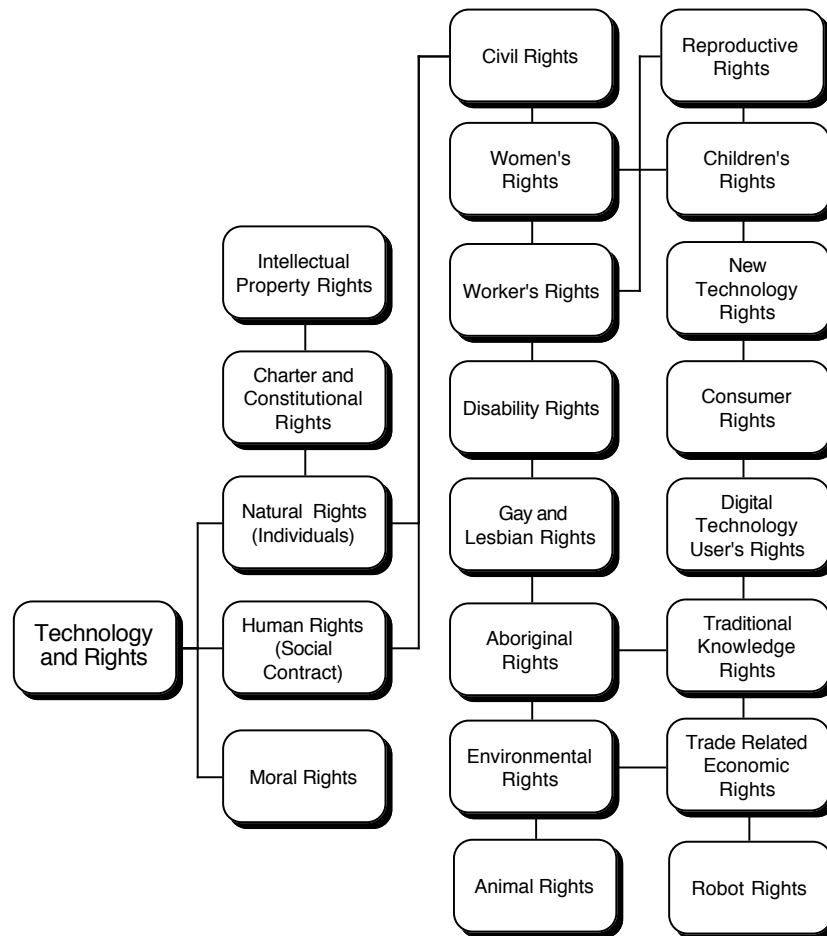


# Technology and Rights



Stephen Petrina  
University of British Columbia  
Department of Curriculum Studies  
2125 Main Mall  
Vancouver, BC V6T 1Z4  
Canada

Phone: 604-822-5325 Fax: 604-822-4714

[stephen.petrina@ubc.ca](mailto:stephen.petrina@ubc.ca)

## Technology and Rights

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### *Technology and New Bills of Rights*

We commonly speak of human rights, children's rights, the rights of women, worker's rights, civil rights, aboriginal rights, disability rights, the rights of the downtrodden of the world or economic welfare rights, gay and lesbian rights, animal rights and environmental rights. New bills of rights issue from the invasive and pervasive characteristics of a convergence of new technologies and corporate formations: consumer's rights, new technology rights for workers, digital technology user's rights, traditional knowledge rights and various trade related economic rights. For some, such as Glendon (1991), we speak of rights much too casually. Nevertheless, as the scale and scope of technology becomes increasingly invasive and pervasive, the interrelations between technology and the full range of rights become more pronounced. In many ways, the new stream of rights protects people from further incursions of technology into their lives— they buffer against globalisation and the convergence of new technologies with the ways and means of capitalism. Today, individuals and rights-watch groups are vigilant about technological infringements on rights. Whereas in the past technology may have had indirect effects on rights, today those effects are direct. Every group of rights, from inalienable rights or individual rights to human rights or the social contract and moral rights, is in some way affected by technology (Figure 1).

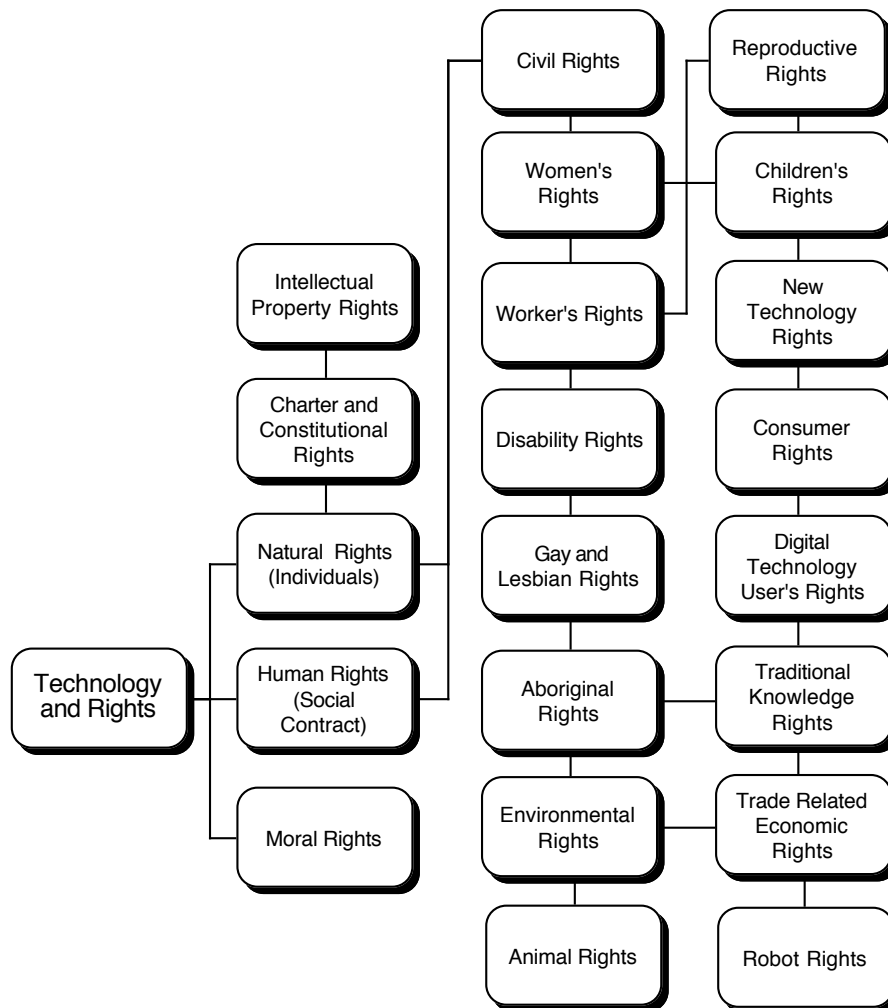


Figure 1. Technology and Rights

The Digital Consumer's Bill of Rights, for example, was crafted in response to encroachments on rights to privacy, and rights to freely generate, use and share information. This bill is the consumers' solution to the Digital Millennium Copyright Act (DMCA) and the Sonny Bono Copyright Term Extension Act (CTEA), both of which are overly sympathetic to corporate intellectual property (IP) rights. President Clinton signed the DMCA into law in 1998 but enforcement has been nearly impossible in most jurisdictions of web access. The DMCA attempted to shore up the ownership of digital property for large lobby groups, such as the music

recording industry. The CTEA was also signed into law in 1998, effectively adding twenty years of copyright protection for works produced prior to 1976. Critics dubbed it the Mickey Mouse bailout bill because it coincided with the year that Disney's Mickey Mouse copyright would have expired. The CTEA added another twenty years to Disney's most coveted copyright.

Copyright lawyers have attempted to accommodate cyberspace by merely calling it a conveyance— another shell or format— for the content of expression (Petrina, 2003b). For example, copyright law extends ownership, distribution and reproduction rights for music copied from record to tape to CD to MP3. Extension of copyright is one thing; protection is something entirely different. As John Perry Barlow (1994, p. 1) has asked, if digital property can be ‘infinitely reproduced and instantaneously distributed all over the planet without cost, without our knowledge, without its even leaving our possession, how can we protect it?’ One issue implicates disability rights: If virtual spaces are not 'brick and mortar' spaces, can accommodation laws extend to cyberspace (Blank and Sandler, 2003)? Another issue is that the forces of globalisation, the DMCA and CTEA are matched by the uncontainability of digital property along with a heightened sense of rights (e.g., economic, human, legal, trade related, etc.) to public knowledge and IP.

### *Cyberspace and the System of Intellectual Property Rights*

Intellectual property rights (IPRs) are protected in countries such as Canada, Japan and the US by a system of copyright, patent, trademark and trade secret laws. In the US, IPRs were defined similar to other natural rights in first article of the Constitution and were enforceable by law. The US Congress was given the power 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 inventions’ (Article 1, Section 8, Constitution of the United States, 1787). The first

Copyright Act was passed in 1790, granting authors and proprietors the right to print, re-print or publish their work for a period of fourteen years and to renew for another fourteen. The law was intended to encourage an open circulation of knowledge and provide an incentive for artists, and scientists and writers to create original works. The ownership of information eventually translated into a monopoly for publishers. In 1793, the first US patent law was passed and defined a patentable invention as ‘any new and useful art, machine, manufacture, or composition of matter, or any new or useful improvement thereof’. Except for the replacement of the word ‘art’ with the word ‘process’ in 1952, the definition remains the same today. Copyrights and patents were, in theory, legal protections of IP and, since the information was to be openly circulated, promotions of the public good. However, the commercialisation of IP throughout the nineteenth century undermined the original intent (Allen, 1990; Noble, 1977, pp. 84-109). IPRs became a means to monopolistic control; trade secrecy, rather than the open promotion of science and technology marked corporate practice (Kitch, 1980). Patents acquired by corporations, such as AT&T, IBM, General Electric and Microsoft through consolidation, purchase, patent pools and licensing agreements allow(ed) them to monopolize their respective industries.

In the late 1990s, a number of smaller companies challenged Microsoft 's dominance of the software industry through what many saw as unfair copyright and patent practices. In August 2002, Microsoft was ordered to pay \$521 million to Michael Doyle and his technology company (Eolas Technologies), and the University of California at Berkeley. The court found that Microsoft infringed on a patent (No. 5,838,906) for the *concept* of viewing ‘multimedia or real-time content within a Web browser rather than a separate software application’ (Kanellos and Hu, 2003). Doyle basically patented the use of plug-ins and applets to summons software

applications to work within browsers. IPRs for software were made possible through adjustments to US patent laws in 1981 and 1989, when software was made patentable as a *process*.

The case of open source software and Linux demonstrates an open knowledge response to software monopolies. Open source refers to the processes of creating, distributing, using, modifying, and sharing software programs without the fear of patent infringements in both commercial and non-commercial environments. Proprietary companies provide licensees the rights to use software programs while the source codes are secretly closed to access. Proprietary software licensees do not have rights to modify the software they purchase. Most users rarely challenge this restriction of modification rights. On the other hand, open source programs give users absolute freedom to distribute, use, modify, and share source codes. The only restriction in open source is that any modification must be shared free of charge and without traditional IP rights under a General Public License (GPL). Linux, the heart of the current open source software movement, evolved over a dozen years ago from a simple hobbyist operating system to one of the most stable server-class systems. Along with Linux, a variety of open source software programs have been flourishing. Patented programs can also be part of open source software under a Lesser General Public License (LGPL). For example, Sun Microsystems' office suite has two tracks: Star Office as an entirely patented program and OpenOffice.org as an open source software program. Documents can be freely created, distributed, used, modified, and shared under a Free Document License (FDL).

GPL, LGPL, and FDL are the components of copyleft, defined as 'a general method for making a program free software and requiring all modified and extended versions of the program to be free software as well' (Free Soft Foundation, 2003). Even with these open licenses, there

are problems with open source software in the world of IP. SCO, a technology company, has recently filed a lawsuit against IBM, alleging that the latter infringed on its IP by copying some of their own source code into Linux. The allegation is quite controversial in several ways (Fried, 2003). And the irony is that SCO itself distributed its own Linux (i.e., Caldera) under GPL. Open source software advocates, such as Bruce Perens, emphasize mutual software patent defence terms, meaning that 'if one Open Source developer is sued for patent infringement, all of the licenses of Open Source software used by the plaintiff terminate' (Miller, 2003). Open source software and Linux are aligned with rights movements working against the commercialisation and globalisation of IP.

Advocates of open source anticipate open source businesses, education, governments, hardware and medicine. For example, when the Massachusetts Institute of Technology (MIT) administrators wanted to catch the economic wave of on-line courses in the late 1990s, a few faculty members contradicted the idea: why not place MIT courses on-line free of charge? In September 2002, MIT's OpenCourseWare site was launched and there are currently 500 courses on-line (<http://ocw.mit.edu/index.html>). OpenCourseWare responds to the increasing commercialisation of public institutions and commodification of knowledge (Willinsky, 1999). While MIT still exploits their patents, the institution seems to have done the right thing with their copyrights for courses. Some of the courses are extremely popular across the world, and university lawyers have had to aggressively protect the MIT trademark in developing countries where courses are marketed and taught as MIT affiliated.

The first trademark law in the US was passed in 1870, expanded in 1905 and modernized in 1946 to include the 'defensive' registrations. In other words, a protective barrier can be built around a word or string of words to block the registration of names that conflict with the original

trademark. This option has become extremely important for corporations in an era of cybersquatting. Cybersquatting refers to the practice of registering domain names (e.g., microsoft.com; MIT.edu) and reselling the trademarks for large sums of money. However, to shore up IPRs for corporations, the Trademark Cyberpiracy Prevention Act was signed into law in November 1999. Under this new law, it became risky to register a domain name or even use a word that may distract from the commerce of a company that has the resources for a lawsuit. In 2001, Microsoft, which owns the word 'windows', filed a suit against Lindows.com Inc., a Linux-base software producer. Microsoft claimed that Lindows freeloaded on their investment in Windows. More and more words and phrases are trademarked, compromising freedom of speech in cyberspace. For example, the McAfee Corporation lists over 200 trademarks on their website, claiming IPRs to 'building a world of trust', 'bomb shelter', 'cybermedia' and 'more power to you'. To demonstrate how commercialised cyberspace has become, University of Iowa assistant professor Kembrew McLeod registered the phrase 'freedom of expression'. In January 2003 he went after AT&T for infringing on trademark No. 2,127,381 in their advertisements. About 80% of all trademark lawsuits are decided in favour of the plaintiff in the US, but few cases have been successful against media giants like AT&T (Abel, 2003; Ives, 2003; McLeod, 2001).

### *Intellectual Property Rights, Knowledge and Nature*

Excluding Pasteur's patent on yeast in 1871, it was not until 1930 that life forms, biological sources of medicine, were made patentable. These patents extended only to asexual non-reproducing plants, but in 1954 provisions were expanded to include cultivated hybrids, mutants and newly discovered seedlings (Haraway, 1997, pp. 97-94; Kevles, 2002; OTA, 1989). The patenting of seeds introduced an element of IP monopoly that was somewhat avoided with

the original stipulation of asexuality. Currently, there are about 6,000 plants patented under US IP law and nearly one-third of these were issued in the last five years. This reflects the significant upward trend in biotechnological patents since the mid 1990s. DuPont, the largest global seed company, profits nicely from plant IPRs with \$2 billion in annual seed sales. Monsanto has over 600 plant patents and makes about \$1.6 billion in annual global seed sales. Their genetically modified seeds are designed to be invulnerable to the herbicides and insecticides that constitute the essence of these industrial chemical companies. For example, Monsanto genetically modified the canola seed so that farmers could spray Roundup on their plant without killing it. The Roundup kills the weeds that compete with the canola crop. The catch is that Monsanto sells the farmers both the seed and the herbicide; the company requires them to sign a contract to license the seed— useless without Roundup— from year to year. In 2001, Monsanto won a lawsuit against Percy Schmeiser, a 70-year-old farmer in Saskatchewan, for infringing on IPRs by growing unlicensed canola, which Schmeiser claims blew into his field from adjacent farms (Fox, 2001). For the 1.4 billion farmers in the world who rely on free seeds for food security, this is devastating. Monsanto now controls food security and rights to agricultural livelihoods in several countries, including India.

In addition to an increasing debt to Monsanto, which is purchasing fresh water rights as well as licensing seeds, India is fighting trends in biocolonialism and biopiracy. Biopiracy refers to the patenting of nature and the patenting of indigenous and traditional knowledge. Biocolonialism and biopiracy are fuelled by the World Intellectual Property Organization's Patent Cooperation Treaty, with which corporations can be issued a single patent that is valid in all 144 WTO countries. The Trade Related Aspects of Intellectual Property Systems (TRIPS) agreement of the WTO, which requires all countries to initiate national systems of IPRs, is also

helping. However, TRIPS also contains an article for overturning a patent if its commercial exploitation is deemed immoral. In 1997, the Council on Industrial and Scientific Research (CSIR) in India successfully challenged the University of Mississippi's patent on the healing properties of turmeric. The CSIR claimed that the properties of turmeric were known for centuries by Indians and constituted traditional knowledge rights. This was the first time a patent was revoked on a basis of traditional knowledge rights. Indian activists also challenged biopiracy by successfully overturning patents of neem tree oil and basmati rice (Mashalkar, 2001; Shiva, 2001a, 2001b).

The patenting of drugs in the US dates back to the era of the 'patent medicines' of the late 1800s, but pharming is a more recent phenomenon. Pharming refers to IPR alliances between plant monopolies, biotechnology and pharmaceutical companies; global sales of plant-based drugs are \$40 billion per year. There are nearly 1,500 biotech pharming companies in the US with a total value of \$224 billion as of May 2002. A vast majority of biotech profits involves medicine and their monopolies are creating conditions that make it nearly impossible for impoverished people to access essential health care. The Swiss company Novartis, for example, developed a leukemia medicine called Gleevec. Although it was a collaborative project involving the Oregon Health and Science University, the University of California at Berkeley and the University of California at Los Angeles, Novartis was given the IPRs to Gleevec and set a high price for its distribution (HHMI Bulletin, 2001). Even though the Gleevec International Patient Assistance Program supports some patients in financially poor countries, it supports only a small number of patients. Hence, Natco, a company in India released its own copy medicine called Veenat. South Korean leukemia patients who cannot afford to buy Gleevec desperately try to directly import Veenat. Veenat, however, is illegal in this Northeast Asian country since it

is a member of the WTO, which regulates the distribution of generic medicine (Kim, 2003). Although South Korea is not considered an impoverished country, most patients simply cannot afford to purchase expensive medicines like Gleevec. Countries such as South Korea need generic medicine in spite of their economic status. Impoverished African countries are faced with the same problem in the distribution of generic HIV/Aids drugs such as AZT. Thirty-nine IP lawsuits filed by US pharmaceutical companies against the South African government for importing generic antiretroviral drugs were finally dropped in 2001 (Krimsky, 2003; Mehrabadi, 2003).

Biopiracy of higher life forms began in 1971 when a patent was issued to Ananda Chakrabarty and General Electric for a genetically engineered *Pseudomonas* bacteria used to clean up petroleum spills. Prior to this patent, microorganisms and higher life forms were 'products' of nature and not patentable. Since that time, the patenting of higher life forms has gotten increasingly complex and controversial. The first patented animal in the world was a mouse— the Harvard Oncomouse™. The patent was issued in 1988 to two professors who re-assigned their IPRs to Harvard University. Harvard's patent protects both the process by which the Oncomouse™ is produced and the end product of the process (i.e., mouse and offspring whose cells contain the oncogenes). Harvard licensed the patent to DuPont, which in turn licenses Oncomouse™ for \$50-\$75 per mouse to cancer researchers across the world. The mouse carries different oncogenes, making it susceptible to cancer, most notably breast cancer (Haraway, 1997; Kevles, 2002). Public protest forced a five-year moratorium on animal patents until 1993; since that time, 383 more animals were patented.

On 5 July 1996, when the Roslin Institute in Scotland cloned Dolly, a transgenic sheep, a new era of animal patents was ushered in. Geron owns Dolly, but the IPRs for cloning an

unlimited number of Dollys was issued to Advanced Cell Technologies (ACT). ACT and the University of Massachusetts, which cloned two cows (George and Charlie), were issued the primary US patent (No. 5,945,577) for cloning animals in 1999. Infigen, which cloned the first cow (Gene) in 1997, and Geron are challenging patent No. 5,945,577. All three biotech corporations anticipate that earnings from the patent will be in the millions, if not billions of dollars. In 1998, Korean researchers claimed to have cloned a human embryo but terminated the experiment at the 4-cell stage. Bioethicists and rights advocates note that when cloning patents are combined with human gene patents, the door is open toward the patenting and commercial ownership of humans — a literal Frankenstein scenario (Rollin, 1995, 1997, 1999).

Through the systematic process of gene patenting, the commercial ownership of human life is well underway. While gene patenting accounted for a large share of all patents over the past decade, 20,000 applications were filed in this period for patents on *human* genes. Based on the mapping of the 30,000 genes in the human genome and thousands of sequences, analysts anticipate that some 3 million patent applications will claim IPRs on related medicines and uses, allowing for a ‘patent family’ or monopoly on human genes and their uses. The French biotech corporation Genset has claimed IPRs to 36,083 gene sequences and the US's Ribozyme has claimed 15, 863 gene sequences. As of July 2003, 1,800 human gene patents have been issued in the US. The first human body part patent was issued in 1976 for a spleen cell removed from John Moore at the UCLA hospital. UCLA sold the rights to the Genetics Institute of Boston, which in turn sold the rights to the Swiss Biotech firm, Sandoz, in the mid 1980s. Moore fought Sandoz for the rights to his own cell line, but in 1990 the California Supreme Court ruled that he had no rights to his cell once it was removed from his body. The first human gene patent (No. 4,322,499) was actually in 1982. The commercial control of human life is primarily in the hands

of the top ten human gene companies, which claim 70.4% of the 126,672 gene sequences with IPR claims across the world. Predictably, litigation over IPRs in US courts has increased by 50%-70% over the last two years (American Medical Student Association, 2003; Kevles, 2002; Mehrabadi, 2003; Nuffield Council on Bioethics, 2002; Wright, 1986). Noting alarming trends in genetic discrimination and biopiracy, the Council for Responsible Genetics created a Genetic Bill of Rights for grass roots civil activism against the commercialisation of human life.

Since the 1980s and especially with the PATRIOT Act, it is increasingly clear that governmental control of IPRs parallels, and often exceeds, commercial control. During World War I, some 2,100 patent applications were kept secret by the US, initiating a series of executive orders and laws imposing restrictions on IP. Currently, only 1% of unclassified military patents, which number between 10,000-15,000 each year, are actually licensed. Even in peacetime, the US government has managed to contravene the First Amendment by restricting the circulation and publication of research conducted by federal employees. Executive orders, such as the War Powers Act (1941), Invention Secrecy Act (1951), Atomic Energy Act (1954), Export Administration Act (revised 1985), Department of Defense (DoD) Appropriations Act (1984) and the PATRIOT Act expand the scope of classified documents and place severe restrictions on the open circulation of IP. With the government's support of about 50% of all research and development in the US, and the DoD's increasing proportion of this support, an inordinate amount of IP is held captive to governmental secrecy. National security has been expanded to include economic and political threats, and executive orders, such as the PATRIOT Act, do not distinguish among the IP of economic, governmental, industrial, military or scientific institutions (OTA, 1988a, pp. 37-68).

IP rights and the open knowledge movement pose a range of ethical and legal challenges to proprietary control and secrecy. Should knowledge with potential for human welfare but also with economic potential for a corporation or government be kept secret? Facing global resistance to the TRIPs agreement and public health, the WTO recently amended policies so that impoverished countries can import generic drugs if they cannot produce them (Kim, 2003; Whittington, 2003; WTO, 2003). The Canadian government became the first to permit generic drug companies to copy, make and export HIV/AIDS drugs to the developing world (CBC, 2003). Canada is also the only country in the world to prohibit the patenting of life forms higher than single celled organisms. This is a commitment to place animal and human rights before IPRs.

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