Technological Determinism vs. Social Determinism/ Constructivism, the Politics It Brings: A Theory of Technology

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In this presentation…

* The History
* The Philosophers
* The Two Theories
* Current Evidence

Let's get a couple things straight…

* **Technology is…**
  – **"*The amalgamation of infinite ideas manifest into the physical objects, structures, and devices humans use. It includes any tool or devices for lessening human toil; to magnify human abilities to exceed physical, biological, or cognitive limitations, while causing disparity where none before existed.*"** (McKirahan, 2013)

* **Technique** is…
  – "***The manner or method in which a tool or tools are used. It provides method for accomplishing desired goals***." (McKirahan, 2013)

What in the world is he talking about with Technological Determinism and Social Determinism?

"How can you know where you are going if you don't know where you've been." (James Burke)

- **Background**
  - (Famous Instances in History)
    - **Archimedes**
      » "Give me a place to stand and with a lever I will move the whole world."

Library of Alexandria

- Ptolemy (Started 323 BC sort of ended 642 AD)
  - Works of thinkers like:
    - Heron
    - Galen
    - Archimedes
    - Pythagoras
    - Plato
- Subsumed (and fragmented) into the Ottoman Empire

James Burke, Connections Series (1979) (1985)

Pre-Industrial Revolution (1600-1750) (Kranzberg and Pursell)

- **Renaissance…**
  - …Investigation into the classics
- **Printing press…**
  - …Ancient Greeks (Heron of Alexandria)…
  - Archimedes screw → Savery → Newcomen → Watt

- **Aldus Pius Manutius**
  - Venetian
  - Bookkeeper   **Pump and Steam Engine, Boilers, Trains, electricity generation**
  - Printer
    - Aldine Press – Greek & Latin Classics
  - Publisher
  - Disseminator of Knowledge
    - The Internet of the Middle Ages

Bye, Bye Guild System… H-E-L-L-O… Factory System
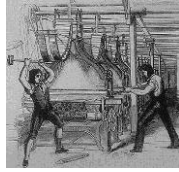
- *Guild (Artisans) System* gives way to the Factory System…
  - **Roman craft organizations**
  - **1515, 48 Guilds in London**
  - **Fusion of capital, science and technical knowledge**
  - **Migration from the guild and farm to factories**
    - **Men, women, children**

-Ogilvie, S. (2011*). Institutions and European Trade: Merchant Guilds, 1000-1800*. Cambridge: Cambridge University Press.
-Ogilvie. S. (2008). *Rehabilitating the Guilds: A Reply.* Economic History Review. vol. 61., 175–182
-Kranzberg, M. & Pursell, C.W. Jr. (1967). *Technology in western civilization (Vol.1)*. London: Oxford University.

- **Ned Ludlam's** (aka Edward Ludlam) (1779)
- Smashing textile company knitting machines.
  - 20 Years later sparked Luddite movement
  - Workers protest against newly developed labor-saving machinery from 1811 to 1817.
  - Open rebellion put down by British Army.

Infusion of Technology/Religion into Politics and vice versa

- Luther → Reformation → Calvin/Knox →Presbyterian → Scottish Reformation → Scottish Universities (Glasgow)→Adam Smith/James Watt/David Hume → U.S. Revolution and American Democracy

YAWN!

-A History of Scotland : Oliver, N. (Host). (2008). Series 2, Episodes 3 and 4. United Kingdom. BBC One.
-An Independent People: Crawley, William (Host). (2013) . Episode 2. United Kingdom. BBC

Adam Smith

- *The Theory of Moral Sentiments* (1759)
- *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776).

  - Ethics and Virtue
  - Private rights and Natural liberty
  - Familial rights (called Economics)
  - State and Individual rights (called Politics).

Industrial Revolution

- Britain (France misses out initially) → U.S. and Germany
  - Men, women and children in factories both in U.S and Britain
  - Higher Standard of Living but Social Ills (pollution, poverty)
  - Market/Labor/Economics →Disruptive Innovation
    - (Ship Building in Glasgow & Belfast.)
    - (Textile Manufacturing in Britain → American → India → South America → SE Asia)

Karl Marx

- *Influenced by Engels*
  - *The Condition of the Working Class in England (1844)*
    - *High death rates in textile mills Manchester and Carlisle*
    - *Disease and pollution*
- *Communist Manifesto* (1848) and *Das Kapital* (1867-1894)
- "The windmill gives you society with the feudal lord: the steam-mill, society with the industrial capitalist."
- Technology saps the "wealth of the soil and the laborer."
- Campaigned for Socialism and the international Workingmen's Association

Musson, A.E.; Robonson, E. (1969), Science and technology in the industrial revolution. Manchester: Manchester University Press.

Marx, Karl. (1955). The poverty of philosophy. Progress: Publishers (1847).

In the U.S….

- 1827 of the Mechanics' Union of Trade Associations in Philadelphia
- National Labor Union 1866
- Knights of Labor mid-1880s
- 1890 over Socialist Labor Party
- 1910's -1930's Growth of Automobile Industry and other Industry
- Conference for Progressive Political Action in 1922
- 1924 Labor's endorsement of Robert La Follette (Progressive Ticket)

The Philosophers Lending to the Theories

The Frankfurt School
(The Institute of Social Research)

- Herbert Marcuse (1898-1979)
- Walter Benjamin (1892-1940)
- Friedrich Pollock (1894-1970)
- Leo Lowenthal (1900-1993)
- Eric Fromm (1900-1980)

Herbert Marcuse

- Called the "*Father of the New Left*"
- Eros and Civilization (1955)
  - Synthesis of Marx and Freud
- One-Dimensional Man (1964)
  - Consolidation of capital, resources, and therefore, technology in democracies is repressive.
  - "Advanced industrial society" (modern capitalism) is preventing us from reaching a non-repressive society."
- Suggested influences upon:
  - Norman O. Brown
  - Angela Davis
  - Kathy Acker
  - Abbie Hoffman

Walter Benjamin (1892-1940)

- *The Work of Art in the Age of Mechanical Reproduction for Reproducibility (1963)*

  - *"Useful for the formulation of revolutionary demands in the politics of art."*

  - *"The absence of any traditional, ritualistic value, art in the age of mechanical reproduction would inherently be based on the practice of politics."*

"Technocracy"

- Adair, D. (1967). The Technocrats 1919-1967: A case Study of Conflict and Change in Social Movement. MA Thesis, Simon Fraser University.
  -summit.sfu.ca/system/files/iritems1/3437/b13876442.pdf

- Elsner, Jr., H. (1967). *The Technocrats: Prophets of Automation.* Syracuse University.

- Aikin, W. E. (1977). *Technocracy and the American Dream: The Technocracy Movement 1900-1941*, University of California Press.

- Taylor, P. J. (1988). *Technocratic optimism, H. T. Odum, and the partial transformation of ecological metaphor after World War II*, Journal of History of Biology, 21, 2, 213-244.

- Burris, B.H. (1993). *Technocracy at work*. New York: SUNY Press.

Aldous Huxley

- *A Brave New World (1932)*
  - *"Power in society is mostly in the hands of a few people, then control over nature through science and technology will serve to increase power inequalities."*

- *Science, Liberty and Peace.* (1947).London: Chatto & Windus.
  - Huxley → Lord Acton → "power tends to corrupt and absolute power corrupts absolutely."
  - If power corrupts, then the power of technology corrupts especially in regard to social arrangements.

Martin Heidegger

- *Die Frage nach der Technik*

("The Question Concerning Technology"), (1954)

  – Influenced by Aristotle → Kant →
  – **How'd humanity get here?**
    - Technology has an essence.
    - Brings means to an end.
    - *"Gestell" (Enframing)* revealing to:
      – Life
      – Existence
      – Work
      – Activity
      – Order of "things"

Lewis Mumford

- **"Technics and Civilization"** (1934)
  - Modern technology roots in Middle Ages
  - Influence upon machine-oriented economy
  - Separates the haves and have-nots
  - Clocks gave basis for the modern industrial work day
- **"Authoritarian and Democratic Technics,"** Technology and **Culture. (1964). 5:1-8.**
  – "Democracy" is a term now confused and sophisticated by indiscriminate use, and often treated with patronizing contempt.
  – "*If this democratic technics goes back to the earliest use of tools, authoritarian technics is a much more recent achievement: it begins around the fourth millennium B.C. in a new configuration of technical invention, scientific observation, and centralized political control that gave rise to the peculiar mode of life we may now identify, without eulogy, as civilization.*"
  – "Specialization", "Standardization", "Interchangeable Parts", efficient bureaucracy

  http://epl.scu.edu/~stsvalues/readings/mumford.pdf

Lewis Mumford

- *"I wish to...persuade those who are concerned with maintaining democratic institutions to see that their constructive efforts must include technology itself."*

- *The Myth of the Machine Vol. II: The Pentagon of Power (Chapter 12) (1970).*
  – Critical of the modern technology
  – Constant expansion of it
  – Constant Production and replacement of goods
  – Biotechnics and Megatechnics

Attachment to Education

- Lev Vygotsky
  – Processes(technology/technique) are shaped by technology, so are agents (Vygotsky, 1978).
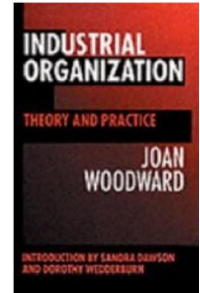
James Burke

- *Connections (1979)*
  - Greeks
    - Library at Alexandria
  - Romans
  - First Industrial Revolution
  - *Traces the circuitous route of inventions*
- *The Day The Universe Changed*, (1985)
  - Specialized Language
  - Stratification of society based upon technological development
  - World View changes
  - Think "**The Matrix**"

Joan Woodward
(No, not the movie star!)

- Industrial Organization: Theory and Practice (1982)
  - Longitudinal Study
  - *STRUCTURE INFLUENCES PEOPLE*
  - Management of Industrial Organization based upon type of work
    - Knowledge-intensive work versus Labor-intensive work

Technology Enters Social Consciousness through Entertainment

- Star Trek: The Next Generation (1987-1994)

"We are the Borg.

Your biological and technological distinctiveness will be added to our own.

Resistance is futile."

http://www.youtube.com/watch?v=WZEJ4OJTgg8

Technological Determinism

- Technology-led theory of social change:
  - *Technology = 'the prime mover'.*
  - Autonomous force that changes society
- Based upon **Media Determinism**
  - *Marshall McLuhan*
    - Borrows from communications studies
      - Media/Medium Theory
    - "The medium is the message"
    - Communication allows humans to create the "Global Village"
  - New technologies transform society at every level, including institutions, social interaction and individuals.
- Social and cultural phenomena are seen as shaped by technology.
  - *'Human factors' and social arrangements are seen as secondary.*

  http://cseweb.ucsd.edu/~goguen/courses/275f00/s2.html

McLuhan

- "All technology is communication, an extension of ourselves that allows us to reach further through time and/or space. "

- "Every new technology necessitates a new war."

John W. Gardner

- Secretary of Health, Welfare, and Education under President LB Johnson
  - Founder of **Common Cause** in 1970, a nonpartisan, not-for-profit *liberal advocacy organization* based in Washington, D.C.

- "*More and more Americans feel threatened by **runaway technology**, by large-scale organization, by overcrowding. More and more Americans are appalled by the ravages of industrial progress, by the defacement of nature, by man-made ugliness. If our society continues at its present rate to become less livable as it becomes more affluent, we promise all to end up in sumptuous misery.*"

David E. Nye

- Technology Matters: Questions to Live With (2006)
  - Questions the extent to which humans let technology control humans through actual technology, policy/laws, and human actions.

http://polifilosofie.files.wordpress.com/2012/12/technology-matters-questions-to-live-with-david-e-nye.pdf

Alvin Toffler

- "Our technological powers increase, but the side effects and potential hazards also escalate."
  - Author of *Future Shock* and *Revolutionary Wealth*

Social Constructionism/Determinism

- Social Determinism
  - *Theory that society is an autonomous force that changes technology.*
    - Simple cause/effect analysis of technical artifacts.
    - The converse of technological determinism, but false analogy
      - Lends to looking at things from a singular technological perspective rather than from the context of a complex technical system and peripheral technical aspects.
        - "Guns kill people"
        - "*Although technology might be a prime element in many public issues, nontechnical factors take precedence in technology-policy decisions.*" Kranzberg's Laws
        - "*Technology is neither good nor bad; nor is it neutral.*" Kranzberg's Laws

Colaguori, C. (2001). Power and Society: Critical Issues in Social Science. Toronto: York University.

Mayberry, M. (1991). Conflict and Social Determinism: The Reprivatization of Education. Chicago: Viewpoints.

Andrew Feenberg

- *Critical Theory of Technology*
  - "Technical Consciousness"
  - "Theory of Instrumentalization"
    - Foucault
      - *"Madness and Civilization"*
    - Update to the Frankfurt School of thought
    - "*...Modern **technology embodies political values that promote hierarchy and domination,** whereas social constructivist studies show that a radically different, democratized technology is possible.*"

    http://www.youtube.com/watch?v=b5cTEnqLR8g

Langdon Winner

- "***Autonomous Technology: Technics-Out-of-Control as a Theme in Political Thought***" (Cambridge: MIT Press, 1977).
  - Issues of Technocracy
    - Francis Bacon's Book *New Atlantis*
    - *Direction of Government and Industry for the sake of government and industry*
    - *Technology (technocracy) challenges Liberalism*
    - *Social planning is crucial to the "technological order" of things.*

http://monoskop.org/images/0/00/Winner_Langdon_Autonomous_Technology_Technics-out-of-Control_as_a_Theme_in_Political_Thought.pdf

"Upon Opening the Black Box and Finding It Empty: Social Constructivism and the Philosophy of Technology" (Winner, 1991).

Langdon Winner

- Do Artifacts Have Politics?
  - *"The Whale and the reactor: a search for limits in an age of high technology."* Chicago, University Press, 19-39.
  - *"...certain technologies in themselves have political properties seems, at first glance mistaken*."
  - *"What matters is not technology itself, but the social or economic system in which it is embedded. This maxim, which in a number of variations is the central premise of a theory that can be called the social determination of technology, has an obvious wisdom*."

Richard E. Sclove - Democracy and Technology

- Chapter 1 -"Spanish Waters, Amish Farming.
  - Running water ruined the cohesiveness of Ibieca, a small Spanish village.
  - Amish shunning of technology

- "Technology is not the cause of such ills (loneliness, narcissism, disempowerment, insecurity, stress, and alienation), but it contributes to all of them."

Scolve, R.E. (1995). Democracy and Technology. New York: Guilford Press
http://loka.academia.edu/RichardSclove

Marc Berg

- *"The Politics of Technology: On Bringing Social Theory into Technological Design"*
  - Notes the burgeoning field of **Constructivist science and technology studies** (STS)
    - Cornell, UC Davis
  - Design of information technologies for work practices are drawing upon theories from sociology, anthropology, and social philosophy.

Science Technology Human Values 1998 23: 456
DOI: 10.1177/016224399802300406

Bernard Stiegler: Man & Technics

- "The Question of Technics"
  - Unbalancing of Nature
  - Social networking and engineering are dimensions of the digital stage of a process of grammatization that began thirty thousand years ago.
  - Technology of Digitization as a political force
    - http://www.youtube.com/watch?v=ymtnUDAOEWc
    - http://vimeo.com/63803603

Technology – Shaped within Social Context, Education

- Society cannot be understood independent of the technologies that shape it.
- SCOT (Social Construction of Technology)
  - *Social Shaping of Technology* (MacKenzie and Wajcman, 1985)
  - *The Social Construction of Technological Systems* (Bijker, Hughes and Pinch, 1987).
    - "an increasing interest by social constructivists in normative and political issues concerning the role of technology in society."
      - http://scholar.lib.vt.edu/ejournals/SPT/v2_n3n4html/brey.html
- ANT (Actor Network theory) theorists
  - (Law and Hassard, 1999)

Current Evidence

Eric Cohen

- *Technology is not a new problem.*
- *It can't be separated from human life.*
- *It's not the only problem, and it's not the only remedy.*

- *"Modern liberalism and conservatism (or the Democratic and Republican parties) offer limited guidance for understanding the new politics of technology — both where it stands and where it is heading."*

- Eric Cohen, "The New Politics of Technology," The New Atlantis, Number 1, Spring 2003, pp. 3-8.
- http://www.thenewatlantis.com/publications/the-new-politics-of-technology

- *"Globalization (brought on by technological development), as defined by rich people like us, is a very nice thing... you are talking about the Internet, you are talking about cell phones, you are talking about computers. This doesn't affect two-thirds of the people of the world."* (President Jimmy Carter)

Jeremy Greenwood

- **Resource Control**, Technology, and Productivity are a BIG influence on Income Inequality

Jeremy Greenwood (1997), *The Third Industrial Revolution: Technology, Productivity and Income Inequality*, AEI Studies on Understanding Inequality, Washington, DC. The AEI Press. Also printed in the *Economic Review*, 1999, Federal Reserve Bank of Cleveland.

Jeremy Greenwood and Ananth Seshadri (2005), "Technological Progress and Economic Transformation," in the *Handbook of Economic Growth*, v. 1B, edited by Philippe Aghion and Steven N. Durlauf. Amsterdam: Elsevier North-Holland, 1225-1273.

Harold L. Cole, Jeremy Greenwood and Juan M. Sanchez (2012), "Why Doesn't Technology Flow from Rich to Poor Countries?" Working Paper 2012-040A, Federal Reserve Bank of St Louis.

Jeremy Greenwood, Nezih Guner, Georgi Kocharkov and Cezar Santos (2012), "Technology and the Changing Family: A Unified Model of Marriage, Divorce, Educational Attainment and Married Female Labor-Force Participation," University of Pennsylvania
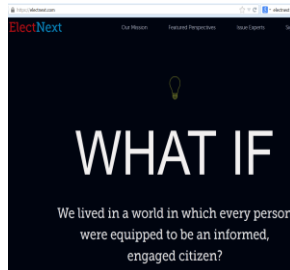
http://www.jeremygreenwood.net/research.htm

Internet Technology Changing American Politics Timeline Highlights

- (February 1997) GOP
  - http://www.freerepublic.com
- (1998) in response to President Bill Clinton's Impeachment
  - http://www.MoveOn.org
- (2002) Markos Moulitsas
  - www.DailyKos.com
- (2005) Arianna Huffington, Kenneth Lerer, and Jonah peretti
  - www.huffingtonpost.com
- (2008) Obama08 app for iPhone
- MoveOn.org.
  - Email group concerned over censure of Clinton

http://www.pbs.org/mediashift/2010/04/how-technology-changed-american-politics-in-the-internet-age096
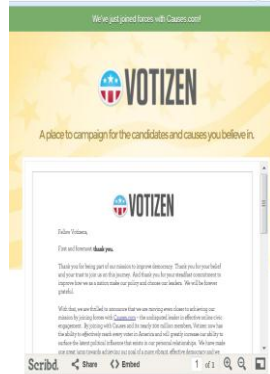
Technology-Enabling Political Action Websites

- PopVox - https://www.popvox.com/
  - displays every piece of legislation in Congress.
- ELECTNEXT - https://electnext.com/
  - Matches voters to candidates based upon their stances on issues

- AMICUS - http://amicushq.com/
  - The technology matches up volunteers to Facebook friends and assigns each volunteer the name of a person for politic outreach purposes
  - Allows volunteers from a nonprofit to ask their friends for donations

- VOTIZEN - http://2013.votizen.com/
  - The technology identifies voters on Facebook, Twitter and LinkedIn.
  - It allows them to find other like-minded individuals.

- SOCIAL TEETH - http://www.socialteeth.co/
  - Anyone can submit an ad to get corporate-funded commercials.

- "*We will build the roads and bridges, the electric grids and digital lines that feed our commerce and bind us together. We will restore science to its rightful place and wield **technology's** wonders to raise health care's quality and lower its costs*."

- "...*harness technology to confront the biggest challenges that America faces*."

- "Ensuring that the US continues to lead the world in science and technology will be a central priority for my administration."
  - President B. Obama, Inaugural Address January 20, 2009

Current Classic Examples of Social vs. Technological Determinism.

- "The Arab Spring"
  - http://www2.technologyreview.com/ontopic/arabspring/
  - http://www.gwu.edu/~ieresgwu/assets/docs/ponars/pepm_159.pdf
    - "The tide of mass protests that swept through the Middle East in early 2011 highlighted the distinct role of modern information-communication technologies (ICT) and digital social media tools and networks."
- "Low Information Voters"
  - Palfrey, T.R. & Poole, K.T. (1987). The relationship between information, ideology, and voting behavior, American Journal of Political Science, 31, 3, 511-530.
    - http://www.jstor.org/stable/2111281
  - http://www.huffingtonpost.com/peggy-drexler/the-high-cost-of-low-info_b_115665.html
    - "Studies over 40 years have shown that voters don't vote on what they know, but what they feel."

- **Affordable Care Act**

- In Conclusion….

  – *Technology influences everything we do, to influence our political thoughts.*

- The Questions to ask yourself…

  – Where do you stand?
    - Does your career endeavor align with your technopolitics?

  – Can we measure technological determinism versus social determinism?

Thank You

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