Public Policy Influences on Design

Primary Question: Is Policy Exogenous to Design?

Apparently some in the various design communities deny or cannot understand how policy influences the design process. By contrast, many practitioners in various disciplines in which design is important and these practitioners have extensive design experience consider policy important to their design work. These attitudes illustrate that designers should consider policy. Furthermore, such policy conformity considerations are better deployed earlier in the design process before sunk costs accumulate in designs eventually considered flawed under public policy considerations. Famous examples include product liability for unsafe designs or pharmaceuticals and close regulation of design of physical structures under standards developed in various venues that are made authoritative through various methods of standards incorporation into public policy (building codes, airframe certification).

Secondary Question: What domains are most likely to have policy questions that constrain design?

First, and foremost, domains that have experienced liability and regulation in the past are more likely to need expertise and instruction in public policy to understand public policy influences on their professional domains now and into the future.

Second, there are several perspectives from which this public policy emanates but some reliable antecedents for this pressure involve perceived abuses or damaging outcomes (negative externalities) produced by that design discipline over which public policy might have a role in reducing the damaging effects by forcing the internalization of these externalities.

Third, design becomes a strong focus of public policy when experience with a particular design’s externalities or strong expectation of externalities are focused through the public policy system. For example, the safety of products is a classic case of policy impingements on design. Similarly, dangerous instrumentalities, known or expected, from the pollution aspects of industrial processes, pollutants and other safety dangers have been a constant source of policy concern for design.

What domains are most likely to have policy questions that incentivize design?

First, policy inspires government funding. For example, direct government funding of infrastructure both implements policy and is largely focused through government – the machinery of public policy deployment.

Second, we have a wide range of public policies that more generally promote design. Consider intellectual property (IP) laws that incentivize the innovation vision of design. There are tax incentives for innovation and start-up businesses that deploy new designs. Business incubation agencies, private sector-government partnerships and entrepreneurship infrastructures are largely the product of public policies. New venture formation incentives are either directly inspired by public policy or receive indirect support from policy.

Public policy is sometimes used to encourage positive externalities from a design activity that might not have been produced in the absence of the public policy pressure. For example, the recent debate over the stimulus package ostensibly invests public funds,
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even into the dangerous territory of deficit spending, because proponents argue the side effects is reinvigorating the economy. Thus, more reliable designs already conforming to existing standards are encouraged to be acellerated, because the immediate economic impact is both more localized and is expected to produce societal benefits well beyond the project’s users or surrounding communities.

How do Contemporary Standardization Group Activity & Collaboration Methods Incentivize Efficient Standards Development

Useful standards are more likely developed in contexts where key participants can contribute the most useful details that play key roles in the design of an efficient standard that will gain critical mass, become ubiquitous, inspire new markets for better products and services, inspire new and useful functionality, displace less efficient technologies, etc. Standards Development Organization (SDO) rules that facilitate forthright participation by contributors with the most effective design components and design configurations attract key Standards Development Activities (SDA) participants. Some researchers insist that this is expertise, but at least anecdotal evidence suggests contributors with partial completed design elements or components are also attracted, a factor separate from technical expertise to understand or contribute to design effort. Some participants may be attracted if they know their substantive design contributions may be adopted. Other participants may also be attracted, even without offering any design components to contribute to the standard, if they can use the SDA to steer the design to their own advantage (e.g., proprietary designs, compatibility, productive capacity) or away from the advantage of competitors.

How do Contemporary Standardization Group Activity & Collaboration Methods Disincentivize Efficient Standards Development

Increasingly, law and international public policies require that SDOs assure their processes are open, fair to the economic interests of direct participants and transparent to constituencies both upstream (e.g., suppliers) and downstream (e.g., manufacturers, service providers, users) that might be effected by the standard. SDA that fail to regulate many forms of stealth participation motives have been exposed to exclusion by key participants (shunning) or even exposed to enforcement under law. For example, economics considers SDA as a form collective action that enable collusion that is increasingly unlawful under various nations’ antitrust laws. Misrepresentation, fraud and breach of duty by SDA participants is also regulated as unfair and deceptive trade practices under Federal Trade Commission caselaw (e.g., Dell, Unocal, Rambus, N-Data, Qualcomm). These emerging market disciplines and legal sanctions can disincentivize SDA by potential contributors to SDA, some with important expertise to contribute. Other disincentives to participate include: the SDO requirement to disclose IP before participation, the requirement to license SDA participant’s IP if it becomes embodied in a resulting standard, that SDOs might dictate licensing terms for the IP of SDA participants if that IP becomes embodied in the standard adopted, such as under FRAND terms: fair, reasonable and non-discriminatory and the delays in SDA that inevitably accompany many such venue’s operations, particularly given the steering and delay incentives of some other participants.
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Due Process and Political Participation Challenges

It is becoming widely asserted that SDO processes too often do not optimize standardization activities within the broad social welfare objectives of standardization. These arguably include: (1) encouraging innovation, (2) reducing the social cost and delays of non-standardization and/or standards wars, (3) optimizing useful expertise (designers) in efficient and effective SDA, (4) resolve or at least attenuating coordination problems, and (5) more quickly resolving social welfare problems through design effected in SDA venues. Social welfare addressed through standardization can include addressing the societal problems of: establishing new and useful products and markets, encouraging safety and controlling pollution, improving the quality of products and services, assuring compatibility and interoperability in network industries, encouraging repeatability in measurement and enabling the commodification of products that facilitate the benefits of competition.

Increasingly, a confluence of U.S. laws addressing antitrust, intellectual property and public participation policy alter the SDA process to enable openness, transparency, checks and balances, public participation, effected party participation and For example, the U.S. National Technology Transfer and Advancement Act of 1996 requires federal agencies and departments to use technical standards developed or adopted by voluntary consensus standards bodies whenever possible in implementing each agency’s policy; to save agency resources and assure quality of standards benefit from technical competence. The coordinator of federal agencies, the Office of Management and Budget, requires in OMB Cir.A-119 that a due process approach parallel to the ANSI Due Process Requirements be followed in those SDOs in which federal agencies participate. A voluntary consensus standards body is defined in terms of the following due process “attributes”: (i) openness, (ii) balance of interest, (iii) due process, (vi) an appeals process and (v) consensus. OMB’s “consensus” attribute is the most detailed, actually a complex collection of due process rights analogous to several due process requirements found in the regime anointing standards as American National Standards accredited under the American National Standards Institutes (ANSI) regime. The Standards Development Organization Advancement Act of 2004 (SDOAA) reconfirms these rationales for standardization due process principles by granting limited antitrust immunity from per se treatment and permitting application of the rule of reason for SDOs following the due process requirements.

In recent eMail dialogue among members of the International Cooperation on Education about Standards (ICES) some SDA researchers who have served as actual participants in SDO bodies have discovered a recurring but curious situation: not all SDA participants are deeply active in the presentation, negotiation and refinement of the design details that comprise the standard under development. While this is well known to several researchers [e.g., Purao/Bagby/Umapathy (2008), de Vries/Simons (2006)]

One commentor in this discussion appeared to decry the concentration of useful SDA “expertise” this way: “10% of the attendees were experts and argued the points of discussion, about 20% seemed to be listening, and about 70% were [just] doing their own emails.” Competency, and expertise to contribute design elements, are sometimes overlapping but sometimes mutually exclusive and different roles in SDA. Particularly for upstream or downstream constituencies, expertise may be important for those who attend so they can provide credible political balance. Among the most famous U.S.
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standardization cases (antitrust, 1st Amendment, political (im)balance) is Allied Tube and Conduit, which forcefully decries political imbalance in SDA precisely it favors narrow private interests while working against the public interest. In the U.S., SDO rules now tend to admit nearly anybody, whether or not anointed as an expert. In some non-U.S. SDO rules, the roles for experts and their qualification is much more regulated. U.S. SDO rules may be the most “participatory” given the “due process” frameworks imposed by the SDOAA & OMB Cir.#A-119. Due process is probably a misnomer as these checks and balances provide political participation design much more akin to those in informal rulemaking under the Administrative Procedure Act or to legislation under Article I of the U.S. Constitution. In the standardization context these are various monitoring and participation roles that are intended to offset the self-interest of the more active SDA participants when these are manifest as steering, delay, spying or diversion.
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Approach #1: illustrate policy impact on design

Why should Design Fear Policy?
- Policy constrains design, raises costs, prevents promising designs, holds designers to unwelcome duties of care or professionalism
- Policy consideration early & frequently strengthens design & works to immunize from future liability

How does Policy Define Science?
- Daubert, expert witnesses, the litigation/evidentiary definition of scientific fields; NSF funding according to legislatively & administratively defined fields

How does policy constrain designs?
- Products liability, professionalism, malpractice

How does policy constrain design teams (design group interaction)?
- Collaboration restraints, collective action scrutiny, antitrust collusion enforcement

How does policy incentivize design?
- Government research & development funding, national / regional industrial policy (preferences, zones, taxes, grants), Intellectual Property policy (IP)

How does policy designers & inventors
- Technology transfer restrictions, contracts, employment relations, non-disclosure, non-compete, confidentiality

How does policy manage the R&D, design process or structure design relationships?
- Inventorship, authorship, contracts
- Management of the development process following design as new technologies move to markets (e.g., FDA-drugs & devices, FAA-airframes, efficacy testing)

How does policy define open & non-proprietary design activities
- e.g., open source

How does policy create order in the division of design benefits
- attribution, profit distribution agreements, enforceability of technology transfer

How & when does policy require retrospectives on design to assign responsibility for design quality
- Environmentalism, occupational & health protections, products liability
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Approach #2: Discuss Recurring Legal Frameworks with Demonstrable Impact on Design

Major legal fields impinging directly on design
- IP (e.g., utility patent, design patent,
- Financing of research & development leading to design
- Employment contracting, IP ownership/transfer/control, confidentiality
- Standardization (Anticipatory, Substantial design component)
- Environmental
- Products Liability
- Design prescription (structures, infrastructure, buildings)
- Design certification (airframe)

Alternative Design Requirements
- Role in Strict Liability
- Role in Patenting: Best Mode, Infringement, Equivalents
- Requirements under projects publicly financed

Risk-Benefit Analysis Duties
- Required by Law, Regulation, Industry Standards, State of the Art or Best Practices
- Feasibility
- Best available technology

Design Standards vs. Performance Standards
- GHW Bush’s Regulatory reform preference against design stds
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Immutables:

Another approach to debating public policy influences on design through the standardization lens is to have some provocative statements that inspire discussion between the “debaters” and thus also inspired comments from the audience, as the program chairman expects.

The following statements are not likely all that controversial among seasoned researchers in standardization. However, they are “truths” that inspire descriptive, supportive and critical discussion by such people. Given the dialog we had early on about some organizers of the DESRST conference who fail to understand the role of policy in IS, IT, MIS, IST, CS, etc. it can be fairly reliably expected that many in the DESRST audience will be provoked to join the debate by these statements and the discussion they trigger. All this is likely to respond to the DESRST chairman’s goal of a lively debate, while not appearing scripted.

- Standardization activities (SDA) increasingly determine sufficient design detail to be considered a design venue of increasing importance
- Standardization is increasingly a political process with only minimal checks and balances to parallel the development of substantive political products
- Participants in political processes yield to self-interest in their conduct of consensus or negotiations in SDA
- Standardization is decreasingly an objective optimization populated solely by impartial, statesman-like participants
- Self-interest drives standardization participants, national interests drive the participation of national teams engaging in SDA
- SDA participants have competing choices for participation in SDA and can often, but not always, avoid unfriendly or excessively restrictive SDO venues
- SDO venues exhibit some parallel and similar problems as do regulatory agencies in relations with regulated entities including: regulatory arbitrage (influential participants threaten defection unless venue promises leniency) and regulatory capture (agency or SDO may cater primarily to regulated or participants and not the public interest, their authorized goals or disclosed strategies)
- SDO participants have “steering” incentives: to their own designs, productive capacities, compatibilities and away from competitors’ products, designs, current/planned productive capacity or likely future directions
- SDO participants have incentives to hide strategies, designs, true state of design maturity, IP
- SDO participants have incentives to misrepresent their intent in SDA participation (e.g., steering, existing products, ongoing research, product plans, divestitures, acquisitions, IP portfolio)
- Collective activity has inherent anti-competitive potential: price-fixing, division of markets, innovation lethargy; lock-out of disruptive competitors or technologies
- Collectivity activity is scrutinized under antitrust law for anti-competitive effects on competitors, customers, suppliers and innovation
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- SDOs in the U.S. and increasingly world-wide recognize the anti-competitive potential to collective activity and impose restrictions on SDA, most notably, broadening participation to improve “due process” from the involvement of participants other than the groups most likely to collude
- SDOs in the U.S. and increasingly world-wide recognize the anti-competitive potential to collective activity and impose restrictions on SDA, also notably, IP disclosure regimes and FRAND licensing obligations
- Key antitrust cases in the U.S. reflect SDA abuses of collusion, hold-up and lock-in from submarine IP
- IP reforms, at least partially, would address some SDO participation abuses
- U.S. law now encourages SDA by overtly addressing the due process, political participation and transparency problems that have driven the more general regulation of SDA