa 1970

Benoît Godin • INRS (Montreal)

ENIP/PRIME International Conference

"Indicators on Science, Technology and Innovation:
History and New Perspectives"

Lugano, Switzerland • 16-17 November 2006

History and Sociology of Statistics
on Science, Technology and Innovation
<http://www.csiic.ca/>

Policy Frameworks

- Linear model of innovation (W.R. Maclaurin)
- Input-Output (C. Freeman)
- Information economy or society (U.I. Porat)
- National System of Innovation (C. Freeman, R. Nelson, B. Lundvall)
- Knowledge-Based economy (F. Machlup)
- New economy

Four Meanings of Productivity

- Productivity as Reproduction
- Productivity as Output
- Productivity as Efficiency
- Productivity as Outcome

Productivity as Reproduction

- Context: Quality of races
- Statistic: Number of men of science/population
- Galton and heredity
- Galton versus de Candolle
- Cattell and the advancement of science

Productivity as Output

- Context: Psychology and the status of the discipline
- Statistics: Number of papers
- Buchner, Fernberger and bibliometrics
- Franz and the law of scientific productivity

Productivity as Efficiency

- Context: Cost of research
- Statistic: Input/output
- Source:
 - OECD (Freeman and the Frascati manual)
 - Management of research
 - Production function (semantics)

Productivity as Outcomes

- Context: Mechanization and unemployment
- Statistic: GDP
- Labour productivity
- Multifactor productivity
(and the production function)

Conclusion

- Explaining a fashionable concept
 - Organizations as unit (frameworks)
 - Easy to measure (sources of data)
 - Economists as consultants
