Online Ethics Center
FOR ENGINEERING AND SCIENCE

Law & Public Policy Subject Aid

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Year

2016

Description

A short guide to some key resources and readings on the topic of law and public policy.

Body

Much law and public policy today call on expertise in order to justify their requirements. In the context of decision making for instance, environmental and public health law and policy cite scientific and technical findings to back up their positions concerning regulations about risk. Economic and social policies provide other examples where research results can provide justifications.

Scientific evidence is used in three distinct legal contexts – legislative, regulatory and judicial. Different processes and criteria are used to evaluate scientific data in these different legal settings. For example, regulatory science is often peer –reviewed by agency scientific advisory committee and subject to public notice and comment. In the judicial context, scientific evidence is screened for reliability by a judge before being admitted for use at trial, which under the predominant U.S. standard inquires whether the evidence has been peer-reviewed and published, whether it has been tested, whether it has a known error rate, and whether the

underlying methodology is generally accepted in the relevant scientific field.

In non-legal contexts, consider controversies over minimum wage or about educational testing where stakeholders call on scientific evidence to justify their positions. This is a relatively new role for science in society, leading some to identify the scientific state as a distinctive contemporary phenomenon. In these circumstances where science, law, and public policy meet, ethical deliberation and discussion is needed about such issues as who is entitled to what protections from toxic substances to requirements for informed consent or personal privacy to which data collection efforts should adhere.

Besides the underlying roles of science, technology, engineering, and mathematics in developing, implementing, and evaluating law and public policy, laws and public policies are made to promote investment in or control of research, science, engineering and technology. There are ethical factors associated with policies that promote or discourage certain kinds of research or innovation. Besides economic benefits and losses, ethical questions arise concerning the positive or negative externalities including environmental or social impacts. Many laws and public policies concerning promotion of and expenditure on research and development fall into one or more of the following major categories: defense, commerce, and health. Other social priorities are smaller factors in what the US calls the Federal R&D budget, but they do include most other areas of Federal involvement: environment, education, transportation, energy, agriculture, etc.

Numerous reports from the National Academies of Sciences, Engineering, and Medicine address topics that fall into one or the other or both of the intersections of science, engineering, technology and law and public policy identified above. Federal agencies are interested in gathering expert information and opinion about both investment in what are called the STEM fields – science, technology, engineering, and mathematics, and about the implications of those investments for the well-being of US citizens and other persons.

See also: Social and Political Conflict, Risk

Subject Overviews

Schmandt, Jurgen and James Everett Katz. 1986. "The Scientific State: A Theory with Hypotheses." ***Science, Technology, and Human Values,*** **11:1, 40-52. https://www.jstor.org/stable/689044?seq=1#page_scan_tab_contents. Accessed August 30, 2016.**

> The article proposes the replacement of the administrative with the scientific state noting changes in all facets of society that are brought about by science, engineering, and technology, including the role of government and system of governance, the issues that policymakers and citizens have to deal with, and the meaning of such central concepts as liberty and accountability. The authors believe that the quality of political debate will be improved by differentiating the scientific state from its predecessor.

Macnaghten, Phil, Mathew Kearnes and Brian Wynne. 2005. "Nanotechnology, governance, and public deliberation: What role for the social sciences?" ***Science Communication*** **27(2): 268-291. http://scx.sagepub.com/content/27/2/268.full.pdf. Accessed August 30, 2016.**

> The authors argue that nanotechnology provides an opportunity to build in a robust role for the social sciences in a technology at an early, and hence undetermined, stage of development. Policy dynamics in both the United States and United Kingdom aim at both opening up, and closing down, the role of the social sciences in nanotechnologies. The authors set out a prospective agenda for the social sciences and its potential in the future shaping of nanotechnology research and innovation processes. The emergent, undetermined nature of nanotechnologies calls for an open, experimental, and interdisciplinary model of social science research.

Faigman, David, 2013. "The Daubert revolution and the birth of modernity: managing scientific evidence in the age of science." ***U.C. Davis Law Review*** **46:893-930. https://lawreview.law.ucdavis.edu/issues/46/3/Symposium/46-3_Faigman.pdf**

> This article reviews the standards and criteria that U.S courts use to screen the reliability of scientific evidence used in court rooms. It traces how the U.S.

Supreme Court's *Daubert* decision has revolutionized the admissibility of scientific evidence in courts by assigning trial judges a gatekeeper role to determine the reliability and relevance of scientific evidence before it can be admitted for presentation to the jury.

Sussman, Robert M. 2004. Science and EPA decision-making. *J. of Law & Policy* 12:573-687. .
http://brooklynworks.brooklaw.edu/cgi/viewcontent.cgi?article=1281&context=jlp

Using the U.S. Environmental Protection Agency as an example, this article explains the complexities of applying scientific evidence in regulatory proceedings. Regulatory agencies often undertake rulemaking and other regulatory decisions in a highly charged context in which they must balance substantive and procedural criteria imposed by the legislature for their decisions, a variety of inconsistent stakeholder interest and inputs, oversight by the executive, legislative and judicial branches, internal policies and precedents, and often a high level of scientific uncertainty.

Bozeman, Barry. 2000. "Technology transfer and public policy: a review of research and theory." *Research Policy* 29: 4: 627-655. http://calitc.pbworks.com/f/TechTransferStudy.pdf. Accessed August 30, 2016.

This article reviews, synthesizes and criticizes the voluminous, multidisciplinary literature on technology transfer. To reduce the literature to manageable proportions, it focuses chiefly but not exclusively on recent literature on domestic technology transfer from universities and government laboratories. It begins by examining a set of fundamental conceptual issues, especially the ways in which the analytical ambiguities surrounding technology transfer concepts affect research and theory. The literature review that follows emphasizes technology transfer's impact and effectiveness, employing a ''Contingent Effectiveness Model of Technology Transfer'' to organize the material. The model assumes that technology effectiveness can take a variety of forms. In addition to the more traditional effectiveness criteria - those rooted in market impacts- the model considers a number of alternative effectiveness criteria, including political effectiveness and capacity-building.

Schwartz, Arthur. 2004. "Ethics in competitive bidding and contracting." *Science and Engineering Ethics.* 10(2): 277-282.

> This article discusses engineering ethics in competitive bidding and contracting, by reviewing the origins of professional codes of ethics and rules of professional conduct; factors which forced professional societies to significantly restrict their scope of activities and revise their codes of ethics; and elements which shape the professional engineering practice environment.

Policy or Guidance

Donovan, Shaun and John P. Holdren. 2015. "Multi-Agency Science and Technology Priorities for the FY 2017 Budget." *Memorandum for the Heads of Executive Departments and Agencies.* White House Issuance M-15-16, Washington DC. https://www.whitehouse.gov/sites/default/files/omb/memoranda/2015/m-15-16.pdf Accessed August 15, 2017

> Information from the Office of Management and Budget and the Office of Science and Technology Policy about the subject matters and areas to which the agencies should give priority in their 2017 budget submissions to OMB and the Office of the President.

The Science of Science Policy website. http://www.scienceofsciencepolicy.net/ Accessed August 15, 2016

> The Science of Science Policy is an association whose members form "a community of interdisciplinary researchers that seeks to provide a scientifically rigorous, quantitative basis for science policy. Its website offers a central location for the communication of research findings, access to datasets and analytical tools and links to resources. It welcomes the active engagement and participation of Federal practitioners, researchers, others in the broader science community, and interested members of the general public.

The National Academies of Science, Engineering and Medicine. 2014. *Oversight and Review of Clinical Gene Transfer Protocols: Assessing the Role of the Recombinant DNA Advisory Committee*. Washington, DC:

National Academies Press. http://www.onlineethics.org/34396.aspx. Accessed August 15, 2016.

> At present all researchers and institutions funded by the National Institutes of Health (NIH) to undertake human gene transfer protocols are required by NIH guidelines to submit them for advisory review by the NIH Recombinant DNA Advisory Committee (RAC). Some protocols are then selected for individual review and public discussion. *Oversight and Review of Clinical Gene Transfer Protocols* provides an assessment of the state of existing gene transfer science and its current regulatory and policy context. This report assesses whether the current oversight continues to be necessary and offers recommendations concerning the criteria the NIH should employ to determine whether individual protocols should receive public review. The focus of this report is on the standards the RAC and NIH should use in exercising its oversight function. Findings will assist not only the RAC, but also research institutions and the general public with respect to utilizing and improving existing oversight processes.

Bibliography

Science and Democracy Network Selected Bibliography, https://www.hks.harvard.edu/sdn/bibliography/ Accessed August 30, 2016.

> This annotated bibliography contains items that members of the Network consider significant for scholars working on issues of science and democracy. The annotations are provided by SDN members.

Public Engagement in Science and Technology Policy Decision-Making Bibliography. https://onlineethics.org/cases/public-engagement-science-and-technology-policy-decision-making-bibliographyAdded to the OEC July 12, 2010. Accessed August 30, 2016.

> Includes links, books, and journal articles on engaging the public in discussions of science and technology and related policy.

Notes

Reviewed by Gary Marchant, November 27, 2016.

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