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THE FUNDAMENTAL PROBLEM OF REGULATING TECHNOLOGY

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ABSTRACT

Scientific breakthroughs and the ceaseless pace of technological innovation touch a diverse range of subject matter, with the most profound changes often proving to be the most controversial. Recent decades have seen the fields of biotechnology and information technology raise the most attention, with the deliberations of lawmakers and courts being increasingly focused on issues brought up by innovation within these fields. Though seemingly disparate and autonomous, given the wide range of issues brought up by the different facets of contemporary technological innovation, the author in this special comment presents how one can take an overview of the subject of regulating technology vis-à-vis the law. Drawing inferences from his experiences with such issues during a law reform and judicial career spanning several decades, the author argues that there are interconnected paradoxes, and also general lessons, that regulators, particularly judges filling in for gaps left over by the legislature, must keep in mind when dealing with the subject of regulating technology.

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> [T]he continued rapid advance in science is going to make life difficult for judges.
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> We live in an age of breakneck technological change that will thrust many difficult technical and scientific issues on judges, for which very few of them (of us, I should say) are prepared because of the excessive rhetorical emphasis of legal education and the weak scientific background of most law students.[1]
>
> *- Richard A. Posner*

[1] Richard A. Posner, *The Role of the Judge in the Twenty-First Century*, 86 B.U. L. Rev. 1049 (2006).

I. PRESENT AT THE CREATION

A. Preposterous claims

Dean Acheson, one-time Secretary of State of the United States of America, called his memoirs *Present at the Creation*.[2] It was a clever title, laying claim to having been at the important meetings during and after the Second World War in which the new world order was established.

The claim was faintly preposterous, given that the Second World War grew out of the first, and bore remarkable parallels to other conflicts dating back to the Peloponnesian Wars of ancient times. All history, and all technology, grows out of the giant strides that preceded their current manifestations. We forgive Acheson because (unlike some of his predecessors and successors) he was an elegant and sophisticated man, significantly concerned with improving the condition of the world and the welfare of its inhabitants.

I make an equally preposterous claim that I was present at the creation of the central problem that occasioned the TELOS conference,[3] which discussed the challenge presented to legal regulation by the advent of modern biotechnology and information technology, the subjects of this paper. The claim is absurd because such technologies have advanced by reason of the genius of technologists and scientists, who stand on the shoulders of their predecessors, also dating back to ancient times.[4]

In one of the closing talks at the conference, Professor Mireille Hildebrandt described the advances that occurred in the communication of ideas in medieval times following the perfection of spectacle glasses and the invention of the

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[2] DEAN ACHESON, PRESENT AT THE CREATION: MY YEARS AT THE STATE DEPARTMENT (1969).

[3] TELOS is an acronym for the Centre for Technology, Ethics and Law in Society, at King's College School of Law, London. It is a specialist research centre based in the School of Law; the April 2007 international conference on 'Regulating Technologies' formally launched the Centre. *See* The Centre for Technology, Ethics and Law in Society: Kings's College London, http://www.kcl.ac.uk/schools/law/research/telos/ (last visited July 30, 2009). A selection of papers presented at the conference has also been published; *see* REGULATING TECHNOLOGIES: LEGAL FUTURES, REGULATORY FRAMES AND TECHNOLOGICAL FIXES (Roger Brownsword & Karen Yeung eds., 2008).

[4] Sir Isaac Newton, in a letter to Robert Hooke dated February 5, 1676 wrote; "If I have seen further it is by standing on the shoulders of giants". *See* I CORRESPONDENCE OF ISAAC NEWTON (H.W. Turnbull ed., 196), *as quoted in* THE OXFORD DICTIONARY OF QUOTATIONS 543 (Elizabeth Knowles ed., 1999).

printing press. The former allowed the monks, who spent their years inscribing religious texts, to extend their working lives beyond presbyopia. Yet it was the printing press that released words (and hence the ideas represented by words) from the calligraphy of the monks. For holy men, the words were written to be said or sung. But after William Caxton,[5] printed words took on a life of their own. Their meaning could be gathered without mouthing the sounds they conjured up. In a forerunner to the urgencies of the present day email, words could be read four times faster than they could be said. A revolution in communication had begun. It continues into our own times.

Acknowledging the ancient lineage of contemporary technologies, the changes upon which the conference concentrated were information technology and biotechnology. They are major features of the contemporary world. From the viewpoint of law, they present a common difficulty that, no sooner is a conventional law made to address some of their features, and to regulate those deemed necessary for regulation by reference to community standards, but the technology itself has raced ahead. The law in the books is then in great danger of being irrelevant, in whole or part. Language written down at one time may have little, or no, relevance to events that happen soon thereafter.

B. Regulating biotechnology

This is the sense in which I claim to have been present at the creation of the two nominated technologies. It came about in this way.

In 1975, soon after I was first appointed to federal judicial office in Australia, I was seconded to chair the Australian Law Reform Commission (ALRC). The Commission, a federal statutory body, was created after the model of Lord Scarman's Law Commissions in the United Kingdom,[6] and the even earlier Law Commissions of India.[7] Our task was to advise the Australian Parliament on the reform, modernisation and simplification of Australian federal law.

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[5] The first printer of books in England. *See* SIMON LOXLEY, TYPE: THE SECRET HISTORY OF LETTERS 25, 36 (2004).

[6] *See* Michael Kirby, *Law reform and human rights – Scarman's great legacy*, 26 LEGAL STUD. 449 (2006). *See also* Australian Law Reform Commission, About the ALRC (July 2, 2009), http://www.alrc.gov.au/about/index.htm.

[7] *See* Law Commission of India, Early Beginnings, http://www.lawcommissionofindia.nic.in/main.htm#EARLY_BEGINNINGS: (last visited Dec. 1, 2009); Lalit Sethi, *Rarely Seen or Heard,*

One of the first inquiries assigned to the ALRC concerned an issue of biotechnology. The Attorney-General required on us to prepare a law for the Australian Capital Territory (a federal responsibility) to deal with the issues presented to the law by human tissue transplantation.[8] The project was initiated in July 1976. The Commission was obliged to report no later than June 30, 1977. The timetable was heroic.

In the event, the Commission fulfilled its mandate. It produced its report on time. Within Australia, the report proved highly successful. Not only did it result in the adoption of a law on this aspect of biotechnology for the Capital Territory,[9] but the draft legislation attached to the ALRC's report was also soon copied in all parts of Australia.[10] Such was the universality of the issues that we addressed that the report was also quickly translated into languages other than English and used overseas in the development of the laws of other countries.

The report described the then rapid advances that had occurred in transplantation surgery. The earliest attempts in this technology dated back two thousand years. Instances of the transplantation of teeth in England at the close of the eighteenth century,[11] of successful bone transplantation at the close of the nineteenth century,[12] and of transplantation of organs such as the kidney dating from the early 1950s indicated that this was an area of human activity that probably required fresh legal thinking.[13] One of the events that had propelled

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Law Commission's Work has Great Impact, Government of India – Press Information Bureau Feature, *available at* http://pib.nic.in/feature/fe1199/f2911991.html (last visited Dec. 1, 2009) (The First Law Commission being established by the British administration in India by the Charter Act, 1833, followed by three more commissions till the time of Indian independence, with a further nineteen Law Commissions having been established since by the Government of India via executive order).

8 AUSTRALIAN LAW REFORM COMMISSION, REPORT NO. 7: HUMAN TISSUE TRANSPLANTS, 1977 [hereinafter ALRC REPORT NO. 7].

9 Transplantation and Anatomy Act, 1978 (Austl. Cap. Terr.), *available at* http://www.legislation.act.gov.au/a/1978-44/current/pdf/1978-44.pdf (the statute dealt with the regulation of the removal of human tissues, transplantation, post-mortem examination, the definition of death, and the regulation of schools of anatomy).

10 Human Tissue Transplant Act, 1979 (N. Terr.); Transplantation and Anatomy Act, 1979 (Queensl.); Human Tissue Act, 1982 (Vict.); Human Tissue and Transplant Act, 1982 (W. Austl.); Human Tissue Act, 1983 (N.S.W.); Transplantation and Anatomy Act, 1983 (S. Austl.); Human Tissue Act, 1985 (Tas.).

11 *See* generally MICHAEL F.A. WOODRUFF, THE TRANSPLANTATION OF TISSUES AND ORGANS (1968).

12 *Id.* at 380.

13 *Id.* at 521-525.

the Australian Attorney-General into action on this subject was the world-wide controversy that had surrounded the first transplantation of a human heart in South Africa in December 1967 by Dr Christiaan Barnard. The recipient died eighteen days later from pneumonia. But successful operations quickly followed.

The ALRC was quite pleased with itself for getting its report completed on time. After all, there were many difficult and controversial legal topics of regulation to be addressed. These included whether a system of "opting in" or "opting out" should be accepted to permit the removal of human tissue from the source; whether legal minors should be permitted to give consent, as for a sibling recipient and, if so, under what conditions; whether payments for human organs should be forbidden; whether organs might be taken from prisoners and other dependent persons for transplantation; whether tissue might be removed from coroner's cadavers; whether blood was to be treated separately or as just another human tissue; and how death should be defined for legal purposes, as a precondition to the removal of vital organs for transplantation.

As the ALRC was producing its report, it became aware of a "major medical development … expected within the near future - possibly the next two or three years".[14] This was described as "the fertilisation of human egg cells outside the human body".[15] The process of *in vitro* fertilisation (IVF) and embryo transplantation was therefore mentioned in the report. However, the ALRC recognised that the fertilisation of the ovum of a woman by the use of donor semen, whether *in utero* or *in vitro*, raised issues different in kind from those presented by the transplantation of particular organs and tissues. Whether or not embryo transplantation literally fell within its terms of reference, the ALRC felt bound to exclude the subject from its report and draft legislation. If there were to be an inquiry into IVF, it would require a separate reference.[16]

Similarly, the ALRC had become aware, even at that time thirty years ago, of the potential of transplantation of foetal tissue. It noted that work on foetal

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[14] ALRC Report No. 7, *supra* note 8, ¶ 38.

[15] *Id.*

[16] ALRC Report No. 7, *supra* note 8, ¶¶ 41-42.

tissue transplants "may have already begun in Australia".[17] Already, 'right-to-life' organisations and others had made submissions calling for legal prohibitions. Reports in Britain,[18] the United States,[19] and New Zealand were mentioned.[20] Once again, the subject was side-stepped.

The ALRC inquiry afforded a vivid illustration of how, in the regulation of technology, events rarely, if ever, stand still. Even between the time that the ALRC initiated its project on human tissue transplantation law and the time it reported, the technology had marched on. Draft legislation prepared to address other topics was unsuitable, and plainly so, for the more sensitive and complicated issues emerging from IVF and foetal tissue transplants. Before long, Louise Brown was born.[21] Eventually, special laws on IVF were adopted in Australia, as elsewhere.[22] As I have learned in my judicial capacity, such laws and the issues involving the availability of IVF for unmarried or same-sex recipients, invoke strong feelings, conflicting demands and different regulatory responses in different places.[23]

C. Regulating information technology

Soon after the completion of the law reform project on human tissue transplants, the ALRC was asked to prepare recommendations on reform of

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[17] *Id.* ¶¶ 45-46.

[18] Department of Health and Social Security Staff – Great Britain, The Uses of Fetuses and Fetal Material for Research: Report of the Advisory Group, 1972, H.M.S.O. (Report of the Advisory Group chaired by John Peel which was established in 1970).

[19] United States National Commission for the Protection of Human Subjects on Biomedical and Behavioural Research, Research on the Fetus: Report and Recommendations (1975).

[20] New Zealand Royal Commission on Contraception, Sterilisation and Abortion & New Zealand. Parliament - House of Representatives, Contraception, sterilisation and abortion in New Zealand : Report of the Royal Commission of Inquiry (1977).

[21] Louise Joy Brown, born July 25, 1978, was the world's first baby to be conceived by IVF. *See Profile: Louise Brown*, BBC, July 24, 2003, http://news.bbc.co.uk/2/hi/health/3091241.stm (last visited August 26, 2009).

[22] *See, e.g.*, Infertility Treatment Act, 1995 (Vict.); Reproductive Technology (Clinical Practices) Act, 1988 (S. Austl.); Human Reproductive Technology Act, 1991 (W. Austl.).

[23] *See, e.g., Re:* McBain; Ex parte Australian Catholic Bishops Conference (2002) 209 C.L.R. 372 (arising out of challenges brought before the High Court of Australia against a decision of a single judge of the Federal Court of Australia with respect to the invalidity of the Infertility Treatment Act, 1995 (Vict.) due to its inconsistency with the Sex Discrimination Act, 1984. The High Court ruled against the applicants).

the Australian law governing the protection of privacy. This too led to a major inquiry, although in this case the object was the preparation of proposals for federal legislation, suitable for enactment by the national Parliament. In the result, a number of reports were delivered on the topic.[24] The major report, in 1983, dealt with many aspects of privacy protection under federal law.[25]

As befitted its delivery on the brink of 1984, a major focus of the 1983 report was new information technology. Even at that time, that technology had significantly changed the way in which information was collected and distributed and the amount of personal information that could be communicated.

Because of the currency of the Australian inquiry, I was sent as the Australian representative to a group of experts convened by the Organisation for Economic Cooperation and Development (OECD) in Paris. That expert group was formed to make recommendations to member countries of the OECD on guidelines for the protection of privacy in the context of trans-border data flows. In the event, I was elected to chair the OECD expert group. Between 1978 and 1980, it conducted its inquiry drawing upon principles already developed in relation to automated and non-automated data systems by the Nordic Council, the Council of Europe, and the then European Economic Community. In the result, guidelines were agreed to by the OECD.[26] They were to prove highly influential in the development of the national laws of member states, influencing the design and contents of such laws in countries with legal systems as diverse as Australia, Canada, Japan and the Netherlands and corporate practice in the United States

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[24] AUSTRALIAN LAW REFORM COMMISSION, REPORT NO. 11: UNFAIR PUBLICATION: DEFAMATION AND PRIVACY, 1979; AUSTRALIAN LAW REFORM COMMISSION, REPORT NO. 12: PRIVACY AND THE CENSUS, 1979; AUSTRALIAN LAW REFORM COMMISSION, REPORT NO. 22: PRIVACY, 1983 [hereinafter ALRC REPORT NO. 22].

[25] ALRC REPORT NO. 22 dealt with how the concept of privacy shaped the scheme for its protection, how technological changes put privacy at risk, how the Commonwealth of Australia could learn from other law-makers, how the Commonwealth of Australia could build upon existing laws protecting privacy, and a multi-faceted, flexible and sensitive approach when resolving a scheme for privacy protection.

[26] *See* Organization for Economic Cooperation and Development, *Recommendation of the Council Concerning Guidelines Governing the Protection of Privacy and Transborder Flows of Personal Data*, OECD DOC. C(80)58(final), 20 I.L.M. 422 (1981) (The goal behind the establishment of the OECD Expert Group was to develop guidelines which would help to harmonise national privacy legislation and, while upholding such human rights, would at the same time prevent interruptions in international flows of data. The guidelines, in the form of a Recommendation by the Council of the OECD, were developed by a group of government experts under my chairmanship. The Recommendation was adopted by the Council of the OECD and became applicable on September 23, 1980).

of America. The Australian Privacy Act, based on the ALRC report, was enacted by Parliament in 1988.[27]

Annexed to the Australian Privacy Act, in Schedule 3, were 'national privacy principles'. As the Act declared in its Preamble, its purpose included compliance by Australia, as a member of the OECD, with the recommendation of the Council "that member countries take into account in their domestic legislation the principles concerning the protection of privacy and individual liberties set forth in Guidelines annexed to the recommendations".[28] The Act recited that Australia had "informed that organisation that it will participate in the recommendation concerning those Guidelines".[29]

A difficulty soon became apparent. It did not arise out of any defect in the understanding of the OECD expert group or of the ALRC in its recommendations to the Australian government and Parliament concerning the technology then deployed. It happened that technology quickly changed in its potential, and moreover, did so in a way that rendered an assumption, expressed in the OECD Guidelines and the Australian national privacy principles, out of date (at best) and irrelevant (at worst).

Illustrating the issue by reference to the 'use and disclosure' principle, the second in the Australian national privacy principles, this principle stated:

> 2.1 An organisation must not use or disclose personal information about an individual for a purpose (the secondary purpose) other than the primary purpose of collection unless:
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> (a) both of the following apply:
>
> (i) the secondary purpose is related to the primary purpose of collection and, if the personal information is sensitive information, directly related to the primary purpose of collection;
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> (ii) the individual would reasonably expect the organisation to use or disclose the information for the secondary purpose; or
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> (b) the individual has consented to the use or disclosure; or

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[27] Privacy Act, 1988 (Austl.).

[28] *Id.* Preamble.

[29] *Id.*

(c) if the information is not sensitive information and the use of the information is for the secondary purpose of direct marketing:

(i) . . .

. . .

(v) . . . ; or

(d) . . .

(e) the organisation reasonably believes that the use or disclosure is necessary to lessen or prevent:

(i) a serious and imminent threat to an individual's life, health or safety; or

(ii) a serious threat to public health or public safety; or

(f) the organisation has reason to suspect that unlawful activity has been, is being or may be engaged in, and uses or discloses the personal information as a necessary part of its investigation of the matter or in reporting its concerns to relevant persons or authorities; or

(g) the use or disclosure is required or authorised by or under law; or

(h) the organisation reasonably believes that the use or disclosure is reasonably necessary for one or more of the following by or on behalf of an enforcement body:

. . . .[30]

[Certain clauses omitted for brevity]

The basic hypothesis of the OECD Guidelines (and therefore of the ALRC recommendations) was that personal information that was collected should ordinarily be restricted to use for the purpose for which it was collected and that such purpose should be made known to the individual at the time of the collection.[31] Then along came search engines, including Google and Yahoo. The specification of purposes of collection and the limitation of use and disclosure by reference to such purposes went out the window.[32]

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[30] Privacy Act, 1988 (Austl.), sched. 3, clause 2.1.

[31] *Id.* sched. 3, clause 1 (privacy principle regarding collection of personal information).

[32] Another illustration arises out of the enactment of provisions requiring that confessions and admissions to police, by suspects in custody, should be recorded on "videotape". *See, e.g.*, Criminal Code Act, 1913 (W. Austl.), § 570D(2)(a), *repealed by* Criminal Investigation (Consequential Provisions) Act, 2006, § 26. The change to digital technology necessitated amendment of such laws to substitute a requirement for "audio-visual recording". *See* Criminal Investigation Act, 2006 (W. Austl.), § 118(1).

This is the sense in which I assert that I was present at the creation of the problem vis-à-vis the regulation of new technologies. Accepting as paradigm instances the cases of biotechnology and information technology that I have described, the difficulty (in some cases near impossibility) was soon apparent of drafting any law of the conventional kind that would not quickly be overtaken by events. In part, legal texts might be overtaken by advances in technology of the kind that I have described. But in part too, changes in social attitudes, themselves stimulated by advances in technology and a perception of the utility of the advances, make it more difficult than in other fields of law to draw a clear line in the sand.

D. The caravan of controversy

Take for example, *in vitro* fertilisation. In 1976, when the ALRC report on Human Tissue Transplants was written, many earnest debates were conducted over the suggested ethical quandary of transplantation of ova fertilised by a husband's sperm. These debates were quickly replaced by new ones concerned with the use of non-husband (donor) sperm. Such debates are now rarely raised, even in esoteric legal circles. Today the ethical (and legal) debates in Australia and elsewhere are generally concerned with the availability of IVF to single parents and to same-sex couples. Thus, the caravan of controversy has moved on. A law drafted too early may freeze in time the resolution of earlier controversies which may later be regarded as immaterial or insignificant.

Napoleon reportedly observed a principle of never responding to letters for at least a year. He adopted this principle on the footing that, if the problem still existed a year later, it would be time enough for it to receive the Emperor's attention. Whether by default or by design, many issues presented to the law by contemporary technology appear to receive the same treatment. One suspects that, in many instances, it is because of the complexity and sensitivity of the issues rather than a strategic policy of lawmakers to postpone lawmaking or clarification of regulation until the contours of the necessary law have become clear.

II. FIVE PARADOXES

Having laid the ground for my competence to provide a summation of the issues regarding the subject of the regulation of technology discussed at the

TELOS conference, I will start by identifying a number of paradoxes, or at least curiosities, which emerged during the debates.

A. Doing the Best without Experts

The first of the curiosities is a reflection not only on my own limited competence to participate in discussions regarding the regulation of technology, but also on the limited competence of everyone else. There are no real experts on the subject of regulating technologies. They do not exist in the United Kingdom, the United States, Australia or elsewhere. It is much easier to find an expert on the intellectual property implications of biotechnology and information technology than it is to find someone skilled in considering what new law, if any, should be adopted to deal with a particular issue presented by technology and how it should be devised. Easier by far to find an expert on income tax or unjust enrichment or international human rights law than to find scholars, judges or even legislative drafters who can claim to be experts in the subject matter of the TELOS conference.

Professor Lawrence Lessig is the founder of Stanford Law School's Center for Internet and Society.[33] His book *Code and Other Laws of Cyberspace*,[34] now updated by *Code* v2,[35] blazed a trail, and he is considered something of a guru on the interface of cyberspace and the law. His novel thesis is that 'Code', by which he refers to the architecture of technological systems, will sometimes incorporate regulatory imperatives into information technology obviating any real choice on the part of the user as to whether or not to conform to the law.[36]

In the High Court of Australia, we came face to face with this reality in the appeal in *Stevens v. Sony Computer Entertainment*.[37] The case concerned a claim by Sony Corporation of breach of a "technological protection measure" installed

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[33] Lessig.org, Short Biography, http://www.lessig.org/info/bio/ (last visited July 7, 2009).

[34] Lawrence Lessig, Code and Other Laws of Cyberspace (1999) [hereinafter Lessig, Code V.1].

[35] Lawrence Lessig, Code version 2.0 (2006).

[36] Lessig, *supra* notes 34 & 35. *See* also Lawrence Lessig, The Future of Ideas: The Fate of the Commons in a Connected World 145-239 (2002) (noting the increased level of control possible, and in fact actively being sought to be imposed, over how technological systems can be utilized by their users) .

[37] (2005) 221 A.L.R. 448.

by it in the programme of its computer games. Sony asserted that the measure was protected under the Australian Copyright Act, 1968. Sony argued that Mr. Stevens had unlawfully sought to circumvent the device incorporated computer games that it produced and sold on CD-ROM for use in its PlayStation consoles.

Applying a strict interpretation to the expression "technological protection measure", the court held that Sony's device did not fall within the statute. I agreed in this analysis.[38] The case was a vivid illustration of the way in which, for copyright, contractual and other legal purposes, attempts are now often made to incorporate regulatory provisions in the relevant technological codes. It is a new development, although I suppose one might see primitive attempts directed at the same object in the safety provisions incorporated in the design of houses, bridges and aeroplanes. Digital devices such as the Sony PlayStation simply take this development to a higher level of sophistication and technological capability. Professor Lessig identified this new development. Inevitably, his expertise did not include all of the current major technologies, still less the way in which law can regulate them.

I too am no expert in the design of laws. True, I sat in a final national court that sometimes declared new laws. I worked for a decade in national law reform. True also, I have participated in the drafting of international guidelines, such as those of the OECD.[39] However, this is hardly an intensive preparation for the complex and technical task of drafting conventional laws for, or under, a legislature. I have become rusty since, in my law reform days, I worked with former parliamentary counsel on the draft legislation annexed to the ALRC's reports. Also, although the experience of authentic scientists and technologists often is essential to an understanding of the problem, it does not necessarily provide the best guidance for the legal solutions.

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[38] *Id.* ¶ 186.

[39] Also as chair of the UNESCO International Bioethics Committee drafting group for the Universal Declaration on Bioethics and Human Rights, adopted by the General Conference of UNESCO, Paris, on October 19, 2005. *See* Roberto Andorno, *Global bioethics at UNESCO: in defence of the Universal Declaration on Bioethics and Human Rights*, 33 J. MED. ETHICS 150, 150 (2007), *available at* http://www.ethik.uzh.ch/ibme/team/andorno/Andorno-Bioethics_UNESCO.pdf.

Vladimir Ilych Lenin declared that the person who writes the minutes of an organisation usually ends up controlling it. His work as general secretary of the Soviet Communist Party obliges us to take this advice seriously. We may complain about the absence of law concerned with new cutting edge technology. We may acknowledge our own imperfections for addressing the gap. We may recognise, with Professor Lessig, that regulation in the future may not necessarily come in the form of instruments made by or under the legislature and published in the Government Gazette.

Nevertheless, the issue tackled in the TELOS conference is undoubtedly of the greatest importance for the future of the rule of law in every society. Despite the manifold weaknesses of those whom it invited to its conference, TELOS may, in the long run, have a paradoxically disproportionate impact on perceptions of how technologies may be regulated and used in regulation, simply because it is one of the first organisations to tackle this issue generically. It surveys what is substantially a blank page. Increasingly, the content of law, like the content of life, will be concerned with technology and with its many consequences for society. The importance of the chosen topic therefore belies the comparatively little that is written, said, and thought about it. Paradoxically, then, those who first lay claim to expertise may participate in a self-fulfilling prophesy.

B. Too much/too little law

The second paradox is that most of us recognise that the failure to provide law to deal with the fallout of particular technologies is not socially neutral. Effectively, to do nothing is often to make a decision.

Thus, for the law to say nothing about reproductive cloning of human beings, for example, (assuming that end to be technically possible) is to give a green light to experiments in that technology. In so far as law expresses prohibitions supported by sanctions that uphold the command of a sovereign power, silence may, for once, imply consent or at least non-prohibition. Thus, if there is no law to prohibit or regulate reproductive cloning or hybridisation or xeno-transplants, scientists and technologists at their benches may decide to experiment. Nothing then exists to restrain them except their own ethical principles, any institutional ethics requirements, the availability of funding and

the prospects of a market. A scientist or technologist may proceed out of sheer curiosity, as when David Baltimore so beneficially investigated a simian retrovirus a decade before the discovery of the immuno-deficiency virus in human beings.[40]

The scientist or technologist may do this in the hope of cashing in on a potentially lucrative therapeutic market. One such market certainly exists in respect of therapies to overcome human infertility. Reproductive human cloning might, potentially, be one such therapy. Some of its supporters treat with contempt the supposed moral objections to this form of scientific advance.[41] They point to earlier resistance to other reproductive technologies such as artificial insemination donor (AID), artificial insemination husband (AIH), *in vitro* fertilisation (IVF) and surrogacy arrangements.[42] Most of these objections have faded away as society becomes more used to 'non-natural' ways of securing a desired pregnancy in a particular patient.

The recognition that inaction in the face of significant technologies may amount to making a decision co-exists with our appreciation, as observers of the law, that premature, over-reaching or excessive lawmaking may, in some cases, be an option worse than doing nothing. It may place a needless impediment upon local scientists and technologists, obliging them to take their laboratories and experiments offshore.

In a big world with diverse cultures, religions and moral beliefs, it is never difficult to find a place offering a regulation-free zone in exchange for investment dollars. Just as bad is the possibility that laws are solemnly made and then ignored or found to be ineffective, as was temporarily the case with the 'technological protection measure' considered in the Australian *Sony* litigation.[43] Following

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[40] *See* Robert C. Gallo, *A reflection on HIV/AIDS research after 25 years*, 3 RETROVIROLOGY 72 (2006), *available at* http://www.pubmedcentral.nih.gov/picrender.fcgi?artid=1629027&blobtype=pdf.

[41] *See, e.g.*, John A. Robertson, *Why Human Reproductive Cloning Should Not in all Cases be Prohibited*, 4 N.Y.U. J. LEGIS. & PUB. POL'Y 35 (2000-2001); *and* Yuriko Mary Shikai, *Don't Be Swept Away by Mass Hysteria: The Benefits of Human Reproductive Cloning and Its Future*, 33 SW. U. L. REV. 259 (2003-2004).

[42] The New South Wales Law Reform Commission in 1988 recommended a prohibition on surrogacy arrangements which was not implemented. However, surrogacy arrangements are regulated in some Australian jurisdictions; *see* Parentage Act, 2004 (Austl. Cap. Terr.); Surrogate Parenthood Act, 1988 (Queensl.); Family Relationships Act, 1975 (S. Austl.); Surrogacy Contracts Act, 1993 (Tas.); and Infertility Treatment Act, 1995 (Vict.).

[43] *See supra* text accompanying notes 38-39.

the decision of the High Court of Australia in that case, and under pressure from the United States government under the United States-Australia Free Trade Agreement, Australian law was changed. The new law represented an attempt to overcome the High Court's decision, although in a somewhat different way.[44]

Many participants in the TELOS conference, whether expert in matters of biotechnology or information technology, revealed themselves as legal libertarians. They were so mainly because of their recognition of the common potential of premature, over-reaching and ill-targeted laws to diminish experimentation, burden innovation and cause economic and other inefficiencies. Thus, Professor Han Somsen presented a number of compelling arguments about the dangers of the 'precautionary principle'.[45] Whilst this principle appears to be gaining increasing acceptance in the international community, particularly in respect of protection of the global environment, it carries risks of its own. If taken too far, it could instil a negative attitude towards science and technology and encourage excessive regulation in the attempt to avoid *any* risks. Life is risky. Most technological innovations carry some risk. An undue emphasis on precaution, for fear of *any* risks, would not be good for science or technology or for the global economy or for innovation in thought as well as action.

The second paradox is thus more of a contradiction or tension, difficult to resolve. At the one time we must accept that doing nothing to regulate technologies involves making a decision. Yet we must also recognise that sometimes doing nothing will be a better option than making laws that impede innovation and burden efficiency.

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[44] The story of the change of law following the decision in the *Sony* case is told in Melissa de Zwart, *Technological enclosure of copyright: The end of fair dealing?*, 18 AUSTRALIAN INTELL. PROP. J. 7 (2007). For a contrasting view critical of the reasoning followed by the High Court in the same case, see David J. Brennan, *What can it mean "to prevent or inhibit the infringement of copyright"?: - A critique on* Stevens v. Sony, 17 AUSTRALIAN INTELL. PROP. J. 81, 86 (2006). *See also* Copyright Amendment Act, 2006 (Austl.) implementing the new scheme said to be required by Free Trade Agreement, Austl.-U.S., art 17.4.7, May 18, 2004, Hein's No. KAV 7141 [hereinafter Australia-United States Free Trade Agreement].

[45] *See generally* Roberto Andorno, *The Precautionary Principle: A New Legal Standard for a Technological Age*, 1 J. INT'L BIOTECHNOLOGY L. 11 (2004) (explaining the development of the precautionary principle in response to the accelerated pace of technological innovation of the last few decades).

C. Free speech and copyright law

An early illustration of the second paradox arose in the opening address of Professor Lessig. His address was concerned with the potential of 'Code' (or information technology architecture) to play a part in regulating technology in ways more universal and immediately effective than most laws are.

An instance, frequently mentioned, is the installation of filters designed to prohibit access to materials considered "harmful to minors". Many countries now have legal regulations forbidding access to, or possession of, child pornography. Available software may prevent access to sites providing such images. But sometimes they may do so at a cost of over-reaching prohibitions. The burden on free communication may outstrip the legitimate place of legal regulation, forbidding access not only to child pornography but to lawful erotic materials or discussion about censorship itself or to websites concerned with subjects of legitimate interest, such as aspects of human sexuality, women's rights and even children's rights.

Whereas the law will commonly afford avenues of appeal and review of decisions that purport to apply legal norms, an over-reaching 'protective' software programme may afford no such rights of challenge. Those concerned with the human right of free expression are naturally anxious about the potential of 'Code' to re-institute excessive censorship in society, just when we thought we had grown out of that habit.

Like most American lawyers, Professor Lessig approached these issues from the standpoint of the First Amendment to the United States Constitution.[46] This upholds a very high level of unrestricted and unregulated freedom of communication. The rest of the world tends to be less absolutist in this respect.[47] It recognises that, whilst 'free' expression and access to a 'free' media constitute

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[46] Relevantly, the First Amendment to the Constitution of the United States of America states that "Congress shall make no law ... abridging the freedom of speech, or of the press..."; U.S. CONST. amend. I.

[47] *See, e.g.*, ABC v. Lenah Game Meats Ltd. (2001) 208 C.L.R. 199, ¶ 202 (stating that the stringent rule in favour of free speech in the United States is based on the interpretation of an express prohibition in its constitution which has no counterpart in Australia, the United Kingdom, or South Africa); Dow Jones & Co. v. Gutnick (2002) 210 C.L.R. 575, ¶ 115 (observing that even international human rights instruments recognise that the rights to freedom of speech and expression enshrined within them carry duties and responsibilities allowing them to be subject to those restrictions provided for by law and which are necessary for the respect or reputations of others).

important human rights, they are not unlimited. They have to be harmonised with other fundamental human rights. These include the right to individual honour and reputation and to protection of privacy and family relationships.[48] They also include protection of the legitimate rights of inventors.[49] Professor Lessig has also expressed concern about the balance that has been struck in the United States between rights to free expression and right to copyright protection that necessarily impinges on free expression.[50]

The field of technology regulation across international jurisdictions is not, as such, solely concerned with the particularities of United States law, including the way the constitutional law of that country reconciles free expression and lawful copyright protection. On the other hand, because of the dominance of the United States media and its hegemony in entertainment and popular culture, what is done in that country to regulate information technology obviously has consequences world-wide. Just as, in earlier decades, the hard copy issues of *Playboy*, circulating in huge numbers around the world, broke down the prevailing culture of censorship, carrying First Amendment values virtually everywhere, so today the inbuilt 'Code' or architecture of information systems may carry American legal protections for American copyright holders far beyond the protections that the laws of other countries afford them.[51]

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[48] International Covenant on Civil and Political Rights, arts. 17.1, 17.2 & 19.3, Dec. 16, 1966, 999 U.N.T.S. 171.

[49] *Cf.* Universal Declaration of Human Rights, art. 27.1, Dec. 10, 1948, GA res. 217A (III), U.N. Doc. A/810 at 71 (1948); International Covenant on Economic, Social and Cultural Rights, art. 15.1(b) and (c), Dec. 16, 1966, 993 U.N.T.S. 3 (rights regarding participation in cultural life, enjoyment benefits of scientific progress, and protection of author interests).

[50] *Cf.* Nintendo Co. v. Sentronics Systems Pty. Ltd. (1994) 181 C.L.R. 134, 160 (noting that it is the very nature of laws which create, confer, and provide for the enforcement of intellectual property rights that while conferring such rights on authors, inventors, and designers they conversely restrict the proprietary rights which the owners of the affected property would otherwise enjoy); Grain Pool of WA v. Commonwealth (2000) 202 C.L.R. 479, 531 n.266 (citing Graham v John Deere & Co., 383 U.S. 1, 6 (1966), Feist Publications Inc v. Rural Telephone Service Co., 499 U.S. 340, 348 (1991), and LESSIG, CODE V.1, *supra* note 34, at 131, 133-134, to note that "The protection of intellectual property rights must be afforded in a constitutional setting which upholds other values of public good in a representative democracy.", and that while the constitutional setting in Australia may differ from that of the United States, they were still similar in that there existed competing constitutional objectives when it came to the subject of how intellectual property could be protected).

[51] *Sony* (2005) 221 A.L.R. 448, ¶ 216 (citing LESSIG, CODE V.1, *supra* note 34; Brian Fitzgerald, *The PlayStation Mod Shift: A Technological Guarantee of the Digital Consumer's Liberty or Copyright Menace/ Circumvention Device?*, 10 MEDIA AND ARTS LAW REVIEW 85, 96 (2005)). *See also* Metro-Goldwyn-Mayer Studios Inc. v. Grokster Ltd., 545 U.S. 913.

This consequence can present legal and practical problems of regulation of technology in jurisdictions enjoying different capacities to contest the balances struck by the Constitution and laws of the United States. In smaller economies, there may be no real choice. Upholding the local constitution and its values may, as a matter of practicalities, be impossible. Consumers may be presented with no real option. If they buy the software that drives the PlayStation, they may find that it reflects United States constitutional and copyright laws. Indeed, such software may exceed even the protections afforded by those laws. It is in this sense that 'Code' and architecture may challenge the previous assumption that, within its own borders, each nation state is entitled, and able, to enforce its own laws, reflecting its own values. In Australia, we gained a glimpse of things to come in the *Sony* litigation. But it was only the beginning.

The debate between First Amendment values and the current state of American copyright law presents a microcosm of similar conflicts in every society. There is an element of the paradoxical about it in the United States. This is because, as Professor Lessig put it, intellectual property law in that country has been able, to some extent, to slip under the radar of First Amendment values. To a large extent, intellectual property law has developed separately and, in part, inconsistently. This point was noted by me in my reasons in *Sony*. Eventually, across jurisdictions, it will be necessary to face directly the tension between enlarging copyright protection (including through the use of the technological architecture of information technology) and adhering to high levels of free communication, unimpeded by governmental regulation (such as by copyright law).[52]

The conflict recounted by Professor Lessig presents a paradox, visible to non-Americans and to American lawyers themselves.[53] The country which has been foremost in promoting values of free expression and the free press has also lately been foremost in promoting, extending and enforcing the intellectual property rights of its own creators, 'inventors' and designers. This is not only true in the context of information technology. It is also true in the case of biotechnology, as the closely divided decision of the Supreme Court of the

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[52] *Grain Pool* (2000) 202 C.L.R. 479, ¶ 133; *Sony* (2005) 221 A.L.R. 448, ¶ 216.

[53] *Graham*, 383 U.S. 1, 6 (1966).

United States in *Diamond v. Chakrabarty*,[54] and its progeny, demonstrate. It appears in an acute form in the United States. But it has its counterparts everywhere.

D. Technology's democratic deficit

A fourth paradox derives from the way in which contemporary technology at once enhances, and diminishes, our facilities of democratic governance. No one questions the importance of science and technology in the current age, and the desirability of rendering laws, and regulation more generally, available and accountable to the people from whom authority to govern society is ultimately derived. However, on balance, does technology enhance or reduce democratic accountability for the state of the resulting regulations?

In some respects, there can be no doubting that technology has in some ways improved communication that is essential to converting the formalities of electoral democracy into the realities of genuine accountability of the governors to the governed. Radio, television, world-wide satellite communications, the Internet, podcasts, blogs and so forth have revolutionised the distribution of information about those persons and institutions whose decisions affect the regulation of our daily lives. In this sense, democratic governance has moved from small town hall assemblies of earlier times into huge national and international forums both public and private.

Paradoxically, however, the very quantity of information has resulted in its manipulation and presentation that is often antithetical to real democratic accountability. Technology stimulates a demand for the simplification and visualisation of messages, the personalisation of issues, the trivialisation of conflict, the confusion between fact and opinion, and the centralisation and 'management' of news. So-called 'spin' and 'infotainment' are characteristics of the present age. They tend to concentrate power in a way that even George Orwell could not have imagined.

Several speakers at the TELOS conference referred to yet another feature of contemporary technology that can be inimical to democracy. This is the

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[54] 477 U.S. 303 (1980) (concerning the patentability of genetically modified micro-organisms under U.S. law); *c.f.* Michael Kirby, *Intellectual Property and the Human Genome*, 12 AUSTRALIAN INTELL. PROP. J. 61, 64 (2001).

incorporation of regulation in the technology itself that goes beyond what is strictly required by local law yet without effective opportunities for those affected to challenge the regulation so imposed. Who can, or would, challenge the software designed to bar access to Internet sites selected as "harmful to minors" but sometimes operating in an over-inclusive way?

Not long ago, in the High Court of Australia, I found that the website of the Archbishop of Canterbury was barred to use. My staffers were unable to procure one of the Archbishop's addresses. This was presumably because a filter, instituted to deny access to websites deemed undesirable, had erected a bar. Presumably, this was because, in the manner of these times, one or more of his Grace's addresses dealt with issues of sex, specifically homosexuality. In fact, that was exactly why I wanted the speech. I was surprised to find that at the same time the Vatican website was accessible without any restriction. This may say something either about the prudence of His Holiness's choice of language, the power of the Roman Catholic Church in such matters, or the religion of the filter programmer. I gave directions that led to the filter being over-ridden. I secured a copy of the desired speech. But many might not be so lucky.

Given the importance of technology to the current age, how do we render those who design, install and enforce such programmes accountable to the democratic values of our society? As 'Code' enlarges and replaces the old style legal regulation of technology, how do we render its architects answerable to the majority views of the people? How, if at all, are transnational corporations, like Sony for instance, rendered responsible to the democratic values of the nations in which their products are used?

These are legitimate questions because the fourth paradox is the coincidence, at the one time of history, of technologies that vastly enhance access to information that jumped the Berlin Wall, bringing messages of freedom, at the same time as they sometimes diminish genuine debate, enlarge unreviewable 'technological' corporate decisions and expand the capacity to 'manage' news in a way inimical to real transparency and accountability of decision-makers to the people.

E. Vital but Neglected Topics

I reach my fifth, and final, paradox. Because of the elusiveness of much contemporary technology to effective regulation, large and increasing areas of activity in society find themselves beyond the traditional reach of law as we have hitherto known it. When regulation is attempted, as I have shown, it will often be quickly rendered ineffective because the target has already shifted. Typically, in the past, the drawing up of laws has been a slow and painstaking process. Consulting governments and those primarily affected, not to say the people more generally, takes much time. In that time, the technology may itself change, as I have demonstrated from my experience with human tissue transplantation and privacy laws. Now, new forms of regulation are being developed in the form of Professor Lessig's 'Code'. Yet this form of regulation is not so readily susceptible, if susceptible at all, as conventional laws have been, to democratic values and to the participation (or even appreciation) of most of those affected in the moral choices that determine the point at which the regulation is pitched.

If, on the same Easter weekend in London, King's College School of Law had convened a conference on revenue law, it would have filled a convention hall. A month prior to that conference, in Hobart, Tasmania, I addressed more than 600 lawyers and accountants at such a conference in Australia. Similarly, a conference on the law of unjust enrichment would attract hundreds of contributors, with their differing opinions. Even a meeting on the rule against perpetuities would probably have attracted more participants than the inaugural conference of TELOS. Yet, in all truth, the issues addressed by TELOS with respect to the regulation of technology are more important for our societies and their governance than virtually any of the other topics that legal science could offer.

It sometimes falls to small groups, particularly in professions, to lead the way and to bring enlightenment to the many. This, then, is the fifth paradox - at least, it is an oddity. Such an important topic as the regulation of burgeoning technologies in modern society should engage the interest and attention of all who claim to be lawyers, sociologists and philosophers and express an interest in the health of the rule of law. Yet, for the moment, and for most such observers, this is *terra incognita*. The contributions at the TELOS conference suggest that it will, and should, not be so for long.

III. SEVEN LESSONS

A. Recognise a Basic Dilemma

Certain general lessons stand out from the presentations and discussions that I encountered at the TELOS conference. Some of them have already been touched on.

The first is that the regulation of technology faces a fundamental dilemma hitherto uncommon in the law. This is that, of its character, technology is normally global. Law, being the command of an organised community is traditionally tied to a particular geographical jurisdiction. Whereas in recent years the need for extra-territorial operation of municipal law has been recognised, and upheld,[55] the fact remains that the focus of most national law is the territory of the nation. By way of contrast, the focus of regulating technology must be the technology itself.[56] Sometimes, that feature of the technology will make effective regulation by national law difficult, or even impossible.

It is into this context that direct enforcement by 'Code', written into software programmes or otherwise imposed, adds a new dimension to global technology. The values and objectives of transnational corporations may be even more unresponsive to national regulation than the rules of municipal legal system are. Moreover, 'Code' of this kind may opt for caution and over-inclusion so as to avoid dangers to markets in the least right-respecting countries. The contractual arrangements entered between the government of the People's Republic of China and the corporations selling access to Yahoo and Google in China, described during the conference, illustrate the willingness of the latter to succumb to the demands of the former so as to avoid endangering a lucrative economic market for their products. In this way the provider, but also the users, are subjected to forms of censorship that might not be tolerated in other societies.

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[55] *See, e.g., Re Colonel Aird; Ex parte Alpert* (2004) 220 C.L.R. 308, ¶¶ 114-133 (referring to the *Lotus* case decided by the Permanent Court of International Justice in 1927, and the movement towards an international judicial system where national courts take into account the global context when applying municipal law, as put forward in Jenny S. Martinez, *Towards an International Judicial System*, 56 STAN. L. REV. 429 (2003)).

[56] *Dow Jones* (2002) 210 C.L.R. 575, ¶¶ 78-92 (noting the features of the Internet and the World Wide Web that affect how courts must conceptualise applicable common law).

A smaller country, with a smaller market, is unlikely to exert the same clout. Considerations of economics rather than of legal principle, ethical rules or democratic values, may come to predominate in such cases.

B. Recognise that Inaction is a Decision

In the past, proponents of technological innovation have often favoured containment of law and a 'libertarian' approach to developments of technology. Yet most lawyers recognise that there are limits. Unless such limits are clearly expressed, and upheld in an effective way, the absence of regulation will mean, effectively, that the society in question has made a decision to permit the technological advances to occur, without impediment.

Those who are cautious about adopting any form of the precautionary principle may nonetheless recognise the need for some restraints. Thus, unlimited access to child pornography will probably offend most people and sustain the need for regulation of the Internet to prohibit or restrict access to such sites. However, that will still leave room for debate about the detailed content of the regulation: the age of the subjects depicted; any permissible (computer graphic rather than human) images; the means of enforcing the law; and the provision of effective sanctions.[57] Cases on these issues, and on any constitutional questions that they present, are now quite common.[58]

Likewise with biotechnology - views may differ over whether regulation is necessary, or even desirable, to prohibit therapeutic cloning, reproductive cloning or the use of human embryonic stem cells. Yet non-binding prohibitory resolutions and declarations have been adopted in the organs of the United Nations on this subject.[59] Even those nations, like the United Kingdom, that have not favoured prohibitions or moratoriums on experiments with human

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[57] Bounds v. The Queen 228 A.L.R. 190, 197 (2006).

[58] *See, e.g.*, The Queen v. Fellows & Arnold, [1997] 2 All E.R. 548, *and* The Queen v. Oliver [2003] 1 Cr. App. R. 28, ¶ 10. *C.f.* Lawrence v. Texas, 539 U.S. 558, 590 (2003).

[59] *See* Kerry Lynn Macintosh, *Human Clones and International Human Rights*, 7 U.T.S. L. Rev. 134, 134-136 (2005) (describing the resolution of the General Assembly of the United Nations of March 8, 2005. This approved a declaration, proposed by the Sixth Committee of the General Assembly, to "prohibit all forms of human cloning inasmuch as they are incompatible with human dignity and the protection of human life". The General Assembly vote was 84 to 34 in favour with 37 abstentions).

cloning for therapeutic purposes, might well accept the need to prohibit, or restrict, some bio-technological experiments. Hybridisation and xeno-transplantation of tissue across species clearly require, at the very least, restrictions and safeguards so as to prevent cross-species transmission of endogenous viruses. To do nothing is therefore effectively to decide that nothing should be done. It does not necessarily amount to a decision to 'wait and see'.

This is why the regulation of technology is such an important topic. It is not one that can be ignored, simply because the subject matter and the available regulatory techniques are difficult and controversial.

C. Recognise the limited power to regulate

A third lesson, derived from the first two, is that the normal organs of legal regulation often appear powerless in the face of new technology. This is clear in the case of attempts to regulate new information technology. So far as the Internet is concerned, the regulatory values of the United States inevitably exert the greatest influence on the way the Internet operates and what it may include. This means that both First Amendment and copyright protection values, established by the law of the United States, profoundly influence the Internet's present design and operation. An attempt by another nation's laws (such as those of France) to prohibit transnational publication offensive to that country's values (such as advertising Nazi memorabilia) may face difficulties of acceptance and enforcement in the Internet.[60]

The same is true of biotechnology. The Australian Parliament initially enacted the Prohibition of Human Cloning Act, 2002 and the Research Involving Human Embryos Act, 2002. These were part of a package of laws aimed at the consistent prohibition in Australia of human cloning and other practices deemed unacceptable at the time. Both Acts were adopted on the basis of the promise of an independent review two years after the enactment. Such a review was duly established. It was chaired by a retired federal judge,

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[60] *See* Yaman Akdeniz, *Case Analysis of* League Against Racism and Antisemitism (LICRA), French Union of Jewish Students v. Yahoo! Inc. (U.S.A.), Yahoo France, Tribunal de Grande Instance de Paris, Interim Court Order, 20 November, 2000, 1(3) ELECTRONIC BUS. L. REV. 110 (2001), http://www.cyber-rights.org/documents/yahoo_ya.pdf. *See also* JACK GOLDSMITH & TIM WU, WHO CONTROLS THE INTERNET? ILLUSIONS OF A BORDERLESS WORLD (2006).

the Hon John Lockhart. The review presented its report on December 2005. It recommended an end to the strict prohibitions of the 2002 legislation; the redefinition for legal purposes of the "human embryo"; and the introduction of a system of licensing for the creation of embryos for use for therapeutic purposes.[61]

Initially, the Australian government rejected the recommendations of the Lockhart review. However, following political, scientific and media reaction, a conscience vote on an amending Act, introduced by a previous Health Minister, was allowed. In the outcome, the amendments were enacted. They passed the Senate with only a tiny majority.[62]

The main arguments that promoted this outcome in Australia were the recognition of the pluralistic nature of the society; widespread reports on the potential utility of the research and experimentation; and the expressed conviction that experimentation would proceed in overseas countries with results that, if they proved successful, would necessarily be adopted and utilised in Australia.[63] Interestingly, both the then Prime Minister and the Leader of the Federal Opposition voted against the amending Act.[64]

The global debates on the regulation of experiments using embryonic stem cells have often been driven by countries that, to put it politely, are not at the cutting edge of the applicable technology.[65] On the other hand, in recent years, the United States has also adopted a conservative position on these topics in United Nations forums. As happened in Australia, this may change in time.

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61 AUSTRALIAN GOVERNMENT, LEGISLATION REVIEW COMMITTEE REPORT: PROHIBITION OF HUMAN CLONING ACT 2002 AND THE RESEARCH INVOLVING HUMAN EMBRYOS ACT 2002, 2005.

62 In the Australian House of Representatives, the vote was 82 in favour, 62 against. *See* Commonwealth Parliamentary Debates (House of Representatives) *Official Hansard* 6 Dec 2006 (No. 18, 2006) 127. In the Senate the vote was 34 in favour, 31 against. *See* Commonwealth Parliamentary Debates (Senate) *Official Hansard* 7 Nov 2006 (No. 13, 2006) 48.

63 *See, e.g.*, *Let the debate begin: Australia should lead, not lag, in regenerative medicine*, THE AUSTRALIAN, Aug 7, 2006, at 15; B. Finkel & L. Cannold, *Day for Stem Cells and the Hope of Finding Cures*, SYDNEY MORNING HERALD, 7 Aug 7, 2006, at 9; L. Skene et al., *A Greater Morality at Stake on the Decision of Stem-Cells Research*, SYDNEY MORNING HERALD, Aug 14, 2006, at 11; *and* B. Carr, *Age-Old Objections Must not be Allowed to Delay this Revolution*, SYDNEY MORNING HERALD, July 25, 2006, at 13.

64 Commonwealth Parliamentary Debates (House of Representatives) *Official Hansard* 6 Dec 2006 (No. 18, 2006) 117, 119 (Mr. Howard and Mr. Rudd's respective speeches).

65 *See* Macintosh, *supra* note 60, at 134 (Honduras was thus the national sponsor of the United Nations ban on human cloning, reproductive and therapeutic).

D. Recognise Differentiating Technologies

So far as regulation of technologies is concerned, there is a need to differentiate technologies for the purpose of regulation. It is not a case of one response fits all. Self-evidently, some forms of technology are highly sensitive and urgently in need of regulation. Unless the proliferation of nuclear weapons is effectively regulated, the massive destructive power that they present has the potential to render all other topics theoretical. Similarly, some aspects of the regulation of biotechnology are sensitive, including the use of embryonic stem cells and germ-line modification. For some, the sensitivity derives from deep religious or other beliefs concerning the starting point of human existence. For others, it arises out of fears of irreversible experiments that go wrong.

Somewhat less sensitive is the regulation of information technology. Yet this technology too presents questions about values concerning which people may have strong differences of opinion. To outsiders, Americans seem to imbibe First Amendment values with their mother's milk. United States lawyers sometimes have to be reminded that their balance between free speech and other human rights is viewed in most of the world as extreme and disproportionate.

E. Recognise different cultures

One coming from the developed world may reflect general attitudes of optimism and confidence about the outcome of rational dialogue and the capacity of human beings ultimately to arrive at reasonable responses to regulating technologies, on the basis of calm debate.

This is not, however, universally true. The Easter conference in London coincided with a declaration by the Roman Catholic Bishop of Birmingham, the Most Reverend Vincent Nichols, that Britain was facing a period of secular revulsion. This response was attributed to impatience with the instances of violence attributed to religious beliefs and the apparent obsession of some Christian churches with issues of sexuality and gender.

There is no doubt that the current age bears witness to many instances of religious fundamentalism. Modern secular democracies can usually prepare their

regulations of technology without undue attention to such extremist considerations. But when the considerations come before international law-makers, they may have to run the gauntlet of fundamental beliefs. Such religious beliefs are by no means confined to Islam. They also exist in Christianity, Judaism, Hinduism and other world religions. Because, in such instances, religious instruction is attributed to God and derived from human understandings of inerrant religious texts, it may brook no debate and no compromise.

Recognising the coincidence of galloping technology and the force of religious fundamentalism is necessary to an understanding of what can be done in different countries to respond effectively to aspects of technology that challenge orthodox religious beliefs. In the Australian Parliamentary debates on the amendment of the 2002 moratorium on human cloning and use of embryonic tissue, many of the legislators addressed the extent to which it was legitimate, in a pluralistic society, to allow beliefs, even of a majority, to control the design of national legal regulation. Yet if such beliefs are treated as irrelevant, what other foundations can be provided for a coherent system of moral principle? In some societies such issues simply do not arise. The Taliban in Afghanistan would not entertain an open debate on topics treated as decided by a holy text. The diversity of regulatory responses to new technology therefore grows out of the different starting points in each society.

F. Basing Regulation on Good Science

In the early days of the HIV pandemic, I served on the Global Commission on AIDS of the World Health Organisation. One of the members, June Osborn, then a professor of public health in the University of Michigan, taught the importance of basing all regulatory responses to the epidemic upon good science. The danger of responses based on assumptions, religious dogmas, intuitive beliefs, or popular opinion were that they would not address the target of regulation effectively.

The intervening decades have suggested that the countries that have been most successful in responding to HIV/AIDS have been those that have observed June Osborn's dictum.[66] The same is true of the subjects of biotechnology,

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[66] David Plummer & Lynn Irwin, *Grassroots activities, national initiatives and HIV prevention: Clues to explain Australia's dramatic early success in controlling the HIV epidemic*, 17 INTERNATIONAL JOURNAL OF STD & AIDS 787 (2006).

information technology and neuroscience. All too often, science and technology shatter earlier assumptions and intuitions.

For example, the long-held judicial assumption that jurors, and judges themselves, may safely rest conclusions concerning the truth of witness testimony on the basis of the appearance of witnesses and courtroom demeanour has gradually evaporated because scientific experiments shatter this illusion.[67] One day, by subjecting witnesses to brain scans, it may be possible to demonstrate objectively the truthfulness or falsity of their evidence. However, we have not yet reached that position.[68] If, and when, it arrives, other issues will doubtless be presented for regulators. We are not there yet. But any regulation must recognise the need to remain abreast of scientific knowledge and technological advances.

G. Addressing the democratic deficit:

Technology races ahead. Often its innovations quickly become out of date. Laws addressed to a particular technology are overtaken and rendered irrelevant or even obstructive. Nowadays scientific knowledge, technological inventions, and community values change radically in a very short space of time.

Within less than two years, demands were made for reversal to the Australian federal prohibition on therapeutic cloning. Within five years, the prohibition was repealed. In such an environment, there is an obvious danger for the rule of law. It is impossible to expect of legislatures, with their many responsibilities, that they will address all of the technological developments for regulatory purposes. The average legislator finds such issues complex and impenetrable. They are rarely political vote-winners. They struggle to find a place in the entertainment and personality politics of the present age as well as with the many other competing questions awaiting political decision-making. This leaves a gap in democratic involvement in this sphere of regulation. It is a gap that is being filled, in part, by 'Code' which incorporates regulations designed by inventors of information systems themselves in the

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[67] *See, e.g.*, Fox v. Percy (2003) 214 C.L.R. 118, 129.

[68] *See* Judy Illes, *Vicissitudes of Imaging, Imprisonment and Intentionality*, *in* REGULATING TECHNOLOGIES: LEGAL FUTURES, REGULATORY FRAMES AND TECHNOLOGICAL FIXES 317 (Roger Brownsword & Karen Yeung eds., 2008).

structure of such systems but without a democratic input or the necessity of individual moral judgment, thus presenting a democratic deficit with respect to contemporary technology.

In an age when technology is so important to society, yet so complex and fast-moving that it often defies lay understanding, how do we adapt our law-making institutions to keep pace with such changes? One means, ventured in Australia, is by the use of consultative mechanisms such as the ALRC,[69] or independent inquiries such as the Lockhart committee.[70] In such cases, the very process of consultation and public debate promote a broad community understanding of the issues, an appreciation of different viewpoints and an acceptance of any regulations adopted, even when they may give effect to conclusions different from one's own.

Adapting the legislative timetable and machinery to the challenges of modern governance is a subject that has engaged law reform bodies and executive government for decades. In Australia, proposals for some form of delegated legislation have been made to increase the implementation of such reports. Often they lie fallow for years, or indefinitely, not because of any real objections to their proposals but because of the legislative logjam.[71] In the United Kingdom, suggestions for a fast track system for implementing reports of the Law Commissions have been under review for some time.[72]

In the face of radically changing technologies and the danger of a growing democratic deficit, it will obviously be necessary to adapt and supplement the lawmaking processes we have hitherto followed in most countries. Various forms of delegated legislation may need to be considered. So may the enactment of over-arching laws, expressed in general terms, which will not be quickly reduced

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[69] Don Chalmers, *Science, Medicine and Health in the Work of the Australian Law Reform Commission*, *in* THE PROMISE OF LAW REFORM 374 (Brian R. Opeskin & David Weisbrot eds., 2005). The ALRC has produced an important recent report in this field; *see* AUSTRALIAN LAW REFORM COMMISSION, REPORT NO. 96: ESSENTIALLY YOURS: THE REGULATION OF HUMAN GENETIC INFORMATION IN AUSTRALIA, 2003.

[70] *See* Donna Cooper, *The Lockhart Review: Where Now for Australia?*, 14 J.L. & MED. 27 (2006); Nigel Stobbs, *Lockhart Review into Human Cloning and Research Involving Human Embryo - Closing the Gap?*, 26 QUEENSLAND LAW. 247 (2006); *and* Isabel Karpin, *The Uncanny Embryos: Legal Limits to Human Reproduction Without Women*, 28 SYDNEY L. REV. 599 (2006).

[71] *See* Anthony Frank Mason, *Law Reform in Australia*, 4 FED. L. REV. 197 (1971).

[72] *See* Kirby, *supra* note 6, at 466.

to irrelevancy by further technological change.[73] Addressing the weaknesses in democratic accountability of large and complex modern government is an important challenge to legal and political theory.[74] It will take more conferences to provide the solutions appropriate to the differing systems of government operating in different countries.

IV. THE FUTURE

Future discussions on the regulation of technology will need to broaden the scope of the technologies addressed, so that they include participants with expertise in nuclear technology, the technologies of energy and global warming and of explorations of the biosphere and outer space. They will need to widen the participation of those who describe developments in other parts of the world, including Russia and India, both countries of large significance because of their technological capacity. Participants from poorer countries will be essential so as to reflect the diversity of humanity.

There will also be a need to deepen the examination of law so as to include case studies of effective as well as ineffective attempts to regulate technology by municipal law in addition to those attempts that are now emerging from international agencies designed to address global technology on a trans-border basis. Finally, it will be necessary to extend the fields of expertise of participants. The involvement of political philosophers, of persons who sometimes advocate more vigorous regulation, of civil society organisations, law reformers, politicians and legislative drafters, would enlarge the pool of expertise in essential fields.

Regulating technologies is not a matter appropriate to purely verbal analysis of the traditional legal kind. We cannot find the way ahead by reading judicial reasons of our predecessors, however learned they may have been. In default of more effective solutions, the common law system offers judges to fill the gaps left by lawmakers.[75] Sometimes this is necessary. But a more coherent solution is desirable.

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[73] Issues considered in R. (on the application of Quintaralle) v. Human Fertilisation and Embryology Authority, [2005] U.K.H.L. 28. *C.f.* Roger Brownsword, Interpretive Re-connection, the Reproductive Revolution and the Rule of Law 20f (unpublished manuscript).

[74] *Id.*

[75] Recent illustrations include judicial decisions in cases of "wrongful birth" and "wrongful life". *See, e.g.*, Cattanach v. Melchoir (2003) 215 C.L.R. 1, *and* Harriton v. Stephens (2006) 80 A.L.J.R. 791.

A great judge, and one of my predecessors in the High Court of Australia, Justice Windeyer, once declared of the relationship between law and medical technology that the law generally marches in the rear and limping a little.[76] Windeyer was a soldier as well as a judge. He knew what he was talking about when he used this metaphor. In the intervening years since he offered his description, the gap that he discerned has widened. The institutional problem has deepened. Fora which allow for the raising of a variety of issues, consideration of important topics and the danger of doing nothing to envisage and carry forward the efficient regulation of technology where that course is judged beneficial and necessary are therefore important, useful, and most timely.

C.f. McKay v. Essex Area Health Authority, [1982] Q.B. 1166; Gleitman v. Cosgrove 227 A.2d 689 (1967); *and* Curlender v. Bio-Science Laboratories, 165 Cal. Rptr. 477 (1960).

[76] Mount Isa Mines Ltd. v. Pusey, (1970) 125 C.L.R. 383, 395.

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THE MELTING OF PATENT LAW

Eben Moglen[*]

ABSTRACT

In this special comment, the author posits that the patent system as it stands is archaic and oppressive, and has neither intellectual nor moral support. Having veered away from its original goals, by virtue of the change in the technological and functional basis of government, it instead serves as a justification for inequalities of wealth distribution. The author argues that substantial reform is required that would shift the balance in patent law from monopolistic greed to public interest, paving the way for access to knowledge.

Legal thought is not mostly about creating better rules. Lawyers spend much less of their time transforming the rules than they spend inventing new explanations to justify the current effects of rules invented so long ago that their original purposes are lost to memory. Changes in rules occur, mostly over the objections of "respectable" legal thinkers, when the distance between current conditions and obsolete rules becomes too great to bridge by explanatory rhetoric, no matter how fictive or absurd.

At present, respectable legal opinion is reluctantly going through such a process, coming to grips with the deterioration of intellectual and moral support for the patent system. Late twentieth century patent apologetics took the unprecedented and appalling position that human ingenuity would cease unless all technical ideas, whether abstract or immediate, were turned into an absolute monopoly through the metaphor of "intellectual property ownership". The claim that only ownership could stimulate creativity was obviously untrue, but on the meretricious basis that "innovation" depended on the availability of long-

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term statutory monopolies on ideas, the domain of the patent system extended - first in the United States and then everywhere else American influence could make itself felt - to software, business methods, pharmaceutical molecules, and the genetic material embodied in natural objects.

This approach to justifying a current misdistribution of wealth bears no relationship to the original goals of the patent system. Empowering its Congress in the Constitution of 1787 to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries",[1] the early United States understood very differently the advantage of limited exclusivity for inventors. That early American Republic had much empty land and few educated and skilled inhabitants. Its economic future as a free, rather than slave, society depended on skills drawn from the European population. Encouraging skilled immigration was the only workable form of technology transfer for an eighteenth century society. The United States Congress created patent law to help Americans live by importing skilled brains - Scotland in the late eighteenth century, for example, lived by exporting them.

So the original purpose lying behind American patent law was, in return for brief periods of commercial exclusivity, to encourage skilled immigration and ensure publicly-accessible documentation of the skills and inventions of those immigrants. The method employed administratively in determining whether to grant statutory monopolies, though widely copied by patent offices around the world, is equally obsolete, representing the best of nineteenth century bureaucratisation. The managerial technology of the nineteenth century had little ability to make quantitative determinations about large-scale social processes. With no ability to capture data about the market, no statistical sciences with which to evaluate that data, and a shortage of trained staff that would make the complaints of the contemporary Patent and Trademark Office seem ridiculous, the patent system operated at the bleeding edge of administrative complexity. Monopolies distributed for fixed terms, on a mere showing of eligibility under loose criteria, were as much complexity an administrative system could then possibly handle.

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[1] U.S. CONST. art. I, § 8, cl. 8.

In the course of the twentieth century, however, the technological and functional basis of government changed. Administrative law came to assume a governmental agency much more adept, capable, and accordingly accountable for the effective attainment of public purposes. Although conservative thinkers in the United States have tended to observe the expansion of the state's regulatory control at the expense of private aggregations of power, it would be equally accurate to say that the terms on which administration was conducted rendered the state radically more accountable, and therefore far more limited, than it had been before.

The grant of a twenty-year statutory monopoly potentially involving hundreds of billions of dollars in economic rents is a very substantial interference with the free market. Until the recent partial nationalisations of financial institutions, the largest single subsidies for the private aggregation of wealth in the United States - far larger than any single military contract, resource lease, or infrastructure project – were certain pharmaceutical patents, for example. In every other context in which the federal administrative state in the US operates to intervene massively in the private market, it does so under rules that require some combination of open information collection, formal assessment of impact and cost-benefit analysis, and immediate judicial review of the agency's basis of determination. But in patent law, these procedural fundamentals of twentieth century administrative law are absent, replaced by the much more insensitive, rudimentary, and therefore unrestrained processes of nineteenth century vested rights creation.

This nineteenth century approach to administration correlates poorly with the new-found justification for patent law: that it is the regulatory engine of innovation. If patent law's grant of statutory monopoly is actually the *source* of innovation in the contemporary economy, one would expect government to employ the expertise-based system for policy formation and protection of the public interest that it finds necessary in relation to such other foundational issues in industrial policy as environmental regulation, occupational safety, drug and medical device regulation, etc. Instead, we approach this supposedly all-sufficient engine of intellectual creativity with stunning unconcern for the details: handing out monopolies of unvarying term without public comment or fact-finding, without consideration of likely effect or impact on the public interest and without any consideration of cost or its relation to benefit.

The cost-benefit calculus of traditional patent law, in fact, assumes that any patentable innovation is of *infinite* benefit - such that no formal consideration of the cost involved in granting a monopoly need be undertaken at all. This is a breathtakingly counter-factual assumption, one which the modern administrative law makes in no other context.

Patent law thus presents, to the eye of the historian, characteristics of a legal regime in senescence. Its original purposes having sunk, it is presently supported by a justificatory narrative constructed after the fact, inconsistently cobbled together with outmoded procedural institutions at odds with the current state of administrative practice and contemporary political economy. For government to hand out generation-long market monopolies in key industries without cost-benefit analysis or an opportunity for public comment would ordinarily be stigmatised as industrial policy run amok, if it weren't assumed to be the result of "crony capitalism" or outright corruption. Those who are enabled to acquire vested rights on an immense scale at comparatively insignificant cost can be expected to praise the system highly and resist every form of fundamental change, but only a biased eye could fail to observe the radical distance between rhetoric and reality.

Nor is the moral case for patent law any more robust. Patent disclosures were a crucial form of technological literature in the eighteenth century, when even the most advanced societies lacked comprehensive detailed documentation of almost all their basic industrial processes, and learning by any means other than direct contact with skilled artisans was impossible. The development of an industry like contemporary pharmaceutical manufacturing - dependent on an immense socialised research system in the United States National Institutes of Health but claiming monopoly property rights in technical outcomes based on that research - was not an imaginable outcome under traditional patent law, because such a socialised research infrastructure was unimaginable. Instead, patent law was assumed to be a mechanism *substituting*, in default of better choices in an immeasurably poorer society, for direct governmental subsidisation of research. Yet modern pharma not only exists by monopolising the benefits of socialised research, but grows fat on profits earned by charging more for the products of that research than the richest society in the world can afford to pay for access to those products for all its citizens. The industry goes further under

conditions of globalisation, by charging more than *other* societies can afford to pay as well, for drugs resulting from basic biomedical research done by the socialised U.S. research system, and whose further development was then fully funded by profitable sale back to U.S. citizens and their insurers. Everywhere, in order to pay the rents demanded by "property", societies are forced to reduce other aspects of health care delivery, and vulnerable human beings die.

The United States in its industrial period of development, since roughly 1815, has been particularly inclined in its legal theory towards theories of *property*. Innovation in technology, creativity in art, business reputation, algorithms, musical phrases, rights to receive speculative future profits of businesses, personal fame, the medical employment of particular molecules, methods of conducting businesses, and the location in human chromosomes of genes with occasional medically-significant adverse mutations have all been conceived of as property, without any apparent awareness of artifice. With the conception of these intangibles as property comes a presumption of the right to exclude. But exclusion when applied to knowledge is enforced ignorance, which is the immediate precursor of hereditary social injustice. The right to exclude from knowledge is never conceived of by adherents as the *purpose* of the "intellectual property system." But it is, in the long run, the system's most deplorable ingredient.

All societies, since the beginning of human civilization, have wasted almost all the human brains they possessed. We must recognise, whenever we trouble ourselves to consider, that nearly none of the Einsteins who ever existed were permitted to learn physics, that but few of all our Ramanujans were allowed access to mathematics. The human race has never succeeded in freeing every brain to learn. All its other difficulties - technical, social and spiritual - are made profoundly worse by this consistent failure. But within the next two generations it will become possible to allow all human beings, everywhere, access to all the combined intellectual and cultural attainments of humankind. Our network of networks contains digital representations of everything we know and know how to do. Every book, film, instructional video, text, or record of recent experience can be searched for and delivered to instruments that cost very little and fit in a child's pocket. A society in which today even the poorest of the urban poor can possess a mobile phone can become tomorrow a society in which anyone can learn anything. The primary obstacles are the institutions

which render knowledge "property", and create therewith an artificial entitlement to exclude.

So the law of the past must soon come to the end of senescence, and experience both death and transfiguration. Despite the inevitable continuance to the end of "respectable" opinion, the distance between explanatory rhetoric and reality has grown too wide, and the immediate power of social need is much too great to permit the endurance of the system we have known. This historical process, history shows, will remain invisible to the established oracles and their students until the very last moment, because training in the reigning justification narrative tends to bias the lawyer's cognitive awareness of the deeply conflicting reality.

What is presently talked of as "reform" is merely the rearrangement of furniture. Substantive reform, that would strengthen the system's social benefits without entirely reworking the existing distribution of rights, is still possible. Rather than nineteenth century patent process, we need a flexible system that establishes the economic value of innovation and provides for the realisation of fair commercial returns while protecting the rights of researchers, students and non-profit innovators. Monopolies should be granted only within commercial fields of use and for terms limited to the necessary period of cost recoupment. Systems of sharing knowledge to enhance innovation through commons rather than exclusive ownership, such as free software licensing and Creative Commons culture, should be equally protected and fostered by legal rules and governmental administrative practice as proprietary production. Principles of public access, cost-benefit analysis, and judicial review to protect the public interest should be scrupulously honoured in every legal setting.

Failure of reform will not leave the patent system undisturbed. It will merely continue the process of detaching existing practice from surrounding reality. The parties who grow rich through the existing system will grow richer, and they will continue to deny respectability to any theoretical position unfavourable to their interests. But the demand for equal access to learning is a demand founded in the most basic principles of human justice. It will not be ultimately denied. And what has stood as a barrier in its path will most likely be swept away.

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OPEN DOCUMENTS AND DEMOCRACY: A POLITICAL BASIS FOR OPEN DOCUMENT STANDARDS

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ABSTRACT

Modern information society depends upon an enormous variety of electronic devices in order to function on a day-to-day basis. Information and communication technology (ICT) devices are able to exchange information only if they adhere to common communication protocols, technical interfaces, and information formats. ICT standards are the blueprints enabling users to access, create, and exchange information regardless of their hardware or software choices. Increasingly, governments are establishing policies to use ICT products based on standards that adhere to principles of openness and interoperability. Academic analyses of open standards policies usually address economic and technical concerns. But technological design is also political. Technologies both embody values and, once developed, have political consequences. Rationales for government procurement policies based on principles of openness and interoperability should not be viewed exclusively through an economic or a technical lens, but through the prism of the principles that provide democratic governments with their legitimacy.

The overarching conclusion of the authors, emanating from both the theoretical and descriptive portions of this paper, suggests that movements toward open standards, particularly in the context of electronic public documents, are highly beneficial for citizens who value democratic principles.

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I. INTRODUCTION

The modern information society depends upon an enormous variety of electronic devices in order to function on a day-to-day basis. Information and communication technology (ICT) devices are able to exchange information only if they adhere to common communication protocols, technical interfaces, and information formats. ICT standards are the blueprints enabling users to access, create, and exchange information regardless of their hardware or software choices.[1] Increasingly, governments are establishing policies to use ICT products based on standards that adhere to principles of openness and interoperability. For example, the Union Government of India announced a national policy on open standards for e-Governance designed to ensure interoperability among multiple agencies, improve available technology choices, and avoid vendor lock-in.[2] Japan also instituted a policy that government agencies and ministries should procure software products that support internationally accepted "open standards".[3] The Brazilian federal government issued an interoperability architecture establishing the adoption of open standards, such as Open Document Format (ODF), for technology used within the executive branch of the federal government.[4] Academic analyses of open standards policies usually address economic and technical concerns. But technological design is also political. Technologies both embody values and, once developed, have political consequences. Rationales for government procurement policies based on principles of openness and interoperability should not be viewed exclusively through an economic or a technical lens, but through the prism of the principles that provide democratic governments with their legitimacy.

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1 See Bob Sutor's definition of a standard as a blueprint in Bob Sutor, *Open Standards v. Open Source: How to Think about Software, Standards, and Service Oriented Architecture at the Beginning of the 21st Century* (2006), http://www.sutor.com/newsite/essays/e-OsVsOss.php (last visited August 26, 2009).

2 *See* infra Part V.D.

3 *See* Ministry of Economy, Trade, & Industry, The Framework for Information Systems Interoperability (June 29, 2007), http://www.meti.go.jp/press/20070629014/20070629014.html; Ministry of Economy, Trade, & Industry, *Announcement of "The Framework for Information Systems Interoperability"* (June 29, 2007), http://www.meti.go.jp/english/newtopics/data/n070629e.html; *and* Government of Japan Embraces Open Standards, Government Technology, July 10, 2007, http://www.govtech.com/gt/126612?topic=117674.

4 *See infra* Part V.C.

This paper employs democratic theory as a method of political and ethical inquiry into the implications of openness in information and communication standards. Our account describes four ways in which standards can have political implications:

1. Standards can have implications for other democratic processes;
2. Standards can affect the broader social conditions relevant to democracy;
3. The content and material implications of standards can themselves constitute substantive political issues; and
4. The internal processes of standards-setting can be viewed politically.

After providing examples of each of these political implications, we examine various conceptions of openness in standards and describe maximal and minimal definitions of openness as conceptual poles that anchor each end of the spectrum of policy options of potential standards. We then develop some guidelines as to the specific contexts in which democratic values require a greater degree of openness in both the substance of technical standards and their development, and go on to consider these imperatives in the political context of electronic public documents. Finally, we describe some selected cases of government ICT procurement policies based on standards that adhere to principles of openness. Our overarching conclusion, emanating from both the theoretical and descriptive portions of this study, suggests that movements toward open standards, particularly in the context of electronic public documents, are highly beneficial for citizens who value democratic principles.

II. STANDARDS AND POLITICAL VALUES

Economic analysis is, in one sense, less complicated than political analysis, because economic examination can eschew constitutive questions about values. Economic analysis typically assumes that whatever people value, they will act rationally in pursuit of resources that will provide greater opportunities for furthering their aims. In contrast, politics often involves struggles over the nature and priority of these values. As groups adhering to different political ideologies are likely to disagree over whether any given value is universally important,

some actors who view their roles as bearing some kind of duty of neutrality - and even some actors whose roles are explicitly partisan - are apprehensive about policy justifications that employ the language of values. We argue that all decisions of political significance assert some set of values, whether they are explicitly recognised or implicitly assumed. However, we hope to articulate principles of technical standards design that are general rather than partisan by grounding them in basic democratic values that we think are presumed by all major groups who accept the overall legitimacy of contemporary democratic government.

Whereas economists such as Rishab Ghosh have provided a definition of standards appropriate for economic analysis, stipulating that "open standards should be defined in terms of a desired economic effect: supporting full competition in the market for suppliers of a technology and related products and services",[5] intellectual property scholar Mark Lemley more generally defines a standard as "any set of technical specifications that either provides or is intended to provide a common design for a product or process".[6] This paper adopts Lemley's broader definition because economic formulations potentially constrain the focus on externalities. Yet both Lemley's and Ghosh's definitions are general in the sense that neither stipulates the *mechanism* by which an agreement on the use of the standardised technology arises or is enforced. In the real world, standards arise and remain in operation through a variety of mechanisms. A standard can arise from the voluntary, coordinated action of a group of private and public actors, the imposition of a government, or the market dominance of a private actor - whether as a result of the exploitation of luck, first-mover advantages, a natural monopoly, or the less salutary exercise of market power. Similarly, standards stay in operation for a variety of reasons: because of the conservative momentum and incentives created by network effects, the will of a monopolist or cartel, or government enforcement. As our paper is concerned with the political and ethical implications of standards, the identity of the actors who design and control standards and the means they employ are highly relevant to our analysis.

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[5] Rishab Ghosh, *An Economic Basis for Open Standards* 2, 21(Dec. 2005), *available at* http://www.intgovforum.org/Substantive_1st_IGF/openstandards-IGF.pdf.

[6] Mark Lemley, *Intellectual Property Rights and Standard-Setting Organizations*, 90 CAL. L. REV. 1889, 1896 (2002).

A. Democratic Principles in Theory

Political philosophers have managed to articulate plausible democratic principles in very broad and abstract terms, despite disagreeing significantly on their normative justifications and institutional implications. Very broadly, democratic theorists agree that democratic procedures must meet baseline standards of equal opportunity for participation by all members of a polity relevant to a decision or decision-making institution.[7] Of course, things become more complex and a variety of questions arise when we attempt to unpack this principle.[8] What procedures constitute adequate participation in a given decisional context? When must a decision-making institution be directly responsive to its polity's participation and input, and when may it act in a representative capacity? What is the appropriate decision-rule for resolving persistent disagreement in a given decisional context? Who constitutes the relevant polity for any given decision? Should certain stakeholders be privileged in decision-making? What are the duties of public authorities with regard to equalising the resources and capacities of different parties to participate in decision-making? To what contexts do democratic procedures and values extend? Are democratic principles of equal participation and self-government primarily applicable to formal and planned forums, or are they better conceived as norms guiding informal public interactions or even the overall cultural horizon?

Rather than privileging any particular theory of democracy, this paper draws on the questions these theories raise with regard to particular standards contexts in order to identify the key democratic issues at stake. As such, this paper employs democratic theory as a method of political and ethical inquiry rather than a body of fixed normative conclusions. After we identify these democratic concerns, we can employ them to consider democracy-promoting principles of standards design.

B. The Democratic Implications of Standards

The questions the previous section listed as arising from the core principle of democratic theory suggest that democratic theory is primarily concerned with certain procedural values in decision-making. This is in accord with the popular

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[7] *See* ROBERT A. DAHL, DEMOCRACY AND ITS CRITICS 106–15 (1989).

[8] *See, e.g., id.*; Robert E. Goodin, *Enfranchising All Affected Interests and Its Alternatives*, 35 PHIL. & PUB. AFFS. 40, 40 (2007).

identification of democracy with voting and majority rule: democracy is fundamentally a means for peacefully resolving disputes. However, democratic values are never simply procedural.[9] The functional constraints on action, the characteristics and relationships between stakeholders, and the substantive values at stake in any decision-making context all necessarily affect our judgment as to the appropriateness of different kinds of procedure.[10] Furthermore, particularly in the context of large and diverse contemporary nation-states, the implementation of democratic values requires attention to the general social conditions necessary for the functioning democratic processes and institutions.

Different types of standards and contexts will raise different kinds of democratic concerns. In the remainder of this section, we begin our examination of standards design from the perspective of democratic values by considering four broad ways in which standards can raise political implications in democratic society. This section provides examples of these political implications in order to provide a concrete basis for formulating a democratic orientation to standards design.

Effects of Standards on Formal Democratic Processes

Technical standards have clear political implications when they are involved in the functioning of technology related to formal processes of political authorisation and representation, such as periodic elections. Transparency in these formal democratic processes is crucial to maintaining an overall sense of legitimacy and civic trust in government. Electronic voting supplies a prominent example. Vote tabulation processes in elections have historically been available for public scrutiny, with observers gathering in a room scrutinising election ballots. Therefore, the question of whether standards for electronic voting tabulations and information exchange are open for viewing, as well as in a format that can be readily inspected, raises political concerns.[11]

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[9] *See, e.g.*, JÜRGEN HABERMAS, BETWEEN FACTS AND NORMS: CONTRIBUTIONS TO A DISCOURSE THEORY OF LAW AND DEMOCRACY 302–28 (William Rehg trans., 1996) (1992); DAHL, *supra* note 7, at 163–75; JOHN DEWEY, THE PUBLIC AND ITS PROBLEMS 207 (1927) ("Majority rule, just as majority rule, is as foolish as its critics charge it with being. But it never is *merely* majority rule . . . ").

[10] DAHL, *supra* note 7, at 176–209; IAN SHAPIRO, DEMOCRATIC JUSTICE 21–27 (1999).

[11] *See, e.g.*, Rebecca Bolin and Eddan Katz, *Electronic Voting Machines and the Standards-Setting Process*, 8 J. INTERNET L., 3 (2004), *available at* http://ssrn.com/abstract=945288. *See also* Jason Kitcat, *Government and ICT Standards: An Electronic Voting Case Study*, 2 J. INFO. COMM. & ETHICS IN SOC'Y 143 (2004), *available at* http://www.j-dom.org/files/Kitcat-evoting_case.pdf.

Impact of Standards on Conditions Relevant to Democracy

Standards are also strongly relevant to democracy to the extent they affect the conditions under which citizens engage in the democratic process. For example, Robert Dahl's influential account of fundamental democratic criteria includes not only the formal equal right to vote, but universally inclusive, adequate, and equal opportunities to participate and to understand the issues and choices under consideration. Standards that affect these conditions are particularly evident in the information technology context, which involves a host of specifications that potentially affect citizens' access to information concerning issues on, or likely to become part of, the political agenda. Such standards clearly affect democracy if they prevent or raise the cost of access to information that governments are supposed to make publicly available.

The archiving of documents is also a fundamental responsibility of democratic governments, as access to such records is important for holding governments accountable and for deliberation over the effectiveness of government institutions and policies. Standards can raise serious problems of backward incompatibility, non-interoperable proprietary formats, and rapid software and media obsolescence. Any of these could prevent government agencies from guaranteeing that electronically archived public records will remain accessible in the future. Electronic archives reduce information to bits - structured collections of 0s and 1s. Interpreting what binary streams represent requires understanding the formatting structures in which the bits are arranged, software that can read the structure and access the application in which the information is stored, and hardware that can access the storage medium. Electronic information accessible today may become inaccessible in ten years because previously dominant physical media, software, and other proprietary formats are no longer supported.[12] Information dependent upon the ongoing support of a single vendor is more vulnerable to obsolescence than information dependent upon formats supported by numerous companies.

Standards that impede or enable access to information and technologies outside of the conventional sphere of government responsibility or control may

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[12] *See, e.g.*, Simon Davis, *Digital Preservation Strategy - National Archives of Australia*, RECORDKEEPING ISSUES FORUM, Nov. 19, 2002, *available at* http://pandora.nla.gov.au/pan/49635/20050510-0000/www.naa.gov.au/recordkeeping/rkpubs/fora/02nov/digital_preservation.pdf.

also have significant consequences for conditions of democracy. In considering democratic principles, it is easy for political scientists and laypersons alike to focus heavily on formal democratic institutions and processes, such as parliaments, state organs, public hearings, and elections. Yet the substance of democracy in the contemporary world extends well beyond such formal sites and events, and encompasses both the informal interactions of civil society,[13] and potentially a community's culture as a whole.[14] Thus, standards that empower or restrict citizens' capacity to interact and inquire within their community's cultural horizon may significantly impact a polity's conditions of democracy broadly conceived.

Standards and Substantive Political Issues

Technical standards can also interact with democratic institutions when they have significant effects on the substantive issues of public interest that form the subject-matter of political debate. As Alan Davidson, John Morris, and Robert Courtney describe in "Strangers in a Strange Land: Public Interest Advocacy and Internet Standards," technical standards have broad public interest consequences in areas such as property rights, individual privacy, and access to knowledge.[15] Standards can also directly intersect with health care issues, such as the HL7 (Health Level Seven) specifications for electronic healthcare information exchange and management. Such effects are relevant from a democratic perspective, because standards can be set by a variety of different agents. This aspect of standards is of limited relevance to the economic perspective, which typically takes little account of power issues or the value of self-governance. However, from the democratic perspective, the question of "who decides?" with regard to matters of broad public interest is the political question *sine qua non*.[16] Individuals or groups who control a technical standard could potentially acquire not only market power, but also the power to make decisions that affect the lives and interests of citizens who are dependent on

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[13] *See, e.g.*, JEAN L. COHEN & ANDREW ARATO, CIVIL SOCIETY AND POLITICAL THEORY (1994); IRIS MARION YOUNG, INCLUSION AND DEMOCRACY 154-195 (2000).

[14] *See, e.g.*, Jack Balkin, *The Constitution of Status*, 106 YALE L.J. 2313 (1997).

[15] Alan Davidson, John Morris, & Robert Courtney, *Strangers in a Strange Land: Public Interest Advocacy and Internet Standards* (Telecommunications Policy Research Conference, Alexandria, VA, Sept. 29, 2002), *available at* http://www.cdt.org/publications/piais.pdf.

[16] *See, e.g.*, DAHL, *supra* note 7, at 13–105, 112–14.

the technology. Consequently, if a standard poses significant consequences for an issue of public interest, the question of whether the standard is established by a democratically responsive government, a private actor, a voluntary association, or impersonal market forces raises issues of accountability, fair treatment, and stakeholder input.

Advanced industrialised societies are accustomed to the idea that their social systems are organized using a mix of different organisational forms, with the various actors and institutions mentioned above playing different roles in various spheres of action. The desirability of government involvement in a particular sphere depends on numerous context-specific considerations, including estimates of comparative efficiency (both in terms of allocating and using productive resources and accounting for externalities), the relevance of accountability and public input, and the place of that sphere in the polity's collective self-understanding. Society often assigns a robust role to government in either regulating or carrying out a social function for a variety of reasons besides comparative efficiency: a society may view government involvement in a social function because of a sense that the state or the community as a whole has an affirmative obligation to fulfil the function; because it wants to ensure that the entire community has a fair opportunity for input into how the function is carried out; or because it believes it would be morally problematic to give particular actors unfettered discretion over how the function is fulfilled. Serious democratic questions therefore arise when non-state actors' control over a standard results in the displacement of governmental control over a social function that society views as primarily a responsibility of the state.[17]

Disaster response is an example of a function that we view as a paradigmatic government responsibility. Incompatible ICT standards that encumber such government services raise questions of particular political concern. For example, incompatible wireless standards for first responders impeded communications during September 11, 2001 rescue efforts in New York City.[18] Browser

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[17] *See* DAHL, *supra* note 7, at 114; Iris Marion Young, *State, Society, and Social Justice*, *in* DEMOCRACY'S VALUE 141, 156–60 (Ian Shapiro & Casiano Hacker-Cordón eds., 1999) (citing ROBERT GOODIN, *The State as a Moral Agent*, *in* UTILITARIANISM AS A PUBLIC PHILOSOPHY 28 (1995)).

[18] *Homeland Security: Challenges in Achieving Interoperable Communications for First Responders: Testimony before the Subcommittees of the Government Reform Committee, House of Representatives*, G.A.O.-04-231T (Nov. 6, 2003) (statement of William O. Jenkins, Jr., Director, Homeland Security and Justice Issues), *available at* http://www.gao.gov/new.items/d04231t.pdf.

incompatibility prevented some Hurricane Katrina victims in the United States from registering for FEMA (Federal Emergency Management Agency) aid online - only victims using Microsoft's Internet Explorer could initially access FEMA's online registration. This incident followed reports of various Thai agencies that, during the rescue and victim identification efforts after the 2004 Southeast Asian tsunami, were unable to exchange documents because of incompatible proprietary document formats.[19]

National security is another sphere in which contemporary societies ascribe particular - and usually exclusive - responsibility to the government. This is also a sphere, however, in which information technology plays a significant and increasing role. Besides those national security technologies whose development the government directly commissions to exclusive contractors, encryption, domain name system (DNS), and also addressing protocols sometimes have national security and critical infrastructure protection implications. These include information infrastructures, water control systems, electrical grids, financial markets, and air traffic control systems. Government functions, business transactions, and national economies are increasingly dependent upon the Internet. A terrorist attack on the Internet's DNS, or other essential system, could potentially disrupt some critical information exchange and communications. For example, in the spring of 2007, after Estonia removed a Soviet military monument from its capital, some of Estonia's state (and private) web sites were the target of weeks-long denial of service attacks that crippled the sites' functionality.[20]

Proposed standards like DNS Security Extensions designed to make the critical Internet function of root zone management and name and address resolution more secure involve questions of national security and Internet governance.[21] Countries not involved in the development or control of such protocols and their embedded policies or not able to transparently view the

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[19] *See* Berkman Center for Internet and Society - Open ePolicy Group, *Roadmap for Open ICT Ecosystems* (Sept. 2005), *available at* http://cyber.law.harvard.edu/epolicy/roadmap.pdf.

[20] *See Estonia Under Attack: A Cyber-riot*, ECONOMIST, May 10, 2007.

[21] *See generally* Brenden Kuerbis & Milton Mueller, *Securing the Root: A Proposal for Distributing Signing Authority* (Internet Governance Project White Paper, May 2007), *available at* http://www.internetgovernance.org/pdf/SecuringTheRoot.pdf.

underlying specifications could be disadvantaged in their ability to ensure that such standards meet their security needs.

One sphere that is more complicated is international information exchange. When such exchanges - and the technical standards that govern them - directly affect diplomatic relations, they implicate a core governmental function. Global trade policy is a particularly complex issue: whereas the actors directly engaged in carrying out global trade are usually non-state corporations, such trade occurs within a still-emerging thicket of bilateral and multilateral treaties and institutions that governments are deeply and continuously involved in negotiating.[22] Standards are particularly relevant in this area because they can either facilitate or impede trade. The World Trade Organization's Agreement on Technical Barriers to Trade (TBT) recognizes the important role standards play in the facilitation of international trade and asserts that standards should not create unnecessary obstacles to trade. Intellectual property rights in standards can inhibit the adoption of international standards and the development of products based on these standards.[23] Christopher Gibson argues that standards are increasingly emerging as non-tariff barriers (NTBs) and cites the Wireless Local Area Network Authentication and Privacy Infrastructure (WAPI), the Chinese national standard for wireless LAN encryption, as a case study in this area.[24] As such, whereas the trend of the emerging global economic regime has been to lower traditional barriers to global trade, proprietary standards are increasingly emerging as alternative, non-pecuniary technical barriers to trade.

Democratic Values in Standards-Setting Processes

The previous three examples of the political implications of technical standards implicate a fourth area. Technical specifications have democratic implications with regard to their processes of creation and maintenance. Regardless of what sphere of public interest a standard affects, if a technological

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[22] *See generally* HANS VAN HOUTTE, THE LAW OF INTERNATIONAL TRADE (2d ed. 2001).

[23] Communication from the People's Republic of China, *Background paper for Chinese Submission to WTO on Intellectual Property Rights Issues in Standardization*, G/TBT/W/251/Add.1 (Nov. 6, 2006), *available at* http://chinawto.mofcom.gov.cn/accessory/200702/1171346578955.doc.

[24] *See, e.g.*, Christopher Gibson, *Technology Standards - New Technical Barriers to Trade? in* THE STANDARDS EDGE: GOLDEN MEAN 45 (Sherrie Bolin ed., 2007), *draft version of paper available at* http://ssrn.com/abstract=960059.

specification is of significant relevance to an issue of political relevance, then the character of the processes resulting in its formulation are relevant to democratic values. The core questions democratic theory raises with regard to such processes are the same questions it poses to all decision-making procedures of public importance: whose voices and interests are allowed input into the decision and by what procedures are they weighed? The conditions under which such procedures occur are similarly relevant: if a standard is being developed by a private actor or a voluntary organization, then the question of whether the public can freely access a specification and the records of the proceedings concerning its adoption and modification is one of political relevance.

Despite the public consequences of ICT standards, some standards development processes are closed, require fee-based membership, exclude non-members, disallow individuals, and provide little room for public participation or oversight.[25] Such barriers to broad and roughly equal participation and public input are clearly at odds with contemporary understandings of legitimacy and transparency that democratic publics expect of their governments. Governments' reliance on standards created or managed under processes that significantly deviate from basic democratic values therefore potentially raises serious questions of democratic legitimacy.

III. AN EXPANDED DEFINITION OF OPEN STANDARDS

A. Conceptions of Openness

Economic definitions of open standards specify requirements primarily in terms of the standards' effect on market competition and therefore do not consider the democratic implications of technical specifications. Other definitions of "openness" are more expansive and account for both economic and political implications. For example, the European Union's 'European Interoperability Framework for Pan-European eGovernment Services' was written with the political goal of furthering European unification and includes open standards as an essential requirement toward achieving the goal of interoperability of pan-European eGovernment services. The European Interoperability Framework described "open" as meeting the following minimum requirements:

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[25] *See, e.g.*, Davidson et al., *supra* note 15, at 5-7.

- The standard is adopted and will be maintained by a not-for-profit organization, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties (consensus or majority decision etc.).

- The standard has been published and its specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee.

- The intellectual property - i.e. patents possibly present - of (parts of) the standard is made irrevocably available on a royalty-free basis.[26]

It is notable that this definition includes openness criteria for a standard's development process rather than exclusively focusing on the standard's economic effects following its development. The development process must be open to all, maintained by a non-profit institution, and embody democratically-oriented criteria of transparency and a majoritarian or consensual decision-rule. The implication is that the standards development *process*, which might include public policy decisions, is as pertinent to definitions of openness as the material *effects* of a standard. Another distinguishing characteristic of this definition is the requirement that any underlying intellectual property be made irrevocably available on a royalty-free basis.[27]

The IPR policies of some standards-setting organizations have asserted that intellectual property rights should be available under royalty-free terms, but many also have adopted policies that the standard be available on a so-called "reasonable and non-discriminatory" (RAND) basis. Lemley's study, "Intellectual Property Rights and Standards-Setting Organizations," describes the diversity of approaches to how standards bodies treat intellectual property, but finds that RAND licensing approaches are the most prevalent.[28] Although RAND

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[26] European Commission - IDABC Working Document, *European Interoperability Framework for Pan-European eGovernment Services*, Version 4.2 (Jan. 2004), *available at* http://ec.europa.eu/idabc/servlets/Doc?id=1674.

[27] Many irrevocable royalty-free policies include protections such as reciprocity and defensive termination clauses. *See, e.g.*, Lawrence Rosen, *Defining Open Standards*, *available at* http://www.rosenlaw.com/DefiningOpenStandards.pdf.

[28] Lemley, *supra* note 6, at 1896.

licensing approaches are well-intentioned, their implementation can be problematic due to a lack of clarity over the meaning of "reasonable" and "non-discriminatory." Lemley notes that most organisations with RAND licensing requirements do not specifically define RAND.[29] Undefined variables include whether IPR holders are obligated to license universally or just to other standards body members; what constitutes a reasonable royalty fee; and what constitutes reasonable and non-discriminatory substantive licensing terms. In practice, the requirement for RAND licensing often lacks a consistent or clear meaning - sometimes even within the same standards-setting organisation.

In addition to citing this definitional ambiguity, critics of RAND licensing practices usually question whether the Internet would have experienced such growth in numbers, geographic scope, and technological innovation if its underlying protocols (e.g. FTP, HTML, HTTP, and IP) had been controlled by a single vendor or group of vendors under RAND terms rather than made available on a public access basis. The World Wide Web Consortium (W3C), citing the objective of promoting ubiquitous adoption of web standards, has established a policy of issuing recommendations only if they can be implemented on a royalty-free basis, although there is a mechanism for allowing exceptions.[30] Ghosh notes that royalty-free policies - which may conflict with defensive suspension clauses in F/LOSS (Free/Libre Open Source Software) licenses - may be too strict in some markets like mobile telephony and not stringent enough for office applications. In the case of *irrevocable* royalty-free terms, such rules could produce results such as potentially excluding Adobe's PDF as an open standard because of its revocable royalty-free terms.[31]

Other definitions of "open standards" also focus on the standards setting process and issues of public participation, transparency, and accountability. The International Telecommunications Union (ITU) has defined open standards as those that are "made available to the general public and are developed (or approved) and maintained via a collaborative and consensus driven process".[32]

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[29] *Id.* at 109.

[30] *See* W3C, W3C Patent Policy (Daniel Weitzner ed., Feb. 5, 2004), http://www.w3.org/Consortium/Patent-Policy-20040205/.

[31] *See* Ghosh, *supra* note 5, at 11.

[32] *See* Int'l Telecomm. Union – Telecomm. Standardization Sector [ITU-T] TSB Director's Ad Hoc Group on IPR, *Definition of Open Standards* (Nov. 11, 2005), http://www.itu.int/ITU-T/othergroups/ipr-adhoc/openstandards.html.

The ITU's openness definition also states that the standards setting process should not be dominated by any one interest and that a standard's specification should be articulated in detail sufficient to enable the development of heterogeneous competing products that implement the standard.

Ken Krechmer's frequently cited paper, "Open Standards Requirements", expands the definition of open standards further to include not only economic effects resulting from an open standard's implementation and openness in the process of standards setting, but also the concept of openness in use.[33] Krechmer's requirements include openness criteria for development criteria such as participatory openness, due process, and consensus. He also includes requirements for the implementation of openness, including public document availability and IPRs that are not cost prohibitive, do not favour one competitor over others, and do not inhibit further innovation. Krechmer's definition also addresses openness requirements directed at technology users, including choice of vendor implementation, ongoing support for the standard over the life of the product implementing the standard, and backward compatibility with previously purchased implementations.

Open source advocate Bruce Perens further defines open standards by the *principles* he believes should underlie the development and adoption of technical specifications.[34] One of the principles Perens cites is maximisation of user choice in that an open standard does not lock users into a single vendor's products. Another principle underlying open standards is non-discrimination. Institutions establishing open standards should not favour a particular vendor over other vendors. Perens also suggests that open standards should be ubiquitously available and capable of implementation on a royalty-free basis.

B. A Maximal Definition of Openness

These previous efforts at drafting openness requirements allow us to consider a definition of *maximal openness* for technical standards. We should state up front that we recognise that it would be impractical or implausible to impose the full requirements of maximal openness on most contexts. The point of

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[33] *See* Ken Krechmer, *Open Standards Requirements* (Feb. 7, 2005), *available at* http://www.csrstds.com/openstds.pdf.

[34] *See* Bruce Perens, *Open Standards: Principles and Practice*, http://perens.com/OpenStandards/Definition.html (last visited Aug. 26, 2009).

stipulating this maximal definition is not, therefore, to advocate its implementation universally, but rather to fix ideas by defining one pole in the spectrum of potential standards policy options.

The most expansive definition of an open standard would encompass 1) requirements of maximal participatory openness and transparency in development; 2) the absence of hindrances to full competition and multiple competing implementations; and 3) requirements of maximum technical interoperability among heterogeneous systems and therefore user choice. In this context, an open standard is one that exhibits openness in development, openness in implementation, and openness in use.

Openness in Development

Most open standards development processes incorporate participatory openness, procedural fairness and transparency, and a maximally representative decision procedure.[35] Open membership organisations make participation available to all interested parties without regard to corporate affiliation, credentials, or government backing and without requiring membership fees. Procedural fairness and transparency include well-defined, published procedures for the standards development process, and a public process for recording dissent, appealing decisions, or dealing with procedural violations. Such decisions must meet universal norms against self-dealing and procedural abuses. Transparency also includes disclosure of intellectual property, disclosure of organizational affiliations, and making electronic discussions, drafts, and meeting minutes part of public record. As the ITU's definition of openness indicates, the decision-procedure should not allow a single interest or small sub-group to dominate decision-making, but instead require that any decision obtain broad representative agreement among participants.[36]

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[35] The following requirements for maximal openness encompass many of the requirements described in the previous section, as well as those gone into in Eddan Katz & Laura DeNardis, *Best Practices in Internet Standards Governance* (Yale Information Society Project White Paper Submission to the Internet Governance Forum, Aug. 2, 2006), *available at* http://www.intgovforum.org/Substantive_1st_IGF/BestPracticesforInternetStandardsGovernance.pdf.

[36] Although some groups have suggested a requirement of consensus, such a requirement is anti-democratic in many situations because it potentially enables minority dominance in favor of the status quo. Although democratic theorists have long recognised that there exists no general solution for designing a decision-procedure that is perfectly immune from strategic behavior. *See, e.g.*, Adam Przeworski, *Minimalist Conception of Democracy*, *in* DEMOCRACY'S VALUE 23 (Ian Shapiro & Casiano Hacker-Cordón eds., 1999). As such, we do not view the concept of maximal openness as stipulating any particular democratic decision-procedure, but rather as embracing the norm of democratic representation generally.

Openness in Implementation

Standards are maximally open in implementation if they meet three criteria: (1) The specifications are made available to those interested in implementing the standard and to the general public; (2) There is no fee for accessing the specification; and finally, (3) the standard is made available on an irrevocable commitment by its owner to refrain from charging royalties or otherwise enforcing patent claims to exclude anyone from using the standard in accordance with the principles of maximal openness, as has historically been the case with key Internet standards. If IPR relative to the implementation of a standard has not been disclosed during the development process, the IPR holder is prohibited from enforcing the patent against the standard's implementation. The result of open standards can be multiple competing products based on the standard, and therefore maximal innovation among vendors developing these products.

Openness in Use

A completely open standard allows maximum technical interoperability between heterogeneous products. As Perens suggests, this openness maximises user choice and precludes users from being locked into a single vendor's products.[37] Open standards provide backward compatibility in that ongoing changes to the same set of technical specifications do not require users with products based on previous versions of the standard to upgrade to new product suites in order to retain their existing level of functionality.

C. A Maximal Definition of a Closed Specification

In contrast to the many attempts to define an open standard, there have been fewer efforts to define a completely closed specification. First, we opt to not use the term "closed standard" because it would be somewhat misleading. A standard, by definition, is a blueprint that enables users to access, create, and exchange information regardless of their hardware or software choices. A completely closed "standard" is really a specification that is proprietary, meaning it is developed and owned by a single company that controls the development,

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[37] *See* Perens *supra* note 34.

use, and ongoing changes of the specification. Hence, we choose to use the term "closed specification" rather than closed standard. A closed specification is not made available for industry adoption, and is intrinsically not interoperable with competing products. The following stipulates a definition of a closed specification to fix the antithetical pole of non-openness in the spectrum of potential standards policy options.

Closed in Development

A completely closed development process is one in which a technical specification is established by a single vendor with no avenue for the participation of other parties or the general public. In this single vendor development environment, issues of procedural fairness, recording dissent, or dealing with procedural violations are irrelevant. A completely closed development process also has no transparency. Meeting proceedings, minutes, and intra-company electronic discussions are not published and do not become part of a public record.

Closed in Implementation

Once a specification is developed, it is maximally closed in implementation if it is not made available for other vendors, even for a fee, to use to develop interoperable and competing products based on the specification. A closed specification is also not made available for public scrutiny. The specification's developer owns all intellectual property rights and does not license IPR to any other vendor under any terms. The result of this proprietary approach is that other companies are unable to develop interoperable, competing products based on the specification.

Closed in Use

In a completely closed environment, users become locked into a single vendor's products. To continue accessing, developing, or exchanging information based on a closed specification, users must rely on the single vendor to continue developing products based on that specification or that provide adequate backward compatibility.

IV. WHEN OPENNESS MATTERS MOST

The most plausible economic analyses of open standards employ a narrower definition of openness in terms of a standard's implications for competition and conclude that open standards are generally desirable for promoting competition. As the preceding discussion revealed, democratic political discourse gives rise to a range of values and potential concerns far broader than efficient competition and implicates a far broader range of social contexts than market exchange. Section III demonstrated that "openness" implies a number of social and economic dimensions. However, as we noted, these definitions indicate two poles in the spectrum of potential standards options that vary contextually. The key question in considering the appropriate standards design requirements is not "open or proprietary?", or "how much openness?", but rather "what openness requirements are appropriate to *this* context?". In this section, we aim to set down some guidelines as to the contexts in which democratic values require a greater degree of openness in both the substance of technical standards and their development, and then consider these imperatives in the particular context of government documents.

A. Democratic Imperatives for Openness

Our observations in Section II concerning the various ways in which technical standards potentially raise democratic implications can help us determine when democratic values require greater openness. As that Section noted, *any* standard with a potential impact on an issue of potential public concern can raise democratic concerns with regard to the publicity and inclusiveness of the standard-setting procedure. The more a standard's development process or organisation fulfils the desiderata of participatory openness, representativeness, transparency, and procedural fairness, the greater degree to which it promotes democratic values with regard to that technical context, since these norms make it more likely that a decision process will fairly and effectively incorporate the perspectives and interests of a greater number of stakeholders. However, the benefits of open and democratic procedural values can also entail costs - for example, the time and logistical costs of organising and engaging in democratic deliberation and decision-making, as well as the cost of acquiring enough information to participate - and such values may not

be relevant to every context, or relevant enough to overcome the costs.[38] Furthermore, the democratic values that the requirements of openness promote are far more relevant to some contexts than others.

Section II points to several areas in which respect for democratic values clearly demands a high degree of openness. With regard to a technical standard that concerns a *formal democratic process*, openness in the specification's implementation and in the public's ability to access and amend potential problems with its implementation are absolutely crucial. The integrity of democratic processes also requires openness in such a standard's development process so as to ensure that the government has the capacity to oversee and correct any potential means of abusing the process that is affected by the technical standard. For example, the integrity of voting processes is absolutely crucial to an elected government's legitimacy. Transparency with regard to such standards is necessary to maintain the polity's faith that the government that prevails in an election is actually the one that won the most votes. Requiring a fee for access to the standard's specification would limit some citizens' ability to verify the integrity of electronic voting, therefore resulting in unequal opportunities for oversight over and trust in such procedures. Such inequality is unacceptable, as formal democratic processes concern the very basis of legitimate authority in a democratic regime. Royalties with regard to *use* of standards in this area may be acceptable so long as they do not give rise to inequalities between jurisdictions with regard to the kind of voting technology they can use, or provide citizens with different incentives for voting. Ensuring full competition in this area is important if the technology involved in a specification interacts with consumer technologies that citizens are expected to possess; then, openness in the economic sense of allowing for full competition becomes very important. On the other hand, if the technology does not involve any interface with other technologies and there exist strong reasons for concentrating control over the production of such technologies, then competition effects may be irrelevant.

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[38] Borrowing from Ian Shapiro's theory of democracy, democratic procedures and the values they fulfill and promote are, in many circumstances, goods "subordinate" to the activities and values arising from the subject of the decision itself. *See* SHAPIRO, *supra* note 10, at 21-24. We do not, however, necessarily agree with Shapiro's conclusion that democratic participation and the values arising from it are *never* intrinsic or constitutive goods.

With regard to standards that directly affect conditions relevant to democracy, the most prominent examples consist of standards that affect citizens' access to information concerning government decisions as well as standards concerning government records. The importance of accountability renders openness of implementation and use similarly important in this context. Equal and open access to government information serve to legitimate the exercise of formal government power, even though such access may have only an indirect relation to the operations of such processes. The retention of government records serves the same purposes over the long term.

Some requirements of openness of use may be broader for standards that affect conditions of democracy: whereas standards relevant to formal democratic processes tend to come into play on discrete occasions, standards relevant to the *conditions* of democracy are continually relevant. Consequently, the standards that affect such conditions must be continuously free of barriers to the widespread use of the relevant access technology. Democratic values are inconsistent with differential costs in the form of royalty fees or interoperability barriers that potentially result in unequal citizen access to such information. Openness in development is also very important, as the effect of the specification's design potentially affects the ability of all citizens to engage in the democratic process and therefore constitutes a fundamental concern of the community. And as with standards concerning formal democratic process, if the technology involved in a specification interacts with citizens' consumer technologies, then openness in the economic sense is similarly important. On the other hand, although it is similarly important that the public possess the capacity to oversee, access and modify technical specifications concerning the conditions of democracy, the general concern is less exigent. This is because the potential for manipulation or cataclysmic failure does not exist in the same way it does for discrete formal democratic processes.

On a broader cultural level, standards concerning technologies and structures involving large-scale communication or interaction can significantly shape a population's orientation toward social interaction, political critique, and technological innovation. For example, Yochai Benkler has provided an account of how policy choices in America during the twentieth century, including licensing and standards decisions, contributed to the development of

mass industrial media structures that tended to promote a relatively passive and frequently uncurious political culture among a large swathe of the general population.[39]

In contrast, the spectacular innovation and flourishing discursive sphere that have arisen during the Internet's early development can be significantly credited to the open standards that comprise the network's sinews. Standards such as TCP/IP (Transmission Control Protocol/Internet Protocol) and HTML (Hypertext Markup Language), which have been openly available to access and use, have provided individual citizens with the opportunity to contribute to this innovation and to the flourishing discursive sphere. These open standards have therefore helped give rise to a culture that simultaneously promotes individual freedom, communal collaboration, and creative innovation - values that are helpful to sustaining both democratic and economic progress.

With regard to standards that do not directly affect democratic processes or conditions, but instead affect issues of potential political concern, the root question is *who* appropriately controls the standard's development and its potential effects on the public interest. The greater degree to which an issue involves a core government function, either because the public views it as a public obligation or demands broad citizen input, the more important openness of development becomes. Mission-critical domains such as national security and disaster response should not depend on standards that potentially allow private interests to trump public interests in shaping the standard and its consequences or to encumber a standard's implementation. Once the polity has established the appropriate level of public input with regard to a standard, the resulting procedure will presumably give appropriate weight to the openness values to be embodied by the standard. For example, assuming that the public sufficiently participates in the development of standards for technology relevant to defence or disaster response, its representatives will, after considering all of the relevant cost-benefit and risk factors, presumably demand that these standards meet interoperability requirements to an appropriate degree.

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[39] Yochai Benkler, The Wealth of Networks 176-210 (2006).

B. The Importance of Open Government Documents

With our theoretical framework in place, we can now consider the particular function of documents and document formats for a democratic regime and the reasons open document standards are important for democratic governments.

As instruments of communication, documents play a crucial role with regard to several conditions of democracy. Their relatively fixed form gives them a particular place in the exercise and justification of formally authorized power. Individual citizens' capacity to access government documents significantly affects their capacity to participate in and critique public decisions. It is impossible to engage in successful public debate or reasoned critique of government action without firm knowledge of the content and implications of these actions, the latter of which is usually most efficiently assessed either by the government authorities themselves or by other public authorities tasked with oversight responsibilities.

Beyond their role in disseminating information, documents also give government decisions and their justifications concrete and objective reality, which allow the citizenry common points of objective reference for public debate and critique. The same information might not as effectively serve as a resource or subject of debate if not fixed in a document, as it would be costly or perhaps impossible to obtain agreement concerning the precise content of a decision or its justification. It is no coincidence that when government officials engage in unscrupulous activity, they usually aim to minimise or obscure their paper trails.

The relatively fixed nature of documents also serves the valuable role of promoting the values of transparency and accountability in several connected ways. First, a written record of government action greatly lowers the costs of conducting public oversight. By providing a fixed record, documents also commit government officials to prior justifications. Second, a fixed record makes it possible for citizens to re-examine the justifications and implications of prior decisions and to reconsider them when making future decisions.

It is evident that document formats have significant democratic implications, depending on the application's context. In general, the format of publicly accessible documents serves as an important condition of democracy. As we

argued above, it is therefore necessary that standards relevant to accessing government documents and records generally remain free of barriers to the format's widespread public use. Due to the information technology revolution, citizens commonly access electronic documents through the use of personal computers and other consumer electronic devices. Such access cannot be restricted by potentially discriminatory barriers in the form of royalty fees or interoperability barriers. Technical specifications for government documents must allow for full competition in the manufacture of products for accessing and using such documents. Given the importance of documents to the communicative processes that constitute the lifeblood of both formal and informal democratic activities, it is clear that the entire polity has a stake in the implications flowing from the government's technical specifications for its documents.

These concerns may be intensified with regard to documents used in formal democratic processes, or documents that play a central role in the execution or maintenance of functions for which government possesses a particular responsibility. Regarding formal democratic processes, if a government implements a system of formal political participation - for example, electronic voting or voter registration - that requires citizens to access and complete electronic documents, it is absolutely necessary that such access does not discriminate among users based on their choice of systems, as such discrimination would constitute a direct affront to basic equality of citizenship.

The imperatives arising from core government functions in which documents and their formats play a core role varies contextually. However, given that such domains are typically those that involve long-term recordation and archiving - for example, the maintenance of national archives or vital personal records related to basic aspects of a citizen's social identity, such as birth, citizenship, and health - it appears we can say that ensuring sufficient backwards compatibility and interoperability are crucial to these domains. If such records are ones that citizens or the general public legitimately expects to be able to access, then the non-discrimination principle also applies. Finally, security concerns of the highest order arise with regard to documents that record basic aspects of a citizen's social identity. Citizens have a right to hold their government accountable for ensuring the highest order of security, privacy,

and reliability for such documents. Such accountability is not possible if the government employs a proprietary or otherwise closed document specification whose security vulnerabilities cannot be fully considered by the public.

C. Pronounced Implications to Developing Countries[40]

We have presented some reasons that explain why open document standards are important for democratic governments and here further develop how the extent of openness in standards can have pronounced implications for developing countries. Developing countries sometimes face barriers to participation in standards setting. Many standards organisations have membership requirements, impose fees, or may be closed to new members entirely - a situation that disproportionately affects entities that are later entrants into information and communication technology markets. Even in organisations with open membership policies, such as the Internet Engineering Task Force (IETF), participants can face external barriers related to language, cultural differences, money (to travel to conferences or support time commitments), and technical knowledge. If developing country interests do not enter the standards-setting process, their interests are not directly reflected in this policy-making process. The International Telecommunication Union (ITU) is currently leading an initiative called "Bridging the Standardization Gap" in order to make recommendations for improving standardisation capacity in the developing world.[41]

Intellectual property restrictions can also have heightened effects on developing countries. There is an enormous diversity of intellectual property policies among standards-setting institutions, even those in the same industry.[42] Intellectual property restrictions can disadvantage entrepreneurs in developing countries who are later entrants in ICT markets, have not necessarily been involved in the development of standards, and may not have large patent portfolios and cross-licensing agreements with other corporations.

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[40] For a more detailed examination of the implications of open standards on developing countries specifically, see Laura DeNardis, *Open Standards and Global Politics*, 13 INT'L J. COMM. L. & POL'Y 168 (2009), http://www.ijclp.net/files/ijclp_web-doc_9-13-2009.pdf.

[41] ITU-T, *Bridging the Standardization Gap*, http://www.itu.int/ITU-T/gap/ (last visited Oct. 1, 2009)

[42] Lemley, *supra* note 6.

Implementation of a standard can require permissions, so emerging companies wanting to implement a standard are dependent upon these permissions, which may require a royalty payment and legal expertise to deal with licensing complexities. This paper primarily seeks to address political implications of document formats, but there are many related implications to economic development and innovation. The Internet's underlying protocols have historically been developed in an open and participatory process have had minimal intellectual property restrictions, factors that have contributed to the rapid innovation and growth of the Internet. Developing countries have a distinct interest in encouraging open standards to promote economic development and national innovation, as well as to reflect substantive political objectives.

V. GOVERNMENT PROCUREMENT POLICIES BASED ON OPEN STANDARDS

Governments are increasingly establishing policies mandating that ICT technologies used to create, exchange, view, and store government documents meet various criteria of openness in their specifications. The following sections examine the rationales for open standards policies within a few of the local and national jurisdictions that have instituted these policies. Specifically, we describe the open standards policies of the Commonwealth of Massachusetts in the United States, the National Archives of Australia, Brazil, and India. These examples provide one historical snapshot about how government open standards policies unfolded in the early twenty first century, but are part of a larger and rapidly evolving landscape of government approaches to interoperability and open standards.

A. The Commonwealth of Massachusetts

The first prominent government policy addressing open document standards emerged in the United States in the Commonwealth of Massachusetts. In January 2004, the Massachusetts Information Technology Division (ITD) published an 'Enterprise Open Standards Policy'. The policy emphasised that open standards promoted government efficiency and cost effectiveness, helped ensure compliance with agencies' technical requirements for interoperability,

and advanced the interest of citizens. The Massachusetts policy stated that an open standard has the effect of enabling multiple competing and interchangeable products:

> Open Standards [are] [s]pecifications for systems that are publicly available and are developed by an open community and affirmed by a standards body. Hypertext Markup Language (HTML) is an example of an open standard. Open standards imply that multiple vendors can compete directly based on the features and performance of their products. It also implies that the existing information technology solution is portable and that it can be removed and replaced with that of another vendor with minimal effort and without major interruption.[43]

Accordingly, the policy stipulated that prospective IT investments in the Commonwealth adopt the open standards described in the state's Enterprise Technical Reference Model (ETRM), an architectural framework identifying the standards that should be used in Massachusetts state government information technology architectures. In 2005, the Commonwealth released an ETRM listing technical standards required for all subsequent information technology investments. The architectural framework divided technology areas into six categories: access and delivery, information, application, integration, management, and security. Within these categories, most of the specified standards were those already in widespread use in the Commonwealth or globally. For example, the reference model specified 128-bit encryption and X.509 v.3 digital certificates for web browsers and universal protocols such as Hypertext Transfer Protocol (HTTP)/1.1, Secure HTTP (HTTPS), Simple Object Access Protocol (SOAP) v. 1.2, Hypertext Markup Language (HTML) v. 4.01, and Extensible Markup Language (XML).[44] Within an "open format" subcategory of the information domain, the model specified the use of OASIS Open

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[43] Information Technology Division of the Executive Office for Administration and Finance - Commonwealth of Massachusetts, Enterprise Open Standards Policy (Policy #: ITD-APP-01) (Jan. 13, 2004), *available at* http://www.mass.gov/?pageID=afterminal&L=4&L0=Home&L1=Research+%26+Technology&L2=IT+Policies%2C+Standards+%26+Guidance&L3=Enterprise+Policies+%26+Standards&sid=Eoaf&b=terminalcontent&f=itd_policies_standards_open_standards_policy&csid=Eoaf.

[44] For a complete list of specified standards, see Information Technology Division of the Executive Office for Administration and Finance - Commonwealth of Massachusetts, Enterprise Technical Reference Model - Version 3.5 (Effective Date Sept. 21, 2005).

Document Format for Office Applications (ODF) v. 1.0, Plain Text Format and Hypertext Document Format v. 4.01. Portable Document Format (PDF) v. 1.5 was listed in a category of other acceptable formats.

The Commonwealth's inclusion of ODF in the lengthy list of required technical standards for new government IT procurements engendered strong reactions from various interests. Also referred to as OpenDocument, ODF is an XML-based document file format for office applications such as word processing documents, spreadsheets, and presentations. ODF is not a software application but a technical blueprint establishing common rules for structuring information contained within documents so they can be created, exchanged, and stored by any ODF-compliant application. This is somewhat analogous to the widespread ability to exchange audio files among applications adhering to MP3 or other audio formats. A standards institution called the Organization for the Advancement of Structured Information Standards (OASIS) ratified the ODF specification in May of 2005, and assumed responsibility for maintaining and updating the technical specification.[45] The International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC) ratified OpenDocument as an international standard (ISO/IEC 26300) in 2006.[46]

The Massachusetts government primarily used Microsoft Office applications and other software based on proprietary standards for text, spreadsheet, and presentation documents. The formatting structures underlying office products like Microsoft Office have historically been proprietary - they are unpublished specifications not available for other vendors to create competing, interoperable software products. Rather than continue to use proprietary structures, the Commonwealth selected the OpenDocument specification, which is available for anyone to access gratis from the OASIS web site.[47] Additionally, the standard

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[45] Press Release, Organization for the Advancement of Structured Information Standard [OASIS], *Members Approve OpenDocument as OASIS Standard* (May 23, 2005), http://www.oasis-open.org/news/oasis_news_05_23_05.php.

[46] Press Release, International Organization for Standardization (ISO), *ISO and IEC Approve OpenDocument OASIS Standard for Data Interoperability of Office Applications* (Ref.:1004, May 8, 2006), http://www.iso.org/iso/pressrelease.htm?refid=Ref1005.

[47] The Open Document Format for Office Applications (OpenDocument) v1.0 specification can be downloaded from http://www.oasis-open.org/committees/download.php/12572/OpenDocument-v1.0-os.pdf (last visited Aug. 26, 2009).

can be implemented on a royalty-free basis, presumably producing the effect of enabling competing vendors to manufacture and sell interoperable products and providing the possibility of heterogeneous software choice for users. Recall that one of the criteria for openness that Massachusetts stressed was multiple, competing products based on the standard to avoid predicating future access to public documents on a single vendor's proprietary specification. In the case of ODF, some examples of software applications compliant with the standard included, at the time, Google Docs, IBM Lotus Symphony, StarOffice 8, and the open source and freely available OpenOffice.

According to Eric Kriss, then Massachusetts' Secretary for the Executive Office of the Administration of Finance, the state's reasons for adopting ODF included not only economic and technical concerns, but also the political justification of eliminating the potential implications of giving a single corporate interest, in this case Microsoft, the capacity to limit access to state documents through proprietary formats and intellectual property restrictions. Kriss often described the political aspect of document standards in terms of government sovereignty. In a public statement about the importance of open document formats in the context of the government's obligations to provide long-term accessibility to public records, Kriss argued:

> It should be reasonably obvious for a lay person who reflects on the concept of public records that the government must keep them independent and free forever. It is an overriding imperative of the American democratic system that we cannot have our public documents locked up in some kind of proprietary format, perhaps unreadable in the future, or subject to a proprietary system license that restricts access.[48]

The Massachusetts ODF decision, on the surface a recommendation involving an esoteric technical standard, attracted considerable attention and controversy, including a strong reaction from Microsoft, which had an obvious economic stake in retaining the large installed base of Office products in the

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[48] Eric Kriss, Sec'y for the Executive Office of the Administration of Finance for the Commonwealth of Massachusetts, Informal Comments on Open Formats (Jan. 14, 2005), *quoted in* Andrew Updegrove, *Massachusetts and OpenDocument: A Brave New World*, CONSORTIUM STANDARDS BULL., Sept. 2005, http://consortiuminfo.org/bulletins/sep05.php.

Commonwealth. At the time, Microsoft was also in the process of introducing a new version of its Office suite, Office Open XML (called OOXML or Open XML), based on an XML document standard rather than the proprietary binary formats underlying previous versions of Office.

According to one historical account of the ensuing melee, criticisms of the Commonwealth's decision included questions about migration costs, the standard's functionality, the potential to disadvantage proprietary products in procurement bids, the standard's ability to address the accessibility needs of disabled workers, and the extent to which the decision was reached in an open and democratic manner.[49]

In the ensuing political turmoil of the Commonwealth's decision, three critical leaders resigned their posts, all amid controversy. These included Kriss; Peter Quinn, the CIO of the ITD; and later the new CIO of the ITD Louis Gutierrez. In the meantime, Microsoft's Open XML format was approved by the standards consortium Ecma International, which would make the standard freely downloadable from its web site. Some of the criticisms of this format include the following: that areas of the standard are undocumented to the extent that others would not be able to reproduce key features; that the standard does not take advantage of existing and relevant global standards; that it is ultimately controlled by a single vendor; and that Microsoft's patent protection promise not to sue only pertains to explicit components of the standard and not undocumented and implied components of the standard.[50]

Following a series of resignations, administration changes, and mounting political pressure, the end result was that the next iteration of the Enterprise Technical Reference Model, ETRM v. 4.0, expanded the specifications for Massachusetts' "open formats" category to include OOXML, now called Ecma-376, as well as OpenDocument v. 1.1.[51] In *Inventing the Internet*, historian of

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[49] Rajiv Shah & Jay Kesan, *Open Standards and the Role of Politics*, 228 THE PROCEEDINGS OF THE 8TH ANNUAL INTERNATIONAL CONFERENCE ON DIGITAL GOVERNMENT RESEARCH - PHILADELPHIA, PENNSYLVANIA 3,7 (2007).

[50] *See, e.g.*, Sam Hiser, *Achieving Openness: A Closer Look at ODF & OOXML* (June, 2007), http://fussnotes.typepad.com/Achieving_Openness_1point0.html; *and* ODF Alliance, *The Technical Case Against DIS 29500/OOXML*, www.odfalliance.org (last visited August 26, 2009).

[51] *Major Revision of Massachusetts Enterprise Technical Reference Model (ETRM)*, OASIS COVER PAGES, July 3, 2007, http://xml.coverpages.org/ni2007-07-03-a.html..

technology Janet Abbate describes how "[S]tandards battles can bring to light unspoken assumptions and conflicts of interest. The very passion with which stakeholders contest standards decisions should alert us to the deeper meanings beneath the nuts and bolts."[52] The Commonwealth of Massachusetts' open standards case illustrates how politics and technical standards can potentially collide.

B. The National Archives of Australia

The National Archives of Australia (NAA) selected ODF as the standard for its digital preservation of public documents and similarly linked the open standard with conditions relevant to democracy such as transparency, openness, and public accountability. The NAA preserves federal government records dating back to the 1901 inception of the Commonwealth of Australia, and also includes some nineteenth century documents. The Archive's holdings include Prime Ministers' records, cabinet documents, and federal government files related to such areas as national defence, intelligence, and immigration. The NAA describes its mission as focusing on helping government to account to the public, ensuring that evidence is available to support people's rights and entitlements, and that future generations will have a meaningful record of the past.[53]

In March of 2006, the NAA announced it would update its digital preservation software to support ODF. A significant consideration in the NAA's ODF decision was how best to ensure the longevity of electronic public records, as many government agencies in Australia have unreadable electronic records.[54] Digitally stored information can become inaccessible for many reasons: the physical storage medium, whether mechanical, magnetic, optical, or electronic, may no longer be easily accessible; the software application required to read a proprietary document format may no longer be available; and newer applications, even based on the same proprietary product family, may not be backward

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[52] Janet Abbate, INVENTING THE INTERNET 179 (1999).

[53] National Archives of Australia, About Us, http://www.naa.gov.au/about-us/index.aspx (last visited Dec. 1, 2009).

[54] Australian Government - National Archives of Australia, *Digital Preservation: Illuminating the Past Guiding the Future* 13 (June 2006), *available at* http://www.naa.gov.au/images/xena_brochure[1]_tcm2-918.pdf.

compatible with previous formats. The NAA, like other digital archives, has acknowledged that these barriers to electronic storage longevity have created a situation in which paper storage, in practice, outlasts electronic storage. The NAA selected ODF because it believed this open standard, in contrast to proprietary formats, would support its obligation to ensure the durable and accessible archival of digital public information. The presumption is that an open standard that is publicly accessible, developed and maintained by multiple interests in an open institutional process, and ratified as an international standard, would have greater longevity, product availability, and ongoing backward compatibility. An interesting aspect of the NAA's standards strategy is that the agency is both a user and developer of the standard - the NAA actively participated in the format's development in conjunction with the OASIS standards group. This opportunity for participation by an expanded circle of stakeholders clearly demonstrates an advantage of standards developed through open processes.

As part of its standards policy, the NAA would still receive information in all file formats but would use its Xena preservation software, along with OpenOffice 2.0 - open source software supporting the ODF standard - to convert documents into ODF. Xena, short for XML Electronic Normalizing of Archives, is XML-based open source software the Archives have made available for use or comment by any interested party.

Government agencies contributing electronic archives to the NAA's electronic repository submit documents in numerous formats and one of the NAA's policies is to accept any document format rather than mandating a single standard. The NAA's archiving strategy also includes storing the electronic documents in their original formats.[55] This would give citizens the choice of viewing the electronic files with an ODF compliant application or using the application that originally created the file. Those users who want to access a file in the ODF format have the option of deploying one of two free solutions - either OpenOffice or Google Docs - to view, edit, and save documents in ODF.

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[55] Australian Government - National Archives of Australia, Xena: Software for Digital Preservation, http://xena.sourceforge.net/ (last visited Dec. 1, 2009).

C. Brazil

In late 2006, the Brazilian federal government introduced an interoperability architecture establishing the adoption of open standards, making Brazil the first South American country to officially recommend ODF. Brazil's conception of interoperability addressed internal government communications and information exchange with citizens, as well as the more global objectives of interacting with businesses and governmental trading partners and competing in global economic markets. The government established interoperability as a requirement for effective governmental provisioning of public services and for efficient economic stewardship of public ICT investments. Three agencies within the federal government spearheaded the development of Brazil's interoperability architecture: the Ministry of Planning, Budget, and Administration's Secretariat of Logistics and Information Technology; the National Institute for Information Technology of the Presidency of the Republic; and the Federal Data Processing Service, a public company within the Treasury Department.[56]

Brazil modelled its definition of interoperability on conceptions that other governments and institutions had already developed.[57] Brazil defined interoperability primarily in terms of a specification's effects: a structure is interoperable if it ensures the capacity to exchange information among heterogeneous systems and provides users with a choice between multiple competing and compatible technologies. This definition is based on principles of diversity, heterogeneity, and choice, in contrast to architectures that result in single vendor lock-in.

With interoperability as the overarching requirement, the federal government established general policies to guide its selection of specific technical standards. These policies can be summarised as follows: technical specifications must comply with the dominant standards underlying the Internet, including the World Wide

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[56] Brazilian Government Executive Committee on Electronic Government, e-PING Standards of Interoperability for Electronic Government - Reference Document Version 2.0.1 (Dec. 5, 2006) at 12, *available at* http://www.governoeletronico.gov.br/governoeletronico/publicacao/down_anexo.wsp?tmp.arquivo=E15_677e-PING_v2.0.1_05_12_06_english.pdf [hereinafter e-PING Reference Document Version 2.0.1].

[57] Brazil's interoperability definition draws upon frameworks developed by the British government, the Australian government, the ISO, and the European Institute of Computer Science.

Web, and use browser software as the preferred information access mechanism; specifications should be XML-compliant where applicable and adopt standardised metadata approaches based on internationally accepted standards; the specifications should have market support and be scalable to changing demands and uses; the e-PING documentation should be transparently available to the public and have some mechanism for public evaluation and feedback; and the technology underlying electronic government services should provide user privacy and respect legal restrictions on information access and dissemination.

Finally, the Brazilian federal government established the following overarching technical policy:

> *Preferential adoption of Open Standards* - The e-PING defines that whenever possible open standards will be adopted while establishing technical specifications. Proprietor [sic] standards are accepted until there are migration conditions. The situations where there is a need to account for information safety and integrity requirements will be dealt with appropriately. When available, free software solutions will be considered preferential, in keeping with the policies defined by the Electronic Government Executive Committee (CEGE).[58]

Brazil's e-PING interoperability framework recommends specific technological standards on the basis of their compliance with these overarching policies, including the open standards requirement. Rather than imposing a strict binary categorisation of standards as either "accepted" or "rejected," the Brazilian interoperability framework classifies specifications into one of five categories of compliance. *Adopted* standards are compliant and have passed through a formal review process; *Recommended* standards comply with Brazilian policies but have not yet passed a formal review process; *In Transition* standards are specifications that are widely used but do not comply with policies and will eventually be replaced unless they become compliant with policies; other standards are classified as *Under Evaluation* or, if not yet appraised, classified as for *Future Consideration*.

Some of the interoperability framework's recommended standards, among pages and pages of technical recommendations, include well-known

[58] e-PING Reference Document Version 2.0.1, *supra* note 56, at 9.

interconnection protocols such as HTTP/1.1, SMTP/MIME, SIP, SMS, TCP, and UDP. In the category of technical specifications for document files, the interoperability framework recommends OpenDocument (.odt) as well as other standards such as PDF and Rich Text Format (RTF). It assigns the *In Transition* classification to Microsoft's proprietary Word (.doc) format, up to MS Office version 2000. The technical specifications similarly recommend OpenDocument .ods for spreadsheet files, .odp for presentation files, .odb for data files, and .odg for graphic information.[59]

In short, Brazil selected OpenDocument as the preferred format for federal government documents while assigning its installed base of Microsoft proprietary formats as in transition. The e-PING standards are mandatory for new information system procurements and for updates to existing systems within the executive branch of the federal government. Brazil's policies explicitly state that they cannot be imposed upon citizens or on government entities outside of the federal government, but call for voluntary adherence to the interoperability framework.

D. India

The three previous examples described government policies on document format standards. The following case study examines a more general government open standards policy, but one with direct implications for document standards and public documents.

In 2008, India's Union Ministry of Communications and Information Technology released a draft Policy on Open Standards for e-Governance.[60] The policy was designed to offer guidelines about the standard to which e-Governance systems must conform, with e-Governance defined as information technology-based exchanges of information and services between the government and citizens, businesses, and with other arms of government.[61] India's open standard policy articulated several objectives: to ensure interoperability among multiple agencies' systems; to ensure that public

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[59] These specifications all fall under the ISO/IEC 26300 standards.

[60] Government of India - Ministry of Communications & Information Technology, Draft Policy on Open Standard for e-Governance (Draft Policy Version 1.0, June 2008), *available at* http://egovstandards.gov.in/public-review/egscontent.2008-08-22.3525430649/base_view.

documents and information are available in the future; to promote innovation, entrepreneurship, and a level playing field for competition; and to avoid vendor lock-in,[62] which the policy defines as becoming dependent on a single vendor for a product or service.[63] India's first draft policy included eight guiding principles for the selection of standards:

1. Freely available (royalty free, without patent encumbrances, publicly accessible);
2. Developed in a transparent and collaborative manner;
3. Ability to create open extensions and subset in standards;
4. Interoperable (including backward compatibility);
5. Superior to standards adopted earlier (avoiding duplication with existing standards);
6. Conforming to domestic laws;
7. Supporting localisation (i.e., support all Indian languages);
8. Be a single standard.[64]

India's draft policy included a strong mandate for the use of open standards, which it defined as being royalty free, developed in a collaborative and consensus manner, freely available without any restrictions, and preferably developed in India or having official participation from India, and preferably having multiple implementations.[65] Another distinguishing feature of India's draft policy was the requirement that there be a single standard for each technology domain.[66]

Government procurement is a significant segment of technology markets, particularly in the developing world. In India, e-Governance hardware and software procurement by the Indian government represents a multi-billion dollar information and communications technology market. Not surprisingly, corporations with an enormous stake in standards decisions weighed in on India's

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[61] *Id.* at 6.

[62] *Id.* at 1.

[63] *Id.* at 6-7.

[64] *Id.* at 2-3.

[65] *Id.* at 3-4.

[66] *Id.* at 3, 5.

open standards policy. Companies that benefit from open standards and open source approaches, such as RedHat and Sun Microsystems, responded favourably to India's policy, while companies such as Microsoft and industry associations such as the National Association of Software and Services Companies (NASSCOM) opposed elements of the policy, primarily arguing for the acceptability of reasonable and non-discriminatory terms rather than only royalty free, and also taking exception to the requirement that there be a single standard for each technology domain.[67]

While many of the battles over India's open standards policy addressed issues of market competition, entrepreneurship, and innovation policy, it is important to underscore the underlying democratic principles emphasized in India's policy: government transparency, equitable access, and open participation. The Centre for Internet and Society, in its responses to the draft national policy on open standards, emphasized the public interest rationales for openness, as well as the technical and economic:

> We believe that the adoption of open standards is a step towards the promotion of equitable access to knowledge to all the people of our country. We further believe that public accountability will be served greatly by adoption of an open standards policy by the Central and State governments. While even developed countries (such as those of the EU) are mandating open standards in all governmental departments, processes, and interactions, it is developing countries that stand to gain most from open standards. Proprietary standards place a larger burden on developing economies than developed as developing economies have a greater need to participate in the global network by using standards, but do have lesser capabilities than developed economies in terms of paying for royalties.[68]

The policy development process of open public comment and revision on the government's open standards policy itself reflects principles of open and participatory government. India is the world's largest democracy. India's open

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[67] *See* Deepa Kurup, *Open Debate*, FRONTLINE, Nov. 7-20, 2009, *available at* http://www.hinduonnet.com/fline/fl2623/stories/20091120262309100.htm.

[68] Centre for Internet and Society - India, *Second Response to Draft National Policy on Open Standards for e-Governance* (July 7, 2009), http://cis-india.org/advocacy/openness/standards/second-response.

standards policy, at this writing, is still a work in process. Nevertheless, one of the stated objectives of India's new policy, retained in the most recent policy version, was to "ensure reliable long term accessibility to public documents and information", helping to emphasize linkages between open document standards and democratic access to government information.

VI. CONCLUSION

This paper has considered democracy-promoting principles of standards design ranging from concerns with certain procedural values in decision-making to the effects of standards design on political authorisation and representation. Economic definitions of open standards view openness as generally desirable to promote competition. Democratic political discourse implicates a far broader range of social contexts and concerns. As our preceding discussion indicated, democratic inquiry into standards leads not to the binary question of "open versus proprietary" but to the question of what openness requirements are appropriate in any given context. Openness is crucial for technical standards addressing a formal democratic process or affecting issues of potential political concern such as national security and disaster response. Openness is also essential for standards that directly affect conditions relevant to democracy. In our analysis, we emphasised the particular importance of open document standards for democratic governments.

Furthermore, our selected case studies provided examples of governments establishing requirements that technology used to create, exchange, view, and store documents meet various criteria of openness. Our examination of these open standards policies reveals several themes. First, each government entity that has established an open standards policy cited expressly political rationales as well as economic and technical reasons in its justification for preferring technologies based on open standards. The political rationales emanated from the desire to promote the democratic values of transparency, openness, user choice, and public accountability, as well as the imperatives flowing from distinctly public obligations such as the digital archiving of public records. Economic and technical requirements of course also shaped these open standards policies: the government entities were concerned with improving interoperability between heterogeneous systems, reducing ICT expenditures by avoiding vendor

lock-in, and promoting economic competition through selecting standards with multiple competing product implementations. Second, the selection of open standards occurred most expeditiously when undertaken in a generally transparent and open manner with avenues for public review and comment. Many government open standards policies also emanate from broader "interoperability frameworks", which establish guiding principles for openness and interoperability in government interactions with citizenry. Third, the governments in all four scenarios took the same general role in promoting open standards. In promoting the use of open standards, governments potentially could act in one of three possible roles - as a regulator, developer, or procurer of standards. In all of the cases we investigated, the government entities opted for the limited role of procuring technology based on open standards. The partial exception was the National Archives of Australia, which served as one of many participants in the development of ODF. Finally, governments' open standards policies stressed the importance of the availability of multiple, competing products as an evidential criterion of openness, such as ODF's status as the common standard for competing products such as Google Docs, IBM Lotus Symphony, StarOffice, and OpenOffice.

Both the theoretical and applied sections of this paper make it clear that document standards have political implications for democratic governments. Free and open access to many types of government documents is crucial for democratic government, either because ensuring dependable, equal, and free access constitutes a condition of democracy, or because the provision or recordation of certain documents constitute core public duties. It is evident that the government document standards policies we studied in this paper acknowledge the political reasons for open standards, as they did not only focus on cost-efficiency or other purely economic imperatives, but were significantly concerned with promoting distinctly political values - either invoking the specific values of democratic equality of access or public responsibility that we articulated in this paper, or closely related values, such as the principle of citizen choice or government independence from proprietary control. We can conclude that in the present context, movement towards openness in technical standards by both governments and vendors is highly beneficial for citizens who care about democratic values.

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FAKE FACTS: AN INCREDULOUS LOOK AT PIRACY STATISTICS IN INDIA

Prashant Iyengar*

ABSTRACT

The author of the paper looks at how the expression 'piracy' has acquired traits due to the manner in which news has been reported, and also the manner in which 'piracy statistics' have defined the boundaries of their context by perpetuating an image of value-neutrality while revealing little other than the quantity of 'pirates'. By examining newspaper reports, he notes the manner in which the losses in the music and video industries are portrayed, and the estimations of the same which are sometimes downright fictitious, but nonetheless accepted by the press. Accounts of piracy in the press have changed though, with stories of linear losses that focussed on illegality giving way to accounts addressing the issue in terms of affordability and access. However, the truth is still nebulous as most cases are heard with the defendant ex parte, spawning an assumptive methodology of arriving at figures. This situation has the effect of a simple distrust amongst laypeople of the logic of spectacular losses claimed, but also a heightened sense of emergency among official circles.

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The title of this paper is borrowed from the title of a newspaper article from 2003 that provides an assortment of statistics on piracy of branded FMCG products in India; Anna Peter, *Fake facts*, The Hindu Business Line, March 20, 2003. *available at* http://www.blonnet.com/catalyst/2003/03/20/stories/2003032000030100.htm (last visited Jan 27, 2009). Among the various motives that could have prompted the author's selection of this title, I imagine a mischievous and subversive skepticism of 'statistics' and 'facts' as one of them.

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I. INTRODUCTION

> A study, 'The Effects of Counterfeiting and Piracy on India's Entertainment Industry,' released by US India Business Council (USIBC) with Ernst & Young showed that 800,000 direct jobs and Rs 16,000 crore are lost every year due to piracy. (March 2008)[1]
>
> The annual Plan for Bihar for 2009-10 has been pegged at Rs.16,000 crore. The outlay includes an additional Central assistance of Rs.110 crore for priority projects. (Feb 2009)[2]
>
> In fact, 55 per cent of executives estimated their firm's revenue loss at greater than 10 per cent of total revenue. What's more, 77% of those surveyed [by KPMG] agree with IDC (International Data Corporation) estimates that 35% of software installed is unlicensed, leading to an estimated $34 billion in lost revenue to the industry.[3]
>
> India could see economic benefits worth $3.1 billion or Rs.12,555 crore through expanded revenues and better productivity, add $208

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1 *Government, FICCI differ on optical disc law*, THE HINDU BUSINESS LINE, March 28, 2008, *available at* http://www.blonnet.com/2008/03/28/stories/2008032852381100.htm (last visited Jan. 27, 2009).

2 *Rs. 16,000-Crore Annual Plan Finalised for Bihar*, THE HINDU, Feb. 14, 2009, *available at* http://www.hindu.com/2009/02/24/stories/2009022455560900.htm (last visited Feb. 25, 2009).

3 *Software firms lose billions to piracy: KPMG*, BUSINESS STANDARD, Dec. 19, 2007.

> million in taxes, and create 44,000 fresh jobs, if it reduces use of pirated software by 10 percentage points by 2011, a lobby group for software firms has said.[4]
>
> "The man who eats only twice a day, never taking any food or drink in the interval, and does this for six years…will dwell a million years in Brahma's heaven, and enjoy the society of the celestial nymphs." (Mahabharata, xii, 107.7)

In his book *The Taming of Chance*,[5] Ian Hacking describes how a particular statistical principle, namely the law of large numbers,[6] acquired the qualities of a 'metaphysical truth' in nineteenth-century France. This was "not because there was a mathematical demonstration of the law" – since hardly anyone in France understood the mathematics behind the law – and despite its evident implausibility (since "empirical phenomena are a great deal more irregular (to our eyes) than was popularly urged [by proponents of the law]"). According to Hacking, "thanks to superstition, laziness, equivocation, befuddlement with tables of numbers, dreams of social control, and propaganda from utilitarians, the law of large numbers – became for the next generation or two, a synthetic, *a priori* truth... It was not something to be checked against experience; *it was the way things had to be*" (emphasis added).[7]

This paper looks at how the word 'pirate' and its cognate expressions have circulated in newspapers over the previous decade and how 'piracy' has acquired characteristic traits of the kind of 'metaphysical truth' that Hacking describes. The word 'pirate' today automatically conjures images of illegality and spectacular loss – of a healthy, plump creative industry feebly

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4 Malovika Rao, *Software piracy rate cut can see $3.1 bn rise in revenues by 2011*, LIVEMINT.COM, March 8, 2008, *available at* http://www.livemint.com/2008/03/08002108/8216Software-piracy-rate-cu.html (last visited Jan. 27, 2009).

5 IAN HACKING, THE TAMING OF CHANCE (1990).

6 Referring to the statistical law which holds that "in repeated, independent trials with the same probability p of success in each trial, the chance that the percentage of successes differs from the probability p by more than a fixed positive amount, $e > 0$, converges to zero as the number of trials n goes to infinity, for every positive e". *See* Philip Stark, The Law of Large Numbers (University of California Berkley - Department of Statistics, Sept. 2008), *available at* http://www.stat.berkeley.edu/~stark/Java/Html/lln.htm (last visited Feb. 25, 2009).

7 *See* HACKING, *supra* note 6, at 104.

fending off a sustained onslaught from a ravenous,[8] militaristically organized, international network of pirates. Like the statistics of last year's fatal accidents, no-one quite remembers what the exact figures on piracy were, but there is grim conviction that the numbers must have been high, and that ameliorative action is necessary. Before the Satyam scandal, piracy was the biggest egg in the face of a 'techno-savvy' India, which had acquired some stature in the worldwide export of software and cinema. This paper examines newspaper accounts of piracy to see if and how their content has changed over time.

This paper is also an attempt to uncover the manner in which the avalanche of piracy statistics has successfully wrestled control over the boundaries within which piracy may be discussed in the press. 'Piracy statistics' today are only reflective of the quantity of 'pirates' and do not tell us, for instance, the caste-wise or age-wise or monthly-income-wise demographic of these pirates. They do not prompt a deeper reflection on issues such as endemic unemployment, affordability and access to culture, and have been remarkably successful in sustaining media attention on a drummed up notion of national loss.[9] In doing so, they have also had astonishing success in perpetuating the image of their own value-neutrality. This paper attempts to investigate *what* this body of piracy accounts continuously told, revised and retold in newspapers over the past decade can reveal to us.

A galloping review of about 80 such articles found between 2000 and 2009 suggests the following features of piracy reportage.[10]

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[8] The metaphor of hunger and feeding seems to pervade accounts of piracy and responses to it in India. Thus for instance, piracy is forever 'eating into' the revenues of industry; *see, e.g., Piracy eating into music industry health - Falling sales, high taxes and mafia add to the blues*, THE HINDU BUSINESS LINE, March 27, 2003, *available at* http://www.blonnet.com/2003/03/27/stories/2003032701591700.htm (last visited Jan. 27, 2009). Similarly, statutes are given 'more teeth' to combat piracy; *Cinematography Act may get more teeth*, BUSINESS STANDARD, Dec. 25, 2008, *available at* http://www.business-standard.com/india/news/cinematography-act-may-get-more-teeth/11/18/344203/ (last visited Jan. 27, 2009).

[9] A notable exception is the 1999 Study on Copyright Piracy in India commissioned by the Ministry of Human Resource Development, Government of India which includes a chapter on "Socio Economic Aspects" that assesses the impact of high prices, poverty and unemployment on piracy rates. *See* Ministry of Human Resource Development - Government of India, *Study On Copyright Piracy In India* (1999), *available at* http://www.education.nic.in/cr_piracy_study/cpr9.asp (last visited Feb. 25, 2009).

[10] Fifty-five of these articles have been profiled year-wise and by type of piracy in Appendix A at the end of this article.

II. MANY PIRACIES

During the period under study, hackneyed accounts of media piracy ("25,000 pirated CDs, DVDs seized"[11]) have shared space with news relating to counterfeit drugs, spurious drugs, counterfeit fast moving consumer goods (FMCGs), and more recently, piracy on the high seas (the 'original' piracy). Although these various kinds of 'piracy' may appear only orthogonally related, their affinity exceeds the merely nominal. There is much traffic in tactics amongst the different groups to whom the power to name 'piracy' belongs.[12] The guardians of music and video piracy – the MPAAs, RIAAs, IMIs, BSAs, PPLs etc – have learnt much from their better-experienced pharmaceuticals counterparts, a fact that is evident in the shifting of their preferred arenas of crackdown from 'law and order' to customs – big pharma's preferred bulwark. Music and video piracy studies have adopted into their propaganda arsenal the (relatively) sophisticated notion of losses in employment and taxation revenue from their more imaginative software and FMCG kin. Since at least 2003, FMCG piracy estimates include an additional estimate of lost 'taxation revenue' due to piracy.[13] The BSA-IDC has for the longest time been periodically offering karmic 'development' gains, including increases in employment, as inducement for countries to drop their piracy rates by 10% within five years. For instance in 2003: "India can create 50,000 more high technology jobs, add $2.1 billion to its economy and boost software industry's revenue by over $1.6 billion if the country brings down software piracy rate to 60 per cent by 2006 from the current 70 per cent." More recently, this strategy has featured subtle comparisons between India and other countries in the region – chiefly China and Russia. Thus, for instance, "A 10-point reduction in piracy could make China's IT workforce the largest in the world, surpassing the United States, and make Russia a bigger IT market than India."[14] This candy-and-stick approach panders to a desire for

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[11] *Nearly 25,000 pirated CDs, DVDs seized in Punjab*, AOL India News, Jan. 27, 2009, http://www.aol.in/news-story/nearly-25000-pirated-cds-dvds-seized-in-punjab/20090127083890120000014 (last visited Feb. 25, 2009).

[12] Recalling Toni Morrison's famous dictum "definitions belong to the definers, not the defined".

[13] Peter, *supra* note 1.

[14] *Cutting PC software piracy creates jobs: IDC*, LiveMint, Jan. 22, 2008, *available at* http://www.livemint.com/2008/01/22144511/Cutting-PC-software-piracy-cre.html (last visited Jan. 27, 2009).

what Ravi Sundaram has termed as 'temporally-accelerative'[15] development – a route through which we Indians could transcend our 'historical disabilities' and achieve parity with the incumbent masters of the world.

III. THE MARKET FOR PIRACY STUDIES HAS INCREASED

Until around 2004, the province of 'piracy studies' if it existed, belonged exclusively to the International IP Alliance (IIPA) which specialized in conjuring loss estimates that numbered in the officially-noteworthy millions. Previously, complaints of piracy by industry associations were accompanied by amateurish and manifestly cooked-up statistics. Thus, for instance, when the film industry attempted to set up an association called the 'Video Federation of India' in 2001, it complained of losses to the industry of Rs. 500 crore – a figure arrived at rather whimsically by multiplying the size of the legitimate video industry by a multiplier of 10.[16] Similarly. the lobby group Indian Music Industry (IMI) continues to put out estimates of music piracy that are unsupported by any reference to studies of any sort. To a skeptical eye, habituated to being plied with 'studies' backing up figures, these arbitrary methodologies appear manifestly unpersuasive. Being unsupported by any systematic collection/revision of piracy statistics, the IMI and the FPBAI have both periodically hiked in their estimates rather unevenly. As a result, the growth of music piracy has languished in the past five years, rising from Rs. 200 crore[17] in 2002 to only Rs. 600 crore by 2009.[18] By contrast, software piracy has during the same period registered steady impressive growth from $245 million in 2002,[19] to about $2

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[15] Sundaram says "Temporal acceleration was a significant part of the imaginary of developmentalism - this was inherent in the logic of `catching up' with the core areas of the world economy by privileging a certain strategy of growth that actively delegitimized local and `traditional' practices." Ravi Sundaram, Beyond the Nationalist Panopticon: The Experience of Cyberpublics in India, *in* ELECTRONIC MEDIA AND TECHNOCULTURE 290 (John Thornton Caldwell ed. 2000), *available* at www.nettime.org/Lists-Archives/nettime-l-9611/msg00017.html

[16] Nithya Subramanian, *Video cos form united front against piracy*, THE HINDU BUSINESS LINE, Oct. 21, 2001, *available at* http://www.hinduonnet.com/businessline/2001/10/21/stories/14218703.htm (last visited Jan. 27, 2009).

[17] *Piracy deals blow to music industry*, THE HINDU BUSINESS LINE, Dec. 15, 2002, *available at* http://www.blonnet.com/2002/12/15/stories/2002121501520200.htm (last visited Jan. 27, 2009).

[18] *Supra* note 12.

[19] *$245 m lost in 2001 from software piracy: IDC report*, BUSINESS LINE, June 27, 2002, http://www.hinduonnet.com/businessline/2002/06/27/stories/2002062700400700.htm (last visited Jan. 27, 2009).

billion in 2008,[20] thanks to the more professionally organised BSA-IDC studies.[21]

Since 2004, however, an assortment of consultancy firms, including, KPMG, PriceWaterhouseCoopers, Ernst and Young and IDC have specialized in publishing breezy estimates on piracy – themselves usually based on the IIPA reports. In 2007, KPMG even conducted a piracy study to ascertain how many heads of corporations believed a previous (IDC) study on piracy.[22] In 2008, Ernst and Young bagged a (presumably lucrative) account to produce annual piracy studies for the US-India Business Council (USIBC). The latter is the latest entrant into the club of commissioners of piracy studies, a list that was already crowded from the presence of such titans as the Indian Music Industry (IMI), NASSCOM, BSA, FPBAI, IPRS etc.

As their value-addition to the specialized domain of piracy statistics, these consultancies can claim to have added arguments such as figures for number of jobs lost, losses in taxation revenue etc. It is noteworthy that during this period, appeals that prophesized the 'death of creativity' due to piracy were almost negligible.

In a sense, the relative credulity with which these various studies have been received and propagated by the press is hardly surprising and merely

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[20] *Software piracy dips to 69% in India*, BUSINESS STANDARD, May 16, 2008, *available at* http://www.business-standard.com/india/storypage.php?autono=323165 (last visited Jan. 27, 2009).

[21] For all its impressive dedication to the cause of putting out regularly updated figures on piracy the BSA-IDC studies are not without their share of comic gaffes. A regular component of their piracy statistics have been promises of increased employment, foreign investment and taxation revenues in exchange for reduced piracy levels. Thus, in 2003, a 10% reduction in piracy could earn India 50,000 new jobs and added investment of $2.1 billion in the economy. By 2005 this estimate had doubled – now a 10% reduction in piracy would add no fewer than 115,847 new jobs, $5.9 billion to the economy and $386 million in taxation revenues. This appears to have been, even within the optimistic BSA-IDC camp, an ambitious exaggeration and in 2008 the BSA-IDC were more circumspect. A 10% reduction in piracy would now only add a paltry 44,000 jobs, lead to $3.1 billion in added investment and only increase taxation revenue by $208 million. A far cry from the dizzying days of 115,847 jobs and $386 million taxation revenues. *See Curbing software piracy propels growth: Study*, THE HINDU BUSINESS LINE, Apr. 24, 2003, *available at* http://www.blonnet.com/2003/04/24/stories/2003042401590700.htm (last visited Jan. 27, 2009); *BSA initiates legal action for 'piracy'*, THE HINDU BUSINESS LINE, Feb. 28, 2006, *available at* http://www.blonnet.com/2006/02/28/stories/2006022802460400.htm (last visited Jan. 28, 2009); *Less piracy, more jobs, says study*, THE HINDU BUSINESS LINE, Apr. 4, 2008, *available at* http://www.blonnet.com/2008/04/04/stories/2008040451760400.htm (last visited Jan. 27, 2009).

[22] *Supra* note 4.

continues a trend, prevalent since at least the early nineteenth century, of elevating "practices associated with numbers over those associated with metaphorical language." As Mary Poovey has demonstrated in her *History of the Modern Fact*, in the course of the nineteenth century, statistics were able to re-order knowledge practices so that numbers began to be seen as "epistemologically different from figurative language, that the former are somehow value-free whereas the excesses of the latter disqualify it from all but the most recreational or idealist knowledge-producing projects".[23] That this is true in the case of Indian media reports is borne out by the numerous accounts of local piracy 'raids' which incorporate long passages of national piracy statistics, with a relatively marginal description reserved of the 'crime' itself.

IV. HOW TO SOLVE A PROBLEM LIKE PIRACY

> "While there have been dozens of raids against dealers who offer pirated software, some of them run into crores of rupees in terms of illegal software seized the fact remains that dealers distributing illegal CDs are like the mythical Hydra. Companies need to keep taking action against them or it will be business as usual in a few months."[24]

In their book *The Many Headed Hydra*, Peter Linebaugh and Marcus Rediker open with an account of how rulers during the period of English colonial expansion between the seventeenth and nineteenth century frequently invoked the Hercules-Hydra myth to describe the difficulty of imposing order on increasingly global systems of labour.[25] By designating, amongst others, dispossessed commoners, pirates, soldiers, sailors, and African slaves as the many heads of the monster, they found ways to brutally subjugate these various constituents, thereby taming the monster. However, "the heads… soon developed among themselves new forms of cooperation against those rulers, from mutinies and strikes to riots and insurrections and revolution."[26]

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[23] MARY POOVEY, A HISTORY OF THE MODERN FACT: PROBLEMS OF KNOWLEDGE IN THE SCIENCES OF WEALTH AND SOCIETY (2nd ed. 1998).

[24] Prashant Rao, *Software piracy: The scourge worsens*, EXPRESS COMPUTER, Sept. 9, 2002, *available at* http://www.expresscomputeronline.com/20020909/indtrend1.shtml (last visited Feb. 25, 2009).

[25] PETER LINEBAUGH & MARCUS REDIKER, THE MANY-HEADED HYDRA: THE HIDDEN HISTORY OF THE REVOLUTIONARY ATLANTIC 3 (2002).

[26] *Id.* at 4.

Although the myth is less frequently employed in relation to piracy,[27] one imagines that the doyens of the big media empires would cheerfully envision themselves in Herculean majesty if it were suggested to them. Certainly, their labours to quell the beast have been epic, and the obstinate resurgence of piracy displays qualities most Hydra-like.

At the start of the period surveyed, the 'raid' was the most popular (and most sensational) form of assault against piracy and reams of paper have been devoted by now to the description of raids, the enumeration of how many CDs/cassettes/equipment were seized, and rough conjectures on their estimated 'loss' value.[28] Some of these accounts speculate on the centres of these piracy 'rings' (Pondicherry? Malaysia?[29]) and foreground these immediate 'losses' against handy nation-wide figures extracted from the 'studies' mentioned above:

> "Pondicherry has emerged as a major hub for pirated audio and video CDs ... Tamil Nadu has high incidence of piracy and a number of raids have been conducted. In 2002, over 249 raids were conducted and the police seized 56,748 music cassettes, 55,401 CDs, and 86 computers and CD writers in Tamil Nadu." (2003)[30]
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> "The Federation [FPBAI] launched a campaign against piracy 22 months ago at the World Book Fair 2000, ... According to it, so far, 100 persons have been arrested for committing the offence, more

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[27] As previously discussed, Mary Poovey makes the point about how knowledge practices were reordered in the course of the nineteenth century so that numerical representation came to be elevated over figurative/metaphorical/rhetorical language. Nowhere is this tradition more kept alive than in the insipid stuff that emerges from Indian corporate research stables in the guise of 'studies'. Case in point: The Ernst and Young Report on piracy, unimaginatively titled "The Effects of Counterfeiting and Piracy on India's Entertainment Industry." The report packs 40 pages with tables and diagrams interspersed with minimal cliché-ridden paragraphs that overuse words like 'critical', 'stakeholders' 'enforcement agencies' and 'players'. One almost imagines the author(s) profuse embarrassment at the need for including sentences accompanying the tables at all.

[28] By October 2007, IMI claimed that it had helped authorities conduct 10,000 raids over the preceding 5 years and had shut down more than 630 music downloading sites. *Now, India hit by mobile chip piracy!*, THE TIMES OF INDIA, Oct. 14, 2007, *available at* http://timesofindia.indiatimes.com/articleshow/2458185.cms (last visited Feb. 25, 2009).

[29] *Video piracy racket busted*, THE HINDU, Apr. 14, 2003, *available at* http://hindujobs.com/thehindu/2003/04/14/stories/2003041401790500.htm (last visited Jan. 27, 2009).

[30] *Piracy eating into music industry health - Falling sales, high taxes and mafia add to the blues*, THE HINDU BUSINESS LINE, Mar. 27, 2003, *available at* http://www.blonnet.com/2003/03/27/stories/2003032701591700.htm (last visited Jan. 27, 2009).

> than 1,30,000 pirated books seized and 50 reproduction equipment confiscated." (2002)[31]
>
> "As per the findings of the BSA-IDC study of 2005, the rate of PC software piracy in 2005 was 72 per cent. According the statistics, the Indian software industry posted revenue loss of $566 million in 2005…Business Software Alliance, a global trade body, seized pirated software worth $2.1 million in 2006 from India. Pirated software seized from raids in Delhi, Mumbai, Chennai, Kolkata, Ahmedabad, Bangalore and Hyderabad included those from Adobe, Autodesk, McAfee, Microsoft and Symantec..." (2007)[32]

Apart from the raid, the industry has responded to piracy through calls for 'tightening the rules' as well as internally reorganizing itself. Thus various states have mooted or, in some cases, even enacted special legislation to deal with piracy and sporadic calls have been made for the enactment of a nationwide 'Optical Disc' Law.[33] The film industry has sought to cope with piracy through both technological and distributional innovations. Thus on the one hand, 'e-cinemas' have been mooted to combat the problem of piracy based on the (accurate) diagnosis that one of the causes of piracy has been the delayed release of films across small towns in India.[34] On the same rationale, distributors in Andhra Pradesh have begun simultaneously releasing films in all theatres across the State.[35]

An 'anti-piracy' hotline was inaugurated "for the first time" by NASSCOM in 2000 and 2005.[36] Internationally, special 'sniffer' dogs adept at discovering

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[31] *The Hindu Business Line: Piracy eats into publishers' profits*, THE HINDU BUSINESS LINE, June 7, 2002, *available at* http://www.blonnet.com/2002/06/07/stories/2002060702900300.htm (last visited Jan. 27, 2009).

[32] *Pirated software worth $2.1 m seized in India last year*, THE HINDU BUSINESS LINE, Mar. 7, 2007, *available at* http://www.blonnet.com/2007/03/07/stories/2007030703320400.htm (last visited Jan. 27, 2009).

[33] *Government, FICCI differ on optical disc law*, THE HINDU BUSINESS LINE, Mar. 28, 2008, *available at* http://www.blonnet.com/2008/03/28/stories/2008032852381100.htm (last visited Jan. 27, 2009).

[34] Gaurav Raghuvanshi, *The Hindu Business Line: e-cinema arrives to fight film piracy - Adlabs' digital tech fine-tunes distribution*, THE HINDU BUSINESS LINE, June 17, 2004, *available at* http://www.blonnet.com/2004/06/17/stories/2004061702190700.htm (last visited Jan. 27, 2009).

[35] K.V. Kurmanath, *Finding new ways to curb piracy*, THE HINDU BUSINESS LINE, Sept. 29, 2006, *available at* http://www.blonnet.com/2006/09/29/stories/2006092902991900.htm (last visited Jan. 28, 2009).

[36] *Cabinet has cleared Sankhya Vahini: Mahajan — Hotline for anti-software piracy launched*, THE HINDU, Apr. 16, 2000, *available at* http://www.hinduonnet.com/businessline/2000/04/16/stories/14166801.htm (last visited 27 Jan 2009); *Nasscom seeks special courts for piracy cases*, THE HINDU BUSINESS LINE, Apr. 27, 2005, *available at* http://www.blonnet.com/2005/04/27/stories/2005042702191000.htm (last visited Jan. 27, 2009).

pirate CDs at customs depots were reportedly causing the Malaysian pirates such pyrosis that they announced a $30,000 reward for the killing of the unfortunate canines.[37]

Midway through the last decade however, along with these boilerplate demands for reform came accounts which, intentionally or otherwise, undermined these linear 'loss' accounts of piracy. These included stories that highlighted how 'good' films continued to make money despite piracy, and how particular regional film industries suffered in particular years due to the hackneyed themes of the films released. For instance a 2004 article in the *The Hindu* titled 'No piracy, yet Deepavali films bomb', reports: "The films were bad. The quality is appalling. Films that released before Deepavali…are doing extraordinarily well because they were good films." Further, the article speculates on reasons why certain cinema theatres had witnessed an increase in audience thanks to renovation.

> "Cinema-going is an outing for the common man. It has a lot to do with the cinema-watching experience. Someone who goes to a hall like Devi goes there to get his money's worth and watch the film on the big screen. So it is idiotic to say that collections will drop if you release the video or satellite rights within weeks," says a trade columnist.[38]

Similarly, an article in the *Financial Express* in 2008 indicates that only 10% of films released in South India that year managed to recover the money invested in them. Although there is a throwaway reference to piracy being one of the causes, the bulk of the blame seems to have been placed on the public's disenchantment with 'stars' and trite themes.[39]

A special mention needs to be made, in the context of piracy counter-currents, of the tactics of Moser Baer – the Chennai based manufacturer of

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[37] *Crime gangs put £30000 bounty on heads of sniffer dogs that find pirate DVDs*, The Telegraph, Feb. 25, 2009, *available at* http://www.telegraph.co.uk/news/newstopics/howaboutthat/3546115/Crime-gangs-put-30000-bounty-on-heads-of-sniffer-dogs-that-find-pirate-DVDs.html.

[38] Sudhish Kamath, *No Piracy, yet Deepavali Films Bomb*, The Hindu, Nov. 30, 2004, *available at* http://www.hinduonnet.com/2004/11/30/stories/2004113012950300.htm (last visited Jan. 27, 2009).

[39] Sudha Prasad, *Flops mar film industry in South; only 10% films recover money*, Financial Express, Dec. 28 2008, *available at* http://www.financialexpress.com/news/flops-mar-film-industry-in-south-only-10-films-recover-money/403788/ (last visited Jan. 27, 2009).

optical media. In 2006, the company entered the home-video market and began offering VCDs and DVDs at prices as low as Rs. 28 to Rs. 34 respectively, deliberately undercutting the rates at which pirated CDs and DVDs are commonly sold. Their tactics have overtly mimicked those of the 'pirates' and they have recently claimed to have single-handedly reduced piracy rates by up to "20 to 30 per cent".[40] They claim to have acquired the rights for close to 10,000 titles in all popular languages of which close to 3,000 had been released in the market.[41]

Of the various counter-arguments to piracy, the Moser Baer model provides the stiffest challenge to 'big media' accounts of piracy by reconfiguring the issue in terms of *affordability* and *immediate access* rather than illegality.

Although some strides seem to have been made by the anti-piracy campaign, before departing from this section it is important to recall the Hydra-esque nature of piracy with which we began. Just when media industries had caught up to speed with the traditional pirates, new forms of piracy such as digital piracy[42] and mobile phone piracy[43] have raised their ugly heads. These will ensure that the market for piracy studies remains robust, at least in the medium term.

V. THE TRUTH EFFECT

Amidst yawning public indifference to what ought to have been alarming rates of piracy, the industry finally found a client for its fantastic figures – the Delhi High Court. In a judgment delivered in 2005 in a case of software piracy filed by Microsoft against a small retailer, the court accepted the (even statistically spurious) contention that the 'loss' caused to Microsoft was exactly equal to the number of pirated copies sold. In *Microsoft Corporation* v. *Mr. Yogesh Papat and Anr.*,[44] owing to the defendant's absence throughout the proceedings, the

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[40] *Moser Baer claims decrease in film piracy*, WEBINDIA123.COM, Jan. 17, 2009, *available at* http://news.webindia123.com/news/articles/India/20090117/1154707.html (last visited Feb. 25, 2009).

[41] *Id.*

[42] Priyanka Joshi, *Virtual bites: Digital piracy robs Bollywood*, BUSINESS STANDARD, Jul7 8, 2008, *available at* http://www.business-standard.com/india/news/virtual-bites-digital-piracy-robs-bollywood/00/14/328043/ (last visited Jan. 27, 2009).

[43] *Supra* note 29.

[44] 118 (2005) D.L.T. 580.

court accepted the assumption-laden affidavit of a Chartered Account instead. The court accepted the assumption "that 200 computers and 20 computers respectively were loaded with the software Office 2000 STD and Visual Studio 6.0." Based on this assumption, the court calculated that "estimated loss of business to the plaintiff" on the "cost per unit of the licensed software" comes to Rs. 64 lacs. In its eagerness to make this exercise believable, the court next deducted "dealers profit" of Rs. 2.40 lacs to arrive at net revenue loss of Rs. 61.6 lacs. Further the Court calculated that on an average, over the past four years, Microsoft had been making a gross profit of 32.1%. Applying this figure to the "net revenue loss", the Court arrived at the "loss of profit to the plaintiff" – a sum of Rs. 19.75 lacs.

In other words, the Delhi High Court conferred judicial approbation on the widely discredited methodology of estimating loss figures by substituting each pirated copy sold with the value of a genuine one. Hitherto, and in most 'normal' suits dealing with copyright infringement, actual loss to the plaintiff had to be proved with reference to the evidence of plaintiff's own accounts and sales figures.

In fairness, the avalanche of piracy statistics cannot claim sole authorship over this 'evidentiary leap'. Indeed, the grounds for this type of evidence to be made palatable for the court had been prepared as early as the sixteenth century. Mary Poovey traces an important epistemic shift, resulting in the installation of the modern fact, to the evolution of double-entry book-keeping practices in the sixteenth century. In the double-entry book-keeping system, Poovey finds an illustration of the way in which "systematic knowledge could create effects beyond its explicit agenda." Thus:

> In addition to the obvious purpose of recording commercial transactions, double-entry bookkeeping also displayed the merchant's moral rectitude, which was signified by the balance and harmony so prominent in the double-entry ledger; it generalized rule-governed behaviour by encouraging merchants and their agents to reproduce in action the orderly logic of the books; and as an effect of this generalization, it enhanced the social status of merchants as a group.[45]

[45] Poovey, *supra* note 25, at 11.

In some ways, it is fitting that the clinching 'evidence' in this extremely irregular case should come from a member of the profession of accountants. Fortified by four centuries of inherited virtue, the Court would have found the Chartered Accountant's 'moral rectitude' irresistible, even if his particular assumptive arguments were somewhat less credible. This case has been subsequently invoked in a couple of other cases of a similar nature, and with each case, the assumptive methodology of these piracy studies gets further judicially fortified.[46]

VI. CONCLUSION

The avalanches of piracy statistics and studies that have saturated the media especially in the past decade have had two somewhat contradictory effects. On the one hand, they have led to a heightened sense of emergency among official circles as various state legislatures become prepared to enact *sui generis* legislations to protect media commodities from piracy, and as the national government introduces sterner border control measures that extend the rights that copyright owners enjoy far beyond the domain of traditional copyright law. On the other hand, this saturation has had exactly the opposite effect among the lay populace who seem to have espoused a simple but stubborn, 'common sense' distrust of the logic of spectacular losses that they are routinely fed.

[46] For instance, the Delhi High Court in the 2007 cases *Infosys Technologies Ltd.* v. *Park Infosys And Ors.* 137 (2007) D.L.T. 349 and *Indian Performing Right Society Ltd.* v. *Debashis Patnaik and Ors.* 2007 (34) P.T.C. 201 (Del) (both delivered by Geeta Mittal, J.) relating, respectively, to trademark and copyright infringement, expressly endorsed the assumptive method of calculating loss where the defendant is absent.

APPENDIX A

S. No.	Year	Type	Loss	Agency	Miscellaneous Comments/ Extracts
1.	2002	Books	Rs. 300 crore to industry Rs.100 crore tax	FPBAI	Different newspaper accounts describe this as a Rs. 3000 crore loss.
2.	2004	Books	Rs 300 crore - Rs 350 crore annually	FPBAI	The federation is taking up the issue of copyright protection with the Government through the Copyright Clearance Agency of India (CCAI) and if necessary is ready to move the Supreme Court as well, he said.
3.	2007	Books	25% -FPBAI Rs. 2500 crore – API	The Association of Publishers in India, FPBAI	
4.	2009	Books	Trade loss of 1.09 billion dollars in 2008 due to copyright piracy. The same stood at 1.19 billion dollars in the year-ago period.	IIPA	

S. No.	Year	Type	Loss	Agency	Miscellaneous Comments/ Extracts
5.	2003	Counterfeit computer hardware	Intellectual property theft- Rs 2,160 crore every year 12% piracy in computer peripherals	Manufacturers Association of Information Technology	
6.	2006	Counterfeit products (global)	€ 500 billion	World Customs Organisation	Based on seizure contributions from over 50 WCO members, analysis indicates that in terms of the type of articles counterfeited or pirated, the top five are: Fine leather goods (+46 million articles valued at more than € 2 billion); Cigarettes (+44 million packets); Games and toys (+39 million articles); CD's and DVD's (+16 million units) and Products of the textile sector (+3 million articles).
7.	2007	Drugs	The study estimates that about Rs 1,000 crore, of the over Rs 31,000 crore crore domestic sales of	World Health Organisation (WHO) funded undertaken by Delhi Pharmaceutical	

S. No.	Year	Type	Loss	Agency	Miscellaneous Comments/ Extracts
			medicines in 2006, are counterfeit suspects.	Trust, along with SearPharm Forum, a forum of pharma associations of South East Asia and Apothecaries Foundation	
8.	2007	Drugs (AP)		State Drug Control Administration	Seized a variety of spurious and illegal drugs valued at around Rs 5.36 crore in the State.
9.	2008	Entertainment (CDs, DVDs, music downloads and cable television)	$4 billion (Rs 16,240 core), or almost 40% of potential annual revenues, as well as around 820,000 jobs	USIBC-E&Y US Chamber's Global Intellectual Property Centre.	
10.	2003	FMCG	4,000 crore 900 crore – excise revenue	FICCI-Brand Protection Committee	
11.	2004	FMCG	Rs.1500-2,500 croreloss of Rs 900 crore to the Government.	HILL	"In the 1970s we could deal with the situation civilly, but not today. In order to conduct raids we need a police force

S. No.	Year	Type	Loss	Agency	Miscellaneous Comments/ Extracts
					but usually the police department is unable to spare staff," Mr Sharma said. HLL has been conducting raids for several years. Currently, it has allocated a budget of Rs 10 crore per annum for these activities.
12.	2006	FMCG	counterfeit automotive parts sold in the country annually accounts for about Rs 20,000 crore, FMCG– 2600 crore 900 crore-tax to govt	International Anti Counterfeiting Alliance, Working Group on Counterfiet Fake, Spurious and Contraband Products set up by the Department of Consumer AffairsFICCI - Brand Protection Committee	
13.	2007	FMCG (global)	$200 bn (Rs 8,000 crore)	OECD, "The Economic Impact of Counterfeiting and Piracy"	18-month probe into counterfeiting and piracy worldwide. The figure of $ 200 bn, based on international

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					customs data, did not include counterfeit and pirated products that were produced and consumed in the same country, the OECD said. It also excluded pirated digital products distributed via the Internet such as software or music.Far from being simple cigarettes or designer t-shirts, professional counterfeiters are producing complex products such as automotive parts, pharmaceuticals and electrical equipment.
14.	2002	General		CII/E&Y	New "study" commissioned by CII/E&Y.
15.	2007	Miscella-neous	Of the pirated goods worth Rs 120.08 crore that entered India in 2006, cable piracy was worth Rs 68.50 crore followed by software piracy	FICCI Joint study by FICCI's National Initiative Against Piracy & Counterfeiting, the Geneva-based World	According to the study by the Federation of Indian Chambers of Commerce & Industry (Ficci), a mere 10% reduction in software piracy in India would create 115,000 additional jobs and generate $5 billion in

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			worth Rs 26.51 crore.movie: around Rs 8 crore, music: around Rs 7.07 crore, video games piracy : Rs 6.52 crore and book piracy 4.02 crore	Intellectual Property Organisation and the government's Department of Industrial Policy and Promotion	sales and $386 million tax revenue. AK Raha, member of the Central Board of Excise & Customs, said the Union finance ministry would shortly notify the Intellectual Property (Imported Goods) Enforcement Rules of 2007 and incorporate it as a clause under Section 156 of the Customs Act of 1962. This clause will enable the customs authorities to seize goods that are pirated or counterfeit.
16.	2002	Music	Rs. 200 crore	IMI	Shrinkage of legitimate market
17.	2003	Music		IMI	"The industry would like to reposition itself as an audio publishing industry", he said. "The local culture and the artistes also suffer because of the piracy," he said.
18.	2003	Music	125 crore	IMI	600 crore industry has suffered 125 crore loss. Earlier a super hit

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					album sold 100-150 lakh copies, now the number has fallen to 45-55 lakh. In the average hit category, sales have fallen to 10-15 lakh from 25-40 lakh copies.
19.	2003	Music	Rs 1,800 crore over the past three years	IMI	Out of 4.9 crore cassettes manufactured and sold every month, nearly 1.6 crore are illegally manufactured.
20.	2003	Music		IMI	"A portion of the proceeds from the music and video piracy trade could be ending up in the hands of terrorist organisations." "No law-abiding citizen would wilfully buy a stolen car. But the same could not be said about pirated music, video, software or print content." "The situation has cost the music industry and artists dear. Most Indian music companies are today reluctant to undertake new ventures."

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21.	2004	Music	25 per cent piracy level	Pricewaterhouse house-Coopers "Global Entertainment and Media Outlook"	In India, percentage of unit sales lost to pirated products was at 25 to 50 per cent in 1997. The figures were same in 2002. PwC has used data from International Federation of the Phonographic Industry.
22.	2005	Music		Phonographic Performance Ltd	Phonographic Performance Ltd (PPL), which has 127 member music companies, is planning to crack down on those restaurants that do not pay the fee.He said according to Section 35 of The Copyright Act 1957, playing commercial music without paying a copyright licence fee is an illegal act, liable for action under contempt of court. Hotel would have to pay a nominal tariff, between Rs 10,000 and Rs 50,000, as licence fee. The amount of the tariff depends on the number of hours the music is played for as well as the number of people expected to attend the event

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23.	2007	Music/ Books	$500m (£250m) every yea		
24.	2007	Music	600-700 crores per year.	IMI	According to IMI, it has helped authorities conduct 10,000 raids in the last five years and seized a huge quantity of cassettes, CDs and shut down more than 630 music downloading sites. IMI is also carrying out special induction programmes for police officials to help them in giving a clear understanding of the flourishing racket of mobile chip piracy and its functionality.
25.	2009	Music	Rs.6 billion (Rs.600 crore) annually Mobile chip piracy causes a loss of another Rs.3 billion (Rs.300 crore) annually	IMI	
26.	2001	Software	900 crore	NASSCOM	Vague reference to loss of jobs
27.	2002 (01)	Software	Rise from 63% to 70%	BSA/IDC	'Annual Study' released

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28.	2002 (01)	Software	$245 million (Rs. 1100 crore)	IDC	
29.	2002	Software	$364 million (Rs.1640 crore)	NASSCOM	Independent Nasscom study
30.	2003	Software		IDC "Expanding Global Economies: The Benefits of Reducing Software Piracy"	India can create 50,000 more high technology jobs, add $2.1 billion to its economy and boost software industry's revenue by over $1.6 billion if the country brings down software piracy rate to 60 per cent by 2006 from the current 70 per cent, a study has said.
31.	2005	Software	73 per cent, which is quite high	NASSCOM	Reducing India's piracy rate by 10 points over a four-year period could create 50,000 high-wage jobs and increase local revenues by more than $1.6 billion. India ranks 20 in global software piracy rankingsat a conference to announce the Nasscom-Business Software Alliance (BSA) hotline to check software piracy.
32.	2006	Software		BSA	10-point reduction in software piracy would

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					add 115,847 jobs, contribute $5.9 billion to GDP, $386 million in taxes and $8.2 billion in revenues to local vendors in India alone.
33.	2006	Software	piracy rate has risen from 73 per cent with losses amounting to $363 million in 2003 to 74 per cent and the consequential loss totalling $519 million in 2004	BSA-IDC	The rise in the piracy rate is just one per cent, but the resultant loss is about 40 per cent considering the size of the economy and the IT industry. It is a dire situation," Mr Ajay Advani, Co-Chairperson, BSA (India). Piracy can be curbed by educating users about the importance of legal software, through enforcement and initiation of legal action, by creating an awareness about the growth potential and opportunities compromised by software piracy
34.	2006	Software	India witnessing a two-point drop drop to 72 per cent and estimated losses at $566 million.	BSA-IDC	Russia saw a four-point drop while China, with one of the fastest growing IT markets in the world, dropped four points between 2004 and 2005.

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35.	2006	Software	$566 million due to piracy directly and about $500 million through Central and other State taxes	Microsoft	A 10 per cent reduction in piracy could potentially add about 1,15,000 new jobs, would help add about $5.9 billion in investment into the economy and generate revenues in excess of $5 billionSignificantly, piracy discourages innovation offering little for IP creation.Thirty four per cent of the CDs could not be installed and 43 per cent of them had some spyware mounted on it.
36.	2007	Software	revenue loss of $566 million in 2005.	BSA-IDC (2005 study)	According to an economic impact study conducted by IDC, if the piracy rate is reduced by 10 points by 2009, India could benefit with an additional 115,000 new IT jobs, an additional $5.9 billion pumped into its economy and increased tax revenues of $386 millionBusiness Software Alliance, a global trade body, seized pirated

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					software worth $2.1 million in 2006 from India.Pirated software seized from raids in Delhi, Mumbai, Chennai, Kolkata, Ahmedabad, Bangalore and Hyderabad included those from Adobe, Autodesk, McAfee, Microsoft and Symantec.
37.	2007	Software	Greater than 10% of total revenue due to piracy50% software piracy rate$34 billion in lost revenue to the industry	KPMG	What's more, 77% of those surveyed agree with IDC (International Data Corporation) estimates that 35% of software installed is unlicensed, leading to an estimated $34 billion in lost revenue to the industry.
38.	2008	Software		IDC	In a study covering 42 countries, IDC said that if each country were to cut PC software piracy rates by 10 percentage points over the next four years, it would generate 600,000 new jobs and $141 billion in new revenue while boosting global tax revenues by $24 billion.A 10 point reduction in piracy could make China's IT

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					workforce the largest in the world, surpassing the United States, and make Russia a bigger IT market than India. Of the 600,000 new jobs that it contends would be created globally, 435,000 would be in Asia, which has high piracy rates and therefore the most room to reduce them.
39.	2008	Software	71% piracy	BSA-IDC	According to the study, reducing software piracy in Asia by 10 per cent over the next 4 years could generate 4.35 lakh jobs, trigger economic growth by over $40 billion and enhance tax revenues by over $5 billion above current projections.
40.	2008	Software	India lost $1.25 billion in 2006 to software piracy, up from $367 million in 2003.	BSA-IDC	India could see economic benefits worth $3.1 billion or Rs12,555 crore through expanded revenues and better productivity, add $208 million in taxes, and create 44,000 fresh jobs, if it reduces use of pirated software by 10 percentage points by

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					2011, a lobby group for software firms has said. BSA, which has initiated 200 cases against companies in India the last two years, is in the process of selecting national and state champions who will take up the anti-piracy effort aggressively across the country.
41.	2008	Software		BSA-IDC	The global piracy study estimates that a 10 percentage-point drop in piracy in India from 74 per cent to 64 per cent over four years would result in 43,696 new jobs and an addition of $3.1 billion to the GDP.
42.	2008	Software		BSA-IDC	In India, it could translate into 44,000 new jobs, $3.1 billion in economic growth and $200 million in tax revenues. The Business Software Alliance (BSA), in a study, predicts that an additional $208 million could come in from local vendors alone.

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43.	2008	Software	Estimated $2 billion in pirated software last year, up from $1.3 billion in 2006. India's piracy rate fell 2 percentage points last year, to 69%.	BSA-IDC	A study by industry researcher IDC released in January found that by reducing PC software piracy in India by 10 per cent over a period of four years could generate an additional 44,000 new jobs, $3.1 billion in economic growth, and $200 million in tax revenues.
44.	2005	Software (Asia)	Constant 53 percent piracy rate.Revenue losses as a result of piracy climbed 4.6 percent to US$7.9 billion, up from US$7.6 billion the year before	BSA-IDC	In Singapore, for example, where the IT market is fairly mature, a stronger US dollar had pushed up software prices in 2004, he explained. So while the island-state saw its piracy rate dip by 1 percent last year from 43 percent in 2003, revenue losses from software piracy grew to US$96 million from US$90 million in 2003. Every copy of software used without proper licensing costs tax revenue, jobs and growth opportunities for burgeoning software markets.

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45.	2006	Software (Global)	Worth of pirated software estimated at close to $200 billion	BSA-IDC	IDC estimates have put the business and consumer IT (PC and software) spend at more than $300 billion over the next five years and at the current piracy rate.
46.	2001	Video	500 crore	Video Federation of India	New agency created.
47.	2003	Video	60 % piracy, loss of $75 million,	MPA	Links loss of profits by films directly to piracy.
48.	2004	Video	42% loss due to piracy	FICCI	One of the main reasons for film piracy in India is the time that it takes for Bollywood films to reach smaller towns. Adlabs Films Ltd., the country's largest film processing company, has found a simple solution using digital technology and by the end of August, would have helped nearly 200 movie halls in B and C class cities to get films the day they are released.
49.	2007	Video	186 million in 2006		USIBC Ray Vickery, senior advisor, USIBC said, "Bollywood makes

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					more films than Hollywood, yet its revenue is only 2% as compared to Hollywood. Of the 132 films made in 2006, only 8 films made money.
50.	2007	Video		USIBC/E&Y	Appoints E&Y to conduct survey.
51.	2005	Video (Andhra Pradesh)			A Bill seeking to amend the Andhra Pradesh Exhibition of Films on Television Screen through Video Cassette Recorders (Regulation) Act, 1993 so as to curb video piracy effectively was introduced in the Legislative Assembly on Monday. The Bill seeks to incorporate VCD DVD under the definition of "Cable Operator" in the original Act on the lines of an ordinance promulgated by the Tamil Nadu Government.
52.	2004	Video (Telugu and Tamil)			The Telugu film industry has got a shot in the arm with the Government agreeing to set up a high-level

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					committee to look into the issue of piracy and recommend measures to curb the menace in the State. There are 6,000 outlets selling pirated video discs in the State. Recently, about 200 traders in Burma Bazaar said that by legitimising the video business, producers could recover up to 25 per cent of their investment.
53.	2004	Video (Telugu)	Rs 100 crore and Rs 150 crore	Movie Artistes' Association	Competition from the satellite channels is a major contributor to the poor performance. "There's a flood of movies targeting the youth, with clichéd themes. People with little experience and understanding of the industry have become directors and actors. Viewers are a confused lot. They see a new face every other day, acting in movies with similar titles," he told Business Line.

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54.	2008	Video (Telugu)	Rs. 200 to Rs. 300 crore	Motion Pictures Association MPA) of US and AP Film Chambers of Commerce (APFCC).	Presently, there are over 6,000 video-piracy cases pending in courts and since 2005, the number of convictions is a paltry 27.Between May, 2005 and December, 2007, the number of piracy cases reported from Hyderabad is 403 while throughout the State, it is at 4,687 cases. The number of accused arrested for piracy is 4,799 in the State.
55.	2009	Video	Rs. 1000 crore	Northbridge Capital Asia Report	Indian film industry, which is currently pegged at Rs 14, 400 crore, produces around 1,050 films every year but loses 14% of its revenue to video piracy.