

Right Brain Drain
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In the 1940's when Claude Shannon developed what is now referred to as 'information theory' to study communication systems, he defined a 'perfect information' system as one in which all possible states can be known and no complexity is involved.¹ This concept became the foundation of contemporary computation as well as having applications in the development of game theory (initially chess), an area of particular interest to Shannon. However, if on one hand 'game theory' can be used as a metaphor for understanding how intellectual property rights are used as a bargaining tool in international politics, on the other hand, 'perfect information', will never describe any representative system of human behaviour and governance. People, their personalities and priorities (as manifested through their politics) inevitably introduce unpredictability into systems intended to regulate social and economic interaction both at the levels of policy development and policy enforcement.

The dilemma within democracies is that definitions of 'public good' are as varied as the opinions expressed by the individuals and groups of which a particular society is constituted. Today we face the challenge of locating the public interest globally, as our citizenship extends beyond domestic borders. Paradoxically, just as globalization exploded, opening up trade, exchange and opportunities on an international scale, it also imploded – closing down avenues for individual expression. Individual rights must be reconciled not only with collective rights, but with both the domestic and international 'public good'.

The voice of the individual is subsumed by various stakeholders, industries and special interest groups all voicing conflicting opinions and priorities regarding the various issues which public policy is expected to address. Proposals put forward by these groups and organizations for programs and institutions intended to address these issues are inextricably tied to cultural factors including the dominant economic model – capitalism. Proposals for public policy may support or reject these cultural factors, but the connection between public policy and economics is unassailable.

A broadcast journalist of the mid-twentieth century, Howard K. Smith, focused on the public policies of the Nazi party in Germany. Published in 1942, 'The Last Train to Berlin' documents Hitler's 'National Socialist Revolution.' One of Smith's observations was that "Nazism is the most reactionary and vicious form of capitalism that has ever existed." (Smith: 243) It would seem, in Smith's opinion, that whether a nation-state is recognized as democratic or as fascist, the same economic system (capitalism) may be used to guide and justify its public policies. That capitalism may be affiliated with such a range of political systems, has implications for the relationship between individualism and innovation.

¹ 'A Mathematical Theory of Communication' by Claude E. Shannon. Available online: <http://cm.bell-labs.com/cm/ms/what/shannonday/paper.html>

Individualism was one of the three theories which fueled the Enlightenment, in concert with Relativism² and Rationalism.³ Recognition of the importance of the individual and their rights as a citizen also inspired classical liberal political principles requiring that the consent of the governed be upheld in public policy as well as personal relations. An alternative position, held by Marxists and others, claimed that in the 16th century the ‘individual’ was invented (rather than merely having their existence politically affirmed) for the sake of sustaining economic productivity. This perspective holds that in order to create motivation for wealth-creation, the ‘individual’ was imbued with an artificial significance. Whatever its origins or justification, it is clear that individualism and economics remain inextricably linked.

A characteristic of the classical liberal political ethos is that a society is evaluated for its quality on the basis of how loyal it is to the mission of securing the rights of individual citizens to their liberty and pursuit of happiness. This, for the most part, is how public policy in North America is evaluated, although some interesting differences between theory and practice have emerged, particularly in the United States.⁴ The model of citizenship dominating the recent and contemporary theory and practice of western democracies rests on the premise that individual liberties are at the heart of citizenship rights (freedom of association, speech and conscience) as well as the premise of citizenship being defined in national terms (the nation state is seen as the privileged locus for political participation, self-government and solidarity). (Kymlicka: 266)

Since the 1990’s, however, the suitability of the nation-state as the appropriate scope for citizenship has been questioned:

Indeed, some people argue that linking liberal democracy to nationhood inevitably leads to a kind of contradiction – liberal democracy is universalistic and individualistic, whereas nationhood is particularistic and collectivistic. Tying notions of democratic citizenship to nationhood, in this view, is inevitably exclusionary, it will involve illegitimately denying rights to those individuals who are not seen as authentic or full-fledged members of the ‘nation’. (Kymlicka: 272)

In Kymlicka’s discussion, he argues for the persistence of the nation-state, since whether defined as minority nationalism, immigrant dual-nationalism, transnational advocacy networks or international human rights laws, new forms of citizenship remain tied to territorially-bounded national political communities.

Kymlicka’s attempt to articulate the nature of citizenship in a world characterized by globalization is dominated by his interest in preserving the legitimacy of the nation-

² Relativism is the concept that different ideas, cultures, beliefs and value systems have equal merit

³ Rationalism is the conviction that using the power of reason, we can arrive at the truth, thereby making progress towards the improvement of human life

⁴ One of the emerging ironies of public policy in the 21st century is that citizens who profess to value individual rights and liberties over policies with collective social benefits (eg. universal and accessible health care) are increasingly willing to surrender those individual rights and liberties without the benefit of the latter. This is happening with increasing frequency in the United States.

state as a political entity. However, perhaps inadvertently, he raises an issue which is central to the context of another discussion: public policy regarding individual (human) rights relating to innovation and globalization.

According to T.H. Marshall, the history of citizenship can be seen as a three-stage evolution: in the 18th century citizens acquired civil rights, in the 19th century they acquired political rights, and in the 20th century, they acquired social rights. (Marshall 1965). How has globalization affected individual (human) rights? What is the relationship between individual rights and innovation in the 21st century economy? The individual's right to exist (their philosophical and physical manifestation in the world), their sovereignty or right to make choices and to control their own human resources, are all, in theory at least, protected through democratic public policy. Included among an individual's resources are their own productivity and creativity. These belong to each individual alone unless the individual chooses to employ them for the benefit or profit of a larger cause, an institution or another individual. In the 21st century, citizenship must further evolve to include digital rights in the global economy.

The pressures inflicted on nation-states due to globalization have taken many forms. On the surface these pressures include economic factors (floating exchange rates, currency instability and the structure of debt⁵) and religious factors (the rise of religious fundamentalism as organized religions attempt to perpetuate themselves). In describing the 'state of the state' under the conditions of accelerating globalization and fragmentation, Stephen Clarkson outlines two major economic constraints on contemporary governance and the formulation or enforcement of public policy. The pressures of globalization and the possible solutions are often undermined by US bilateralism.

Canada is so directly affected by the US' international agenda, whether through the continental or the multilateral agreements that Washington has promoted, that trade policy has become the master disciplinarian of Canadian government. Extensive economic treaties signed in the last two decades contain not just hundreds but thousands of pages of rules which have major implications for Canada's constitutional, statutory, judicial, administrative and even coercive orders. (Clarkson: 505)

Specifically, says Clarkson, the second generation of 'trade' agreements also embrace investment policy and these rules are so broad, intrusive and open-ended, that they potentially affect almost all areas of government. Clearly, globalization has implications for policy development at all levels. The very viability of municipal, provincial and federal governance in Canada is often overshadowed by the social, cultural and economic relationship(s) which we 'enjoy' with our neighbours to the south.

On a deeper level, the factors which are leading many to conclude that the 'nation-state' as a political body may be superfluous, are philosophical, scientific and

⁵ Between 1999-2001, 97% of all debt placed in international markets was denominated in just five currencies.

technological. As well, the ‘individual’ is facing identical challenges with the added complication of understanding the obligations of their citizenship both within their nation-state and in the larger global context.

Of particular interest for an analysis of Canadian public policy regarding individualism and innovation in the 21st century, is the role of technological factors in altering the landscape for both individual citizens as well as nation-states. The rulers of German society aided Hitler’s power gain through contributing their vast resources of money and influence. Smith asserted that in addition to being progressive, “revolution means nothing if it does not mean the overthrow of existing rulers of a society by the ruled-over elements of that society.” (Smith: 243) We freely use the term ‘revolution’ to describe paradigm shifts such as the transition from an agricultural-based economy to one which was factory/industry-based: the ‘industrial revolution.’ Yet, with the exception of an emergent ‘middle class’ what was truly revolutionary about this transition? Did the farm laborers become factory owners, or did they become, almost without exception, the working class in the new economy?

The expression ‘revolutionary,’ however, can be appropriately applied to describe the current transformation to a digital/knowledge-based society. Not only is the distribution of human resources in the process of being reconfigured, but, more significantly, the nature of the resources being exploited has also changed. More than at any other time in history, in the last quarter of the twentieth century, the resources needed to succeed in business have been available to each individual independently of their social or economic status within society. These resources are: the ability to think (create/innovate) and a willingness to engage in risk. These skills and attitudes were both apparent in abundance in the last quarter of the 20th century, as ‘intellectual property’ and ‘digital assets’ gained prominence equal to physical resources.⁶

The analysis which follows examines innovation and individualism as the central tenets of the new digital economy at the turn of the millennium. The context of this analysis is Canadian public policy generally, and the National Innovation Strategy in particular. In order to study the effectiveness of Canadian public policy in protecting individual rights and promoting the individual’s ability to innovate, a few general definitions and a brief history tracing Canada’s public policies regarding innovation over the past hundred years are required. Canada’s stance on individualism, closely tied to its economic policies, will be discussed as well, particularly within the framework of neoliberalism⁷. Canadian public policy regarding innovation and individualism in the

⁶ The internet search engine Google’s recent initial public offering placed its market value on par with companies such as McDonald’s and Sony.

⁷ Neoliberalism is a political philosophy and a political-economic movement beginning in the 1960s. Increasingly prominent since 1980, it focuses on achieving progress and social justice by more free-market methods. Neoliberalism is not a ‘new’ version of the liberalism of the modern period but rather is a ‘new’ version of classical liberalism. Classical liberalism was a philosophy which established a stable medium of exchange (the gold standard) and advocated the reduction of localized rules, regulations and barriers to commerce. Classical liberalism is associated with the ‘first era of globalization’ whereas the ‘second era of globalization’ (after WWII) is associated with neoliberalism. Neoliberalist policies include: ‘free market’ policies (laissez faire) and privatization of state assets. Neoliberalism peaked with the Reagan/Thatcher era

decade in and around the turn of the century/millennium, will be the focus of the remainder of this analysis.

In capitalist democracies, all levels of government (to varying degrees) have lost sight of the need for their support of individual rights as a means towards achieving successful, long-term innovation. Canada currently has a reputation as a ‘last adopter’ on many issues relating to intellectual property legislation.⁸ Whether by accident or design, this may provide us with the breathing room needed to establish ourselves as defenders of individual rights. This reversal, the prioritizing of individual rights over the rights of business and government, is what is necessary to liberate innovation from the grip of corporate monopolies and the stranglehold of lawyers and policy makers intent on ‘protecting’ creativity through intellectual property legislation.⁹

Intellectual property begins with a creative individual. This battle for our future is a battle of resources (information) in the new digital economy. The growing threat to individual rights and innovation cannot be understated. Ironically, at the same time that individuals began to gain recognition and prestige as the creative minds behind the new economy, public policy in Canada (as elsewhere) began to privilege corporate rights: “governments ignore human rights in favor of perceived trade advantages.”¹⁰

Furthermore, innovation has come to be narrowly defined as commercialization and as a result individual innovation is perceived as constituting a threat to established (e.g. analog) business models. Lawrence Lessig, in describing industry resistance to emerging (digital) media points out that “faced with a disruptive technology that threatens their way of life – their mode of doing business, their vision of the market – why would those leaders voluntarily step down from their place and enter a different market with uncertain results?” (Lessig: 146) The real danger, therefore, is that Canadian public policy, in attempting to promote innovation has internalized this attitude and is moving towards a model which fails to accept that the commercialization of innovative ideas are not always apparent at the outset. Supporting only those concepts which have demonstrable commercial applications with the requisite short-term (next quarter) timeline in business (marketing) practices is more than a failure of imagination, it is bad business.

and key thinkers included the economists Friedrich Hayek and Milton/Rose Friedman. Frank Chodorov, one of a group of US writers spurred to action by the totalitarian implications of Franklin Roosevelt's New Deal, played a role in reiterating the traditional American creed of individual freedom and scornful distrust of government; philosopher/writer Ayn Rand is also associated with the philosophy of individualism which she reconstituted as objectivism.

⁸ The Canadian federal government has developed a reputation of waiting for legal precedents before moving on many issues including digital satellite TV, gay marriage, internet downloading, etc. For example, prosecution for downloading and file-sharing of copyrighted material is well underway in the U.S. while in Canada this issue is still being debated in the courts. The phrase ‘last adopter’ is particularly in relation to the slow implementation of global treaty requirements at WTO and WIPO.

⁹ In particular, patent law is increasingly seen as an impediment to innovation.

¹⁰ Julie Light, “Repression, Inc.: The Assault on Human Rights,” Corporate Watch, 4 February 1999.

In February 2002, the federal government of Canada launched a 10-year innovation strategy with the stated intention of moving Canada to the front ranks of the world's most innovative countries. Fifteen goals designed to build on investments already made in research and innovation, were intended to ensure that essential research and technological expertise would be available to firms of all sizes, as well as providing access to venture capital financing. The strategy, as outlined in the Industry Canada report 'Achieving Excellence: Investing in People, Knowledge and Opportunity,' recognizes the necessity of considering knowledge to be strategic national asset. It focuses on how the federal government might facilitate the strengthening of Canada's science and research capacity in order to ensure that this knowledge contributes to building an innovative economy of benefit to all Canadians. The range of these goals are intended to ensure that Canada become a world leader in areas such as: developing and applying the path-breaking technologies of the 21st century; creating and commercializing new knowledge; promoting continuous learning; training skilled workers; ensuring a strong and competitive business environment; and strengthening the social economy.¹¹

While the recommendations of the 'Achieving Excellence' report, should they be fully implemented, may produce the desired short term results, the current federal innovation strategy does not support the role of the individual in the process of innovation. Indicative of this, federal strategies lean heavily on terminology such as: 'clustering,' 'networking' and 'teams'. However, the practice of innovative thinking and the willingness to take risks are not skills or abilities of businesses or institutions or even teams; they are skills and abilities of individuals who may or may not be affiliated with established institutions, businesses or teams. It is as absurd to describe a company as innovative as it is to describe a company as sexy.¹² A company may be guided by an individual with these assets or abilities, or it may promote a corporate culture emphasizing or encouraging these qualities; it may even market itself to the public as embodying these traits, but a company or institution does not have a personality – individuals do. Individuals are the source of all intellectual property, whether that property is retained and developed independently, ultimately held in common as in 'open source' development, or whether that property is transferred (by choice or by default) to a team, a company or an institution.

The practice of describing companies/institutions in human terms has evolved along with the practice of first promoting and then favoring the rights of corporations

¹¹ The United Nations Human Development Report, 2001 included a technology achievement index which measured national economies against eight parameters: patents granted to residents, receipts of royalties and license fees, internet hosts per 1000 people, high and medium technology exports, number of telephones per 1000 people, electricity consumption, mean years of schooling and enrollment in post secondary science education. Using these criteria, Canada was ranked as eighth.

¹² Marketing works only with vague, amorphous concepts such as 'sexy' (a company such as Nike or Benetton may be marketed and accepted as 'sexy' while the sweatshops which it relies on are discreetly downplayed). However, innovation is not a vague concept, either an individual has creative ideas and the support to develop and apply them, or not.

over the rights of individuals.¹³ It is no coincidence that this transformation has taken place within the context of globalization, a political/social/economic philosophy which spans borders making legislation difficult to conceptualize and even more difficult to enforce. However, documentation of the negative effects of globalization on employment security, income distribution, housing, literacy and ultimately health, is beginning to take place, and the seriousness of the various losses of our individual sovereignties is beginning to be studied and documented.¹⁴

The assumption that the Canadian government has a role in the protection of individual rights and the promotion of innovation, is based on the role of government as first defined by Adam Smith for the purposes of contemporary economics. According to Smith, the role of government can be described through three basic and essential duties. Considered from a contemporary perspective, these three duties still adequately define our understanding of why and how government functions in democratic societies:

First, the duty of protecting the society from the violence and invasion of other independent societies; secondly, the duty of protecting, as far as possible, every member of the society from the injustice or oppression of every other member of it, or the duty of establishing an exact administration of justice; and, thirdly, the duty of erecting and maintaining certain public works and certain public institutions, which it can never be for the interest of any individual, or small number of individuals, to erect and maintain; because the profit could never repay the expence to any individual or small number of individuals, though it may frequently do much more than repay it to a great society. (Smith: 325)

The relatively straightforward nature of the first two duties as outlined by Smith, is overshadowed by the controversy of the third which has been used to justify an extremely wide range of government activities. As explained by economists Milton and Rose Friedman “In our view it describes a valid duty of a government directed to preserving and strengthening a free society; but it can also be interpreted to justify unlimited extensions of government power.”¹⁵

The protection of individual rights with their corresponding duties and responsibilities, may be said to be the core responsibility of any modern government. In addition to Smith’s first criteria of government which describes the protection of a ‘society’ from external invaders, he agrees that the role of government has a major role to play in the protection of individuals.

¹³In the United States, the doctrine of ‘corporate personhood,’ the claim that corporations should enjoy the legal status and protections originally intended for humans, was introduced in the late 1800’s. Much has been written about the evolution of ‘corporate rights’ and the commensurate erosion of individual rights including: ‘Unequal Protection: The Rise of Corporate Dominance and the Theft of Human Rights’ by Thom Hartman and ‘The Divine Right of Capital: Dethroning the Corporate Aristocracy’ by Marjorie Kelly

¹⁴ For example, Social Determinants of Health: Canadian Perspectives, Ed. By Dennis Raphael, 2004.

¹⁵ Friedman, p. 35

In Canada individual rights are outlined in the Canadian Charter of Rights and Freedoms. In the United States individual rights are entrenched within the Bill of Rights. On a global level, the Universal Declaration of Human Rights (adopted by the United Nations Assembly in 1948) outlined basic human rights.¹⁶ While not legally binding in itself, this declaration was the foundation for the original two UN human rights Covenants which are legally binding for signatories: the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR).¹⁷ In combination with the Universal Declaration, these two Covenants established individual rights, in theory, as the basis of international legal norms. At the very least, the Committee on Economic, Social and Cultural Rights (Office of the High Commissioner for Human Rights) has pointed out that trade liberalization undertaken by the WTO will have an impact on the effective enjoyment of human rights. “The wave of economic and corporate restructurings undertaken to respond to an increasingly competitive global market and the widespread dismantling of social security systems have resulted in unemployment, work insecurity and worsening labor conditions giving rise to violations of core economic and social rights”¹⁸ The annual Couchiching Conference (Orillia, Ontario) has been exploring this theme for the past several years; the 2004 conference ‘God’s Back (With a Vengeance)’ asks participants to consider how the prosperity arising from globalization should be distributed for the benefit of all humanity.

Louise Arbour, formerly a Canadian Supreme Court justice, and the current High Commissioner for Human Rights at the United Nations, has declared human rights around the world to be ‘under siege.’¹⁹ What evidence does Arbour and others such as Kenneth Roth, Executive Director of Human Rights Watch, a New York-based rights advocacy group, point to as proof of this statement?

In support of the assertion that human rights are under assault, two examples are frequently cited: 1/ terrorism and 2/ the proposed remedy for terrorism, the ‘war on terror’ (a strategy initiated by the United States government, with little international support).²⁰ From a Canadian perspective, the impact on individual freedoms can be seen

¹⁶ Canadian lawyer John Humphrey was one of the drafters of this declaration and was the first Director of the Human Rights Program at the United Nations

¹⁷ According to: <http://www.unhchr.ch/pdf/report.pdf>, as of January 2004, the ICESCR has 149 signatories and the ICCPR has 152 signatories. There are currently 12 International Human Rights Treaties whose implementation is being monitored by the United Nations High Commissioner for Human Rights.

¹⁸ Statement of the UN Committee on Economic, Social and Cultural Rights to the third ministerial conference of the World Trade Organization – Seattle, 30 November to 3 December 1999)

¹⁹ As reported in a National Post Editorial on July 6, 2004, Arbour is quoted as describing her main challenge at the United Nations: “rights being threatened from Guantanamo Bay to Baghdad”

²⁰ The USA PATRIOT Act (Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism) was passed into law on October 26, 2001 establishing the ‘Homeland Security’ office. Further legislation adopted following the destruction of the World Trade Center on September 11, 2001 include: anti-terrorism legislation, bio-terrorism legislation, transportation legislation, hazardous material legislation, border security legislation, driver’s licenses/national identification system legislation, electronic surveillance legislation, cyber-security legislation, first-responder legislation, and vaccination legislation. The Center for Democracy and Technology provides regular updates at: <http://www.cdt.org/security/usapatriot/hearings.shtml> including links to information about Carnivore, a computer program designed by the FBI to intercept Internet communications, Roving Wiretaps Orders

as follows: first, people perceive themselves as potential targets of terrorism. Indicative of a breakdown in international diplomacy, terrorism is an ‘attack’ on human rights which knows no boundaries. Unlike a declared ‘conflict’ with delineated combat zones and designated combatants, terrorism makes potential soldiers and victims of all people. Bioterrorism and other contemporary techniques of terrorism are specifically intended to undermine concepts of individual rights and security. The second challenge to human rights has been highlighted by the ‘war on terror’ but can also be linked to the inability of policy makers to adequately respond to cultural, social and economic changes for which new digital technologies have been utilized. In many cases the challenges to human rights in this quarter have been orchestrated by government itself. Interestingly, while terrorism is a strategy which is intended to disrupt or overthrow the government in power, the challenge to individual freedoms which is constituted by the ‘war on terror’ (and the failure to understand and incorporate new digital technologies), supports or reinforces the power of government at the expense of individual rights. In this case, the threat to individual liberties, rights and freedoms comes from internal sources.

Kymlicka counsels patience, assuring that “apart from issues of international security, the issues confronting international organizations rarely require urgent decisions. There is no necessity to sign a free trade agreement this month, as opposed to next month or next year, and no reason not to take the time needed to discuss trade or environmental agreements in depth within national political settings” (Kymlicka: 302). Yet urgency is exactly what is being advocated, particularly in relation to the ‘war on terror’. Virtually everything, including economic agreements, has become a matter of ‘security’ and surrendering our individual rights is described as both necessary and appropriate. In order to safeguard our individual rights and liberties, we are told, we must be prepared to give them up. Particularly in matters where our shared borders are concerned, Canada is forced to follow the lead of the U.S. government.

Regarding the impact on Canadian public policy of the ‘war on terror,’ Dr. Gaylen Duncan, President and CEO of the Information Technology Association of Canada wrote in his foreword to the ITAC report: ‘Towards a Culture of Innovation’:

In the last months of 2001, Canada and all democratic nations face new challenges of unparalleled severity. The war against terrorism provides a new and unwelcome context for the pursuit of Canada’s public policy objectives. This new reality requires us to balance all domestic priorities against an urgent need to provide security to our citizens and to fulfill our commitments to our allies in this imminent struggle...The war against fascism was waged by soldiers who made the ultimate personal sacrifice for liberty. But it was largely won by significant innovations in cryptography and nuclear physics. With a relatively small conventional army, Canada’s best hope to make a significant contribution to the struggle at hand may lie in its capacity to provide breakthroughs in surveillance technology and information gathering, advanced communications and information processing tools. (ITAC: 1)

which allow the government to tap any phone lines that a suspect may use and Echelon, a secretive international surveillance system that operates outside of the normal limitations of the Constitution.

From this report it is clear that ITAC is the ‘voice of the Canadian ICT information and communication technologies) Industry’²¹ ITAC is essentially an association of businesses using criteria of investment/return to evaluate new technologies rather than considering environmental/social impacts. The willingness to advocate development of technologies which will in some applications impinge on individual liberties is not surprising from this quarter. Primarily concerned with providing networking opportunities, advice for procuring government contracts and strategies for commercialization, ITAC’s emphasis is on applied rather than pure research. The CATA Alliance (Canadian Advanced Technology Alliance), the second major source of input into government public policy formulation regarding innovation strategies, is similarly biased towards industry.

What is disappointing is that the misunderstanding/misinterpretation of new media technologies as well as the industry bias towards applications which will profit them rather than benefiting the public interest, is being incorporated into Canada’s public policy. A significant percentage of the commissioned reports which inform policy development regarding innovation come from industry-focused organizations such as ITAC and CATA. Even when the public is invited to participate in ‘town hall’ meetings, their input is often interpreted and represented to the government by the report’s authors, which are affiliated with one of these organizations. As has been documented, the attempt by the Coalition for Public Information to involve themselves in the policy making process for the information highway, was largely unsuccessful, owing to its limited resources, limited political experience and late entry into the policy process (Buchwald).

Why is the government relying on industry to guide public policy in these fields? These industry associations represent themselves as experts in new media, a field which many politicians and public servants find overwhelming. In a report released in 2003 by the Parliamentary committee responsible for broadcasting policy, titled ‘Our Cultural Sovereignty: The Second Century of Canadian Broadcasting,’ the evolution of broadcasting technologies are a starting point for a study which examines the importance of protecting Canadian cultural content. Unfortunately, this report describes the internet as a “vast and in some ways a limitless ocean” (p.16) perpetuating the idea that the internet is a ‘place’ rather than simply a communications protocol. This has serious implications for the formulation of public policy because it sidesteps the real issues which should be debated: universal access and the politics of bandwidth.²² The internet today is dominated by (2D) products created primarily with Macromedia software, viewable on a PC (Microsoft). However, it is a serious mistake to limit public policy to current applications since technologies such as VOIP (voice over IP), HDTV (high definition – digital video) as well as 3D interfaces and applications are going to market.

In reports issued by the Information Highway Advisory Council in 1995 and 2000, confirmed by a decision made in 1999 by the CRTC, the Canadian government

²¹ <http://itac.ca/>

²² For instance, the government should be discussing international regulation of (digital/telecom) peering agreements and the adoption of IPV6 (more IP addresses) both of which would provide more accessibility.

declined to undertake ‘regulating’ the internet. Fortunately, the right decision was made, albeit for the wrong reason. The proposal that the government should regulate the internet was a case of industry-biased organizations attempting to superimpose their agenda over public interest(s). Regrettably, in the case of Peter Sandmark, National Director of the Independent Film and Video Alliance (supposedly representing 8,000 creative producers across Canada), a case was made for the regulation of the internet in the name of protecting Canadian culture. In reality, the impossibility of enforcing regulation of the internet, should have been a determining factor in this discussion.

Threats to individual rights come from more oblique angles today. Among the challenges to individual rights and freedom are: medical/pharmaceutical (medically resistant superbugs, AIDS, SARS, and Creutzfeldt-Jacob disease), cultural (media conglomerates and cultural hegemony), environmental (Kyoto), political (the potential proliferation of ‘suitcase’ nuclear weapons) and digital rights (bandwidth). This is further complicated by the fact that the definition of ‘individualism’ itself is at issue. The definition of ‘individual’ is not only a policy issue, but because of recent advances, is a scientific, philosophical and technological issue as well. Cloning, the human genome, DNA patenting, Microsoft’s skin networking, intellectual property rights – it is no longer simply a matter of determining where the individual’s rights begin and end – today we are faced with the question ‘what is an individual’?

Technology which is supported for research and development (whether this funding comes from the private or the public sector) is increasingly deployed to protect corporate rights (profits) as well as to support government bureaucracy. This same technology is increasingly employed to attack individual sovereignty. Viruses, spam, spybots, robots, adware, crawlers, cookies, web beacons, surveillance, security tags and iris scans are obvious examples of technologies which infringe on individual rights and sovereignty; less obvious examples include the control of vulnerable networks which control electricity and banking. In each instance where this technology is promoted as benefiting individuals, a more sinister application also lurks just below the surface. A particularly chilling example is the emerging relationship between digitalization of personal information and identity theft.

Cultures throughout the world value individual rights but they do not always share the same methods for protecting these rights, nor do they always agree on what aspects of individual rights are most worthy of protection. For example, a much higher value is placed on individual privacy in Europe than in North America, specifically the United States.²³ Canada’s privacy laws are following the European model. Canada’s PIPEDA (Personal Information and Electronic Documents Act) which came into full effect in 2004, updating the Privacy Act of 1983.²⁴ This legislation is a step in the right direction,

²³ Beginning in 1998 the European Union’s Directive on Data Protection barred the movement of personal data to countries that do not have sufficient data privacy laws in effect. The US takes a much more *laissez faire* attitude towards privacy protection

²⁴ PIPEDA restricts the collection and use of personal data on both employees and customers.

as data-mining or knowledge discovery²⁵ threaten the privacy and security of personal information. US companies have developed an internet e-commerce architecture which favors massive amounts of personal data collection. File sharing is another controversial topic with the Supreme Court of Canada providing a decision which prioritizes individual rights (for the time being). Judge von Finckenstein ruled that Canadian law requires a balancing between privacy rights on one side and the public interest on the other. Privacy interests of alleged file sharers were judged to outweigh the public interest concerns favoring the disclosure of their identity, much to the chagrin of the US music and entertainment industries.²⁶

Creative individuals hack code, contribute to open-source software, and develop reverse-encryption schemes while being prosecuted for their innovative work. It is becoming clear that we need to feed and ‘grow’ new economic and business models, setting them in motion to evolve (along with technology) and providing opportunities for these individuals to take their place as the innovative force behind the new economy. Otherwise, propped up by the crumbling values and priorities of the 20th century, we will not be able to build enough prisons fast enough to house the Dmitry Sklyarov’s²⁷ of the world.

The Canadian federal government, should they continue to follow the priorities and directives of industry and the example of the US government, will be in danger of failing the individual and ‘disappearing’ their own citizens. Not only are the rights of individuals being eroded but their ability to influence public policy without affiliating themselves with a special interest or lobby group, has also essentially vanished. The most devastating loss, however, has been the undermining of the most important currency of individual capital: the individual’s opportunity to innovate, and to be recognized for their accomplishments.

Shalini Venturelli, in a paper written for the Center for Arts & Culture, argues that culture must be seen as the key to success in the Information Economy, specifically because for the first time in the modern age, the ability to create new ideas and new forms of expression forms a valuable resource base.

The challenge for every nation is not how to prescribe an environment of protection for a received body of art and tradition, but how to construct one of creative explosion and innovation in all areas of the arts and sciences. Nations that

²⁵ Data-mining and knowledge discovery are the process of analyzing data from different perspectives and summarizing it into useful information, to track and project spending habits, etc.

²⁶ This is likely a temporary reprieve, as Prime Minister Paul Martin and federal Heritage Minister Helene Chalifour Scherrer advised that they intended to change copyright law to meet the requirements of the World Intellectual Property Organization (WIPO) treaty, which has been signed but not yet ratified.

²⁷ D. Sklyarov was a Russian engineer/academic visiting the US in July 2001. He was arrested by the FBI after presenting his research on the subject of digital rights management technologies, specifically Adobe’s eBook system. He was held for approximately 3 weeks without bail until his employer Elcomsoft was charged with ‘trafficking in a circumvention device’. Previously, Matt Skala, a Canadian and a Swedish colleague were sued by the vendors of CyberPatrol in U.S. Federal court even though none of their actions (reverse-engineering CyberPatrol, and posting their research results online) took place on U.S. soil.

fail to meet this challenge will simply become passive consumers of ideas emanating from societies that are in fact creatively dynamic and able to commercially exploit the new creative forms. (Venturelli: 12)

Venturelli also points out (optimistically) that “the emergence of ideas as capital has brought culture to the center of public policy. The central economic and societal question of the Information Society will soon be how to stimulate innovation, that is to say, originality in ideas.” (Venturelli: 17)

In a privileged North American culture such as ours, certainly, any discussion of individual rights and freedoms inevitably evolves to include individual capital and individual sovereignty. That is, the individual’s ability to have self-determination as well as the ability to shape the culture in which they live and respect for the individual creative process and output. The emphasis is not on our freedom as consumers (which is itself somewhat illusory) but rather on our freedom as individuals to participate in society as creative producers and innovative contributors.

Digital technologies challenge individual sovereignty even while they are empowering – through the computing power available on the desktop or the range of information available through the world wide web. As much as the internet has opened up, it has closed down, and the same may be said for virtually every new media tool available to the individual. The internet is a mile wide but only an inch deep; it’s like watching ‘Jeopardy’ – a thin veneer of information with no depth and no context. In the early days of the internet, the quality of information online was exceptional and there was a real opportunity for interaction between educated and/or creative individuals. What began as a collaborative academic tool has devolved, over the short course of twenty years, to being the commercial and largely superficial space that we experience today. It is not a matter of technology outpacing our ability to incorporate it into our lives. Rather, we are constrained by industry’s limited visions for these technologies and the public policy which these visions inform.

As we examine the role of technology vis-à-vis the new economy, it is clear that whereas previously the economy drove technology, now technology drives the economy. Young people (in particular), sense this and protest that our social, cultural and environmental landscapes are being laid waste – for the advancement of a digital-electronic technological infrastructure which presents no pretense of employment or fulfillment. We are sacrificing our natural and creative resources and gaining...nothing, not even the ability to make ourselves heard. What channels are there for feedback? Where is the support through public policy for fully synchronous and interactive communications? Why does public policy continue to privilege corporate commercial interests at the expense of individual creative and intellectual rights?

Joseph Schumpeter (1934) is widely recognized to be the founder of ‘innovation theory’. He defined innovation as: the commercialization of all new combinations based upon the application of a/ new materials and components, b/ the introduction of new processes, c/ the opening of new markets or d/ the introduction of new organizational

forms. Schumpeter's definition sets the precedent for the definition most commonly utilized in the development of public policy related to innovation: innovation = commercialization. Authors such as Debra Amidon, in texts such as 'The Innovation Superhighway: Harnessing Intellectual Capital for Collaborative Advantage' and 'Innovation Strategy for the Knowledge Economy' write for a business audience and the techniques which they detail, while acknowledging the importance of the individual as the source of innovation, emphasize the individual as team-member. These authors discuss innovation as the creation, evolution, exchange and application of new ideas into marketable goods and services. More insightful authors, such as Rosabeth Moss Kanter in 'When a Thousand Flowers Bloom' reject the equation of innovation with invention and promote a broader definition of innovation simply as the creation and exploitation of new ideas.

Economists have always been involved in the definition of innovation. Economist Christopher Freeman distinguishes between four categories of innovation: incremental innovations (small-step improvement of existing technologies or processes); radical innovations (going beyond variational creativity – to explore or invent new media forms as opposed to working within established techno-cultural genres); new technological systems (interrelated innovations – both radical and incremental); and changes in techno-economic paradigm (pervasive shifts, based on widespread cheap and available components – the microprocessor being an example – which are ultimately revolutionary in impact). (Freeman 1992)

British economist Adam Smith, in 'The Wealth of Nations' advocated the abolition of government intervention in economic matters. Smith's application of individualism was 'liberal' in the sense that it opposed restrictions on manufacturing and barriers (such as tariffs) to commerce. This economic liberalism was the dominant economic philosophy in North America through the 19th and early 20th century until the Depression, after which another British economist, John Maynard Keynes, wrote 'The General Theory of Employment, Interest Rates and Money' in 1936 which ultimately influenced Roosevelt and his 'New Deal' in the U.S.

Addressing the employment problems which occurred at the Depression, Keynes asserted that full employment could only be reached with the aid of government development and spending. Laissez faire capitalism, Keynes felt, did not offer appropriate solutions for the economy of the 20th century. One of his main critics was an Austrian economist, Friedrich von Hayek. By the late 1970's, Keynesianism was seen to be no longer relevant – with western capitalist nations experiencing spirals of inflation, unemployment and debt. At this time, Hayek's predictions about the inevitable outcome of such 'socialist' policies seemed to have been fulfilled. Hayek linked economics with freedom and proposed a different course, one based on individualism and classical liberal thought.

It is important to note that Hayek's proposal at no time advocated the removal of government. In fact, Hayek was a passionate advocate for the rule of law and proposed a society based on a government that was carefully limited by law while facilitating

competition and the functioning of a free society. Friedrich Hayek's philosophy of economics was used in the 1980's to give academic legitimacy to the politics of deregulation. Although he may have been incorrect in his supposition that intervention always makes things worse (in economics nothing ever always produces a particular effect) what Hayek was ultimately championing was free markets and individualism. Unfortunately, the loose interpretation of his theories of economics provided deregulation and the produced the opposite effect – the suppression of individual liberties. The deregulation of the 1970's in turn produced the corporate monopolies of the 1980's and ultimately the mismanagement and corruption of the 1990's.

By the mid 20th century, economists such as Milton Friedman at the University of Chicago championed liberal economic thinking. With the arrival of Margaret Thatcher's government in Britain in 1979 and the Ronald Reagan administration in the United States in 1980, there was a reversal of the trend towards centralist economic policy – this movement came to be described as neoliberalism. Reagan and Thatcher's administrations began implementing liberal economic reforms such as lower taxation rates, privatization of government control (deregulation). Like Hayek, Friedman's approach emphasized economic freedom.

Schumpeter was most well known for his theory of 'creative destruction' (1942), but equally significant, he wrote that monopolies are the natural outcome of capitalism, and that monopolies inevitably lead to the end of competition as successful companies struggle to maintain the status quo while resisting the profound effects of change. At present, with a secure and comfortable hold on market share, monopolies are reluctant to explore and risk embracing digital technologies. Why should they? As a result, consumers end up paying twice. First, paying 'whatever the market will bear' (in monopolies this rises to infinity so long as desire for the product/service can be artificially inflated). Second consumers pay again, because new inventions, products and services are held back. Prevailing monopolies are swept away only with the next gale of 'creative destruction' and the key force of 'creative destruction' is what Hayek called individual entrepreneurialism. Authors such as Ann Coulter and Sean Hannity attack liberalism, but what they are attacking is not an accurate representation of either Hayek or Schumpeter's ideas. Lack of support for the individual entrepreneur is what impedes innovation, progress, and the end of monopolies.

Every major industry has evolved to be dominated by only a handful of companies (automobile production, TV broadcasters, advertising, direct broadcast satellite, media/music conglomerates, pharmaceuticals). These monopolies now exist as multinationals, on a global scale. Combined with a lack of support for individual entrepreneurs through public policy, innovation is in danger of being permanently disabled. And while capitalism has gained global prominence as the dominant and most sought after economic model, it has clearly ossified along with government, law and diplomacy, all resisting the imperatives and demands of digital-technology change. Capitalism has come to be equated with monopolies. Market theory dictates that all companies seek equilibrium – in full competition, companies are yielded with zero profit. What a company needs in order to maximize profitability is a monopoly. And because

full profitability is what the shareholders want, this is the state towards which a capitalist market aspires. Zero competition equals maximum profits, and the only ‘innovations’ which are supported are those which support contemporary business practices.

Software patents are an important example of how public policy (intellectual property legislation), while purporting to protect individual rights, in fact stifles competition and infringes on the rights of individuals. Patents were originally intended to protect inventors while they took necessary time to design, produce and bring their invention to the market (eventually allowing ideas to enter the public domain). However, good programming ideas or software may only be useful for a few months and computer programs themselves are already covered under copyright law. What possible rationale can there be for software patents? In contrast to the pure free-market theory which neoliberalism generally espoused, in practice intellectual property rights encourage monopolies. In a description of a presentation made by a software company lawyer engineers were advised that “monopolies are the only way to make real money these days and patents are fantastic because they allow you to establish legal monopolies.” (Gittins)

If the theory behind software patents is suspect, its application is clearly destructive to the process of innovation.

Patents on software often appear completely counterproductive – by monopolizing a technique, a patent can simply ensure that the technique is never used. Rather than making money, a patent can cause the death of an otherwise promising technology, and this is frequently the aim of patents held by owners of threatened technology. (Gittins)

The beneficiaries of software patents are not individual engineers but the companies they work for. In fact, “software patents, and their accompanying monopolies, have done immeasurable damage to the world of computer programming, and are one of the reasons the centre of innovation has moved either to open source software, or to corporate working groups where everyone agrees to automatically cross-license all their patents to each other – thus forming a patent oligopoly rather than a patent monopoly.” (Gittins) The debate regarding software patents is interesting for precisely this reason. Many of the principals involved (software engineers) support an alternative system of innovation – open source development – which takes place outside the scope of official research institutions.

Canada’s National System of Innovation (NSI) consists of support for research facilities and laboratories which the federal government has undertaken, over the years, to establish and maintain.²⁸ Canada’s Innovation Strategy is strictly focused on science and

²⁸ During the 20th century, Canada’s National System of Innovation (NSI) was built through three stages. Pre-WWI, the government’s predominant attitude towards innovation was one of laissez-faire. Through WWI to the start of WWII, the federal government became increasingly active as both financier and performer in science and technology innovation efforts. The period which followed has been characterized by both federal and provincial efforts to support industry in R&D (research and development) initiatives.

technology as it is manifested and perpetuated in these institutions, leaving few opportunities for creative, independent individuals, to receive support for their work. Throughout history, the Canadian federal government has recognized three equally significant contributors towards innovation or research and development in Canada. In addition to their own research centres, the government also supported, through public policy, the efforts and participation of private industry, and educational institutions.

With the impetus for research and development provided by the First World War, Ottawa created a national Advisory Council for Scientific and Industrial Research in 1916. This Council found that only a few private companies, a few Universities and a few government departments in Canada had a systematic approach to research and development, so they recommended that the federal government to create the National Research Council. The NRC was intended to be the national institution for determining standards, carry out fundamental research in chemistry, physics, biology and related fields and applied research in biochemistry and bacteriology as well as promoting R&D regarding Canada's natural resources.

The first NRC laboratories were built in 1932 and by the end of the 1930's numerous research institutions had been created under Departments such as Agriculture, National Defence, Health and Welfare. Over the course of the Second World War, federal R&D expenditures increased significantly. The focus of federal innovation policies turned to collaboration between industry and government laboratories; this was accomplished through the licensing of some public-research results to private business as well as a number of research projects with potential commercialization which were conceived in the public laboratories. With the conclusion of WWII, new federal labs were set up for the first time outside the Ottawa region. "The trend towards geographical decentralization of the national laboratories was to accelerate and to contribute to the emergence of regional centres of innovation." (Niosi: 43)

From Confederation to the mid-1960's University research had been financed primarily by internal funds. This changed in the second half of the 20th century, when the federal government began to provide institutional and project funding to benefit (academic) researchers working through Universities. University-based research in Canada also showed signs of substantial growth following the war.

The 1960's may be called the era of the formation of an NSI (national system of innovation). The Royal Commission on Government Organization (Glassco Commission) recommended the creation of a National Scientific Council in 1963, recommending as well the reorientation of government research towards its original goal – supporting industry.²⁹

²⁹ The accepted formula for innovation prior to the 1960's had been: 1/ University and public labs carrying out basic research; 2/ Government labs conducting applied research; 3/ Industry undertaking development based on university and government research. Knowledge was expected to naturally flow between them as needed/warranted. However, this model was challenged in the 1960's and more systematic cooperation was mandated by the Glassco Commission. Federal scientific organizations were encouraged to undertake to be the initiators and co-ordinators rather than the performers of R&D.

New federal tax deductions for industrial research were introduced in the 1960's, and during the 1960's federal expenditures on scientific activities tripled. In 1978 the Natural sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC) were created, and these councils continued the trend of promoting collaboration between industry and universities. Another major upgrading of the NSI occurred in the 1980's when both the federal government and most of the provinces adopted policies regarding venture capital to provide support for firms which were technology-intensive, undertaking innovations in fields such as biotechnology, computer software and hardware, medical and telecommunication equipment.

In the late 1980's and the 1990's the federal government undertook to overhaul the national R&D system. When the Conservative government modified the patent system in 1987, extending protection to seventeen years after initial filing of an application, this was a huge benefit for pharmaceutical corporations whose profits had been suffering under the previous Liberal government's compulsory licencing amendment. During this same period, both federal and provincial R&D funding in Canada shifted to an emphasis on networking as well as scientific and technological collaboration between independent organizations. The most significant policy change, however, was announced in March 1996. For the first time in decades, Ottawa announced that there were no plans to increase government R&D in science and technology. Instead, to improve the nation's performance, the following measures were advocated: information networks, more public-private partnerships, intergovernmental cooperation.

The federal government's original attempts to coordinate and promote R&D from the top down had initially been prompted by underinvestment by private firms. "Whatever its level of unity and coherence, Canada's NSI – like probably most NSI's in industrial countries – was the product of both market forces and public policies. In Canada, as a late industrializer, the latter were probably more powerful than the former." (Niosi, p. 74) Once scientific research in universities and technological research in industry had been stimulated through the federal government's development of a large 'in-house' research establishment immediately following WWII, followed by numerous programs in the 1960's, the federal government stepped back to allow market forces to take over the organization and management of R&D in Canada.

A period of governmental trial and error and public learning started with the Second World War, about how to stimulate innovation. During five decades (1940-1990), the Canadian government increased its involvement in innovation, adding horizontal policies nurturing the development of private R&D and evaluating and redirecting some of them when it considered that the attended results were not attained. At the same time, it targeted a few specific sectors – emerging industries such as nuclear energy, aerospace, telecommunication, biotechnology, and software – and launched a set of specific policies, including creation of government laboratories and parallel, specialized programs, to foster their growth. Finally, by the 1990's, the NSI was established and its present

contours were in place. Under budgetary and international trade policy restrictions, Ottawa's efforts receded somewhat, and the NSI operated alone, like a plane flying on automatic pilot after an energy-intensive take-off. The new routines were now well entrenched in industry, government laboratories, and universities, and these needed only horizontal policies to keep incentives operative, while more direct technology policies almost disappeared." (Niosi: 193, 194)

In October 1997, the House of Commons Standing Committee on Industry began a long-term study leading to a series of reports on innovation, productivity and industrial competitiveness. This study was initiated in response to 'Sustaining Canada as an Innovative Society: An Action Agenda' a document written by several research groups for the Government of Canada.³⁰

The House of Commons Standing Committee on Industry's first report, titled 'Research Funding: Strengthening the Sources of Innovation' (June 1999) attempted to address these concerns through recommendations for improving the planning, effectiveness and efficiency of research activities in Canada. This report was limited to addressing the R&D aspects of product and process innovation. In their next report, the Committee addressed what it felt was the single leading catalyst in all types of innovation: competition. In April 2000 they published 'Productivity and Innovation: A Competitive and Prosperous Canada' containing recommendations intended to prepare Canadians and Canadian businesses for the opportunities and challenges presented by a knowledge-based economy.

In its 1999-2000 and 2000-2001 budgets, the Government of Canada began to respond to the recommendations made in these two reports. As Susan Whelan (MP), Chair of the Standing Committee on Industry, Science and Technology reported, "Government and private sector spending on R&D is now on the rise, and tax reductions are set in place to stimulate long overdue private sector investment. Not surprisingly, Canadians are witnessing improvements in Canada's Gross Expenditure on Research and Development (GERD) per unit of Gross Domestic Product (GDP) – the bell weather statistic for innovation in the longer term." Acknowledging this 'good start' Whelan presents the third report of this Committee focused primarily on science and technology issues. In the writing of 'A Canadian Innovation Agenda for the Twenty-First Century' (June 2001) forty-three expert witnesses appeared before the Committee. Beginning with the premise that "in a knowledge-based economy, a country's wealth and economic success is no longer found in the ground, in the size of the manufacturing plant, or in the horizontal and vertical industrial expanse of the corporate conglomerate, but in the minds and creativity of its people...Innovation, as founded on S&T, has thus become the

³⁰ These groups, the Association of Universities and Colleges of Canada, the Canadian Association of University Teachers, the Canadian Consortium for Research, the Humanities and Social Sciences Federation of Canada and the Canadian Graduate Council, had outlined the dangers of under-funding basic research – both in terms of short term economic and long-term innovative capacities.

principal means for achieving economic success in the twenty-first century.” (preface, pg. 1).

The Canadian federal government’s commitment to innovation has been clearly articulated. What is in question is how this (theoretical) commitment will translate into practice (policies). At present the government’s definition and criteria for innovation have been guided by industry, associating it more strongly with commercialization than with creativity and risk. Like the monopolies reluctant to surrender their grip on the economy, the government has become most comfortable with innovation that is familiar. Unfortunately, familiarity is anathema to creativity or innovation.

During the 1990’s, individual entrepreneurs utilizing and developing digital technology, were also able to make substantial progress and gains. With the tech stock crash (contrived by deregulation, monopolies, mismanagement – aided by digital technologies) which took place at the end of the 20th century, that changed and the shortcomings of Canada’s NSI have become evident.

The extent and scope of Canada’s National System of Innovation (NSI), and the proactive role of the government in this development falls sorely short for individual innovators. Those individuals who do not fall into the categories of: ‘academic’, ‘scientist’ or ‘engineer’ and who, in particular, are not formally affiliated with a research facility, an educational institution or a business which is involved in the commercialization of an invention or innovation, experience the effect of ‘flying under the radar’ of the federal government’s innovation support. They are not referred to in the numerous reports of Senate Standing Committees, their names do not appear on the lists of industry representatives or scientists invited to give their perspective on the country’s prospect of becoming ranked as one of the world’s top innovative nations. They are not eligible for research funding and they are left standing on the sidelines during the formation of technology ‘clusters’. Their exclusion from many opportunities for innovation funding, and the subsequent reluctance to acknowledge the research which they undertake (outside of the institutional context) as legitimate and valuable is both a loss and a liability. More importantly it is symptomatic of the federal government’s inability to reconcile new digital media with (analog) business and educational practices. This inability to think about the process of innovation itself in new and different ways will render it increasingly difficult to recognize and harvest some of Canada’s most creative innovators.

In the emerging digitally networked society, the creative arts and cultural institutions in general are mutating by forming a constellation of productive relationships with the science and technology research system, industry, humanistic and social science scholarship, and with emerging new structures of civil society. This apparently rising density of communication suggests the need to begin rethinking some aspects of the relationship between cultural support policy, innovation and research policy and the still nascent but interconnected set of concerns about the requirements for widespread creative participation in a

‘techno-sphere’ increasingly shaped by fast-changing digital media technologies.
(Century: 3)

In fact, the separation of funding opportunities into categories of ‘artists’ and ‘scientists’ has only become entrenched over the last century. Innovation has come to be associated with science (and with commercialization), with funding being directed through industry and educational institutions; applicant eligibility encourages team-building within companies/institutions and networking between them.

Technology demands policy changes. However reluctant industry may be to revise business models which support existing monopolies, creative individuals working with new technologies continue to disrupt the status quo. It has become clear that public policy must stop responding to the requirements and expectations of existing industries, and stop trying to ‘fit’ all innovation into an economic model which does not respect individual rights. The question is not whether this will happen, but when this will happen.

Globalization and diversity have complicated the effort to understand the role and the rights of individuals in the 21st century. The additional ‘freedoms’ which they have contributed are balanced by the complexity and chaotic systems which globalization and diversity have also introduced. Organizations concerned with digital rights (not to be confused with Digital Rights Management) are being established around the world. From the Campaign for Digital Rights in the UK (www.ukcdr.org) to European Digital Rights (<http://www.edri.org>) to the Electronic Frontier Foundation (www.eff.org), these groups are working to raise awareness of rights in the digital world, to discuss proposed laws, regulations and technological systems that will make digital media more expensive, less useful, less diverse and less democratic. Some regulations and developments which have attracted their attention are: data retention requirements, spam, telecommunications interception, copyright and fair use restrictions, the cyber-crime treaty, rating, filtering and blocking of internet content and notice-and-takedown procedures of websites.

Venturelli has stated, “forging an environment of creative dynamism requires regulatory stimulation of creative enterprises (those whose products are ideas).” (Venturelli: 17). The effectiveness of the model which Canada has established for scientific innovation is currently being evaluated.³¹ What has become clear, however, is that this research and innovation model does not fit all creative enterprises, particularly those undertaken by individuals. Just as terrorism emerges from oblique angles today, profitability and progress also comes from unexpected sources. Individual digital rights may point the way to a new relationship between public policy and innovation; a model based, not only on regulation of the individual, but on the protection of their personal creative resources and potential as well.

³¹ An international ranking published in July 2004, prepared for the UK government, compared the output of top-quality research publications among 31 nations and found that Canadian scientists outperform those of at least a half-dozen countries that spend more per capita on research and development.

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