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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.

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.<sup>1</sup>

- Richard A. Posner

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<sup>1</sup> 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*.<sup>2</sup> 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,<sup>3</sup> 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.<sup>4</sup>

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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<sup>2</sup> DEAN ACHESON, *PRESENT AT THE CREATION: MY YEARS AT THE STATE DEPARTMENT* (1969).

<sup>3</sup> 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).

<sup>4</sup> 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,<sup>5</sup> 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,<sup>6</sup> and the even earlier Law Commissions of India.<sup>7</sup> Our task was to advise the Australian Parliament on the reform, modernisation and simplification of Australian federal law.

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

<sup>6</sup> 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>.

<sup>7</sup> See Law Commission of India, *Early Beginnings*, [http://www.lawcommissionofindia.nic.in/main.htm#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.<sup>8</sup> 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,<sup>9</sup> but the draft legislation attached to the ALRC's report was also soon copied in all parts of Australia.<sup>10</sup> 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,<sup>11</sup> of successful bone transplantation at the close of the nineteenth century,<sup>12</sup> 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.<sup>13</sup> 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).

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

<sup>9</sup> 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).

<sup>10</sup> 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.).

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

<sup>12</sup> *Id.* at 380.

<sup>13</sup> *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”.<sup>14</sup> This was described as “the fertilisation of human egg cells outside the human body”.<sup>15</sup> 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.<sup>16</sup>

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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<sup>14</sup> ALRC REPORT NO. 7, *supra* note 8, ¶ 38.

<sup>15</sup> *Id.*

<sup>16</sup> ALRC REPORT NO. 7, *supra* note 8, ¶¶ 41-42.

tissue transplants “may have already begun in Australia”.<sup>17</sup> Already, ‘right-to-life’ organisations and others had made submissions calling for legal prohibitions. Reports in Britain,<sup>18</sup> the United States,<sup>19</sup> and New Zealand were mentioned.<sup>20</sup> 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.<sup>21</sup> Eventually, special laws on IVF were adopted in Australia, as elsewhere.<sup>22</sup> 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.<sup>23</sup>

### 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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<sup>17</sup> *Id.* ¶¶ 45-46.

<sup>18</sup> 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).

<sup>19</sup> UNITED STATES NATIONAL COMMISSION FOR THE PROTECTION OF HUMAN SUBJECTS ON BIOMEDICAL AND BEHAVIOURAL RESEARCH, *RESEARCH ON THE FETUS: REPORT AND RECOMMENDATIONS (1975)*.

<sup>20</sup> 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)*.

<sup>21</sup> 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).

<sup>22</sup> See, e.g., Infertility Treatment Act, 1995 (Vict.); Reproductive Technology (Clinical Practices) Act, 1988 (S. Austl.); Human Reproductive Technology Act, 1991 (W. Austl.).

<sup>23</sup> 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.<sup>24</sup> The major report, in 1983, dealt with many aspects of privacy protection under federal law.<sup>25</sup>

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.<sup>26</sup> 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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<sup>24</sup> 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].

<sup>25</sup> 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.

<sup>26</sup> 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.<sup>27</sup>

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”.<sup>28</sup> The Act recited that Australia had “informed that organisation that it will participate in the recommendation concerning those Guidelines”.<sup>29</sup>

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:

(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;

(ii) the individual would reasonably expect the organisation to use or disclose the information for the secondary purpose; or

(b) the individual has consented to the use or disclosure; or

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<sup>27</sup> Privacy Act, 1988 (Austl.).

<sup>28</sup> *Id.* Preamble.

<sup>29</sup> *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:
  - . . . .<sup>30</sup>

[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.<sup>31</sup> 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.<sup>32</sup>

<sup>30</sup> Privacy Act, 1988 (Austl.), sched. 3, clause 2.1.

<sup>31</sup> *Id.* sched. 3, clause 1 (privacy principle regarding collection of personal information).

<sup>32</sup> 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.<sup>33</sup> His book *Code and Other Laws of Cyberspace*,<sup>34</sup> now updated by *Code v2*,<sup>35</sup> 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.<sup>36</sup>

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

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

<sup>34</sup> LAWRENCE LESSIG, *CODE AND OTHER LAWS OF CYBERSPACE* (1999) [hereinafter LESSIG, CODE V.1].

<sup>35</sup> LAWRENCE LESSIG, *CODE VERSION 2.0* (2006).

<sup>36</sup> 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).

<sup>37</sup> (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.<sup>38</sup> 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.<sup>39</sup> 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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<sup>38</sup> *Id.* ¶ 186.

<sup>39</sup> 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](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.<sup>40</sup>

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.<sup>41</sup> 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.<sup>42</sup> 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.<sup>43</sup> Following

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<sup>40</sup> 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>.

<sup>41</sup> 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).

<sup>42</sup> 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.).

<sup>43</sup> 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.<sup>44</sup>

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'.<sup>45</sup> 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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<sup>44</sup> 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].

<sup>45</sup> 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.<sup>46</sup> 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.<sup>47</sup> It recognises that, whilst ‘free’ expression and access to a ‘free’ media constitute

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<sup>46</sup> 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.

<sup>47</sup> 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.<sup>48</sup> They also include protection of the legitimate rights of inventors.<sup>49</sup> 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.<sup>50</sup>

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.<sup>51</sup>

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

<sup>49</sup> 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).

<sup>50</sup> 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).

<sup>51</sup> *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).<sup>52</sup>

The conflict recounted by Professor Lessig presents a paradox, visible to non-Americans and to American lawyers themselves.<sup>53</sup> 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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<sup>52</sup> *Grain Pool* (2000) 202 C.L.R. 479, ¶ 133; *Sony* (2005) 221 A.L.R. 448, ¶ 216.

<sup>53</sup> *Graham*, 383 U.S. 1, 6 (1966).

United States in *Diamond v. Chakrabarty*,<sup>54</sup> 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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<sup>54</sup> 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 INTEL. 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,<sup>55</sup> 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.<sup>56</sup> 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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<sup>55</sup> 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)).

<sup>56</sup> *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.<sup>57</sup> Cases on these issues, and on any constitutional questions that they present, are now quite common.<sup>58</sup>

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.<sup>59</sup> Even those nations, like the United Kingdom, that have not favoured prohibitions or moratoriums on experiments with human

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<sup>57</sup> *Bounds v. The Queen* 228 A.L.R. 190, 197 (2006).

<sup>58</sup> 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).

<sup>59</sup> 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.<sup>60</sup>

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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<sup>60</sup> 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](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.<sup>61</sup>

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.<sup>62</sup>

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.<sup>63</sup> Interestingly, both the then Prime Minister and the Leader of the Federal Opposition voted against the amending Act.<sup>64</sup>

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.<sup>65</sup> 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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<sup>61</sup> AUSTRALIAN GOVERNMENT, LEGISLATION REVIEW COMMITTEE REPORT: PROHIBITION OF HUMAN CLONING ACT 2002 AND THE RESEARCH INVOLVING HUMAN EMBRYOS ACT 2002, 2005.

<sup>62</sup> 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.

<sup>63</sup> 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.

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

<sup>65</sup> 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.<sup>66</sup> The same is true of the subjects of biotechnology,

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<sup>66</sup> 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.<sup>67</sup> 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.<sup>68</sup> 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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<sup>67</sup> See, e.g., *Fox v. Percy* (2003) 214 C.L.R. 118, 129.

<sup>68</sup> 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,<sup>69</sup> or independent inquiries such as the Lockhart committee.<sup>70</sup> 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.<sup>71</sup> In the United Kingdom, suggestions for a fast track system for implementing reports of the Law Commissions have been under review for some time.<sup>72</sup>

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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<sup>69</sup> 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.

<sup>70</sup> 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).

<sup>71</sup> See Anthony Frank Mason, *Law Reform in Australia*, 4 FED. L. REV. 197 (1971).

<sup>72</sup> See Kirby, *supra* note 6, at 466.

to irrelevancy by further technological change.<sup>73</sup> Addressing the weaknesses in democratic accountability of large and complex modern government is an important challenge to legal and political theory.<sup>74</sup> 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.<sup>75</sup> Sometimes this is necessary. But a more coherent solution is desirable.

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<sup>73</sup> 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).

<sup>74</sup> *Id.*

<sup>75</sup> Recent illustrations include judicial decisions in cases of “wrongful birth” and “wrongful life”. *See, e.g., Cattanaach 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.<sup>76</sup> 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.

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*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).

<sup>76</sup> *Mount Isa Mines Ltd. v. Pusey*, (1970) 125 C.L.R. 383, 395.