Berkeley

[technology law Journal]

VOLUME 26
NUMBER 3
2011

UNIVERSITY OF CALIFORNIA, BERKELEY
SCHOOL OF LAW
BOALT HALL

Production: Produced by members of the *Berkeley Technology Law Journal*. All editing and layout done using Microsoft Word.

Printer: Joe Christensen, Inc., Lincoln, Nebraska.
Printed in the U.S.A.
The paper used in this publication meets the minimum requirements of American National Standard for Information Sciences—Permanence of Paper for Library Materials, ANSI Z39.48—1984.

Berkeley Technology Law Journal
U.C. Berkeley School of Law
Student Center, Ste. 3
Berkeley, California 94720-7200
btlj@law.berkeley.edu
http://www.btlj.org

FOREWORD: TECHNOLOGY'S TRANSFORMATION OF THE REGULATORY ENDEAVOR

Kenneth A. Bamberger†

Both the practicalities of governance and our understandings of it have come a long way since the articulation of the insight that code "regulates;"[1] that the choices embedded in technology for a whole variety of reasons (and none at all) have normative implications; and that the computer code of California's Silicon Valley—"West-Coast Code"—operates on a very different logic than the Beltway variety: the "East-Coast Code" of statutes and regulations.[2]

While those insights revolved the lens through which we view policy issues, reality is even more complicated, muddled, and less differentiated than these original important dichotomies suggest. For the technology form of code is not simply an additional mode of regulation; rather, it infuses, grounds, and enables legal regulation and governance itself—just as it does all aspects of our lives. Technology is part and parcel of management and decision making, of action and inaction.

Indeed, regulators have taken to heart the cyberspace lesson that "[i]f code is law . . . 'control of code is power,' "[3] enlisting technological capacity in the pursuit of policy aims. Digital computing, communication, and information management offer tools of extraordinary strength. Technology permits forms of regulation and enforcement and a capacity for both concentration and diffusion of power and authority that have never before existed. It further creates possibilities for governance in contexts heretofore thought ungovernable.

---

† Professor of Law, University of California, Berkeley School of Law.

1. *See* LAWRENCE LESSIG, CODE AND OTHER LAWS OF CYBERSPACE 60 (1999) ("How the code regulates . . . [is a] question[ ] that any practice of justice must focus in the age of cyberspace."); *see also* Joel R. Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules Through Technology*, 76 TEX. L. REV. 553, 554 (1998) (noting that technological capabilities and system design choices provide sources of rulemaking).

2. LESSIG, *supra* note 1, at 53.

3. *Id.* at 60 (quoting WILLIAM J. MITCHELL, CITY OF BITS: SPACE, PLACE, AND THE INFOBAHN 112 (1996)).

At the same time, the fusion of technology and regulation introduces normative inputs into governance, creating particular consequences. Those consequences—intended or not, visible or opaque—must be made the subject of searching inquiry, as they implicate foundational assumptions of accountability, fairness, and reliability on one hand, and the effectiveness of governance and its fidelity to rules adopted by democratic and constitutional processes on the other.

Perhaps because of its breadth across substantive contexts, the scope of technology's role as a regulatory instrument and the implications of that role have largely eluded systematic inquiry.[4]

To that end, in March 2011, the Berkeley Center for Law and Technology ("BCLT") convened academics and policymakers to address these issues from a variety of lenses and perspectives. The structure of BCLT's symposium, "Technology: Transforming the Regulatory Endeavor," reflected the belief that answering the big picture question of how technology is transforming the art and science of governance requires both scholarly inquiry that drills down into particular examples and analysis identifying themes that emerge across context, and recognition of the importance of contextual difference.

The symposium panels included discussions of both specific cases and general themes, which are incorporated in the collected essays in this volume. The symposium speakers reflected a rough typology of four distinct ways that technology has transformed the regulatory endeavor: technology's use in (1) *making individualized decisions* about government benefits; (2) *assessing and managing governance risks*; (3) *monitoring regulatory compliance*; and (4) *forcing compliant behavior* by regulated parties.

The first, individualized decision making, was reflected in the work of symposium panelist Danielle Citron.[5] The second, technological risk assessment and management, was explored by a panel that included Nuclear Regulatory Commissioner George Apostolakis, earthquake researcher Patricia Grossi, and legal economist Eric Talley, discussing the use of technology to measure and regulate nuclear, natural disaster, and financial

4. One exception is REGULATING TECHNOLOGIES: LEGAL FUTURES, REGULATORY FRAMES AND TECHNOLOGICAL FIXES (Roger Brownsword & Karen Yeung eds., 2008) (containing papers presented at a 2007 conference on both "Technology as a Regulatory Tool" and "Technology as a Regulatory Target").

5. *See* Danielle Keats Citron, *Technological Due Process*, 85 WASH. U. L. REV. 1249 (2008).

risks, respectively.[6] While these three panelists focused at the time on the similarities of method and challenge in regulating in complex contexts, the kinship between these three types of risk was underscored just days thereafter by the events following Japan's 2011 Tōhoku earthquake and the consequent damage to the Fukushima nuclear power plant and the regional and national economies.

Examples of the third and fourth categories, regarding the use of technology as a regulatory instrument, are explored in this volume by Molly K. Macauley and Nathan Richardson on environmental monitoring, and by Ira S. Rubinstein on "privacy-by-design."

Macauley and Richardson's *Seeing the Forests and the Trees: Technological and Regulatory Impediments for Global Carbon Monitoring* discusses the way that increased capacity to monitor forests through remote sensing instruments carried on aircraft or satellites can permit the use of forest carbon offsets in climate policy, an as-yet unexplored option in environmental governance.[7] Their work offers important direction for regulators, given the reliance on monitoring capacity implicit in major trends regarding not just environmental law, but regulation and governance more broadly.[8] The move away from command-and-control regulatory mandates to a focus on outcomes undergirds the turn towards "new governance" approaches across the range, including performance-based regulation; market-based or market-mimicking models; and regulatory approaches that "adapt" to the changing situations that monitor defects.[9] In light of institutional impediments to monitoring discussed by Macauley, Richardson, and symposium panelist Eric Biber,[10] the role of technology in monitoring becomes increasingly important.

Rubinstein's *Regulating Privacy by Design*, in turn, explores perhaps the most ambitious use of technology as a regulatory instrument: embedding technology into product design in ways intended to direct behavior towards compliance with regulatory norms.[11] As Rubinstein details, regulators on

6. These themes are, as well, reflected generally in recent work such as Kenneth A. Bamberger, *Technologies of Compliance: Risk and Regulation in a Digital Age*, 88 TEX. L. REV. 669, 714 (2010); Erik F. Gerding, *Code, Crash, and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis*, 84 WASH. L. REV. 127, 179 (2009).

7. Molly K. Macauley & Nathan Richardson, *Seeing the Forests and the Trees: Technological and Regulatory Impediments for Global Carbon Monitoring*, 26 BERKELEY TECH. L.J. 1387 (2011).

8. *See generally id.*

9. *See generally* Kenneth A. Bamberger & Deirdre K. Mulligan, *New Governance, Chief Privacy Officers, and the Corporate Management of Information Privacy in the United States: An Initial Inquiry*, 33 LAW & POL'Y 477, 480–82 (2011) (describing "new governance" approaches to regulation).

10. *See* Eric Biber, *The Problem of Environmental Monitoring*, 83 U. COLO. L. REV. 1 (2011).

11. Ira S. Rubinstein, *Regulating Privacy by Design*, 26 BERKELEY TECH. L.J. 1409 (2011).

both sides of the Atlantic have settled on frameworks that encourage the use of both "Privacy Enhancing Technologies" and default settings that favor privacy. These technological solutions often serve as not just complements to but also substitutes for data protection and privacy laws.[12]

Against this background, the remainder of the works in this volume explore thematic questions raised by these technological and regulatory developments. Philosopher Helen Nissenbaum casts the analytic net most broadly in her Keynote Address, asking the basic question: "If technology regulates, why do we need regulation (and vice versa)?"[13] Drawing from a range of work in both law and science and technology studies, Nissenbaum reflects on the difficulties of translating policy prescriptions into code.[14] As she describes, the exercise is "not quite as straightforward as simply plugging values into a technology and then believing that you have immediately had some positive and protracted impact on society."[15] Rather, with reference to both privacy-protecting technology and digital rights management ("DRM") technologies—perhaps the two most developed examples of the use of technology as behavior-forcing regulatory instruments—she posits a number of reasons for the continued salience of legal regulation.[16] The most straightforward might be as a corrective, when "regulation by technology contradicts societal values."[17] Yet even when such a corrective is not needed, Nissenbaum suggests, the coexistence of both law and technology is necessary because it permits the "handoff" between two regulatory systems.[18] Such a handoff not only allows law to compete with technology but also provides an alternate means "to shape how people s[ee], underst[an]d, and interpret[] prevailing" technologies that might otherwise be believed to be simply natural, neutral, or "regular."[19]

From different perspectives, the Notes by Krzysztof Bebenek and April Elliott expand on the themes of interaction between different regulatory tools. In *Strong Wills, Weak Locks: Consumer Expectations and the DMCA*

12. *Id.* at 1410–14.

13. Helen Nissenbaum, *From Preemption to Circumvention: If Technology Regulates, Why Do We Need Regulation (and Vice Versa)?*, 26 BERKELEY TECH. L.J. 1367 (2011). More specifically, Nissenbaum asks, "if technology embodies values, and if technology is capable of regulation, what role is left for law and regulation?" *Id.* at 1368.

14. *See generally id.*

15. *Id.* at 1370.

16. *Id.* at 1374–79.

17. *Id.* at 1374.

18. *Id.* at 1380.

19. *Id.*

Anticircumvention Regime, Bebenek again draws on the DRM context.[20] He cautions against an overemphasis on either law or technology as normatively determinative and suggests the importance of a third "regulator" in governing behavior: consumer norms. The power of these norms, he suggests, not only tempers technology's regulatory effectiveness but also must be considered in shaping the law if legal regulation is to be effective.[21] In turn, Elliott, in *Medicare as Technology Regulator: Medicare Policy's Role in Shaping Technology Use and Access*, considers the phenomenon of legal regulation often ignoring its impact on technology choices, and the implications for policy.[22]

Finally, in *Lost in Translation: Legality, Regulatory Margins, and Technological Management*, Roger Brownsword addresses squarely the implications of the "sea change in the regulatory environment" when "technologies are used to manage conduct in a way that assures a patterned outcome."[23] Specifically, he identifies important governance transformations that occur when legal regulation is replaced by "techno-regulation."[24] Such a substitution, he argues, diminishes regulation's moral component, the traditional notion that salient (legal) constraints embody shared notions of what behavior is "legitimate."[25] This presupposition of regulation as "an inclusive attempt to articulate the community's best interpretation of its moral commitments" is, in turn, replaced by a signal that everything that is (technically) possible is permissible, and vice versa: "if the door will not open without the required biometric confirmation, there is no way in."[26] By this account, the handoff from law to technology shifts regulation's pitch from the "normative . . . to the non-normative register."[27]

In this light, Brownsword joins the other symposium authors in structuring important framing questions for the emerging research agenda in

---

20. Krzysztof Bebenek, Note, *Strong Wills, Weak Locks: Consumer Expectations and the DMCA Anticircumvention Regime*, 26 BERKELEY TECH. L.J. 1457 (2011).

21. *Id.* at 1475–86.

22. April Elliott, Note, *Medicare as Technology Regulator: Medicare Policy's Role in Shaping Technology Use and Access*, 26 BERKELEY TECH. L.J. 1489 (2011).

23. Roger Brownsword, *Lost in Translation: Legality, Regulatory Margins, and Technological Management*, 26 BERKELEY TECH. L.J. 1321, 1323 (2011).

24. *Id.*; Roger Brownsword, *What the World Needs Now: Techno-Regulation, Human Rights and Human Dignity*, *in* 4 GLOBAL GOVERNANCE AND THE QUEST FOR JUSTICE: HUMAN RIGHTS 203 (Roger Brownsword ed., 2004).

25. *See generally* Brownsword, *supra* note 23 (describing how technological regulation can decrease opportunities for community participation in the law's creation and moral self-determination).

26. *Id.* at 1324.

27. *Id.* at 1326.

techno-regulation: the relative capacities of competing regulatory instruments; the ways in which each of those multiple instruments are intertwined, and can deepen, illumine, or undermine the others; and the manner in which fundamental governance values such as regulatory legitimacy—reflecting not only "the purposes pursued by regulators" but also "the means that they use to implement their purposes"[28]—might be translated for the technological age.

28. *Id.* at 1325.