

Techné: Research in Philosophy and Technology

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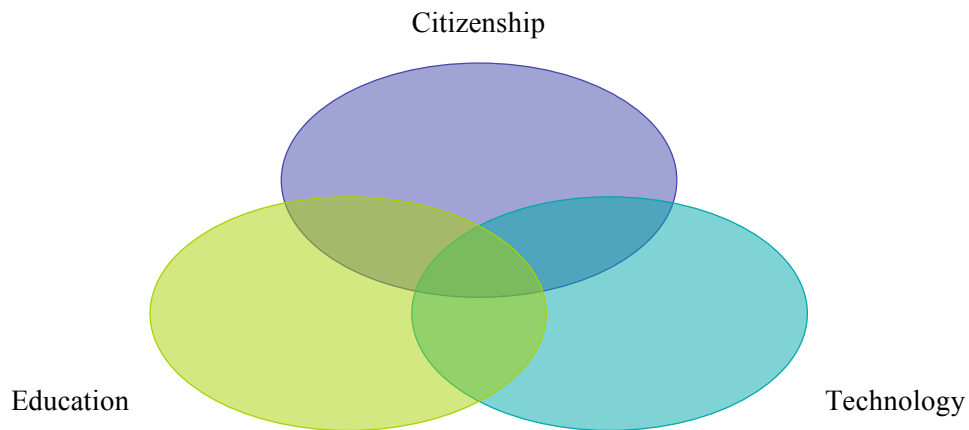
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Education and Citizenship in the Digital Age

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In the Hall of Gonville and Caius College at Cambridge University there is a stained glass window depicting three interlocking circles. The window commemorates the logician John Venn who, among other things, built a machine for bowling cricket balls that made short work of the Australian batsmen who visited Cambridge in 1909 (O'Connor & Robertson 2005). Venn also bequeathed to us a means of graphing relationships whose elegance makes it equally at home in high school math classes and sophisticated philosophy journals.



A Venn diagram indicates eight regions (including the one outside the circles), and suggests a possible 256 Boolean combinations, the sort that make computers work (Venn is as important to the possibility of Google as he was to the perfection of googlies). Assuming that the phenomenon mapped by each of the circles is independently worthy of attention, the central region in a Venn diagram, where the circles intersect each other, defines a territory of particular complexity and significance. It locates the heart of the matter. In this case, the

heart of the matter is the territory where citizenship, education and technology meet.

What appears here graphically can also be rendered discursively: citizenship, however one defines its characteristics and practice, forever and always draws at least part of its sustenance from education; in technological societies, especially nominally democratic ones, citizenship must, in one way or another, come to terms with technology; and the presence of technology—as means, object and context—in the sphere of education is undeniable. Together, these relationships mark a territory of sorts. This special issue of *Techné* is devoted to exploring that territory, as it is being imagined and materialized in the period of technological dynamism currently underway in countries undergoing a transition to something called “knowledge” or “information” societies.

The discussions that follow emerge in the context of a particular constellation of social, political, economic and technological phenomena:

- development of sophisticated digital technologies of information and networked communication, and their rapid application and deployment across a wide range of social, political and economic practices and institutions, domestically and globally;
- emergence of novel and powerful biological and genetic knowledges and technologies that excite moral, ethical and political controversy;
- commitment by most “post-industrial” states to encourage actively the development and application of technology, as crucial to economic growth and material prosperity, national cultural autonomy, democracy and social well-being;
- neo-liberal restructuring of capitalist economies, domestically and globally, around priorities euphemistically styled as “innovation”, “flexibility” and “competitiveness”;
- increased attention to the role played by education and research in generating opportunities, innovation, and sustaining flexibility in knowledge-based economies;
- rapid integration of new information and communication technologies into educational institutions, practices and delivery at all levels;
- intensification of the relationship between private sector research and development interests and traditional public learning and research institutions, including the growth of private, for-profit, commercial learning enterprises;

- pressing crisis of democratic citizenship in most western liberal democracies, manifested in decreasing rates of formal political participation and civic engagement, declining levels of efficacy and trust in political institutions, diminished civic capacity and political knowledge, and normalization of violent protest and state repression of civil liberties;
- ongoing and widespread popular hope in the potential for new information and communication technologies to reinvigorate democratic citizenship and governance.

If the relationship between citizenship, technology and education establishes a territory, then these are the predominant features of its landscape.

Scholarly attention to these issues has been vigorous. Political economists have carefully specified the relationship between new information and communication technologies and globalized, post-Fordist capitalism, and have worked to situate the encounter between these technologies and education/knowledge within this broader, structural context (Noble 2002; Aronowitz 2000; Schiller 1999; McChesney 1999; Dyer-Witheford 1999; Robins & Webster, 1999). Public policy analysts have begun to investigate the education/technology nexus, and activists have drawn attention to the need for an educational focus on technological literacy (Lewis et.al., 2001; National Academy of Engineering 2002). An expansive body of scholarship examining technologically-mediated delivery of education, in a variety of forms, both inside and outside of the classroom has focused attention on issues of educational design, pedagogy, and performance in computer-mediated educational environments (Kuh & Vesper 2001; Cuban 2002; Moll 2001; *Canadian Journal of Communication* 1999). And, as is well known, the “culture wars” of the 1990s generated no shortage of heat surrounding the state of “liberal” education and the university (Levinson 1999; Nussbaum 1997; Reading 1996; Anderson 1992; Barber 1992).

The essays in this special edition speak to many of these concerns. What they add to them is the specific attention of political theorists and philosophers to the central issue of citizenship in technologically-dynamic society, and of the role that education might play in this relationship. What does citizenship mean in a technological society? What can we, or should we, expect from education in these circumstances? How has technology been involved in the ability of education to meet these expectations? These are the questions that the essays

gathered here—presented and debated at a workshop held at the University of Manitoba in June 2004¹—seek to address.

Leah Bradshaw considers the relationship between technology and the “primary considerations of education and politics,” which she identifies as the abiding concern with mortality and fairness. Drawing on accounts of the relationship between technology and willing given in the philosophies of George Grant and Hannah Arendt, Bradshaw wonders whether contemporary ethical approaches to technology that are grounded in the discourse of “values” are capable of much more than reproducing modern technological consciousness. She goes on to explore the role of education and politics in cultivating the sort of character ethics that might make it possible to stand humanely in the face of technology, and closes with a profound meditation on the politics of refuge in thought.

David Tabachnick explores related ground in his examination of the Bush administration’s current “anti-science” policy concerning biotechnology, and the philosophical contradictions behind this position. Tabachnick juxtaposes the administration’s Aristotelian claim that technology must be subordinated to politics with its Heideggerian conception of technology as essentially dehumanizing and beyond control. Exploring the manner in which this contradiction has played out in the President's Council on Bioethics, Tabachnick shows how it has affected the possibilities of coherent public policy, science education, and citizenship in relation to technology more generally.

Contradiction is also a dominant motif in Edward Andrew’s critical essay on the academic economy of contemporary post-secondary education. Here, the contradiction is between the technological multiversity and scholarship. For Andrew the current economy of knowledge production—in which academic recognition is tied to economic success—converts scholars into researchers, and indebts them to various public and private dispensaries of capital. Contrasting the present situation with earlier ecclesiastical and patronage-based models, Andrew draws out the implications for scholarship of direct research funding by private corporations and the commercialization of intellectual property. At stake are not just academic freedom (as Andrew says, “he who pays the piper calls the tune” and there are “no free lunches”) but also the place of love in the soul of scholarship.

Ronald Beiner asks whether people can be educated to citizenship, and concedes the failure of politics to accomplish this purpose in the face of modern

technology. Beiner's essay proceeds to explore the possibility that architecture might succeed where politics has failed, and recommends that we turn our attention from theorizing public *reason* to philosophical inquiry and political investment into the civic possibilities of public *space*. In a nuanced reading of Hannah Arendt's political philosophy, Beiner argues for a "notion of citizenship as *constituted* by a sense of built civic space," and a corresponding civic architecture capable of evoking, against the worldlessness of modern technology, the ultimate meaning of citizenship: the "sense that public things matter."

Graham Longford is also interested in the relationship between citizenship and built environments—in this case the environment built through digital code. In Longford's view, the norms, rights and obligations of citizenship are encoded in the design and structure of digital networks. This leads him to a conception of "technological citizenship" defined by engagement with the technical codes and protocols that shape our inhabitation of technological environments, and by the capacity for agency in relation to the legislative character of technological design. Longford's essay examines the conditions under which such citizenship is either undermined or supported—including, for example, the "hidden curriculum of e-commerce"—and the ongoing political contests over their determination.

The "politics of code" is precisely what is at stake in Edward Hamilton's and Andrew Feenberg's essay on the affordances of online education. Against deterministic approaches to digital technology, Hamilton and Feenberg argue that "educational technologies only gain definition, functionality, and value in the framework of the pedagogical models they instantiate, the forms of social relationship they construct, and the educational goals they are applied to achieve." To illustrate, they compare two modes of online education: computer-assisted instruction, in which the representational capacities of the computer are directed towards automation and commodification; and computer conferencing, which emphasizes the communicative functionality of networks. Hamilton and Feenberg argue persuasively in favor of the pedagogy of communication, but their real contribution lies in demonstrating that neither model is a necessary outcome of the technology itself. Which will prevail depends instead, they write, on the struggles over design and policy that comprise the politics of technology.

Our collection ends with Langdon Winner, inventor of the Automatic Professor Machine and seminal figure in the critical theory of technology. Winner investigates the American euphoria that aligns technological novelty with greater

freedom, the latest symptom of which is the popular expectation that the Internet will deliver a reborn democratic citizenship. In characteristic fashion, Winner exposes the distance between such expectations and their realization in the context of contemporary American culture, politics and economy. This is cause for sobriety, but not passivity. Thus, Winner concludes with a call for political, as opposed to technological, innovation: democratic reform of the institutions that currently direct the course of technology in our midst.

Together, these essays testify to the role of philosophy in addressing the concrete challenges of living well in contemporary technological society. The authors gathered here are all educators, and so their reflections on education, citizenship and technology are not simply abstract, but rather a thinking-through of the daily reality of their vocation, as they see it. Obviously, each of them does not necessarily see this reality in exactly the same way. Nevertheless, there is a common note of urgency winding its way through these essays. It is not so loud as to drown out the nuances of thought that define the enterprise of theory, but nor is it so soft as to go unheard by those who also have an ear for politics.

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End Notes

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Technology and Political Education

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In a book titled *How to be Alone*, the American writer Jonathan Franzen bemoans the incapacity of the contemporary individual to find either a meaningful public space in which to participate, or the quiet comfort of solitude. Franzen is a writer of fiction, not philosophy, so his thoughts are not woven into any coherent account of modernity. Instead what one gets from his books is a sharp aesthetic feel for living in modern urban space. Technology, or rather the love/hate relationship that Franzen has with it, figures prominently in this aesthetic. Franzen tells funny stories about his resistance to the CD (for years he pirated from his friends' CDs and copied their tunes onto tapes), his scavenging in the streets of New York for cast off, thrown away objects like old chairs which he rescues and rehabilitates, and his senseless hanging-on to a manual typewriter. He also chronicles his own debilitating depression that he suffered for years, until he decided to move from a state of "depressive realism" to one of "tragic realism" (Franzen 2002, 93). Underscoring all of these ruminations are Franzen's efforts to live with technology and as its creature. Resigned, he writes:

For better or for worse, ours is now a technological society, and whatever the benefits to the health and affluence of the upper half of society, it would be difficult to argue that either technology or the free market capitalism that is its Siamese twin has done much to solve the ancient problems of mortality and the world's unfairness (202).

Death and injustice remain the perennial problems of the human condition.

In this paper, I want to pick up where Franzen has left off, and consider what impact technology has had on matters pertaining to mortality and fairness. If these are the primary considerations of education and politics (and they are identified as such as far back as Plato's *Republic*), how has technology changed how we see them? I begin with George Grant and Hannah Arendt, two thinkers who thought deeply about these questions, and I hope to draw out of their work some cautionary tales about how *not* to respond to technology.

George Grant has been dead for some years now, and his voice is fading in the study of Canadian political theory, a regrettable thing. Best known probably for his lamentations on the dwindling of Canadian sovereignty and the absorption of

Canada into the United States' ethos, Grant also had important things to say about technology and its wedding to the "Siamese twin" Franzen identifies as free market capitalism. Grant would also add liberalism, or what he preferred to call "English-speaking justice," to the entanglement. In a book of conversations with David Cayley, Grant lays out what he sees as the fundamental essence of technology. "Knowing has been put at the service of making in the ancient world," Grant explains in these conversations, *techne* was a species of *poesis*, and *poesis* is a kind of production, what Grant calls a "leading forth" that requires human activity. This is really the best depiction I have encountered of the difference between *techne* and technology. To "lead forth" is to be guided by something outside one's own volition. Exactly what it is that is doing the guiding is hard to pin down. Grant thought it could be some intimation of what is good, or some intimation of what is beautiful, and sometimes he conflated the two.¹ The general point that Grant makes, though, is that technological "knowing" is different from earlier forms of knowing. He tells Cayley: "I've been thinking very hard about this, and one thing that has become clear to me is that the paradigm of knowledge given in modern science differs from the origins of the idea that one is given knowledge through love of the beautiful. I see this" (Cayley 1995, 184-85). What makes modern science true, according to Grant, is "that you're able to control the world through it" (135).

Grant elaborates on why this distinction between ways of knowing has profound political implications. The ancients had no practical ambitions for perfecting politics, or building ideal states, precisely because their ways of knowing precluded such ambitions.² If part of how one knows is to be open to being "led forth," then one does not dream of masterful control, so much as one simply hopes for vision, good fortune and grace, coupled of course with as much human effort and ingenuity as is realistically possible. Grant tells Cayley, when the conversation begins to drift: "I won't leave technology out of it for a minute. It is inconceivable that moderns would think in this way [*that is in terms of never actualizing the best state*]" (79). Modern political philosophy and modern scientific technology have walked hand in hand, as Grant says, and one cannot separate them.

The collapse of knowing into making has two principal dimensions in Grant's work: the decline of metaphysics (or what he sometimes speaks about in the context of natural law) and the supplanting of knowing as loving, by knowing as willing. Both are precursors to the success of technology, which is the wedding of *techne* and knowledge into one, instead of *techne* being guided by knowing.

In an early work, *Philosophy and the Mass Age* ([1959] 1966, 31), Grant focuses mostly on the first aspect, the decline of metaphysics. Metaphysical understanding for Grant encompasses the nature of man, the order of the universe, final causality and the existence of God. None of these objects of knowing is grasped in its entirety, but that does not mean that there is no human knowledge of any of them. In a metaphysically ordered understanding, we assume that there is a natural order of some kind, and that it is important to think about it and try to grasp its meaning. What we do know is that we are rational creatures, and the ends for which we are fitted are not given to us instinctively. “Reason is at first present in us potentially and not actually. It needs to be developed, and developed by education. Education is seen as the process by which a person comes to think clearly about the proper purposes of human life” (32). Part of education then consists in knowing when and how to curtail *techné* and production, insofar as these things can hamper the proper purposes of a human life. To go back to Jonathan Franzen’s concerns, we *can* say with some authority that two purposes of a human life are to die (that is a natural given), and to pursue justice (that is the reasonable way to live). For me, Plato’s *Republic* and *Apology* stand out in the Western tradition as the most persuasive accounts of why one ought to pursue justice, even in the face of death. George Grant would probably add the Christian Gospels. For Grant:

The fundamental difference between our modern society and the old is not only, or even primarily, the external difference shown by our mastery over nature through science and technology, but a profound difference in man’s very view of himself. We no longer see ourselves as part of a natural order and as subordinate to a divine law. We see ourselves rather as the makers of history, the makers of our own laws. We are authentically free since nothing beyond us limits what we should do (42).

Ten years after the publication of *Philosophy in the Mass Age*, Grant delivered his Massey Lecture on “Time as History”. By this time, Grant’s concerns, though the same, have shifted to a different target: the ascendancy of the will. He explains in that lecture that “the accomplishments of masterful doing lead us to think about the language of willing” (Grant [1969] 1995, 21). Since actions require volition, Grant looks closely at what kind of thinking accompanies the modern project of mastery and control, and he decides that a new form of “willing” takes place in metaphysical decline. Willing, he says always does violence to the world, because it is unthinkable without action (22). In fact, Grant

says, it is a strange thing about human beings that the deepest thought (that directed at the good, the true or the beautiful) seems to be in some way hostile to the greatest actions. “If our thinking is not to be Procrustean, we require an uncertain and continuous openness to all that is; certainty in closing down issues by decision is necessary for great deeds” (22).

This disjuncture between thinking and acting has probably always existed, so what is characteristically modern about the will in *Time as History?* Grant argues that the decline of metaphysics, and the unhinging of knowing from loving, means that it is difficult, if not impossible, in the modern world to understand *techne* in its classical sense as a kind of leading forward. There is nothing to lead *into*. Instead, knowing becomes tied to the will, and turns back on the world in a mode of control and domination. The way we know things is actually transformed by this shift, in that knowing becomes willing and its consequences in action. Grant’s encapsulation of this is worth citing in full:

The coming together of willing and reasoning lies existentially in the method that has made possible the success of modern science. The world is a field of objects that can be known in the workings through the creative acts of reasoning and experimenting by the thinking subject who stands over them. This brings together willing and reasoning because the very act of the thinking ego standing over the world and representing it to himself as object, is a stance of the will (26).

The will now stands over all the other things in the world, Grant says, and subordinates them to our own understanding of freedom. The liberating aspects of this shift toward the paramountcy of the will, and its consequences for practical life, are well known to us, and even Grant warms to them sometimes. In his exchange with David Cayley, at one point Grant hesitates in his vitriolic attack on modernity and qualifies:

Now, before we go any further, I want to make one thing perfectly clear about modern technology: my wife and I would have been slaves, with six children, if we hadn’t had a washing machine and stove and electricity. This is something that *must* be admitted and must be seen with clarity, along with what I call the ‘oblivion of eternity’ that went with it (Cayley 1995, 78).

Grant's ambivalence about the will in the modern world is most evident in his *English-Speaking Justice*, an even later book ([1974] 1985) that he delivered initially as a lecture at Dalhousie University. If the will and its capacities for domination and control are the only measures of worth, we can be led to much greater ambitions than were possible for the ancients. To be "led forth" by things not quite comprehensible is to open oneself to vulnerability, chance and disappointment, as well as success. This is what it is to love. To make the world according to one's own will appears initially to be more reassuring. One can aspire to overcome the defects of nature by developing the arts and sciences (technology), and the free power of human reasoning can show us "in its impartial, universalizing power, why the arbitrary and deficient allocations of nature ought not to be allowed to continue" (24). We see no reason necessarily why we ought to accept the vicissitudes of nature.

The victory of the will in the modern world appears to be more humane than the assent to natural or cosmic forces, but if we return to the two principal objects of human concern, death and justice, we may get a different picture. The will cannot conquer death, not matter how hard it may try. Grant's greatest contribution to modern political thought, however, may be in his relentless questioning of why the will should care at all about justice. If we do not believe that there are any final purposes for which we are fitted, how can we think about justice? For Grant, the greatest modern exponent of justice was Kant, because he was the only modern thinker who tried consciously to tie the will in its freedom to morality. Famously, Kant posited his categorical imperative, that the only truly free will is a will that is moral. One ought to order one's actions in such a way that they are consistent with what one would choose for anyone who is autonomous and free. For Grant, "[Kant's] categorical imperative presents to us the good without restriction. That justice which is our good depends upon our willing of it. We are the makers of our own laws; we are the cause of the growth of justice among our species" (26). The best state for Kant is a republic that necessarily is based on the protection of the universal rights of man, so that all individuals can have the maximum amount of autonomy to will their own ends. In the *Metaphysics of Morals*, Kant declares that "the universal law of right is as follows: let your actions be such that the free exercise of your will can co-exist with the freedom of everyone in accordance with a universal law" (Kant 1970, 133). Morality in the Kantian universe is autonomously willed action and self-made law.

There is nothing in Kant, however, nor in any other modern thinker, according to Grant, that can sustain the commitment to morality or universal autonomy against

the force of the will to power. Grant really believed that the commitment to liberal justice—in the extension of universal rights and autonomy—was a legacy of *pre-liberal, pre-modern* conceptions of justice, a kind of laggard epiphenomenal baggage that would wane as technology advanced. Justice cannot be derived from making, only from loving, and insofar as this is a civilization bent on technology, justice is a hindrance. “It must be stated,” Grant says,

that our justice now moves to a lowered content of equal liberty. The chief cause of this is that our justice is being played out within a destiny more comprehensive than itself. A quick name for this is technology...that technological destiny has its own dynamic conveniences, which easily sweep away our tradition of justice, if the latter gets in the way (Grant [1974] 1985, 83).

Grant’s major contribution, then, to the discussion of technology, is really that the problem is not technology itself—the wedding of technique and knowledge in such a way as to perform transformative tasks—but the *kind* of thinking that underscores technology, and that kind of thinking involves a shift from meditative reflection to willing. Hannah Arendt wrote about similar themes in much of her work. In an essay called “The Concept of History,” written about the same time as Grant delivered his Massey Lecture on “Philosophy in the Mass Age,” Arendt weighs the impact that that has accrued from the shift from knowing as “beholding” to knowing as making. Whereas history before the modern period had been thought to be a record of the deeds and sufferings of human beings, it has acquired a different status today. History is no longer thought as distinct from nature, a series of actions and deeds against a backdrop of the merely given, but has become one with nature. “We know today that though we cannot ‘make’ nature in the sense of creation, we are quite capable of starting new natural processes, and that in a sense therefore, we ‘make nature’ to the extent that is that we ‘make history’” (Arendt 1958, 291).

Like Grant, Hannah Arendt attaches the modern concept of history, and its focus on making, to the ascendancy of the will. In her book on willing, part two of Arendt’s last major work *The Life of the Mind*, Arendt explored the idea of the will, tracing its evolution both in practice and in the thoughts of major thinkers in the modern world. Like Grant, Arendt concludes that: “In short, the will always wills to *do* something, and thus implicitly holds in contempt sheer thinking, whose whole activity depends on ‘doing nothing’” (Arendt 1978, 37). Also, like Grant, Arendt distinguishes this modern will to do something from the ancient

notion of *poiesis*. For Aristotle, for example, the craftsman who makes a “brazen sphere” puts together matter and form, both of which existed prior to his activity, and makes a new object that adds to the world of both given things, and man-made things. “The human product, this ‘compound of matter and form’—for instance, a house made of wood according to a form pre-existing in the craftsman’s mind (*nous*)—clearly was not made out of nothing, and so was understood by Aristotle to pre-exist potentially before it was actualized by human hands”(15). According to Arendt, the Greeks did not even have a word for the will, precisely because they had no notion of creating *ex nihilo*. Neither, according to Arendt, did the Greeks have a sense of time that was oriented toward the future:

The view that everything real must be preceded by a potentiality as one of its causes implicitly denies the future as an authentic tense: the future is nothing but a consequence of the past, and the difference between natural and man-made things is merely between those whose potentialities necessarily grow into actualities and those that may or may not be actualized. Under these circumstances, any notion of the Will as an organ for the future, as memory as an organ for the past, was entirely superfluous. Aristotle did not have to be aware of the will’s existence; the Greeks do not even have a word for what we consider to be the mainspring of action (15).

To formulate a notion of the will, one must reconfigure one’s notions of being, time and history.

Arendt links conceptually the victory of the will in the modern world, the collapse of history into nature, and the conflation of the public and private realms. One of the reasons that she devoted an entire book to an inquisition of the faculty of the will was because she realized that the locus of the will is the radically isolated individual. Unlike *thinking*, which is attached to something outside the self (to hearken back to Grant’s formulation, thinking is always a kind of love insofar as it is attached to the true, the good or the beautiful), *willing* is radically and irrefutably autonomous. As such, it is indistinguishable from power. Drawing on Heidegger, Arendt shows how even the commonplace making of things is transformed by this kind of thinking. Every act of willing on the part of an individual generates opposition, and pits itself against obstacles to be overcome. “For a carpenter for instance, the wood constitutes an obstacle ‘against which’ he works when he forces it to become a table. This again is

generalized: every object by virtue of being an object—and not merely a thing, independent of human evaluation, calculation and making—is there to be overcome by a subject. The will-to-power is the culmination of the modern world's subjectivization; all of man's faculties stand under the Will's command" (177). Seen from this perspective, the will is essentially destructive. "Technology's very nature is the will to will, namely to subject the whole world to its domination and rulership, whose natural end can only be total destruction" (178).

So we have, in the accounts of George Grant and Hannah Arendt, a bleak picture of technology and its impact on the modern world. The root of the problem is deeper than technology; it is in the formulation of the will and the conversion of thought from a meditative consciousness to a productive consciousness. What these two were really saying is that under technology, to think *is* to will. If they are right, then there is no question of tinkering with technology, or trying to subordinate it to rules and regulations, or to dam it under the rubric of a kind of Kantian moral autonomy. None of this will work. You cannot educate people to the appropriate uses of technology, if in fact the participation in technology requires a mode of thinking that precludes management of ends. There is a large intellectual industry these days engaged in just this task, but to what avail?

Margaret Somerville is the founding director of the Centre for Medicine, Ethics and Law at McGill University, and has been an advisor to the World Health Organization, and the United Nations High Commissioner for Human Rights, and UNESCO. In her book *The Ethical Canary* (2000), she proclaims that "scientific progress alone would be a hollow victory without the moral and ethical progress that must accompany it and ensure the humanization and humanity of our development and use of science." Somerville acknowledges that we have a "stunning power" in the modern world, to alter the very basis of human life through genetic and reproductive technologies. "The possibilities presented by these technologies include *in vitro* fertilization; cloning human embryos; cloning our adult selves; using ova from aborted fetuses to produce children whose "mother" was never born; and designing our progeny through genetic manipulation in ways that range from choosing certain physical characteristics—such as height or eye or hair colour—to dramatically augmenting their intelligence through a so-called smart gene and even creating disease-proofed children" (3).

Margaret Somerville recognizes that in the past “we wove the metaphysical facts in which we wrapped the events of birth and death mainly using the resources that we found in religion.” The great religions gave us a “shared story” that we have since abandoned in favor of a collective “faith” in the new science. “In particular, modern medical miracles held out hope, if not of immortality as most religions do, at least of delayed mortality. This new science radically altered our perceptions of the nature of human life, its transmission and its passing” (3). What Somerville advocates is a more conscientious development of ethics, and under that concern she lists three factors: values, trust and risk. “Ethics deals with values. For one thing, doing ethics requires us to identify our values. Moreover, we must justify the choice of values on which we base our ethical decisions” (289). We choose our values, we convert them into systematized ethics, and then we invest trust in others once we have made an intelligent choice.

The problem with this response is that values themselves are products of the will, not capable of containing the will. Rights, values and conscience, as Edward Andrew has explained, are the “holy trinity of liberalism,” and all are subsumed in a polity that is conceived as a “marketplace of moral and consumer choice” (367).³ Ethics construed as “choosing values” does not supply a vantage point from which to assess and judge technology; it allows us only to choose among the alternatives within technology. Values, as Andrew warns, are “relational and exchangeable goods” and they “represent the language of the marketplace, of trade and trade-offs, not of deep loves or strong loyalties” (367). Values can always be traded *up*, as one becomes more sophisticated, or has more options.

Conceived in this way, education in a technological society seems to be a matter of keeping informed, so that one is aware of the broadest range of options. We are urged as citizens to make ourselves aware of technological advances so that we can make wise decisions. If we are ill, we are encouraged to find out as much as possible about the nature of the illness and the treatments available, to shop around for medical care, and to demand from the state that we receive state of the art treatment. Some of the most contentious debates in our political context are those surrounding the issue of when and under what circumstances it might be an ethical decision to choose death, but even in this case, one can see that the value lies in the individual, who is viewed as a manager of alternative choices. In January 2005, a Canadian man held a press conference to advertise his own suicide. Marcel Tremblay had a fatal lung disease and he told reporters that he had decided to pull a helium-filled bag over his head and kill himself because he “had nothing to look forward to but a lousy death.” Mr. Tremblay “chose not to

suffer on from a disease that was slowly choking him to death, and his friends and family backed him up, sending him off with a wake at his suburban Ottawa home” (*Globe and Mail*, 2005). The *Globe and Mail* editorial noted that there was something about this “public leave-taking” that makes the conscience itch: “an earlier time might have called it self-murder. Today, according to Mr. Tremblay, his suicide was simply a matter of choice—perfectly legal and thoroughly disturbing.” Every major religion condemns suicide, but can we even articulate why? The most important consideration within the framing of a rights-based technological society is how much autonomy an individual can have in willing his or her own destiny, and overcoming as far as possible contingencies of nature, disease, suffering and dying.

Somerville’s attempts to think through the moral quagmire of modern medical technologies is admirable, but if George Grant and Hannah Arendt are right about the fundamental issue—that the problem is a philosophical one of the will, and not a practical one of technology—then Somerville’s attempts seem an impoverished response. As Grant put it: “We are called to understand technological civilization just when its very realization has radically put in question the possibility that there could be any such understanding” (1996, 34).

There is an alternative way of living in the world, other than that immersed in the modern combination of will, values, and technology, and one can get some sense of this by reading pre-modern accounts of politics. Here, I can only refer to what I have learned from reading and teaching Aristotle, and over the years of doing this repeatedly I believe that I have some sense of the world that is lost to us under technology and the victory of the will. Here are some of the things that Aristotle says about living well. The purpose of a human life is to live a life of happiness, according to reason, and in pursuit of virtue. These things all belong together. Happiness is not a state but an activity, and it requires some understanding of the purposes for which we are fitted, which is why happiness is tied to reason and virtue (some understanding of the good). When Aristotle tries to sort out what the best activity is for human beings, things get opaque. Theoretical activity, he says (that is, thinking), seems to be the supreme kind of happiness, because it dwells on the greatest virtue. It is the most “continuous activity,” that which least depends on the contingencies of the world, that which has “remarkably firm and pure pleasures” (Aristotle 1985, 1177a25), and that which is the most self-sufficient. One can always think, if one has the native capacity for it, no matter what the circumstances of the world; this seems to be what Aristotle is saying.

A secondary kind of happiness can be found in a life of action, a different kind of virtue, but one that is more specifically “human” according to Aristotle (1178a8). The life of action is more human than the life devoted to contemplation, because it is a life tied to the many human goods that one enjoys in family and political community, and because it is a life that requires the development not just of intelligence, but of character. In the life of active engagement in the world, “intelligence is yoked together with virtue of character, and so is this virtue with intelligence.” The development of character cannot happen without deliberative decision about the most ordinary things. How will I earn a living, how will I treat my friends, how will I respond to situations I find myself in: with anger, with patience, with contempt, with generosity, and so on. Human virtues, Aristotle continues, are tied to feelings, not just to thoughts, and the virtues of human beings are a consequence of this “compound.”

In the exercise of practical virtue in a *human life* that reflects the compound of thoughts and emotions, the habituation of the political community is absolutely central. It is in the political community that the nature of human beings is brought to fruition, or else corrupted. There is no such thing for Aristotle as an *innate* nature; nature is a potential that can be realized or thwarted under specific conditions. What is natural for human beings cannot really be separated from what is habitual, or from what we are taught. To understand what is ethical for individuals, in Aristotle’s way of thinking, one has to start by thinking about the whole of which individuals are a part, and this whole includes cosmic things as well as political units and families. One does not begin with the individual, with his or her will, values and rights. The political theorist Stephen Salkever traces this great divide between Aristotle’s way of looking at the world and ours, to the developments in scientific thinking that have so profoundly affected how we view questions of education and ethics. “Scientific reasoning . . . explains natural phenomena by treating them as wholes in need of being reduced to the lawful motion of the smallest parts: real science is in part the search for the smallest element. Scientific sophistication involves unwillingness to treat apparent wholes—such as plants and animals—as if they were real wholes” (Salkever 1991, 326).

Jonathan Jacobs, a philosopher who draws on Aristotle to draft a kind of “virtue ethics” for the modern citizen of liberal democracies, writes in a compelling way about “choosing” one’s character under conditions that are themselves formative for those choices. “[T]here are objective goods for human beings [and]

excellences that are perfections of human nature” but “our grasp of the reasons that certain goods are goods and our ability to appreciate them as such depends on second nature. Habituation is crucial to bringing a person into a condition to make these acknowledgements and to have these abiding concerns” (Jacobs 2001, 95). According to Jacobs, we choose our characters because we act in ways through life that eventually congeal into a settled and identifiable persona, but the fact is that those choices are made within a context that in itself is constitutive. Character is something that is formed by habit and practice in a specific context; it is not the consequence of intellectual judgment, although certainly decisions are part of our habituation. The point is, though, that a good character is not the same as a correct principle. The latter can be arrived at conceptually, through analysis, in the way that Margaret Somerville talks about embracing modern ethics: one thinks about choices, then posits a value, and then follows it, until of course one may reassess in light of newer information, and then “trade-up” in values. Jacobs, on the other hand, drawing on Aristotle, is talking about a settled state of character that is developed through habit, choice, instruction and practice. His point is that one cannot in fact change one’s character once it is formed, unlike “values” which one can always exchange.

The development of “character ethics” makes the issue of education a critical one. This is why Aristotle thought that the *polis* was the natural home for human beings, and it is only under the guidance of law and community that is attenuated to some good, that people can live purposeful lives. This is such a remote way of thinking to those of us in the modern world that it is almost impossible to think through the implications of what Aristotle means. For Aristotle, the cultivation of virtue in the fully human sense, as a combination of the development of intelligence and character, is unthinkable outside politics. As Stephen Salkever put it, “Political activity [for Aristotle] is neither a self-generating end in itself nor an association for the protection of individual rights; its constitutive function is the development of virtuous personalities or ways of life” (1991, 37).

Aristotle was well aware of the difficulties of cultivating virtue, or finding happiness, in a vacuum. Toward the end of the *Politics*, he addresses these concerns. He is not all that optimistic about the benefits of argument. “If arguments were sufficient by themselves to make people decent, the rewards they would command would justifiably have been many and large” (Aristotle 1984, 1179b5), but the fact is that “the soul of the student needs to have been prepared by habits for enjoying and hating finely, like ground that is to nourish seed.” It is hard for anyone, adult or child, to move toward virtue if he has not been brought

up under good laws (1180a), and the sad truth is that a father's instructions lack this power, as do the exhortations of any individual "unless he be a king or someone like that" (1180a20). It seems to be the case for Aristotle that if one has the bad fortune to live in a corrupted state, with little or no proper guidance from the laws, that it is impossible to pursue a happy life in the active sense. One cannot as an isolated individual, pursue a good that is thwarted by the greater whole in which one lives.

Given the fact that the ancients did not conceive of building a perfect state on earth, but only of hoping for such a state by chance (or praying for it), what teaching can we possibly take from Aristotle on political education? All I can say is that under the auspices of technology and the primacy of the will in modern thinking, and how these things have pervaded every aspect of our existence, I find it hard to prescribe anything. There are no kings in democracies. If our understanding of justice is reduced to "values" that are the consequence of our own wills, and our wills are integrally bound up with action in a way that has made technology possible, then there can be no "ethics" that stand outside technology, no political community that can divert the will to power. Our characters are inextricably tied to the habituation of a technological milieu.

There are those contemplative sorts however, who suggest a much less ambitious course than the reform of political institutions under technology, and who advocate a turning away or existential relapse from technology. An example of this can be found in an interesting lead article in the *Atlantic Monthly*, a magazine of wide circulation in North America, in 2004 by Michael Sandel. Sandel is a professor of political theory at Harvard, and best known for his communitarian critique of John Rawls' *Theory of Justice*. Most of Sandel's work has been devoted to trying to bolster atrophying levels of community involvement in a society that increasingly turns toward atomism. Critical of John Rawls' notion that liberal democracies ought to be places that tolerate the widest range of individual choices, both economic and moral, Sandel has tried to make a case for the embeddedness of choices. He has stressed the ways in which people's choices are shaped by the communities into which they are born, and which habituate them in specific ways. While a critic of Rawls, Sandel nevertheless had previously always maintained his commitment to the broad parameters of the liberal society, with its protection of individual autonomy. In this *Atlantic Monthly* piece, however, Sandel takes a different turn. Sandel attacks the unleashing of "human freedom unfettered by the given". Looking particularly at genome research and its possible consequences for the

manipulation of human life, Sandel says that this kind of research “threatens to banish our appreciation of life as a gift, and to leave us with nothing to affirm or behold outside our own will.” As a response to this, Sandel takes the position that we ought “to acknowledge the giftedness of life” and to recognize that “our talents and powers are not wholly our own doing.” It is also to recognize that,

...not everything in the world is open to whatever we may desire...
Appreciating the gifted quality of life constrains the Promethean project and conduces to a certain humility. It is in part a religious sensibility. But its resonance reaches beyond religion (Sandel 2004, 54).

But exactly what does “appreciating the gifted quality of life” accomplish? And what does it mean to appreciate the “gifted quality of life” in a technological society? Does it mean that, if my child is born prematurely, I let nature take its course and do not intervene with massive amounts of medical expertise? Does it mean that if I discover that I have cancer, I think about my impending death instead of embarking on an informed series of the latest treatments in chemotherapy? Is it just for me to absorb the cost of such treatments when there are thousands of children dying every day in the world because they don’t have enough to eat, or because their water is unclean? My point is: can we realistically stand by and admire the “given” in a technological society?

Sandel’s karmic stance in the *Atlantic Monthly* article has resonances of Heidegger. Heidegger, as we know, thought deeply about technology, and his final response to it was standing still and waiting for the appearance of God. This was a position that he came to only after his disastrous foray into politics, something that still is the subject of enormous controversy in academic circles. Hannah Arendt issued an infamous apology for Heidegger on the occasion of his eightieth birthday, in which she tried to explain Heidegger’s initial support of the Third Reich, and his subsequent retreat into silence.⁴ The pivotal moment for Heidegger, according to Arendt, was his recognition of the paramouncy of the will in modernity, and Arendt believed that Heidegger was the first philosopher to see clearly the destructive effect that the will has on thinking. “The outcome of the whole thing,” Arendt (2004, 161) writes—and by the “whole thing” she means Heidegger’s seduction by the Third Reich—“was the discovery of the will as the will to willing and thus as the will to power.” Heidegger’s reaction to this “discovery” was to retreat back into thought, a stance that Arendt appeared to endorse in this apology:

Composure (*Gelassenheit*) is part of thinking and, from the perspective of willing, the thinker has to say, only apparently paradoxically: “I want non-willing.” For only then, only if we ‘wean ourselves from the will’, can ‘we release ourselves to the sought-for essence of the thinking that is not willing’ (61).

I draw on Heidegger and Sandel as examples of what I see as the philosophic response to the problem of will and technology. If the fundamental core of technology, as George Grant and Hannah Arendt (and Heidegger, according to Arendt) have identified, is the primacy of the will and its intrinsic entanglement with action, one possible response is to stand back in the paralysis of thought. The choices appear to be immersion in technology or detached withdrawal. The individual can always retreat. I tracked this response in a book that I wrote on Hannah Arendt some years ago, and noted that for Arendt, the turning away from willing toward “pure” thought, was a reluctant stance taken only under conditions in the world that make any kind of action compromising. A life of withdrawal is never an optimal choice, but one that is pursued in sadness in a world that precludes meaningful citizenship. Arendt quotes Lessing:

Flight from the world in dark times of impotence can always be justified as long as reality is not ignored, but is constantly acknowledged as the thing that must be escaped. When people choose this alternative, private life too can retain a by no means insignificant reality, even though it remains impotent. Only it is essential for them to realize that the realness of this reality consists not so much in its deeply personal note, than it springs from privacy as such, but inheres in the world from which they have escaped (1968, 22).

I like this citation from Arendt because it captures the tension that exists between our existence as thinking beings, in solitude, and as political beings, living among others in meaningful association. Arendt was always uneasy about the solitary life of thinking withdrawal, although she defended it, both in Heidegger and in general, as a reasonable response to desperate political conditions.

Can *thinking*, in the way that Arendt formulates it, lead to a resurrection of political life? Dana Villa wrote a book recently called *Socratic Citizenship*, in which he invokes the model of Socrates for a reinvigorated citizenship in liberal democracies. Rather than lament the Periclean model of ancient democracy, with its robust conception of political engagement, Villa calls for a disengaged

citizenship modeled on the reflective negativity of Socratic questioning. Everyone must “take up the project and the burden of their own moral self-formation” (Villa 2001, 305). Thinking for oneself requires “the realization that *one does not have* a firm grasp of what virtue is” (305). Villa’s prescriptions for citizenship involve “a never-ending practice of critical disillusionment,” coupled with a healthy sense of the intrinsic moral inadequacy of all “local” form. It also outlines a new conception of citizenship, “one which does not demand the *sacrificio dell’intelletto* and in which moral and intellectual integrity finally take their rightful place as important *civic* virtues” (309).

The problem with Villa’s formulation is that moral and intellectual integrity are not the same things, and they never have been. Even in the best political circumstances, there is always a tension, and this unresolved tension can be found in Aristotle. We recall that for Aristotle, the happiest life in some sense is the life of contemplation because it is the purest, the most self-sufficient and the most “continuous” activity. Thinking “aims at no end beyond itself” (Aristotle 1985, 1177b), and does not cause trouble. Political and moral activity, even at its best, necessarily involves actions that entail relations of power and honor, and usually involves the handling of enemies as well as friends (1177b). We ought, as far as possible, “to go all lengths to live a life that expresses our supreme element,” which is the life of contemplation, but a life of continuous thinking is more divine than human. It does not require the development of character, or of the moral virtues, all of which have to do with the management of “troubles.” One can understand a lot, and still be a lousy human being (which is the most common indictment of Heidegger).

We seem to be living in an age of extremes. For reasons that are complex and historical, the tension that has always existed between *theoria* and *praxis*, between the “most divine element” in human beings, and the most human elements in human beings (their actions and their living together in the world), is broken. To return to George Grant, we can say that the break in this tension has made it possible for the will to ascend to untold heights and to become the existential reference point for people living under technology. We can understand something about this break, but I don’t see any way that we can “fix” it. As I see it, the two realistic alternatives in the modern world are those of Margaret Somerville and like-minded ethicists on the one hand, and people like Heidegger, Arendt and Grant on the other. One lives and develops one’s “ethics” within the parameters of technology, arranging and classifying values, thereby living within the vortex of modern “will”, or one abstains as far as possible through thought.

I think it is important, though, that if one adopts the latter stance that one does so without smugness and *hubris*. A life of withdrawal is not divine, it is unhuman. This is why I prefer fiction writers to philosophers for the most part. They portray better the aesthetic of the modern world, and in their attention to detail, they capture better what is lost. One can live in a “tragic realism,” as Jonathan Franzen says, without living in despair. Emerging from his solipsistic despair and embracing hope, Franzen writes:

How could I have thought that I needed to cure myself in order to fit into the ‘real’ world? I didn’t need curing, and the world didn’t either; the only thing that needed curing was my understanding of my place in it. Without that understanding—without a sense of *belonging* to the real world—it was impossible to thrive in an imagined one (2002, 94).

Franzen wrote a review of Alice Munroe’s *Runaway*, her most recent collection of short stories in the *New York Times Book Review*. Alice Munroe is a Canadian writer from Southern Ontario who has collected many accolades for her stories about ordinary people in small settings whose lives are afflicted by all the things that have always beset human beings. Her characters love, they struggle to understand, they make serious moral transgressions, they are filled with remorse, and sometimes they experience grace. Franzen calls Munroe probably the greatest living writer in North America today. As Franzen says, she does not give her books grand titles like *Canadian Pastoral* or *Canadian Psycho* or *Purple Canada* or *In Canada* or *The Plot Against Canada*, the point being that her aspirations are not huge or pretentious or hubristic. Toward the end of the review, Franzen begs people to read Munroe, and he asks: “Can a better kind of fiction save the world? There’s always some tiny hope (strange things do happen), but the answer is almost certainly no, it can’t. There is some reasonable chance, however, that it could save your soul” (2004).

If education is always about learning to die and learning how to be just, and this is a constant for human beings, and if George Grant and Hannah Arendt are right about the deep, deep conundrums of living in a technological society, then this is the most that I can say. Education begins with saving one’s own soul. One does that by thinking, and by opening oneself to the best accounts one can find that map the terrain of the modern world. What one does after that is a matter of practical judgment. I do think it is safe to say that a person who reads authors like Alice Munroe and Jonathan Franzen is not likely to spend his or her money

buying a kidney from some destitute person in a developing country, in order to forestall their death, just because it is possible to do that. Such a person is less likely to see every human relation as one of opposition, with winners and losers in a struggle of the will. Such a person is less likely to believe in the perfectibility of either himself or of the world. Such a person is less likely to respond to the world with the smug detachment of what Arendt called the “professional thinker,” and more likely to respond with a prayer.

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¹ There is a very good discussion of the problem in George Grant's work with the conflation of the good and the beautiful, or, put differently, between the conflation of the philosophic and the poetic (Cf. Andrew, 1996). For the purposes of this paper, I am most interested in distinguishing between activity that is aimed at something outside itself (whether in philosophy, or art, or production) and activity that is self-referential, so I shall not be considering this difference that Andrew specifies, though I actually think his criticism of Grant on this ground is right.

² On this matter, Grant would agree with Leo Strauss' interpretation of classical political philosophy. Grant shared with Strauss the view that neither Plato nor Aristotle was interested in building an "ideal state", but rather precisely in showing the error of such a project. Strauss argues that the rejection of the perfectibility of man and states is the precise point of departure between the ancients and the moderns. "Because [the ancients] saw how limited man's power is, they held that the actualization of the best regime depends on chance. Modern man, dissatisfied with utopias and scorning them, has tried to find a guarantee for the actualization of the best social order" (Strauss 1991, 210).

³ Edward Andrew has written a trilogy on the interweaving of rights, values and conscience in the modern world: *Shylock's Rights: A Grammar of Lockean Claims* (Toronto: Univ. of Toronto Press, 1988); *The Genealogy of Values: The Aesthetic Economy of Nietzsche and Proust* (Lanham: Rowman & Littlefield Publishers, 1995); *Conscience and Its Critics: Protestant Conscience, Enlightenment Reason and Moral Subjectivity* (Toronto: Univ. of Toronto Press, 2001).

⁴ Arendt wrote to Heidegger in 1969 and sent him this address, with the prefatory dedication: "For you, for September 26, 1969, after forty-five years, as ever, Hannah". Hannah Arendt had been Heidegger's student and his lover when she was young (Arendt 2004, 148). This apology was published in the *New York Review of Books* 17, no. 6 (October 1971): 50-54.

The Politics and Philosophy of Anti-Science

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Earlier this year, the Cambridge-based group the Union of Concerned Scientists (UCS) released a statement accusing the Bush administration in the United States of anti-science practices and policies. They write, “A growing number of scientists, policy makers, and technical specialists both inside and outside the government allege that the current Bush administration has suppressed or distorted the scientific analyses of federal agencies to bring these results in line with administration policy” (2004, 7). They go on to charge the White House with distorting scientific data on a diverse array of issues from global warming to condom use; air pollutants to endangered species; forest health to weapons of mass destruction. They conclude, “There is significant evidence that the scope and scale of the manipulation, suppression, and misrepresentation of science by the Bush administration is unprecedented” (8). Science, they say, is being obstructed for the sake of politics.

I begin this paper by highlighting how this antagonism between science and politics relates to education policy. This is followed by a consideration of another area of administration policy criticized by the Union of Concerned Scientists: stem cell research and therapeutic cloning. I then consider the work of Francis Fukuyama and Leon Kass to help clarify the overarching philosophy that may guide all of these “anti-science” policies.

Actually, instead of one philosophy I argue that it is a strange mix of two philosophies. On the one hand, the administration adopts an Aristotelian view of politics—that the higher goods of politics must subordinate and regulate the lower goods of technology—and, on the other hand, they accept the Heideggerian view of technology—that technology has a dehumanizing effect. But, as I suggest, these two philosophies do not mix easily. In turn, the Bush administration seems to at once embrace all the benefits of technological progress and recoil at the prospect of a society dominated by technological control.

I

The anti-science position of the Bush administration has an indirect but far reaching affect on the way science is taught in schools. While the formation of

curriculum is done on the state and local levels, federally funded programs have the affect of promoting anti-science education and opening critical discussion of accepted scientific conclusions. For example, the UCS report states:

Since his tenure as governor of Texas, President George W. Bush has made no secret of his view that sex education should teach teenagers “abstinence only” rather than including information on other ways to avoid sexually transmitted diseases and pregnancy. Unfortunately, despite spending more than \$10 million on abstinence-only programs in Texas alone, this strategy has not been shown to be effective at curbing teen pregnancies or halting the spread of HIV and other sexually transmitted diseases (16).

In fact, the rates of teenage pregnancy actually increase when students are not exposed to comprehensive sex education. Beyond the clearly negative impact this program has, “the Bush administration went further by distorting science-based performance measures” (17) and suppressing effective sex education information. Similar efforts have been made on issues such as the link between breast cancer and abortion as well as condom use and HIV/AIDS.

On the surface, the motivation behind this distortion and suppression is political, to “satisfy conservative constituents” (Clymer 2002, 17). This in itself is nothing new. During his 1980 campaign for President, Ronald Reagan called evolution “a scientific theory only” and not “infallible as it was once believed” out of fear that he would alienate the religious right. George W. Bush similarly argued that when it comes to evolution “the jury is still out” (NYT 2000, 29 Oct.).

But, this also suggests that this is more than just an ideological battle or crass political maneuvering. Instead, it is a reflection of the President’s deep religious convictions. For example, Bush made it be known that he would not object to the Kansas Board of Education decision in the late 1990s that demanded the state’s school districts teach creationism alongside evolution. He explained, “people ought to be exposed to different theories as to how the world was formed” (Associated Press 1999, 14 Nov.). And, in recent years, there has been an active effort to challenge the scientific validity of evolution in public schools. The Ohio State Board of Education put forward an amendment to the curriculum that would ask students to “to investigate and critically analyze aspects of evolutionary theory.”¹

II

The same religious conviction was also readily apparent in President Bush's original announcement of the moratorium on stem cell research in August of 2001. He said:

while we must devote enormous energy to conquering disease, it is equally important that we pay attention to the moral concerns raised by the new frontier of human embryo stem cell research. Even the most noble ends do not justify any means...My position on these issues is shaped by deeply held beliefs. I'm a strong supporter of science and technology, and believe they have the potential for incredible good—to improve lives, to save life, to conquer disease. Research offers hope that millions of our loved ones may be cured of a disease and rid of their suffering...And, like all Americans, I have great hope for cures. I also believe human life is a sacred gift from our Creator. I worry about a culture that devalues life, and believe as your President I have an important obligation to foster and encourage respect for life in America and throughout the world (Bush, 2001).

At once he applauds science and technology research but also suggests that the effects of that work represent a potential affront to his own Christian beliefs and the sacredness of human life. These contradictory positions have led to the adoption of an ambiguous middle ground policy on stem cells: allowing the research to continue but only on existing stem cell lines.² This policy has angered both opponents and advocates of stem cell research. On the one hand, it takes advantage of stem cells that have already been harvested from embryos where, as Bush says, “the life and death decision has already been made” (2001). Opponents argue that it is immoral to exploit human embryos for the sake of scientific advancement, regardless of any timeline or previous work. On the other hand, researchers and individuals that could benefit from new stem cell derived therapies argue that the United States is being left behind, that there are far too few stem cell lines to engage in effective research.³ Either way, the policy was intended as a stopgap measure rather than providing a clear direction for stem cell research in the United States.

To be fair, President Bush's impasse may reflect the hesitancy of the rest of the country, if not the world, to fully embrace stem cells, cloning, and other new biotechnologies. There is general agreement that we need time to reflect on and clearly articulate what these technologies will provide, their long-term impact,

and potential dangers. This was the idea behind the creation of the President's Council on Bioethics. In their first major report in July 2002, *Human Cloning and Human Dignity* (HCHD), the council presented recommendations for two types of cloning: reproductive cloning and therapeutic cloning. The council expressed unanimous opposition to reproductive cloning or, what they call, "cloning-to-produce-children." While they recognized some of the potential merits of the technology,⁴ they decided that, when considered within the larger context of society, any potentially good outcomes would be far outweighed by wider negative impacts.⁵

Overall, the council's opposition to reproductive cloning did not focus so much on the act of cloning itself but the problems that may arise post-cloning. Questions of long-term health, freedom, family, identity and society were at the forefront. The council recognizes that the cloning debate cannot remain solely focused on technical and safety issues but must also consider the larger societal effects of the technology. Robert Wachbroit, a research scholar at the Institute for Philosophy and Public Policy in Maryland, agrees, writes: "the ethical issues of greatest importance in the cloning debate...do not involve possible failures of cloning technology, but rather the consequences of its success" (1997, 2). Wachbroit argues that the real problems of cloning are philosophical, ethical, political, and social and cannot be addressed on only scientific grounds. The implication is that in order to understand fully the impact of cloning and, it can be assumed, other biotechnologies we must go beyond the expertise of scientists and technologists and include ethicists, philosophers, sociologists, and others to advise on larger issues and dilemmas.

Following this logic, membership on President's Council is divided between a bioethicist, a political philosopher, a professor of Christian Ethics, a neo-conservative columnist, a professor of metaphysics and other distinguished philosophers, law professors, *as well as* medical doctors, biochemists and neuroscientists. And, despite this diversity, they all agreed that reproductive cloning should be banned.

However, the council was split on whether to allow therapeutic cloning. In a 10 to 7 decision, they recommended that the original moratorium on federal funding be extended for four more years.⁶ In contrast to the thinking that went into their reproductive cloning decision, the council now focused on the harvesting of stem cells rather than the post-cloning, social and political implications. The main issue for many council members was that the cloned embryos must be destroyed

in order to harvest stem cells. In other words, the council split on the rights of the unborn. Therefore, when they thought through the long-term, post-cloning implications of reproductive cloning, there was less consideration of the societal affects of genetic treatments, therapies, and enhancements derived from therapeutic cloning and stem cell research.⁷ The debate remained centered on the status of the embryo.⁸

III

Still, this outcome cannot be understood simply as an extrapolation of the well-established conflict between the “pro-choice” and “pro-life” movements. The work of two of the most well-known and influential council members suggest that there is a deeper set of philosophical concerns that led to the council's recommendations and the White House's policies.

It is not that Francis Fukuyama and Leon Kass espouse anti-science philosophies or are neo-Luddites (although Kass seems to come close at times). Instead, their understanding of politics and technology leads them to at once assume that all technology requires some form of regulation and that the introduction of new technologies represent a threat to human dignity, natural limitations, or the things that define us as human.

In his recent book *Our Posthuman Future: Consequences of the Biotechnology Revolution* (2002b), Francis Fukuyama argues that politicians and legislators must pay more attention to new developments in technology and, more specifically, biotechnology. He writes “countries must regulate the development and use of technology politically, setting up institutions that will discriminate between those technological advances that promote human flourishing, and those that pose a threat to human dignity and well being” (Fukuyama 2002b, 182).

The Bush administration has adopted this thesis: allowing politics to rule over science. Of course, it may seem more sensible to allow scientists and technologists regulate themselves. Arguably, only those that fully understand the technology—who understand what it can and cannot do—are qualified to make decisions about its larger health and social effects. For example, a few years ago the late world-renowned computer scientist Mark Weiser, then the chief technologist at the Xerox Palo Alto Research Center, expressed some alarm at his company's work on “invisible thinking computers.” He worried that it might lead

to “dumber people” unable to think for themselves and, by consequence, unable to control technology. Weiser explained:

Early on we confronted the question of how to do this work most ethically. We concluded that it is vitally important for everyone, scientists and consumers alike, to remain alert to the ethical issues we may face as the world becomes filled with embedded, invisible computers...With a little vigilance and planning, we can reap the benefits of this new technology without compromising our intelligence, our opportunities or our freedom (Weiser 1997, 118).

Here, Weiser seems the person who best understands the full range of dangers and benefits that this new type of computer presents. Most politicians are probably not even aware that this kind of technology exists and that these dangers are on the horizon. A similar example comes from William Joy, co-founder of Sun Microsystems. In an interview on PBS, Joy expressed his concerns about “self-replicating nanotechnology,” “If you can let something loose that can make more copies of itself it is very difficult to recall. They are everywhere and make more of themselves. If attacked, they mutate and become immune...That creates the possibility of empowering individuals for extreme evil...Sun has always struggled with being an ethical innovator” (2000). Again, only Joy and a few others have the expertise to understand the full possibilities that this technology presents. In turn, it could be argued that legislators and regulators should heed the advice of people like Weiser and Joy and develop appropriate laws and prohibitions. Conventional thinking suggests that the scientists should lead the politician not, as Fukuyama argues, the other way around.

Still, Fukuyama contends that, while politicians do not necessarily have a sophisticated understanding of science, they do understand the goals which science pursues. That is to say, while scientists and technologists may be experts in technical means, political leaders are the ones who decide on the ends. Scientists can create plutonium but political leaders decide whether it is put into bombs or power plants. Likewise, scientists can develop cloning technology but politicians ultimately decide whether it will be used for reproductive, therapeutic purposes or, perhaps, not all.

While Weiser and Joy have expertise in computer science and robotics, they do not have an authoritative knowledge of social values, morality or ethics. Despite

the fact that they “remain alert to the ethical issues” and that their company is an “ethical innovator,” it is wrong to assume that they really understand what it means to be ethical. Consider Robert Oppenheimer's (1954) infamous statement about experiment: “When you see something that is technically sweet you go ahead and do it and you argue about what to do about it only after you have had your technical success. That is the way it was with the atomic bomb.” Obviously, Oppenheimer’s startling, disturbing admission about the ethical sensibilities of the Manhattan Project scientists cannot be universally applied to all scientists and technologists. Nevertheless, it is true that ethics is not in and of itself the purpose of science and technology. Many unethical things can still be rightly called scientific and technological. Nazi experiments on concentration camp prisoners were evil, horrible, and unethical yet still qualify as science. The same point applies to American radiation experiments on military personnel during the Cold War. Oppenheimer himself came to view atomic and nuclear weaponry as unethical but, despite this, the Bomb is still clearly technology. According to Oppenheimer, technical success is the goal of experiment. Ethics is something else.

Of course, we could just as well argue that ethics is not the goal of politics and that political leaders are in an equally bad position to make ethical judgments about technology or anything else for that matter—they are self-interested, corruptible, and partisan. This being the case, they are in no position to tell anyone what to do. However, Fukuyama has a different idea:

The case that I will lay out here might be called Aristotelian, not because I am appealing to Aristotle's authority as a philosopher, but because I take his mode of rational philosophical argument about politics and nature as a model for what I hope to accomplish...Aristotle argued, in effect, that human notions of right and wrong—what we today call human rights—were ultimately based on human nature. That is, without understanding how natural desires, purposes, traits, and behaviors fit together into a human whole, we cannot understand human ends or make judgments about right and wrong, good and bad, just and unjust (2002b, 12).

Fukuyama’s “case” is Aristotelian because he argues that the politician or statesman best exemplifies an ethical understanding between right and wrong, good and bad, just and unjust, etc. In the Aristotelian model, politics necessarily implies ethics, and the statesman necessarily implies a person of good and ethical

judgment. In both *Ethics* and *Politics*, Aristotle argues that the statesman or *phronimos* is the person with the *greatest* capacity to understand what is ethical and, more importantly, the *most* able to apply that understanding to the laws and policies of the city.

In fact, in the *Politics* he is clear that the intellectual virtue of good judgment or *phronesis* is the exclusive virtue of the statesman— *phronesis*, he writes, is “the only form of goodness which is peculiar to the ruler” (Aristotle 1958, III, iv, §17). In Book VII of the same text, the statesman is described similarly as the person who knows “what is the end or aim to which a good life is directed” (§8). Aristotle’s statesman/*phronimos* is not a cobbler, a blacksmith, or a house builder but still understands the ends to which all of these technical crafts aspire: the good and happy life. Likewise, Fukuyama’s political leader may not be a geneticist, biochemist, or roboticist but can still judge whether these technologies are directed toward good ends. Because the statesman or *phronimos* understands the ends of the city, human flourishing, and human dignity, they are in the best position to judge what crafts or technologies belong in the city, not the craftsman, scientist or technologist. So, as President, George W. Bush is cast in the role of the Aristotelian *phronimos*, attempting to find a middle way through the contentious cloning debate and the evolution debate but also exercising the power of a statesman to enforce his decision.

Importantly, though, Aristotle’s statesman does not hold a fundamental suspicion against technology. The point for Aristotle is that technology is good only when subordinated by higher virtues such as those associated with ethics and politics. In the *Politics*, he is clear that we need the products of *techne* or “technical knowledge” in order to live good and full lives (1958, VII, i, 13) but also writes that “...it is for the sake of the soul that these other things [external goods] are desirable, and should accordingly be desired by every man of good sense — not the soul for the sake of them” (9). This is a warning that external goods, the products of technology, should be used in the service of being a good person and living a good life. In other words, for Aristotle, there is a hierarchy of goods or virtues that makes the higher ends of politics the guiding principles of the lower ends of technical knowledge. Because politics has a higher end, it determines the lower ends of technology rather than the other way around.

Therefore, according to Fukuyama, a great onus is placed upon the judgment of our political leaders to find the right balance between human flourishing and potential affronts to human dignity. This is the same idea expressed by Leon

Kass, the chairman of the Bioethics council, in his 1997 testimony in front of the American Bioethics Advisory Commission, on the subject of cloning:

You have been asked to give advice on nothing less than whether human procreation is going to remain human, whether children are going to be made rather than begotten, and whether it is a good thing, humanly speaking, to say yes to the road which leads (at best) to the dehumanized rationality of Brave New World. If I could persuade you of nothing else, it would be this: What we have here is not business as usual, to be fretted about for a while but finally to be given our seal of approval, not least because it appears to be inevitable. Rise to the occasion, address the subject in all its profundity, and advise as if the future of our humanity may hang in the balance.⁹

He concludes, “The President has given this Commission a glorious opportunity. In a truly unprecedented way, you can strike a blow for the human control of the technological project, for wisdom, prudence, and human dignity.” Kass makes an unequivocal plea to ban reproductive cloning not simply because it is unethical but also because it suggests the loss of “human control” of technology. This is the same premise of the Fukuyama thesis: government and legislators must assert themselves over and *against* the ends of science.

Kass, however, does not limit his concern about technology to the issue of cloning. He also has reservations about organ transplants:

we have made a start on a road that leads imperceptibly but surely toward a destination that none of us wants to reach... Yet the first step, overcoming reluctance, was defensible on benevolent and rational grounds: save life using organs no longer useful to their owners and otherwise lost to worms. Now, embarked on the journey, we cannot go back... there is neither a natural nor a rational place to stop (1992, 86).

He also raises similar concerns about other “techniques of prolonging life” such as respirators, cardiac pacemakers, artificial kidneys and all forms of genetic engineering (Kass 1976, 297-301). Inspired by such philosophers as Hans Jonas and Martin Heidegger (Mooney 2001; Kass 1993, 3-4), Kass is not so concerned about this or that technology but accepts a certain truth about all technology: technology in its essence represents a potential threat to human dignity.

His opposition to the above set of technologies is reminiscent of Heidegger's infamous statement on the character of technology:

Agriculture is now a motorized food industry—in essence the same thing as the manufacture of corpses in the gas chambers and extermination camps, the same thing as the blockading and starvation of nations, the same thing as the manufacture of hydrogen bombs.¹⁰

According to Heidegger, all “technologies” share the same essence. He says in *The Question Concerning Technology*, “the essence of technology is by no means anything technological” (Heidegger 1993, 311). So, rather than being distracted by the many technical differences between diverse technologies, Heidegger asks us to consider the common quality or character of all technologies. In the above passage, Heidegger argues that mass agriculture, the gas chambers of the holocaust, current global politics and the development of weapons of mass destruction all result from a shared conceptualization of the world and nature as standing-reserve (*Bestand*). Rather than accepting that plants, human beings, cultures, or even war have a given nature or essence, technology treats all things as “stuff” to be manipulated. Likewise, it matters not whether it is organ transplants, prosthetic limbs or cloning, biotechnologies are all the same. Heidegger writes, “Everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering” (1993, 332). This includes the ordering of human beings: Heidegger writes, “man...comes to the very brink of a precipitous fall; that is, he comes to the point where he himself will have to be taken as standing-reserve” (332).

In the same essay, Heidegger explains that just as a hydroelectric damn on the River Rhine submerges the Rhine River valley, technology as a whole obscures the rest of existence. Fukuyama also seems to adopt this Heideggerian view of technology. In his short essay “In Defense of Nature, Human and Non-Human,” he strikes a Heideggerian tone when he warns, “...the attempt to master human nature through biotechnology will be even more dangerous and consequential than the efforts of industrial societies to master non-human nature through earlier generations of technology” (2002, 30). Again, whether massive coal-mining operations, the construction of the Hoover Dam or genetically modified organisms, all technology is the same: it threatens nature, both human and non-human. In the same piece, Fukuyama goes onto argue that “we use the power of

the state to regulate the way in which technology is developed and deployed...” (31).

Considering both Fukuyama’s and Kass’s shared belief that biotechnology represents a fundamental threat to human dignity and will lead to a dehumanization, how can they allow for any form of genetic engineering, enhancement or therapy? For them, as for Heidegger, it is all a threat. Likewise, if they also share Heidegger's belief that technology in general threatens nature, both human and non-human, how can they allow for any technological advancement, including knowledge of evolution, sexual transmitted disease or global warming? Of course, Fukuyama and Kass do not call for a prohibition or moratorium on all new technologies and scientific knowledge. The point is that their argument against therapeutic cloning leads to that very conclusion. One cannot distinguish between this or that kind of technology, biotechnology and all other technology; the Heideggerian argument includes all of it.

In the end, the conviction that politics is a higher virtue that can guide society to good ends combined with the idea that technology represents an essential threat to human life leads to a political doctrine permeated with an anti-science stance. This is reflected in the antagonism between politics and science indicative of the Bush administration.

IV

I do not want the above remarks to be taken to mean that I do not support the regulation of science and technology. I believe that specific dangers of biotechnology, for example, are not well understood and therefore demand caution and consideration.

There is no doubt that technology allows humans to control the harshness of nature and gives us the ability to satisfy our needs and mitigate suffering. The concern is that when we are completely ruled by technology, we lose all connection to the natural order in lieu of the prescribed order of technical control. Considering this trade off, the political philosopher Martha Nussbaum writes:

In a time of deep need, feeling that our very survival is at stake, we may turn ourselves over to a new art. Sometimes this art will simply do what we ask of it, providing efficient instrumental means to the ends that we already have. Sometimes, however...the art will so deeply transform

ways of life that we will feel that it has created a new type of creature. If, then, we contemplate curing our current ethical diseases by a new art, we must imagine, as well, and with the utmost care, the life that we will live with this new art and the aims and ends that go with it. For we may not want a radical solution, if its cost will be to be no longer human. This would hardly count as saving our lives (1986, 106).

Without some “cure” human life would be harsh and at the mercy of the natural elements. But, with too much medicine, human life will lose all connection to nature. When left unchecked, our efforts to overcome "inhumane" disease and death result in dehumanization. Of course, this is the paradox of technologies such as cloning and genetic engineering. They seem to have unlimited potential to overcome disease and death and yet this cure may come at a cost we are unwilling to pay. Hence, we may choose to embrace suffering and mortality over the alternative.

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¹ According to the Ohio Board of Education's December 2002, Newsletter:

At its business meeting on Tuesday, December 10, the State Board of Education adopted academic content standards for science and social studies. There was an amendment to the science standards that added a sentence to Grade 10 life science Indicator # 23 and Grade 9—10 Benchmark H. Portions of the indicator and benchmark now read, "Describe how scientists continue to investigate and critically analyze aspects of evolutionary theory. The intent of this indicator/benchmark does not mandate the teaching or testing of intelligent design.

²He also announced funding for research on umbilical cord placenta, adult and animal stem cells "which do not involve the same moral dilemma."

³Days after the policy announcement, The National Academy of Sciences released its report *Stem Cells and the Future of Regenerative Medicine* which maintained that 60 or so stem cell lines permitted to receive federal funds are far too few.

⁴For example, "providing a 'biologically related child' for an infertile or same sex couple; avoiding the risk of genetic disease; securing a genetically identical source of organs; 'replacing' a loved spouse or child who is dying or has died; or producing individuals of great genius, talent or beauty" (HCHD 2002, 78).

⁵For example, the council warns that reproductive cloning might lead to the breakdown of the family (HCHD 2002, 85). They explain, "Procreation as traditionally understood invites acceptance, rather than reshaping, engineering, or designing the next generation. It invites us to accept limits to our control over the next generation."

⁶It has been argued that membership on the Council was stacked against therapeutic cloning (Mooney 2001; Hall 2002). Even when not explicit, as is the case with high-profile Bush supporters like Leon Kass, the chairman of the council, Francis Fukuyama, and Charles Krauthammer, many members of the council had publicly spoken out against all forms of cloning. Council member Robert P. George, for example, writes in the journal *National Review* that harvesting stem cells from human embryos is "grotesquely immoral" and decries any efforts to publicly fund and promote this "injustice" (2001). Council member Mary Ann Glendon is a signatory to the "Statement of the Catholic Leadership Conference on Human Cloning." It reads:

The CLC endorses the position of President George W. Bush which he stated in his first formal address to the American people: I strongly oppose human cloning, as do most Americans. We recoil at the idea of growing human beings for spare body parts or creating life for our convenience.... Even the most noble ends do not justify any means... The moral justification of any research cannot be based upon the dehumanizing promise that a good end justifies the use of any means necessary. Destroying human life in order to help human life is intrinsically evil (1 November, 2001).

Not long after the report's release, the members on the other side of the debate expressed frustration with the direction the council had taken. Janet D. Rowley, Elizabeth Blackburn, Michael S. Gazzaniga, and Daniel W. Foster, all traditional university scientists, objected to the moratorium. In an open letter, they write:

The President's Council, composed primarily of academics, now proposes to maintain our ignorance by preventing any research for four more years. That proposal is short-sighted: It will force U.S. scientists who have private funding to stop their research, and it will accelerate the brain drain to more enlightened countries... Our ignorance in this vitally important area is profound, and the potential for meaningful medical advances is very high indeed. To realize that potential, we must remove the current impediments to this critical research. Scientists should become more active in urging Congress to lift the ban and to establish the proposed, broadly constituted regulatory board NOW (2002, 1957).

The frustration of these scientists reflects a broader alienation of the scientific community from the administration. To add more fuel to the fire, on February 27 of this year, Professor Blackburn and William May were told their services would be no longer needed and were dismissed from serving on the council. Blackburn said she believed she was let go because her political views do not match those of the president and of Kass, with whom she has often been at odds at council meetings. "I think this is Bush stacking the council with the compliant," Blackburn said to the *Washington Post*. Three new members were named to take their places. They include a doctor who has called for

more religion in public life, a political scientist who has spoken out precisely against stem cell research and another who has written about the "threats of biotechnology."

⁷Stem cells research, therapeutic cloning, and genetic enhancement are related but are different things:

i) Stem cells are cells that have yet to become specialized and have the ability to become any type of cell to form skin, bones, organs or other body parts. They come in three forms: embryonic stem cells, embryonic germ cells and adult stem cells. Embryonic stem cells come from embryos, embryonic germ cells from testes, and adult stem cells can come from bone marrow. Right now, scientists generally agreed that embryonic stem cells have greater plasticity than adult stem cells. In other words, they can develop into more diverse tissues. This is why much of the focus has been on the "embryonic" aspects of stem cell research. In order to harvest embryonic stem cells, an embryo has to be destroyed.

ii) A big question then is where the embryos come from. Therapeutic cloning is a technique that produces cloned embryos. It is "therapeutic," rather than reproductive because its sole purpose is to create stem cells not produce a child. The person or patient in need of stem cells would donate a non-egg, non-sperm cell. The DNA from that donated cell would be removed and inserted into a donor egg that has had its own nucleus and DNA removed. The egg with the introduced DNA would act like it had just been fertilized and begin to divide, forming an embryo. Stem cells from that embryo would be removed and cultured to provide the needed tissue.

There are some obvious controversies associated with this practice. Opponents object to the creation of a pre-human life for the expressed purpose to destroy that life. To avoid the controversy associated with "therapeutic cloning," an alternative source for stem cells has been suggested. Unused embryos, for example, are left over from in-vitro-fertilization (IVF) sit frozen in vats and will likely be disposed of anyhow. However, the most promising aspect of stem cell research is the elimination of tissue and organ rejection. Unless the stem cells are harvested from the patient's own genetic material, the problem of rejection remains. As of now, therapeutic cloning is the only way to harvest matching stem cells that will develop into organs and be used to repair damaged or defective tissue in the parent of the cloned cells.

iii) Genetic enhancement technology is "any technology that directly alters the expression of genes that are already present in humans, or that involves the addition of genes that have not previously appeared within the human population (including plant, animal, or custom-designed genes), for the purpose of human physical, intellectual, psychological, or moral improvement" (Baylis and Robert 2004, 15). Under this definition, both stem cell research and therapeutic cloning are part of the larger project of genetic enhancement. Importantly, though, the idea here is not simply to treat sickness or disease but to enhance abilities and capacities: physical performance, intellectual prowess, you name it. Therefore, perfectly healthy people may seek out genetic enhancement: not as a treatment but as a lifestyle choice.

⁸ Many bioethicists seek an “ethical bypass” (Mahowald and Mahowald 2002) out of this debate. A promising way out is adult stem cell research. Marlyn Coors writes, “. . . the challenge lies in making cells derived from adult stem cells function effectively. If this hurdle can be overcome, adult stem cells promise to be a practical, efficient, and therapeutic option that avoids the ethical problems associated with the therapeutic cloning” (Almeida-Porada, 2001, 306). Harvesting adult stem cells from blood, bone marrow, or tissue does not require the creation or destruction of an embryo. Just as we give blood or tissue for medical tests for the benefit of our own health, we will provide stem cells for the development of therapies and organs. But, as it stands, therapeutic cloning is the best way to get stem cells.

⁹ It is not without its irony that the term “dehumanization” has its origins in Marxist ideas of manual labourers becoming cogs in the machine of capitalism or industrial society. However, Kass is not using the term in this sense. He is not saying that the capitalist establishment or industrialists are oppressing and thus dehumanizing a certain class or group of citizens. Instead, Kass seems to think that technology is itself or by itself devaluing the quality of all human life. “Dehumanization” is also associated with existentialists and critical theorists such as Søren Kierkegaard, Arthur Schopenhauer, Jean-Paul Sartre, Frantz Fanon, Simone de Beauvoir, and Theodore Adorno.

¹⁰ The passage itself is from an unpublished cycle of four lectures on technology Heidegger gave in 1949. It was first quoted in Wolfgang Schirmacher's *Technik und Gelassenheit*. Freiburg: Alber, 1983.

Education and the Funding of Research

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Owners and Workers in the Knowledge Business

We are as remote spiritually as temporally from the medieval adage that all knowledge belongs to God. Perhaps our distance from the medieval view that all knowledge belongs to God is manifest in the fact that the key to decoding human genetics is owned by the Wellcome Foundation's Genome Project, which has patented tests and cures for some of our most disturbing diseases, and can hold our health systems up to ransom by profiting from tests for breast cancer or for drugs for AIDS. God no longer holds the code of life, as nanotechnologies created by the biotech industries can rectify the errors in God's creatures or natural beings (Falk 2004; Kellner 2002, 229-31). Private and corporate ownership of knowledge is not new; most craft guilds zealously held onto their craft secrets to ensure a higher price for the products of their trades. The bold voyages of discovery around the world in the sixteenth and seventeenth centuries have handed on to us the names of famous sea captains but these men were contractually bound not to yield any information to anyone other than those who financed the expeditions (Merwick 2001). But the tension between knowledge as private property and as a common good has vividly come to the fore in recent years. A team of Australian Nobel laureates in medicine recently split apart because one laureate thought their discoveries belonged to the world of science and the other thought they belonged to Novartis, which funded their research in biochemistry. I wish to highlight the question whether knowledge belongs to God, or as the Enlightenment would have it, to humanity, or whether it is private property.

The view that knowledge cannot be owned seems lofty but corresponded to the reality that the Catholic Church had a monopoly in knowledge production and distribution. Between the medieval world and us are the Renaissance and the Enlightenment, in which knowledge was produced with royal and aristocratic patronage but came to be distributed through the technology of print to readers besides the patrons. The commercial or capitalist print culture that emerged co-existed with, and then supplanted royal and aristocratic patronage, in late eighteenth century England and nineteenth century France. An intermediate step between aristocratic patronage and commercial publishing was the practice of publication through prior subscription. In this way, aristocratic patronage was

collectivized through subscription lists; Pope, Voltaire and *L'Encyclopédie* made money by aristocratic subscribers guaranteeing capitalist publishers that they would buy their works (and indeed it was the demands of the aristocratic subscribers more than the combined efforts of Diderot, D'Alembert, their publisher, and their protector, Malesherbes, that ensured completion of the work once the government attempted to suppress it). In the process of developing a commercial marketplace of ideas, intellectual property rights were contested by publishers and authors, and the idea of individual and corporate ownership of knowledge emerged but with it, the idea of the author and scientist as creative genius and servant of humanity.

To sum up these opening paragraphs, we have three models of intellectual activity: the medieval model of clerics serving God and the Church, which had the authority to distribute or suppress the ideas of its servants; the Renaissance-Enlightenment model of patronage of the arts and sciences (during which time ideals of intellectual autonomy and creative genius serving humanity were fabricated under actual conditions of dependence on royal or aristocratic patronage); and the modern ideals and practices of professional employees of universities and capitalist corporations. Tenure at universities has minimized the need for political protectors, which the thinkers of the Enlightenment required; social security has lessened the need for economic patrons to provide for the old age of thinkers; ubiquitous examinations, peer-reviewed standards of competence, and open competition for positions has again lessened—or at least changed--the role of the favour of the powerful for posts inside and outside the university. Moreover, the professional status of professors and scientists means that they look to their peers for recognition as well as their employers for money.

However, to return to the Enlightenment practice of patronage, which has not entirely died out but lives on in a withered form, a patron-client relationship is not a relationship of master and servant, or that of employer and employee. Patronage is part of a gift economy where there are unspecified obligations on the part of both donor and recipient; reciprocity is expected but it is bad form to leave the price tags on the gifts. Patronage is less clear-cut than feudal homage and capitalist contracts where the terms of service are clearly spelled out. Patrons referred to clients, and clients to patrons, as friends, though it was not the friendship of equals but an asymmetrical friendship of social superiors to talented inferiors. Burke defined patronage as “the tribute opulence owes to genius” and Rousseau understood patronage as “the consideration riches owe to talent.” All major thinkers of the eighteenth century depended upon patronage (Chartier

1995, 1-2; Lough 1978; Griffin 1996). Those as wealthy as Voltaire and Montesquieu needed political protection more than financial support—although both men received substantial financial support from royal and aristocratic patrons; less wealthy men, such as Hume, Smith, Rousseau, Diderot and D’Alembert enjoyed both economic support and political protection. Thinkers also were attracted to the powerful in order to put their ideas into effect; Price and Bentham did not receive money from Lord Shelburne as Priestley did, or as Burke did from Lord Rockingham and others, but they received recognition, Shelburne’s connections to French translators and publishers, and the elder statesman’s support for their fiscal and penal projects. In his *Enclyopédie* entry, *gens de lettres*, Voltaire claimed that royal patronage was essential to strengthen the independent-mindedness of *philosophes*, as the alternative was degrading supplication to aristocrats. Rousseau, on the contrary, was reluctant to accept royal patronage, although he accepted a pension from Frederick the Great’s Marshall, Lord Keith, and later from George III (insofar as Hume was eliminated as the broker of royal patronage), but he accepted largesse from the bluest of the blooded French aristocracy. The differences amongst Enlightenment thinkers were more about whether royal or aristocratic patronage better fostered independence of thought than whether it was essential to the republic of letters. However, many in Britain and a few in France maintained the illusion that scholars and philosophers could earn a dignified independent existence through the activities of their pen, made possible by the expanding readership of the eighteenth century. Adam Smith thought scholars and beggars were the same thing “until the age of print” and various thinkers followed Samuel Johnson’s dictum that booksellers are the modern patrons of literature. But, whereas Johnson was the prototype of a professional writer, who thought only blockheads write other than for money, Rousseau refused to prostitute his pen as a professional writer, since his genius came from the heart rather than catering, as his peers did, to anticipated demand of readers and patrons, and claimed to earn his living as a music copyist (while his wife and mother-in-law collected gifts from the aristocrats who used Rousseau’s services as a copyist).

Certainly few members of the Enlightenment saw themselves as servants or instruments of their patrons. A patron is not just an employer of a client; he or she gives political protection and economic support as a gift for which gratitude and unspecified services are due in return. The *lumières* were and were not servants or employees of their patrons. If the ideal of intellectual autonomy or independence of thought was in part an illusion, thinkers had a multiplicity of patrons, regal and aristocratic, inside and outside of government. It is in this

environment of multiple patrons, rather than a free but unpatronized marketplace of ideas, that thought flourishes. To be sure, the character of thought is conditioned by the mode of patronage. In aristocratic salons, wit and facility in conversation were more prized than erudition and systematic thought, and the philosophic literature of eighteenth-century France lacked the heaviness of seventeenth-century rationalism. After the commercial failure of his *Treatise of Human Nature*, and his failure to obtain a post in Scottish universities, where a certain ponderousness was acceptable, David Hume, like *les philosophes*, wrote “for the ladies.”

Despite the blessings of academic tenure, open competitions for scholarly and scientific positions, old age pensions, etc., patronage has not disappeared from the intellectual marketplace. I strongly endorse Pierre Bourdieu’s (1995, 54) view that “patronage is a subtle form of domination that acts thanks to the fact that it is not perceived as such.” In the contemporary world, support for the arts and sciences comes either from government or capitalist corporations. I further support Bourdieu’s concern with the threat to artistic and academic freedom when government cutbacks in the arts and education leave artists and researchers dependent on corporate patronage. Bourdieu wrote:

Research activities, in art as well as science, need the state to exist. To the extent that, *grosso modo*, the value of works is negatively correlated with the size of the market, cultural businesses can only exist and subsist thanks to public funds. Cultural radio stations or television channels, museums, all the institutions that offer “high culture,” as the *neocons* say, exist only by virtue of public funds—that is, as exceptions to the law of the market made possible by the action of the state, which alone is in a position to assure the existence of a culture without a market. We cannot leave cultural production to the risks of the marketplace or the whims of a wealthy patron (1995, 69).

One cannot expect businessmen who fund the granting agencies to support forms of thought, research and expression critical of their activities; he who pays the piper calls the tune. As William Simon (1979), who funded hundreds of right-wing thinkers and enterprises through the Olin Foundation, asked (PFAW): “Why should businessmen be funding left-wing intellectuals and institutions which espouse the exact opposite of what they believe in?” Simon wrote:

Funds generated by business...must rush by the multimillions to the aid

of liberty . . . to fund desperately needed funds to scholars, writers and journalists who understand the relationship between political and economic liberty. [Business must] cease the mindless subsidizing of colleges and universities whose departments of economy, government and history are hostile to capitalism (1979).

It has been argued that the millions donated to right-wing scholars, journalists, and institutions helped shape the political culture of the USA from the Reagan years until now.

As patrons merge with capitalist employers, intellectuals are in danger of becoming employees rather than “friends” of their patrons, with knowledge owned and at the disposition of the employer. The outdated idea of the state as an oppressive Big Brother fosters the unimpeded sway of the capitalist corporations. Just as the Enlightenment thinkers flourished through a plurality of royal and aristocratic patrons, contemporary thinkers need a variety of sponsors inside and outside government to avoid becoming servants of the corporate funding agencies.

The most dramatic tension between knowledge as public or private property, whether in science or in law, is in the sphere of biochemistry. Recently, the Supreme Court of Canada (2004) upheld Monsanto’s ownership of canola seed because neighbouring farms using genetically modified seed had cross pollinated with Percy Schmeiser’s seed and nullified his ownership of his seed crop. One would think that ownership of a life form would be limited by legislation insofar as the life form is not sterile, as Monsanto claimed, but invasive, and reproduces without farmers’ will or knowledge. This split decision was the opposite of the ruling by Indian courts that farmers should be able to own and experiment with seed crops, and no corporate ownership of a life form would take precedence over nature’s common provision to humanity. In general, we can say that biology has replaced physics as the queen of sciences since the American Congress, in the wake of the end of the cold war, refused to fund a high-speed particle reactor. Biotech and biochemistry are the high profit areas in which corporations create demand for their products. Prescriptions for anti-depressants like Paxil and Prozac, and Ritalin for hyperactivity and attention deficit disorder, have increased by a thousand-fold in the last two decades (Somerville 2004, 24). No wonder that Lilly Chemicals pressed the University of Toronto to rescind the offer to David Healey to head the Clark Institute because he questioned Lilly’s claim of no negative side effects of Paxil, or that the University of Toronto would

make life hell for Nancy Olivieri when she questioned the safety of the products of Apotex, a major sponsor of research at the university. The Bush family is present at the University of Toronto both as directors of Peter Munk's Barrick Gold and as a major shareholder of Eli Lilly. That George Bush senior received a doctorate from the University of Toronto is of less interest to me than the fact that the Munk Centre for International Relations produced a long list of distinguished speakers sounding drums and trumpets for the recent Iraq war, and the director of the Munk Centre declared the Canadian government's position on the war cowardly and indecisive. The questions of whether the pharmacological industry can allow independent research, whether research can or will be done by scientists not sponsored by the biotech or pharmacological industries, whether government-sponsored scientists can monitor the safety of bio-chemical discoveries, can be generalized—namely, whether all research must serve the military-industrial complex or have its funding cut off. As the Canadian government reduced its funding to universities, and provincial governments are squeezed with mounting health care costs, universities have looked to business corporations to maintain their funding. Within universities, academic weight or standing is measured by the ability to obtain research grants. Social scientists look to the Olin, Bradley, Liberty, Earhart, or Donner Foundations, or the American Enterprise and Fraser Institutes, to enhance their standing in the academy.

Joseph Priestley, in *The History and Present State of Electricity* ([1767] 1775, xv-xvi), insisted that “natural philosophy is a science which more especially requires the aid of wealth...The patronage of the great is essential to the flourishing of this science.” Priestley thought scholarship in the humanities (history or philosophy) does not need patronage since they do not require the costly laboratory experiments of the natural sciences. Our governments have hearkened to Priestley's counsel. Roughly 70% of Natural Sciences and Engineering Research Council (NSERC) proposals are funded by the Canadian government while only about 30% of Social Sciences and Humanities Research Council (SSHRC) proposals are funded. Moreover, in Ontario, provincial strategic grants are provided to those researchers who foster economic growth, job creation and the physical health of citizens. Provincial and federal governments fund the University of Guelph's project of inducing false pregnancies in cows to increase milk supply, despite the glut of milk on the world market.

The social sciences and humanities are disadvantaged not only in their subject matter but also in their methods. Research is not love of learning or mere

scholarship. Research in the humanities and social sciences are pressed into the mould of the applied sciences. SSHRC's strategic grants are given to interdisciplinary research teams investigating what are deemed to be useful topics, such as gerontology. The Nobel Laureate John Polanyi has complained that government as well as corporate granting agencies fund applied science more readily than pure science, research that has a more immediate payoff than science with no immediate technological application. In his study of patronage from the fourteenth to the eighteenth centuries, the economic historian Michel Mollat (1985, 280) supported Polanyi's advocacy of pure science by concluding that "les plus rentables ont été les investissements sinon désintéressés, du moins dépourvus de calcul préalable." Since one cannot predict the profitable inventions, one can't say for certain that research into false pregnancies in cows may not pay off some time down the road; all one can say for certain is that no government agency knows what goes into Monsanto's biotech products, any more than they know the secret ingredients of Coca-Cola. The scientists employed by Monsanto lack the freedom of a patron's gift; they are bound by a capitalist contract to cede the product of their intellectual labor to their employer. Alan McHughen (2000, 100-102), a strong proponent of genetically modified food, asked a local rabbi what to do with "a veggie burger containing soy beans with a pig gene...He emphasized that each Jew must confer with his or her own rabbi on this question." McHughen concluded that "vegetarians, Jews, Muslims and others, consume, perhaps unwittingly, genes homologous to those in pigs, beef, and other animals every day," but did not discuss the dilemmas arising from the use of human fetal cells to diminish the amount of fat in pork products. McHughen points to a bull market in the profession of ethicists, the camp followers of progressive technology.

Research, Scholarship and Teaching

Nothing is more commonly repeated in the academy than the claim that research and teaching belong together in a mutually supporting relationship, although Tom Pocklington and Allan Tupper's book, *No Place to Learn* (2002), has provided thoughtful grounds for questioning this claim. From my own experience, I found no connection between my teaching and my research; the variety of political philosophy courses I taught were unrelated to the scholarship on Plato, Machiavelli, Hobbes or Marx that I was doing while teaching. The specialized subjects on which I submitted articles and books were of little relevance to the general undergraduate and graduate courses I was teaching. What interests specialists in research journals would be unlikely to fire the

interest of undergraduates who require a grounding in the history of political philosophy and whose intelligence is illuminated by direct encounters with Plato's *Republic* or Hobbes's *Leviathan*, rather than secondary sources with particular axes to grind. Only since I retired and no longer feel that I have to earn my salary have I indulged in merging research and teaching in courses on the Enlightenment, which are probably less interesting to students because my specialized interests, first in the deconstruction of conscience in the Enlightenment and its reconstruction in the romantic reaction to Enlightenment, and second in the patronage of philosophy, deflect attention from other questions students are concerned with regarding the Enlightenment and its postmodern critics.

One might note that I said that, at an early stage of my career, I did not connect my teaching and my scholarship but, once retired, I merged teaching and research. Now what is the difference between scholarship and research? One could follow Joseph Priestley and say that scholarship does not require vast sums of money and research does. The money I received from the Canada Council and SSHRC in the 1960s and 1970s as a student and young faculty member were minute compared with the sums I received from SSHRC since the 1990s, much of it earmarked for research assistants. Research, as distinct from scholarship, tends to be a team project, and designed to stimulate further research projects.

To adopt a distinction made by Heidegger, love is present in scholarship but absent in research. Research must be objective – that is, based on a subject-object split where subjectivity is removed from the object of research. David Lodge's character, Morris Zapp, based on Stanley Fish, might be an exemplar of a researcher in the humanities; in *Changing Places* (Lodge 1975), Zapp has written twenty books on Jane Austen, whom he cannot abide. The medical researcher cannot love the animals on which she experiments; she has to be objective, to distance herself from the objects of her research. Scholarship is the love of learning; research is the desire to master some new field of inquiry. The love of learning and the teaching of great books are in danger of being pushed aside by the research university.

Students and young faculty in the 1960s started to call the Canadian Learned Societies "the Stupids" as if the converse of learned is stupid rather than ignorant. Intelligence and learning sometimes co-exist in individuals—but rarely. To (over)generalize from my experience of colleagues at the University of Toronto, scientists on the whole are more intelligent and less learned than social scientists

who in turn are in general less learned but more intelligent than colleagues in the humanities. In short, research is compatible with ignorance, and the love of learning with stupidity.

As our technological world imposes an engineering outlook on us all—an outlook in which we conceive our experience one-dimensionally in terms of problems—so the academic world has imposed a research orientation onto scholarship and teaching. For example, the perspective of the efficiency engineer reduces the world of work to problems of productivity, removing all the elements that made work meaningful to the worker: application of skill and intelligence, opportunity to socialize, and understanding of one's function in relation to the product produced and its purpose in society. Play subjected to technique becomes a contest, the sole purpose being to win at all costs. The doping scandals in both amateur and professional sports attest to the fact that the elements of fun and personal challenge have been taken out of games. Consumerism is the result of the technological reduction of work to productivity and spectatorism, the result of the technical reduction of sports to contests. The technological equation of the citizen with the consumer is buttressed by “conservative” reliance on the free market and “liberal” efforts to secure a value-free public sphere. But, as Albert Borgmann observed, “to extol the consumer is to deny the citizen. When consumers begin to act, the fundamental decisions have already been made” (1992, 114). By the time students react against large class sizes or the unsatisfactory character of the curriculum, the university has congealed as a knowledge or research factory. Students increasingly react against the mass factory production of their life skills by plagiarism (something virtually impossible in classes under thirty and very difficult to detect in classes of three hundred or more).

Is there any way to keep the love of learning alive in Canadian universities as they become more and more research factories for the corporations? Young faculty are too often hired on sessional contracts to replace older faculty with research grants, and with steady salaries. It is a deal too good for administrators to pass up—having courses taught for 25% of the pay given to tenured professors. Even if a majority of academics were to refuse to participate in the charade of interdisciplinary grants to on-going research teams, some academics would take part in giving and receiving grants, and they would be the most honored members of the faculty. That research is more respected than teaching in universities is not a surprise to anyone. But excellence in research (accorded to 90% of my colleagues by tenure and promotion committees, as distinct from the

10% accorded excellence in teaching) is not love of learning or even the joy of the hunt. Love of teaching and learning will continue in the research university but will be an uphill struggle.

Information and Knowledge

Michael Perelman (1998), Noam Chomsky (2002) and others have indicated how commerce impedes communication in our information age. Newspapers, television and the Internet are businesses that cater to their advertisers. Perelman pointed out that public relations practitioners outnumber reporters in the United States—150,000 to 130,000—and 38% of journalists get their stories from public relations sources. Editors at newspapers and television stations are routinely submitted to interference and sometimes censorship by their advertisers (1998, 17). Has the Internet provided an information commons, akin to the medieval view that knowledge cannot be privately owned, or has Google replaced God as the source of knowledge as a common good?

Don Tapscott and David Ticoll, in *The Naked Corporation* (2003), argue that Google, or our common access to information, will make business enterprise transparent to investors and the general public as consumers. For example, everyone can click on “coltan” and find out that this essential material for all cell phones in production around the world is produced only in the Democratic Republic of the Congo, and that the extraction of coltan has halved the population of gorillas and elephants in that nation in the last decade. Tapscott and Ticoll assume that consumers will care about gorillas as well as the convenience of cell phones, and consumer and investor transparency in our wired age will replace the need for corporate responsibility and government intervention. Aside from “innovations, market entry plans, proprietary business methods, pending mergers and acquisitions, and a host of other matters,” business enterprise will renounce the practices of Arthur Andersen, Enron, the Canadian Department of Public Works, etc., and enter a new age of publicity and transparency. In short, marketable knowledge will remain private, and while the cynic will say that the information commons is of no market price, Tapscott and Ticoll maintain that Google will ensure ethical standards in trade. If Tapscott and Ticoll are overly optimistic about the possibilities of Google ensuring fair industrial practices around the globe, they are right to point out that the Internet provides sources of information unfiltered by the demands of advertisers.

Yet we should not think of the Internet as a free lunch. Perhaps we should look to

the capitalist marketplace to regulate the information commons and think what could be done if every e-mail message sent and Internet use were charged 5 cents—cheaper than phone calls using the same lines. No more spam, sufficient funds to wire everyone to the global market, population decline with the literacy essential to being a human resource for capitalism. If libraries are a cheaper source of information than the Internet, maybe a few students will start reading books again to contextualize the information available in the wired world. New copying and downloading conventions from the web might serve as a model for third world drug companies to replicate patented drugs of Wellcome and Eli Lilly and might enable some local control over the subjects used in the experiments of the biotech industry. There is no free lunch—there are costs in producing and consuming knowledge—and we in the knowledge business must get used to it.

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Our Relationship to Architecture as a Mode of Shared Citizenship: Some Arendtian Thoughts

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In Memory of Namir Khan

"the public and political realm...is synonymous with architecture."
Daniel Libeskind (Gillmor 2004, 62)

In these reflections, the question I want to pose (a question that comes close to unraveling the whole of my work as a political theorist hitherto) is: Can politics educate us to citizenship? And if it can't, what can? Now I don't want to rush too quickly to a categorical "no" answer to the first question. But what we encounter in the reality of contemporary political life certainly gives us enough reason to lean towards a "no" answer that we should want to have ready a possible "fall-back answer," if I can put it that way. Hence the second question: if politics can't educate us to citizenship, what can? Technology constitutes a significant part of the problem here. Indeed, an alternative way of wrestling with the topic could proceed under the following title: "The Defeat of Citizenship by Technology, and Its Revival By Means of Shared Public Experience (such as Architecture)."¹ But I'm not going to pursue the problem in that way here. Rather, I want to raise some questions about the political philosophy of Hannah Arendt. In particular, the question I'll be posing is, if Arendt sees "public space" as the central category of her political philosophy, why is she so determined to make *politics* the decisive vehicle and standard of public space, rather than public space in a more literal sense, i.e., architecture (and again, I'm fully conscious of how subversive these questions are of *my own* work as a political theorist, not just Arendt's).

In recent years an extensive literature has arisen, at the intersection of Rawlsian and Habermasian political theory, on the notion of "public reason." While both notions share an appeal to "publicity," I think public reason is in some sense less important for citizenship than Arendt's notion of "public space." Public reason, at least as it operates in Rawls's later thought, primarily refers to the appropriate considerations relevant to the discourse of political and juridical elites with respect to the constitutional structure of the political order. Public space, on the other hand, is in principle relevant to *all* citizens. Therefore, although I concede that there are significant affinities between Arendt and the theorists preoccupied

with public reason, I think there's something to be said for maintaining allegiance to *her* notion of the public realm (at least in some version).

The basic idea I want to argue for is this: The fundamental categories of Arendt's political philosophy, such as worldliness and public space or "space of appearances," are architectural ones (one can see this in how certain architectural theorists and even practitioners respond to her work). Hence, precisely where one encounters limits in trying to apply her political philosophy to *politics*, one can perhaps redeem her political philosophy by applying it to architecture.

Let me start with a very brief summary of Arendt's political philosophy. The core problem of Arendt's political philosophy is the problem of *mortality*—the question of how to stabilize a meaningful existence for mortal creatures who come on the scene and then in fairly short order depart again. Arendt has really a dual response to this problem. The first response is the construction of a "worldly artifice" that provides a durable site for our "comings and goings" as mortal creatures. She calls this "reification," in a positive sense. As Arendt puts it, this durable world, "a non-mortal home for mortal beings," offers "a premonition of immortality...something immortal achieved by mortal hands" (Arendt 1998, 168; quoted in Frampton 1979, 110). This core problem in Arendt's thinking is captured nicely by Alex Colville (Cheetham 1994, 59): "Life is characterized by its lack of permanence. Art, I think, tries to compensate for this. Art tries to be permanent, tries to extract from the transitory, that which is durably meaningful."² That this sort of immortalizing function is implicit in architecture as the creation of a lasting habitat and a more durable context for human activities is not a surprise; but Arendt didn't stop here in developing her idea. She also wanted to draw a kind of immortality out of the fact that human beings, as political creatures, *speak* and *act*—they enact deeds, and these deeds are narrated in stories that outlive the deeds themselves. One might say that Arendt's ultimate theoretical project was to experiment with the thought that "collective action" could function as a kind of "art" in Colville's sense (as the quest for durable meaning extracted from what is transitory). The basic idea is that once we have erected a tangible "world" of durable things that gives us an immortal or less mortal place for our doings as human beings, we can enact words and deeds in this space that will achieve, in effect, a second, higher-order immortality. Hence the supremely high existential ranking of politics articulated in Arendt's work.

Can politics live up to this very exalted existential purpose? I'm not sure it can. But in any case, there's something misleading about distinguishing as sharply as Arendt does between the kind of immortality achieved in the fabrication of a

enduring world and that achieved in the enacting of memorable words and deeds. Arendt's "official" view is that architecture is pre-political: "Before men began to act, a definite space had to be secured and a structure built where all subsequent actions could take place, the space being the public realm of the *polis*" (Arendt 1998, 194-195). There are four other references to architecture in *The Human Condition*, the first three of which (39, 91, 128) celebrate architecture as a "public art" and a "liberal art," whereas the fourth reference (157) relates the Greek view of the inferiority of all crafts, including architecture, in relation to genuine "praxis." According to Kojin Karatani, this latter Greek view was typified by Plato, notwithstanding the fact that Plato made fundamental appeal to architecture as a privileged image of philosophy: "Plato disdained both architecture and the real-life architect" (Karatani 1995, 6).³ In that sense, one could say that in her last-cited reference to architecture, Arendt shares more with Plato than she herself desires, since the broader argument of *The Human Condition* is intended to be thoroughly anti-Platonic.

In any case, what's properly political according to what I've called Arendt's official view is simply the talking and acting that unfolds in a public space. If, for instance, we construct a parliament, what are political are the speeches that get delivered in this place or space of appearances, not the place itself. But one starts to rethink this conception as one reflects more seriously on the central concept of Arendt's political philosophy: public space. In fact, one could even ask whether it is really a political concept at all. It's not about rule. It's not about power (although she has important things to say about power). It's not about justice, or about the distribution of goods and resources. It's about *how things look*, and how the experience of collective togetherness is organized by how things look. That is, what's at stake here is actually very close to what's at stake in architecture (or an important part of what's at stake in architecture). Arendt herself acknowledges this in an interesting discussion in a famous 1964 interview: she starts by observing that a central problem of the modern world is that nobody cares any longer what the world looks like.

INTERVIEWER: "World" understood always as the space in which politics can originate.

ARENDR: I comprehend it now in a much larger sense, as the space in which things become public, as the space in which one lives and which must look presentable. In which art appears, of course. In which all kinds of things appear. (Arendt 1994, 20)

I would be inclined to say that the notion offered in this re-statement, that public space isn't exhausted by politics (or that there is a kind of broader sense of politics at stake in public space), is already anticipated in *The Human Condition* itself, whether Arendt intended this or not. Evidence for this claim is provided by the fact that, as it appears to me, Chapter 4 of the book (on "Work") is intellectually more powerful than Chapter 5 (on "Action"), or offers a more central account of Arendt's philosophical concerns.

As I interpret Arendt's final reflections on "judging," her project to base an answer to the problem of mortality on the imperishable meaning of what political agents enact through speaking and acting doesn't really work since the self-enacted stories of historical praxis still require "art" (poetry, historiography) in order to fashion them as memorable and therefore durable sites of meaning. One can pose a second challenge: Isn't this whole way of thinking about politics just a mode of political romanticism, since it requires investments of creative energy on the part of ordinary citizens that we know, sociologically, modern societies are poorly equipped to supply? (This is such a familiar criticism of Arendt that it seems rather crass to repeat it, yet if we are to take seriously Arendt's claims on behalf of political life to the full extent of their philosophical ambition, it is an inescapable question.) When one looks at the pathetic rates of political participation, or even of voting, in contemporary democratic society, one can't help but feel powerfully disenchanted about the relevance of Arendtian themes of action and citizenship. One starts to wonder, therefore, whether thinking about "public space" in a literal rather than metaphorical sense might provide a somewhat less utopian focus for these Arendtian concerns. Hence the appeal of putting less emphasis, philosophically, on "action" and more emphasis on "public space" (and therefore architecture) as a response to the existential problem that defines Arendt's project.

Given the huge emphasis that Arendt puts on the notion of a durable world (and on the erosion of durability as a crucial basis for her critique of modernity), it seems a bit puzzling that architecture, precisely with its worldly enduringness, *does not* loom larger in her argument than it does. The answer to this puzzle, I think, lies in her conception of political action as oriented towards ephemeral eruptions of agency without precedent. In Arendt's account of politics there is actually an important tension between the temporal open-endedness and indeterminacy of action, and the givenness and determinacy of the worldly space in which action unfolds. (Or rather, we need the stability of the latter precisely in order to provide a durable setting for the spontaneous "happenings" of the former.) The key to interpreting Arendt's privileging of action over its location,

the privileging of action over the architecturally built world where action transpires, is that for Arendt, politics is fundamentally about freedom. This is why the tension is inevitably resolved in favor of action's spontaneity and openness. Giving more emphasis to the civic dimension of architecture than Arendt herself actually gave it allows us simultaneously to emphasize the need for what is stable over what is unstable in our experience of citizenship.

In other words, we need to address the paradox that although Arendt was unwaveringly preoccupied with how modernity undermines the sense of a stable and durable world that we need in order to give meaning to our mortal existence, her own concept of action (and therefore of civiness) seemed almost to relish civic action in its most fleeting and *least* stable aspect (which she construed as an entailment of its freedom/spontaneity). Arendt tended towards a romantic celebration of "episodic" citizenship (similar to Sheldon Wolin's idea of "fugitive democracy"),⁴ and therefore—in her writings subsequent to *Origins of Totalitarianism*—sighted citizenship as a stable identity or a stable political status.⁵ If what truly matters are the spontaneous happenings that play out on the public stage, the stage itself is as it were instrumentalized in relation to what transpires on it (as, for instance, Wenceslas Square in Prague served as a site for grand citizenship in 1989). Conversely, the idea that we're trying out in this essay is the notion of citizenship as *constituted* by a sense of built civic space.

Hence, in contrast with Arendt, who puts the main emphasis on public space as a setting for eruptions of freedom, I would put the primary emphasis on public space as a public good, and as a stable horizon of civic experience. Arendt's political philosophy is emphatically anti-teleological, and her concept of public space reflects this. Hannah Arendt, in the manner of a twentieth-century Tocqueville, was preoccupied by the prospect of modern life as an enforcer of dreary sameness, and so she was correspondingly preoccupied with miraculous possibilities of spontaneity and novelty. She famously coined the term "natality" to express this sense of human beings as capable of giving birth to something unique and unpredictable. On her view, we need public spaces where what is unique, spontaneous, and novel can appear before everyone, and thereby vindicate its reality. To be sure, any human life worth living must allow a place for what is novel, but novelty alone is not a sufficient standard for a viable civic life. In other words, a political philosophy of architecture must be concerned not only with public spaces as settings for freedom, but also with public spaces as themselves instantiating the provision for human needs—spaces that gather us together rather than isolate us, spaces that uplift us rather than crush the spirit, spaces that enhance our sense of civiness rather than reinforce our fixation on

our own private purposes. To use a term that naturally suggests itself when one tries to capture Arendt's idea of worldliness, we need stable worldly "furniture" that helps give us the sense that we are rooted in something permanent or that at least *feels* permanent.⁶

Here, the concept of civic architecture generates a shattering critique of modernity (entirely in the spirit of Hannah Arendt), for virtually nothing in modern architecture meets the standard of enduringness set by great old-European spaces such as (to mention a few of my favorite cities) the Place de l'Horloge and Place du Palais des Papes in Avignon, the old walled city of Santiago de Compostela, and the old city of Dubrovnik—or, to mention a non-European example, the San Angel district of Mexico City. Over against the idea of citizenship as "episodic" or "fugitive," what is at stake here is a conception of *grounded* citizenship—civic experience grounded in shared attachment to a built place that provides an enduring home for members of a political community extended over many generations. This conception of citizenship defined by a relationship to shared architecture can reawaken the etymological *Ur*-meaning of "political" as referring to life in a real "polis." Modernity per se is fundamentally anti-political in this sense: again, virtually nothing in modern experience (including architecture) allows us to think in centuries (compare Nietzsche's root-and-branch critique of modernity in *Twilight of the Idols*: "Skirmishes of an Untimely Man," section 39).

Does the immortalizing architecture of cities like Avignon, Santiago, and Dubrovnik make its citizens better citizens, in the sense of improving rates of voting and other forms of political participation? Again, this has the effect of instrumentalizing our relationship to civic architecture, whereas the idea of a relationship to architecture as a mode of citizenship is intended to be *constitutive* of a certain experience of citizenship, one that can't necessarily be measured in conventional ways.

Can modern architecture be as effective as the centuries-old architecture of the most exemplary European cities in building a civic home, while simultaneously being true to itself as modern? Of course it can. But those responsible for such architecture (which in the final reckoning means all of us) *must be much more aware* of the civic purposes that are at stake here, and must come to an understanding of architecture as the deliberate expression of civic identity rather than as just serving purposes other than those that define us as citizens. One example might be the reconstructed Jewish Quarter of Old Jerusalem, which is unquestionably modern but, from a civic point of view, succeeds in expressing an

enfolding, “polis-like” character. Clearly, the focus here is not on the architectural properties of any one building in isolation, but rather on an ensemble of buildings as the site of civic space, or more likely, on a community as a whole as a locus of civic-architectural experience. It's in this sense that one relates to architecture not as the aesthetic spectator of particular products of architectural virtuosity, but something closer to the relation between a citizen and his/her “polis.” If the effect of an ensemble of architectural creation is not the constitution of some kind of “polis,” at least ideally, then the idea of architecture as a source of “citizenship” is a hollow one.

It may start to look as if the project here is a recreation of the polis within modernity (not a small undertaking!). If this means recreating the polis throughout the modern world, then surely this is a completely hopeless project. But there is no reason in principle why good or great architecture cannot, at least in localized instances, give us intimations of a modern version of the polis. This by itself will not revolutionize the cultural and political reality of the modern world—that's too big a project to be coherently conceived—but if we are given even intimations of a lived world outside the horizons of modernity that will itself be a stupendous achievement. If we can build cities that are genuinely livable and genuinely civic, we will have begun to enter a realm that is not “post-modern” in the phony sense in which that term is currently used, but, one would like to hope, post-modern in a more genuine sense—in the sense that the modern world will have begun to become a different kind of world.

My only aim in these brief remarks is to begin sketching a research agenda. But I think it is a research agenda that would richly repay the effort expended in its pursuit. I think political philosophers should attend to architecture with a view to how it vindicates (or ought to vindicate) the public dimension of human experience. To be sure, some important political philosophers have indeed reflected on architecture as a mode of social experience—for example, Adorno (1979), Habermas (1985), and Albrecht Wellmer (1998)—and some architects and architectural theorists have sought to appropriate the categories of political philosophers in pursuit of their own concerns—for instance, Kenneth Frampton (1979) and George Baird's (1995) appropriations of Arendt's theorizing.⁷ Surely, the fact that architects/architectural theorists are drawn to Arendt must tell us something interesting about her political philosophy. But my hunch is that much more can be done in this direction (or rather, in both directions: from political philosophy to architecture, and from architecture to political philosophy); therefore I speak of it as a research agenda yet to be pursued fully. The research agenda I have in mind here is of course not empirical but normative: not what

architecture is or has been, but what architecture *ought to be* in order to fulfill its mission (the mission I am assigning it!) of drawing members of the society into a stronger, more emphatic identification with what's public, and thereby transforming them into better, more "patriotic" citizens.⁸

Is this whole discussion just more Arendtian romanticism? Perhaps. But there's the following crucial difference between citizenship enacted through political participation, and citizenship expressed in the habitation of shared spaces. Citizenship conceived in terms of political participation is merely *optional* in the sense that any citizen can opt either to participate or not to participate. Citizenship conceived in terms of public spaces is *not* optional, in the sense that we have to live in a public world that has some kind of shape, some kind of look—either drawing us together in some kind of animating experience, or failing to do so, but either way, shaping our experience together. Mark Kingwell (2004) makes this point in a recent magazine article. Borrowing Arthur Danto's idea that architectural beauty should be subsumed under a "third realm" of beauty, namely, "the realm of application, where beauty is neither natural (sunsets and fields) nor purely artistic (the so-called fine arts)," Kingwell writes:

It is fair to say, given that this realm also includes fashion, advertising, design, cosmetics, interior decoration and much of everyday visual culture, that it is a far more significant feature of urban life than the other two combined—in volume certainly but also, we might say, politically. In the third realm, beauty is always political because it addresses, in some manner, how to live... [I]t is in this realm that urbanites realize whatever remains of the old Platonic connection between beauty and justice: occupying their public spaces to negotiate the daily business of being citizens together (2004, 75).⁹

One gets a similar idea in Daniel Libeskind's thoughts about the civic relevance of architecture:

Architecture costs a lot of money. It costs a lot of effort. It influences every single person who is on the street. So I believe it has to be addressing every citizen and has to be a stage for life in the full sense of the word (Freeman 2002, F3).

This is what Libeskind refers to as "the cultural, civic nature of what we [architects] do." "Hannah Arendt meets Daniel Libeskind" would be a cute way of summing up what I'm interested in in this essay; yet the meeting between them

is easy to arrange, intellectually, for Libeskind's suggestion that architecture is necessarily civic-oriented because it provides "a stage for life" is already implicitly Arendtian.

The ultimate meaning of citizenship is that we are given a compelling sense that *public things matter*. Obviously, people can become cynical about politics and politicians, and this corrupts their sense of what's public. But it's hard to see how people can become cynical about architecture that actually works in drawing us all into a sense of what's public. If one thinks of politics as, so to speak, "instrumental" in relation to developing a public consciousness, then (and this is the thought that I'm playing with here) architecture (or successful architecture) may be a more reliable source of this public consciousness than politics.

Well, what happens if people react to architecture just as so many of our fellow-citizens react to the more directly political ways of expressing our citizenship—with a shrug of indifference (or simply lack of taste, lack of a feel for good architecture)? Naturally, there's no real answer to this, nor any guarantee against this civic outcome. Still, architects and those who commission architecture ought to comport themselves as if what's at stake is enhanced versus degraded citizenship. Whether people do or don't fully exercise their civic capacities, we must certainly treat them as *potential* citizens, and make every effort to provide them with a public world that encourages and bolsters civic identity. Citizenship, after all, is not just a consumer preference, but a function of ways of experiencing the world that get objectively "reified" in the structure of our social life, and that are already geared towards civic identity, or (more likely) serve to discourage it.¹⁰ People can feel themselves to be citizens among citizens only if they inhabit a world intended to build civic consciousness; and if what has been suggested in these remarks has some plausibility, architecture ought to be making a substantial contribution to this possibility of responding to the world in a civic mode.

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¹ For a very lucid presentation of how the technological dimension of modern politics tends to defeat possibilities of civic engagement, see Forbes 1988.

² Cheetham's book reveals that Colville read and was influenced by Arendt: see especially pp. 120-121.

³ Cf. Karatani 1995, 126: "Plato admired the architect as a metaphor, but despised the architect as a man because the actual architect and architecture are fully exposed to contingency." By contrast, Arendt's view is not that architecture is too contingent, but rather, that it is *not* contingent enough—that is to say, it's too much a product of design and planning, relative to action (which is ontologically superior), where things just "happen" according to the spontaneity of the moment. Yet there's agreement between Plato and Arendt (at least in the passage where she cites the authority of the Greek view) that architecture, in common with other crafts, other *technai*, is "banausic"—a less than fully human mode of human activity.

⁴ See Wolin 1996. The *advantage* of an episodic conception of civic agency like Arendt's is that it seems to allow one to sustain hope even in contexts where the prospects for civic engagement look quite grim. If it is built into one's very concept of what politics is that true politics only flares up during rare moments of miraculous freedom, then there's already an expectation of long waits in the civic desert; and as well, it means that one can never predict when the long tarrying in the desert will yield another oasis of freedom—hence one never fully despairs. Despite a deeply pessimistic account of modernity, Arendt therefore manages always to maintain a surprisingly hopeful spirit with respect to future re-eruptions of political action (which, by the way, is not the case with Wolin, whose parallel reflections have a much more melancholic tone).

⁵ For a discussion of countervailing tendencies in Arendt's political thought, see Waldron 2000.

⁶ Of course, the notion of architecture as offering the stable "furniture" of a public world has the odd consequence of referring us back to the *private* domain. Yet furniture in the literal sense fulfils an analogous function within the household—namely, it constitutes a "private public space," if that doesn't sound too paradoxical, where an otherwise flux-ridden individual existence is stabilized and made to feel enduring. The analogy can probably go in both directions: architecture constitutes the "furniture" of our public world, and furniture provides the "architecture" of our private lived space. (This conception doesn't really work in French, since *meuble* carries the implication of something "movable," as opposed to the *immeuble*, which is "immovable," in which *les meubles* reside.)

⁷ For Baird's commentary on Frampton, see pp. 355-358, n. 25.

⁸ For an interesting discussion of architecture and citizenship in the context of the 9/11 crisis in New York, see Traub 2003. Traub argues that notwithstanding the fact that "New Yorkers will never be Florentines—we have more transitory things than buildings on our minds," 9/11 brought people back to an awareness that architecture is a key locus of civic consciousness: "the kind of meaning that can be expressed through architecture, and the making of places, comes to the fore at moments of profound civic feeling."

⁹ Cf. Wellmer 1998, 288: "the aesthetic, practical, and political aspects of architecture are indissolubly linked with each other." Consider also our epigraph from Libeskind.

¹⁰ For some relevant discussion, see Winner 1986. Kenneth Frampton judges contemporary architecture by high Arendtian standards, and deems much of it a failure in relation to those standards:

Elevated on freeways or pedestrian decks or alternatively sequestered behind security fences, we are caused to traverse large areas of abstract, inaccessible urban space that can be neither appropriated nor adequately maintained. In a similar way we are confronted by piazzas whose hypothetical public status is vitiated by the vacuousness of the context or alternatively we are conducted down streets evacuated of all public life by the circulatory demands of traffic. We pass across thresholds whose public-representative nature has been suppressed or we enter foyers which have been arranged or lit in such a manner as to defeat the act of public promenade. (Frampton 1979, 118) [For some examples that illustrate this analysis, see n.34, 129]

One naturally thinks of Dundas Square in Toronto, which aroused such high expectations as a civic gathering-place, and which flops so dismally from that point of view: it has the look of a bus terminal rather than a "piazza"! For reflections in a similar vein on the topic of "dead public space," see Sennett 1977, 12-16.

Pedagogies of Digital Citizenship and the Politics of Code

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“Tiny controls, consistently enforced, are enough to direct very large animals” (Lessig 1999).

“...control of code is power. For citizens of cyberspace, computer code...is the medium in which intentions are enacted and designs are realized, and it is becoming a crucial focus of political contest. Who shall write the software that increasingly structures our daily lives? What shall that software allow and proscribe? Who shall be privileged by it and who marginalized?” (Mitchell 1995).

“[I]nformation technology...entails more than computers, programmes, fibre-optic cables, mobile telephones and so forth. *Every technology also requires the inculcation* of a form of life...” (Rose 1999).

Introduction: Technological Citizenship in the Digital Era

The rapid development and proliferation of new information and communication technologies (ICTs) has given rise to lively debate and a growing literature on technological citizenship in the digital era addressing topics ranging from e-democracy, networked social movements, and the digital divide, to the virtual public sphere, and electronic surveillance. This essay adopts a somewhat uncommon approach to the question of citizenship in the era of digital technology, one which highlights the ways in which citizenship norms, rights, obligations and practices are *encoded* in the design and structure of our increasingly digital surroundings. To be more specific, it explores technological citizenship in terms of the ways in which, particularly at the level of technical design, the Internet and the World Wide Web regulate and *govern* users, enabling and cultivating certain conduct, activities, and forms of life while simultaneously constraining and neutralizing others. Cyberspace, while often described erroneously as lawless and anarchic, is governed by its technical infrastructure and supporting features which simultaneously enable and constrain users. In other words, there is a *politics of code*; in so far as Internet architectures and software code *legislate* questions regarding how the Internet and the web are used, by whom, and under what conditions (Lessig 1999, 6; 20). Such technical features encode what Luke calls “hidden pedagogies of citizenship” into the

architecture of the Internet and the web, shaping users' conduct, habits and experiences on-line (Luke 2002). To the extent that Internet users are subject to law-like codes regulating on-line behaviour and access to information, our understanding of technological citizenship in the digital era must transcend preoccupations with the digital divide, electronic voting and the like, to interrogate the terms of technological citizenship as they are encoded in cyberspace. Genuine technological citizenship in the digital era entails a critical awareness of how code constitutes the conditions of possibility for different norms, models, and practices of on-line citizenship, along with the capacity to resist and reshape—to *hack*, if you will—the prevailing terms and conditions of cybercitizenship if they no longer serve our needs.

ICTs, citizenship and democracy

A number of influential approaches to technological citizenship have emerged out of the rapidly expanding literature on the information society, e-democracy, networked social movements, and the virtual public sphere. A large body of work emphasizes the appropriation of new ICTs by various agents (social movements, political parties, and governments) for the purposes of disseminating information, facilitating communication, and organizing and mobilizing supporters (Barney 1996; Diebert 2003; McCaughey and Ayers 2003; Norris 2002; Wilhelm 2000). Much of this work focuses on the use of ICTs as tools to renew or enrich existing democratic practices and institutions. Major questions revolve around quantitative and qualitative issues, such as the degree to which ICTs recruit new participants to the political process or merely reinforce the activities of those already engaged (Norris 2002). The qualitative impact of new ICTs is taken up in lively debate and discussion of the virtual public sphere, which focuses on the depth, diversity, and conduct of online political deliberation among citizens (Hill and Hughes 1998; Poster 1995; Sunstein 2001).

Another approach focuses on communicative rights and liberties, examining both the expansion and curtailment of traditional civil liberties, such as freedom of expression and the right to privacy, in the context of digital technologies. While some celebrate the ways in which the Internet promotes freedom of expression and the exchange of ideas and information (Negreponete 1995; Lévy 2001), others have traced its connection to media industry trends, such as technological convergence and corporate consolidation, which have reduced media diversity and access to alternative voices (McChesney 1999; Schiller 1996). Developments in new ICTs have also spawned the burgeoning field of surveillance studies,

which traces the social and political effects of increasingly ubiquitous forms of electronic surveillance (Ball and Webster 2003; Lyon 2001)

Another important strand of research on technological citizenship stems from the literature on the political economy of the information society, “global cities,” and high-technology “clusters” like Silicon Valley. Such work focuses on the economic and social impact of industrial change from Fordism to post-Fordism, under which certain places, industrial sectors and populations (both outside and within the new economy) are valorized while others are marginalized (Barney, 2000; Castells 1989; Mosco & Schiller 2001; Murdock & Golding, 2001; Robins & Webster 1999; Sassen 1998). According to this body of work, the significance of new ICTs for democratic citizenship cannot be divorced from the political-economic context of globalization and post-industrialism in which they are also deeply implicated, a context marked by deepening social inequality and polarization.

Many of these approaches to the implications of ICTs for democratic citizenship treat the issue of *access* as central. To the extent that access to and skilled use of the Internet and other new ICTs has become central to economic, social, and political participation in information societies, so the argument goes, various digital divides must be narrowed in order to ensure that none are excluded (Castells 2001; Norris 2002; Wilhelm 2004). Many of these approaches are highly worthwhile; however, most tend to overlook the vital question of the politics behind the design of the very technologies and networks whose accessibility they seek to universalize.

Citizenship Code

This essay introduces another way of thinking about technological citizenship in the digital era, which I refer to as the problem of citizenship and *code*. By this I mean the ways in which, at the level of their technical design, the Internet, the World Wide Web and other new media structure and enable certain activities, conduct and forms of life on-line while they simultaneously constrain or neutralize others. My argument stems from the general proposition that embedded within all technological systems and artifacts in general are a variety of ethical, political and social norms. The design elements of such systems and artifacts can serve to hardwire certain forms of conduct, experience and social relations into our surroundings. In the context of digital technology and new media, the technical architecture of the Internet and the various software codes

and applications which run on it are analogous to legislative declarations and founding political documents which delimit the form, content and extent of citizen rights and obligations in a given polity. The degree to which Internet users can access information or navigate the web anonymously, for example, can be dictated at the level of code. As our daily lives are increasingly dependent upon, mediated through and enmeshed in the circuits of digital networks and computerized databases—to access information, government services and benefits, credit and insurance, health care, work, leisure and entertainment—we become subject to the terms and conditions of existence and action as laid down by code. Rose refers to this as “the cybernetics of control” which increasingly enwraps our daily existence (Rose 1999). But whereas the terms and conditions of political citizenship in liberal democratic states are, relatively speaking, subject to free, open and transparent deliberation and negotiation, the codes governing the citizen in the digital era are invisible and opaque, thanks to certain features of the technologies themselves, and to the proprietary nature of many of the codes increasingly mediating our lives.

Furthermore, I will argue, we have witnessed in recent years a more or less subtle adjustment of the terms and conditions of cybercitizenship at the level of code, according to which Internet users are being induced, habituated and, if necessary, compelled, to accept the norms of commercialized cyberspace, which include, *inter alia*, the commodification of personal information (and its accompanying erosion of privacy) and the aggressive expansion of intellectual property rights on-line (along with efforts to marginalize and criminalize widely practiced on-line activities such as music downloading). This renegotiation of the terms and conditions of cybercitizenship is taking place in the absence of democratic debate and discussion. It behooves us, therefore, as citizens of cyberspace, to read between the lines of code to decipher and respond critically to the constitutional fine print contained therein, before the terms and conditions of cybercitizenship they set forth become hardwired without our consent.

Part I: Citizenship and the Politics of Code

Technology as Legislation

The insight that technology and design embody certain values and goals, and that they can be used to regulate the conduct of individuals and populations for strategic ends can be traced back at least as far as nineteenth-century figures like Marx, Bentham and Haussman. Marx diagnosed the oppressive and alienating

effects of various technologies of capitalist industry, from the wage relation to mechanized factory production, while simultaneously recognizing the emancipatory potential of the socialization of labour under the factory roof. Bentham and Haussman, meanwhile, both incorporated corrective and strategic objectives into their respective designs for panoptic institutions and the streets of nineteenth-century Paris (precisely to neutralize the emancipatory pressures built up by capitalist technologies). In the twentieth century, Heidegger's critique of technology as an "enframing" of existence gave philosophical credence to the substantive view of technology as having effects that were far from neutral. Adorno, Ellul and Marcuse, among others, were the post-WWII heirs to the substantive tradition on the value-laden nature of technology. Perhaps it was Foucault's analysis of Bentham's *Panopticon*, however, which demonstrated so clearly to recent generations how technical design (the architectural achievement of hierarchical relations of visibility and invisibility between prisoner and warder, in this case) can embody strategic objectives and be used to achieve effects of power on those subject to it (Foucault 1977).

More recently, theorists of technology like Feenberg, Sclove and Winner portray technology and technical systems as unacknowledged *legislators* of human activity and social life which embody specific forms of power and authority (Feenberg 1991; Sclove 1995; Winner 1977; 1986). Here technological politics takes at least two forms. Specific technical innovations and designs can legislate social relations of power, as demonstrated by Robert Moses' efforts to hardwire racial and class segregation into the transportation grid of New York City by designing freeway underpasses to prevent public buses from accessing suburban (i.e. white) neighbourhoods (Winner 1986, 23). Feenberg also relates how what, in terms of its technical specifications, came to constitute a "steam boiler" in the nineteenth century was determined by shifting social judgments about worker safety and decades of political struggle, culminating in the development of uniform engineering codes of manufacture to reduce instances of "bursting boilers" (1995, 14). Sclove has also described how the introduction of private plumbing in a traditional Spanish village in the 1970s inadvertently dissolved key aspects of its traditional social life and culture, which hinged upon daily interactions at the village's communal fountain (3). Feenberg designates the embodiment of social and cultural values within the design features of artifacts as their "technical code" (1996, 78-83).

Secondly, whole technical systems such as industrialism, or energy and transportation grids, are linked to institutionalized patterns of power and

authority constitutive of social relations and daily life. The lethal properties and operational requirements of nuclear energy and armaments, for example, link their production to highly centralized, bureaucratic and secretive forms of administration hostile to democratic accountability (Winner 1986). More recently, Winner has shown, our increased dependence on highly complex technological infrastructures like the Internet and air transportation, coupled with their increased vulnerability to terrorist attack, has had chilling effects on civil and political rights in the name of “critical infrastructure protection” (2004).

The work of these authors demonstrates the significant degree to which the terms and conditions of modern citizenship are laid down by technical codes embodied in the technologies and technical systems in which our lives are enmeshed. The rights and obligations of citizenship are delimited as much, if not more, by these technical codes as they are by formal political declarations and codes of citizenship. As Feenberg declares:

So far as decisions affecting our daily lives are concerned, political democracy is largely overshadowed by the enormous power wielded by the masters of technical systems: corporate and military leaders, and professional associations of groups such as physicians and engineers. They have far more to do with control over patterns of urban growth, the design of dwellings and transportation systems, the selection of innovations, our experience as employees, patients, and consumers, than all the governmental institutions of our society put together (1995, 3).

None of this is to suggest that all technology and technical systems are inevitably bound up with authoritarian rule and domination. Without underestimating the magnitude of the obstacles involved, all three authors hold out the possibility for a democratic reform of technology in the service of more humane goals, or what Feenberg calls “subversive rationalization” (1995). Technology is amenable to democratization; that is, it can respond to the assertion of new goals and values by incorporating new “technical codes” into its design and structure, as evidenced by the success of social movements over the last few decades in achieving a host of positive changes in areas ranging from workplace health and safety and environmental regulation, to nuclear power and biotechnology (20). A new, more humane form of technological society is possible as a result of collective mobilization and civic action on technological issues, that is, as citizens recognize and exercise the full rights and duties of technological citizenship.

In this paper I explore the nature and effects of information technology as legislation; that is, I illuminate some of the ways in which we are regulated and governed as citizens of cyberspace by the “technical code” embedded within various structures and features of the Internet and the World Wide Web. The technical coding of the Internet has ethico-political dimensions which impinge upon on-line citizenship by dictating who has access and under what kinds of conditions. After elaborating on the implications of code for on-line citizenship, the paper offers a number of concrete examples of the ways in which the design of Internet technologies serves to hardwire certain norms and practices of on-line citizenship. Finally, the paper considers the prospects for politicizing code and democratizing Internet design by examining the recent struggle between music copyright holders and downloaders, and the emergence of a self-conscious political movement around peer-to-peer networking and open-source software development.

The Politics of Code

If, as I suggest, the terms of on-line citizenship are increasingly hardwired into the digital networks of information and communication mediating everyday life, then we must interrogate the politics of the design of these very networks. Significant contributions to such an interrogation have been offered recently by Lessig (1999; 2001; 2004) and Galloway (2004), each of whom explores the politics of the technological infrastructure under-girding the Internet; how it structures and governs access to and conduct within cyberspace.

Lessig’s basic argument, articulated in his first book, *Code: And Other Laws of Cyberspace*, is that the architecture of the Internet—i.e. software codes such as the Transmission Control Protocol/Internet Protocol (TCP/IP), which facilitates the transmission and reception data packets), and the Domain Name System (DNS), (which assigns and manages Internet names and addresses)—forms a constitution governing cyberspace and its inhabitants. “Codes,” he writes, “constitute cyberspaces; spaces enable and disable individuals and groups. The selections about code are therefore in part a selection about who, what, and, most important, what *ways of life* will be enabled and disabled” (Lessig 1999, 66). In other words, in the digital world, Lessig writes, “code is law” (6). The framers of this digital constitution, if you will, are the engineers, designers and programmers of digital technologies. It is they, as much as it is conventional lawmakers and

regulators, who determine whether privacy is protected, anonymity allowed, and access guaranteed in cyberspace (60).

The original architecture of the Internet, Lessig argues, was designed to hardwire certain “hacker” values into the network itself. Through the development and proliferation of “open source” software codes like TCP/IP, UNIX, C++ and HTML, the Internet took the form of an open, distributed, and decentralized network that could be modified in an open and transparent fashion via negotiation and consensus-building among communities of experts and knowledgeable hobbyists. According to Lessig, these codes provided the Internet with its original “architecture of liberty” (30).

Galloway’s recent book, *Protocol: How Control Exists After Decentralization*, highlights the ethico-political dimensions of the architecture of the Internet as well, substituting the term *protocol* for Lessig’s *code*. Like code, *protocol* is constitutive of cyberspace and all that takes place within it. While, technically, *protocol* means little more than the “set of recommendations and rules that outline specific technical standards” for connecting to and transmitting information over the Internet (Galloway 2004, 6), *politically*, it is constitutive and enabling of connectivity and action on the network: “Protocol outlines the playing field for what can happen, and where.” (167). The original protocols constitutive of the Internet embodied the hacker values of the loose-knit group of engineers, academics and computer hobbyists who devised, deliberated over and eventually agreed upon them (119-143). The values of decentralization, openness, transparency, consensus, flexibility, universal accessibility, anti-commercialism and anti-authoritarianism—values espoused by today’s “open source” movement—were *designed into* the architecture of the Internet.¹

Lessig and Galloway also describe the recent colonization of cyberspace by commercial, proprietary forms of code. Monopolistic proprietary software (e.g. Microsoft’s Internet Explorer web browser), digital rights management (DRM) software (e.g. encryption and copy protection software embedded onto DVDs and CDs), and identification and authentication technologies (e.g. cookies, passwords, digital certificates, etc.) increasingly dominate the user’s on-line experience. The transformation Lessig and Galloway describe is from an open, accessible and decentralized architecture designed to empower users to communicate and create, to a closed, opaque and proprietary one in which users are configured primarily as consumers, who are continuously incited to surrender both their credit card numbers and personal details in exchange for access to

information, cultural content and other electronic privileges. What distinguishes proprietary code is its development in closed, corporate-dominated circles, and the refusal of its commercial owners to reveal its source code and subject it to scrutiny and modification by the wider Internet public, as is done in the case of open source code.

Aiding and abetting the colonization of the Internet by proprietary code is the increasing involvement of governments in the politics of code, in the form of legislation designed to protect proprietary code and to stigmatize, and even criminalize, both the creation and use of certain kinds of code (e.g. viruses and peer-to-peer networks) which threaten commercial interests. In the U.S., the *Digital Millennium Copyright Act* (1998), or DMCA, prohibits, among other things, the reverse-engineering of proprietary software and criminalizes the development and distribution of software code designed to circumvent the encryption and copy-protection systems embedded into DVD movies and music CDs. Other examples include the *Computer Fraud and Abuse Act* (1986) targeting hackers and virus-writers, the *No Electronic Theft Act* (1997) which criminalized the copying and free distribution of copyrighted software, and a bill called the *Inducing Infringement of Copyrights Act* recently considered by the U.S. Congress, which proposes to make the operators of P2P networks liable for copyright infringement if copyrighted works are shared over their networks. In Europe, the EU Commission *Copyright Directive* (2002) and the Council of Europe *Convention on Cybercrime* (2001) contain many similar provisions. The World Intellectual Property Organization's (WIPO) copyright treaties of 1996 enjoin signatories to pass legislation to protect digital copyright and prohibit the development and distribution of DRM circumvention technologies.

Together, the colonization of cyberspace by proprietary code and various legislative initiatives designed to protect it, represent a major renegotiation of the terms and conditions of cybercitizenship as embodied in the design of the early Internet. Under the rule of proprietary code, the cybercitizen is being subtly reconfigured, *by design*, from an active subject of communication and creation into a passive consumer of on-line commercial products and entertainment. The following section offers concrete examples of the workings of proprietary code through a number of common technical design features of digital media, including web browser and cookie software, web portals and customization features, and digital rights management (DRM) technologies. Each of the technologies examined harbours implications for the terms of cybercitizenship and encodes particular ethico-political norms and values into the technical fabric

of cyberspace. The reconfiguration of the terms of cybercitizenship which these technologies effect is achieved via a gradual process in which new habits, expectations and practices on the part of web users are cultivated and/or inculcated through subtle mechanisms of inducement, coercion, and reward designed into the very experience of cyberspace. Such mechanisms subject users to what Luke calls the “hidden curriculum” of e-commerce, according to which web users are subtly configured into compliant consumers of digital media products and entertainment. The “hidden curriculum” of e-commerce technologies constitutes the new civic education for the citizens of an increasingly commercialized cyberspace (Luke 2004).

Part II: Digital Technology, E-Commerce and the “Hidden Curriculum” of the World Wide Web

Web Browsers and Cookies: Automating Choice

Web browser and cookie software have a significant impact on the experience of Internet users, mediating and filtering information they see and determining the amount of access, customization, and privacy they enjoy. The design features of popular web browser software products like Microsoft’s Internet Explorer and AOL’s Netscape Navigator subtly induce and coerce end-users into sacrificing on-line privacy in exchange for convenience and access to information. According to Elmer, among others, surfers are *habituated* to surrendering personal information or submitting to surveillance as a result of the design of user interface software (Elmer 2002; Luke 2002). Web browser privacy controls can make retaining on-line anonymity more or less difficult, and have a tendency to steer users towards surrendering privacy. By setting factory default settings to automatically accept cookie files, and by burying cookie control functions deep within user preference settings and menus, (where they are unlikely to be accessed by the average user), browser software habituates surfers to comply with e-commerce’s demand for personal information. Users who opt to maintain privacy are punished by being denied access to various sites, or they face increased inconvenience by having to continuously turn off cookie alerts.

Navigating the web, meanwhile, users are constantly confronted with web site features which demand personal information: passwords; log-ins; registrations, customization options etc. Users can elect not to provide this information, but in doing so they are penalized with restricted access and reduced convenience. Repeated experience of blocked or reduced access induces web surfers into

capitulating to the terms and conditions of cybercitizenship as dictated by e-commerce. Meanwhile, functions like Internet Explorer's "Autofill," which transmit personal information to complete standard information forms at the click of a button, routinize and normalize the surrender of information and privacy. Divulging such information has become what Elmer ironically calls the "automatic 'choice'" of web surfers, thanks to features built into the very design of browser software (Elmer 2002, 61). What follows from this routinized, induced publicity is the normalization of data capture and trace technologies which subject the Internet user to surveillance. Thus, as Luke points out, a "perpetual pedagogy of surveillance" is hardwired into the web, becoming "a hidden—and therefore uninterrogated—part of the process of learning to use the technologies of access" (Luke 2002, 74).

Such features are designed to support the commercial exploitation of the web, of course. E-commerce depends upon myriad opportunities for personal information to be surrendered and collected, usually in exchange for information and/or services like free e-mail or customized news headlines. The ideal on-line consumer is one who casually reveals her identity without undue regard for her privacy. Browser features like privacy/cookie settings and Autofill constitute what Luke calls the "hidden pedagogies of citizenship" for the world of e-commerce. "As they exchange personal information for dubious electronic privileges," Luke writes, "the lesson users are learning is one of compliance with the commercial imperatives of the corporate-controlled Net" (2002, 82).

Web Portals and Customization Tools: The Daily Me

Another aspect of web design which impinges on the nature of on-line citizenship is the proliferation of web portals through which users gain access to information and services customized to their specific needs and interests; a technology that Negroponte argues empowers users to radically personalize the flow of information entering their homes, resulting in what amounts to a "Daily Me" delivered to their electronic doorsteps (Negroponte 1995, 153). Web portals and customization tools enculturate users into certain kinds of habits, conduct and expectations that condition their use and experience of the web, with the potential for spillover into the off-line world. Luke (2002), Nakamura (2002), Patelis (2000) and Sunstein (2001) have all examined the hidden pedagogies of citizenship encoded into web portals. Firstly, reliance upon customizable web pages and portals (AOL, MSN, Yahoo, etc.) to filter and deliver information and news is relatively passive, since users are encouraged to assume a posture of

waiting for information to be brought to them on the basis of the preference/personalization settings and menu choices offered to them by the portal (Luke 2002, 66). Secondly, while marketed as neutral information conduits, portals and customization tools structure the content and customization options available to users through processes that are far from neutral. The web page convention of the “menu,” for example, structures cyberspace as orderly and controlled, and defines for the user what kind of information is available and what the web can be used for (e.g. shopping, news, sports, horoscope, search, etc.). Decisions about the design, structure, content and customization options available on major web portals like AOL are far from neutral (Patelis 2000); more often than not they are dictated by commercial imperatives, such as maximizing web site “stickiness” and attracting “eyeballs” to web advertisements.

The customization features of web portals and on-line news alert services also encourage users to isolate themselves from events, information, experiences and voices which are of less interest or relevance to them (Sunstein 2001, 3-23). By filtering information and narrowing worldviews these same features work *on* the user’s subjectivity as well (Nakamura 2002, 106). Portalization and customization facilitate the construction of on-line “fortified enclaves” of “intellectual isolation and insulation from difference” (Luke, 2002 76). The danger exists that the subtle pedagogies of portalization and customization will spill over into and affect civic life. The risks, as outlined by Luke, are that

the willful segregation and/or self-imposed exile of individuals and groups within the online fortified enclave will become a grammar of action (or even democratic inaction) that reinforces segregation in the physical world...

“If the digital citizen,” he continues, “is constituted solely under the rubric of consumer empowerment, and this sense of empowerment is allied to a sense of entitlement and personal fulfillment only, then there is little room left for the negotiation of social difference. It is a slippery slope into intolerance from here” (77).

Digital Rights Management: Framing Cultural Citizenship through Code

Developments at the level of code are also having a dramatic impact on the terms and practices of cultural citizenship, generating sometimes acrimonious debate between producers and consumers of digital culture. In the last decade digital technologies have furnished millions with the ability to digitize and make copies of a wide range of cultural materials with no loss of fidelity in relation to the original, and which can be shared with others at the click of a mouse. As media and entertainment conglomerates sensed the danger posed by the democratization of the tools of cultural production, reproduction and distribution (what they refer to as digital “piracy”) they began to invest in the development of software codes—digital rights management (DRM) technologies, in particular—designed to protect copyrighted works in digital format. Lessig’s work has traced in detail the emergence and proliferation of the politics of code in the field of digital copyright in the U.S (1999; 2001; 2004). Along with aggressive legislative, public awareness and litigation strategies designed to reinforce the sanctity of copyright, new media industries in the U.S. in particular began to develop and embed DRM technology into their products in the 1990s. Under the leadership of the Motion Picture Association of America (MPAA), the film industry introduced its Content Scramble System (CSS) encryption software in 1994, which it encoded onto DVD movie releases thereafter. CSS was designed to prevent DVD movies from being played back on any device other than one licensed to decrypt CSS. In the late 1990s, meanwhile, a consortium of over 200 music recording and technology companies launched the Secure Digital Music Initiative (SDMI) which aimed to develop encryption code to protect copyrighted music in digital format. Today, tens of millions of music CDs have embedded copy protection software limiting the number of copies that can be made, the devices on which they can be played, and the ability of P2P users to “upload” music files onto the Internet. Federal legislation in the U.S., including the aforementioned DMCA, prohibits and criminalizes the production and use of software code designed to hack or circumvent DRM code, as we saw above.

Critics argue that the culture industries exaggerate the financial losses associated with digital “piracy,” and that DRM technology and its accompanying legislative protections represent an attempt by these industries to exercise control over culture more thoroughly than ever before (Lessig 2004). Far from a defensive action, Lessig argues that DRM technology threatens to limit legitimate uses of copyrighted works far more strictly than they have been under previous regimes of “fair use” (116-173). Through code, the cultural industries are imposing new,

more restrictive terms and conditions of cultural citizenship upon the users and consumers of digital culture. Such attempts have not gone unopposed, however, by increasingly organized groups of hackers and consumers who, through their everyday practices of new media consumption and skilled use of technology, are articulating new cultural citizenship rights and obligations, as we shall see below.

The above examples suggest that the terms and conditions of access to cyberspace and the use of digital media are increasingly governed by commercial forms of codes embedded into the basic architecture and software applications of the Internet. These commercial forms of code have a number of properties and effects in common. Firstly, they structure the experience of cyberspace in such a way as to configure the user as a consumer, literally to *hardwire* commercial terms and conditions of citizenship into the electronic circuits of communication and consumption in contemporary capitalism. The colonization of cyberspace by commercial, proprietary code amounts to the declaration and enactment of a new constitution for cyberspace which lays down commercial terms and conditions of cyber-citizenship, including new rights (intellectual property) and obligations (compulsory visibility, identification, pay-per-view/play), and which also identifies and excludes non-citizens and outsiders (hackers, file-sharers, the unconnected). Secondly, proprietary code is designed through opaque processes of product-development and marketing by centralized, secretive corporations who conceal their source codes from the wider Internet public, this despite the fact that such codes have potentially profound implications for the production of users as subjects. Lastly, the production of new subjects and citizens of cyberspace through commercial code may spill over into and shape processes of subjectification in the off-line world as well, with troubling consequences for the cultivation of democratic citizens (Luke 2002; Sunstein 2001).

If, as the above suggests, the architecture and application programs which structure the experience of Internet users subject them to subtle and opaque disciplinary mechanisms which enculturate them into compliance with commercial objectives for cyberspace, then surely an adequate conception of technological citizenship for the digital era must include the politicization of code. Bringing the politics of code into the world of mainstream Internet users has been a challenge however. While software firms, the corporate media and U.S. legislators have for some time now demonstrated a sophisticated appreciation of the politics of code, the same cannot be said of average users and consumers of digital technology and new media. Until recently, the politics of code has been the province of hackers, cyber-activists and their industry and

legislative adversaries. Notwithstanding a handful of high profile legal disputes, such as the Microsoft anti-trust case in the U.S., the politics of code has seldom hit the radar screens of average Internet users and citizens.

Among the obstacles to elevating the politics of code to popular consciousness are certain properties of new media technologies themselves. Much of the code regulating access to, conduct within, and experience of the Internet is largely invisible to users. A central feature of new media design, in fact, is that the source code for any particular application or program which structures an end-user's experience is hidden from them. "The job of computers and networks," according to Tim Berners-Lee, the inventor of HTML, "is to get out of the way, to not be seen" (quoted in Galloway 2004, 65). Code acts as its own "hiding machine," Galloway observes, "an apparatus to hide the apparatus" (75). HTML, IP addresses, and web browser software are exemplary of code's self-concealing character. HTML conceals the textual information which is ultimately responsible for the graphical web pages presented to surfers. Web browsers interpret, organize and filter HTML before presenting end-users with content while concealing their own editorial functioning.

In the last few years, however, the politics of code has assumed a more prominent place in key societal conflicts and debates over technology, law, and culture. The 2000-2001 Napster music downloading and file-sharing case is perhaps the most famous of these. In addition to introducing millions of new Internet users to the technologies of downloading and file-sharing over P2P networks, the high profile Napster dispute helped to foster the development of self-conscious social, cultural and political communities of P2P networkers who began to wake up to the possibilities as well as the risks of the politics of code. More recently, the Recording Industry Association of America (RIAA) filed more than 7,000 lawsuits against individual music downloaders and, with the help of other media industries and sympathetic legislators, is working to stigmatize, criminalize and sabotage popular peer-to-peer networks such as *KaZaa*, *Grokster*, and *BitTorrent*. For its part, I argue, the explosion in popularity of music downloading and P2P networking represents a form of resistance to proprietary code and an example of the *social appropriation* of the cultural and political possibilities of code. The final section of this paper examines the controversy over copyright, music downloading and peer-to-peer networking in light of the themes of citizenship and the politics of code outlined above. I argue that the politics of code lies at the centre of the current struggle between the music industry and the users of peer-to-peer networking and file-sharing

technology over the future of musical culture, and that the struggle pits two very different paradigms of digital citizenship against each other.

Part III: Digital Rights Management, Cultural Citizenship, and the Politics of P2P Networking

Code Wars: Digital Rights Management, Hacking and the Rise of P2P Networks

While the most visible signs of the current struggle over digital copyright manifest themselves in the legislatures and courts, its roots lie in developments at the level of code. Since the beginning of the 1990s, digital technologies have allowed Internet users to digitize and make copies of a wide range of cultural materials, and to make that material instantaneously available to others. This democratization of the tools of cultural production and distribution has been characterized by some as a shift to a more “participatory culture” (Jenkins 2004; Poster 2004). As we saw above, the cultural industries certainly sensed the potential threat posed by such a shift, and have responded with the introduction of DRM technologies to control the reproduction and distribution of copyrighted works, along with an aggressive legislative and ‘public education’ campaign to marginalize and stigmatize activities such as free music downloading as lying outside the bounds of responsible digital citizenship.

Opposition and resistance to the way in which code has increasingly been used by the cultural industries to legislate and control the use of digital media came from within the hacker community initially, with the release of software codes to circumvent DRM systems (Lessig 2001). DeCSS, for example, was created to disable the encryption system encoded onto DVDs, enabling them to be played on any machine (but not, it is worth mentioning, to be copied). A beta version of SDMI’s encryption code for digital music recordings was publicly released in 2000, along with an invitation to the hacker community to try to “Hack SDMI.” The SDMI code was cracked within weeks, wiping out two years of work and investment by the consortium. These and other examples suggest that, despite the subtle and hidden way in which software code governs the use of digital media, its authority to govern and regulate is not absolute.

With the appearance of free DRM circumvention programs in the late 1990s, media industries sought relief from legislatures and courts. In 1998, the U.S. Congress enacted the DMCA, which, by outlawing the development and distribution of DRM circumvention code, tipped the balance of power back in

favour of copyright holders. In 2002, for example, Hollywood filmmakers used the DMCA as the basis for launching lawsuits against the firm 321 Studios, the maker of DVD-copying software products, which circumvented the industry's CSS encryption code. Unable to sustain the costs of litigation, 321 Studios closed its doors in August of 2004 (Dean 2004). The DMCA was also the basis for the notorious July 2001 F.B.I. arrest of Dmitry Sklyarov, a Russian programmer, who was attending the Defcon hacker conference in Nevada. Sklyarov attended the conference to present software developed by his Russian employer, ElcomSoft, which enabled users to circumvent certain DRM features of *Adobe Acrobat e-Book* software. Sklyarov's arrest was widely reported as having been made at the behest of Adobe (Glasner 2002). Sklyarov was charged under the DMCA and held in U.S. custody for over six months and threatened with up to 25 years in prison before finally being released in exchange for testimony against his employer. The DMCA also provides the legal basis for the RIAA's legal campaign against music downloaders. In other words, when their own attempts to regulate and govern the use of digital media through technological means fail, the cultural industries will move quickly to recruit legislatures and courts to help ensure that countervailing technologies are stigmatized and criminalized.

Frustrated by these limits and empowered by a new generation of software tools like MP3 data compression and P2P networks, hackers and consumers have engaged in new rounds of resistance to DRM code and other attempts to control their habits and practices on-line. Practices such as downloading and file-sharing over P2P networks have become enormously widespread among American and other Internet users, and there is a high degree of acceptance of such practices as legitimate. By 2003 an estimated 35 million American adults had downloaded music from the Internet for free, while 26 million of these also shared files on-line (Pew Internet and American Life Project 2003). Two-thirds of this group said they did not care whether the files contained copyrighted works or not. At the time of writing, the world's most popular P2P networking software, *KaZaa*, had been downloaded almost 400 million times (KaZaa 2004). In light of such figures, the industry-led war on "piracy" can be read as a war on a set of popular, everyday practices and attitudes towards digital media consumption embraced by hundreds of millions of Internet users worldwide, practices which themselves speak to a popular urge to appropriate new media in ways which challenge the traditional commercial model of producing, distributing and consuming cultural material.

KaZaa Nation: Culture and Community in the Era of P2P Networks

While dismissed by industry as a malignant form of disregard for ownership, intellectual property and the value of music, critical media scholars have read the popular embrace of downloading and P2P networking quite differently—as prefiguring new forms of cultural citizenship and community on-line. Numerous scholars have drawn attention to the broader cultural and social significance of P2P networks, music downloading, and file-sharing. Viewed in historical context, they can be seen as recent iterations of the “participatory turn” in culture enabled by new technologies which blur old distinctions between producers and consumers of culture (Jenkins 1992; Uricchio 2002, 5-6; Ebare, 2004). Digital technologies have helped to diffuse, decentralize and de-hierarchize the means of cultural production, distribution and consumption by, for example, increasing access to studio-quality recording technology or enabling downloaders to assemble their own customized MP3 “playlists” of favourite artists and songs. From this perspective, downloading and file-sharing (of images, movies, text and software, as well as music) constitute the typical activities and practices of an emerging “digital culture” (Jenkins 2004; Poster 2004).

Music downloading and file-sharing have also been the focus of sociological studies of on-line music communities *qua* community. On-line community is now a well-established if somewhat contested concept in the social sciences (Smith & Kollock 1999). Cultural significance is to be found in on-line music-sharing communities as virtual places where music fans gather, produce and exchange cultural goods, communicate with and educate one another, and express and affirm their identities (Ebare 2004; Poblocki 2001; Uricchio 2002). Virtual communities formed around shared interests and the free exchange of information, ideas and cultural content—from news blogs and fan sites to academic listservs and free software communities—have also been characterized as participating in on-line “gift economies” outside the cash nexus of commodified social relationships (Barbrook 1998; Stalder 1999). Viewed in such light, downloading and file-sharing constitute the expression and enactment of a more participatory form of cultural citizenship: one in which musical culture is produced and enjoyed in a collaborative, decentralized and dehierarchized fashion “outside the framework of commodification” (Uricchio 2002, 19).

Copyright, Music Downloading and the (not so) Hidden Curriculum of Digital Citizenship

Predictably, the explosive popularity of music downloading and file-sharing produced alarm within the cultural industries, particularly among executives in the music industry. At stake, according to the industry, are the rights of artists and copyright holders to just compensation for their creative works, and the very survival of music itself. According to figures from the International Federation of the Phonographic Industry (IFPI), retail sales of CD and cassette sound recordings in mature markets like the U.S. have decreased by almost 30%, representing losses in the billions of dollars (IFPI 2004). The industry attributes these losses almost entirely to the explosive growth of music downloading and file-sharing.² Sensing that we are on the cusp of a major restructuring of the terms of cultural citizenship, the recording industry and its allies in film, publishing, proprietary software and other forms of intellectual property are attempting via an aggressive politics of code to ensure that the potential of P2P networks goes unrealized. Since 2000, the music industry has pursued a strategy designed to steer and coerce Internet users into practices and habits of new media consumption more compatible with their own agenda and financial interests, as well as the broader capitalist model of cultural citizenship. This strategy includes technological, “public awareness,” legal and legislative components, all of which are deeply implicated in a reactionary politics of code. Together, the components of the industry strategy articulate a distinct vision and pedagogy of good cultural citizenship in the digital age, one based on the centrality of the commodity form and the social relations wrapped up within it. This industry vision of cultural citizenship simultaneously disparages and undermines competing paradigms of cultural citizenship which, as I argued above, are prefigured in practices like P2P networking and music downloading and file-sharing. Let us take a closer look at the industry strategy.

Prior to launching its more aggressive campaign of lawsuits against individual downloaders in 2003, the recording industry in the U.S., led by the RIAA, initiated a number of programs designed to dampen Internet users’ enthusiasm for downloading. Firstly, as noted above, the industry took technological measures to prevent or reduce the incidence of CD copying and uploading by embedding copy protection software in its products. In addition, the RIAA and its member companies have also used more clandestine technological measures, including electronic surveillance of P2P users and the sabotaging of P2P networks, in their battle with downloaders and file-sharers. The RIAA and

various member companies have used the services of Internet security firms, like New York-based MediaSentry, to monitor users of P2P networks and to identify the most enthusiastic file-sharers. MediaSentry advertises a number of “anti-piracy solutions” on its web site. *MediaSentry* software patrols over 25 popular P2P networks for copyright infringements and captures information on users such as usernames and IP addresses, while *MediaDecoy* attempts to deter file-sharing and downloading by, in the company’s own words, “overwhelming file trading communities with non-working versions of your copyrighted material” (MediaSentry 2004). It is also worth noting that such Internet vigilantism has not only been exempt from the U.S. *Computer Fraud and Abuse Act* (under which the propagators of other forms of illicit code, such as hackers, are prosecuted), but is currently being considered for legislative endorsement under a federal bill that would limit the liability of copyright holders for the damages done to P2P networks in their efforts to protect their copyrighted works. In other words, in the defense of intellectual property, *bad code* promotes good cultural citizenship.

The cultural industries threatened by downloading and file-sharing have also launched major public awareness campaigns to “educate” consumers on the issues of copyright, file-sharing and the alleged risks of participating in P2P networks. The recording industry in the U.S. launched simultaneous print, TV, web and point-of-sale advertising campaigns warning music downloaders of potential copyright infringement, as well as other risks such as vulnerability to hacking and viruses, as a result of participating in P2P networks. In 2003, meanwhile, in cooperation with the pro-free enterprise student club Junior Achievement, the MPAA succeeded in introducing a “Digital Citizenship Lesson Plan” into the U.S. school curriculum which preaches about the legal as well as moral hazards of file-sharing. The MPAA curriculum package reached upwards of 900,000 students in 36,000 classrooms that year alone (MPAA 2003). Throughout such material the practices of downloading and file-sharing are stigmatized and delegitimized by the use of terms like “piracy,” “theft,” and “trafficking.”

When the music industry’s technological and educational efforts failed to make a sufficient dent in the growth of downloading and file-sharing, it adopted the more aggressive and direct strategy of filing lawsuits against individual music downloaders and uploaders. Since April 2003, RIAA has filed suits against over 7,000 individuals, ranging from 12 year-olds to college students and grandparents, and has settled out of court with thousands of them, usually for sums in the thousands of dollars.

The recent lawsuits by RIAA represent a significant shift in industry tactics, since they target individual consumers of digital music, where previous industry efforts had been focused primarily on file-sharing networks like Napster and KaZaa. Targeting individual consumers in this way carries a certain degree of risk, since it may alienate the wider music audience. But the industry portrays itself as fighting for survival, for the sustainability of its own business model for the commercial music industry. The future of that model depends, among other things, on cultivating disciplined *consumers* of digital music habituated to paying for music on and off-line. The industry's effort to cultivate willing consumers of commodified music involves a multifaceted program designed to adjust the habits, practices and mindset of the millions of Internet users who currently download and share music files for free. It is within the context of this broader effort to cultivate and discipline music consumers that the lawsuits by RIAA are best understood, an effort involving measures of both persuasion and coercion. Whether RIAA succeeds in recouping the alleged losses of its members is really beside the point. The clear intent of the lawsuits is to discourage the use of file-sharing software and to discipline consumers into abiding by RIAA's expansive interpretation of its members' rights and the commercial model of cultural citizenship to which they are bound.

The RIAA lawsuits appear to be having some effect. The percentage of Internet users in the U.S. downloading music dropped by half, from 29 to 14 percent, between April 2003 and January 2004. The percentage of those who shared files of any kind, music or otherwise, declined from 28 to 20 in the same period. At the same time, the percentage of Internet users running P2P applications like KaZaa and Grokster on their computers dropped anywhere between 15 and 59 percent depending on the service used (Pew Internet and American Life Project 2004). In addition, more and more consumers are turning to paid download sites. In the U.S., sites like Apple iTunes are visited by millions of users every month. Apple iTunes reached the 50 million download mark in March 2004 (IFPI 2004).

To be sure, however, a new generation of hackers and tech-savvy new media consumers, many of whom have become involved in the growing, self-conscious P2P advocacy movement, will continue to pursue a progressive politics of code armed with new software tools, including a new generation of free downloadable P2P software such as *Blubster*, *e-Donkey* and *BitTorrent*. Indeed, one of the virtues of such struggles is that they have raised public awareness of the politics of code and have renewed interest in open source code, free software and so-

called “copyleft” as *political* responses to corporate control of new media, and have furnished consumers and hacktivists with new means with which to pressure for media reform.

Whatever the outcome of this most recent legal skirmish between the music industry and the defendants in the downloading cases, the legal/technological/ideological and legislative battle over downloading and file-sharing is an important one. When one considers the extent of the practice of downloading and file-sharing by Internet users, the potential cultural importance of these new forms of consumption and distribution, and the aggressive response to them on the part of media companies and legislators, one can discern the makings of a major societal and cultural struggle over the future framework for producing, distributing and consuming culture. These legal, technological and cultural struggles pit two conflicting models of cultural citizenship against one another. Against the cultural industries’ model of consumer citizenship as compliance with copyright stand consumers’ claims to a more participatory form of cultural citizenship, in which control of musical production and distribution is wrested from the clutches of industry. Above all, the struggle over digital copyright has exposed the politics of code and demonstrated the ways in which the terms and daily enactment of citizenship can be hardwired into the digital environments in which we increasingly operate. This calls for a new progressive politics of code which is emerging as we speak, and for critical reflection on its potentialities and limitations.

Open Source: Prefiguring a Democratic Politics of Code?

Let me conclude by anticipating and addressing a question begged by the analysis and argument present thus far: if P2P networking and music downloading/file-sharing prefigure new models of cultural citizenship on-line, what form would a progressive, non-proprietary politics of code for cybercitizenship in general look like? My tentative reply is that it might look something like the recently resurgent hacker-inspired open source software movement oriented around open source codes like Linux, GNU, Apache and HTML, and led by groups such as FLOSS and the Free Software Foundation. The main principles of open source code development today consist of the following: collaborative and inclusive design; openness and transparency of source code; openness of the code to ongoing modification, negotiation and refinement; universal access to software at little or no cost; non-restrictive licensing to encourage use and improvement of the code (Jesiek 2003; Moody

2001). Open source coding as a social movement has emerged and grown into a self-conscious social movement since the late 1990s in direct response to the colonization of the Internet by a few monopolistic software firms, most notably Microsoft. While often viewed as obscure, open source code has begun to make a mark on cyberspace. The Apache HTTP open source web server code is now run on roughly 65 percent of all web sites, and the open source Linux operating system has increasingly become the system of choice in the public sector and for a variety of otherwise proprietary systems and devices (Jesiek 2003). MySQL is a free, open source analog of the proprietary database software Oracle. The open source Mozilla web browser and email software is increasingly popular in the wake of revelations about the security and privacy shortcomings of Microsoft's Internet Explorer. Finally, HTML, the basic code on which the web operates, was publicly released as an open source project by its inventor, Berners-Lee, in 1993.

While the open source movement emerged in the late nineties, its predecessors in the free software and hacker movements have been around for two decades. In fact, many early hackers, as well as the electrical engineers and computers scientists involved in the RFC process out of which the original Internet protocols emerged were committed for all intents and purposes to the ethic of open source software development. As recounted by both Lessig and Galloway, the open source process by which the early Internet protocols were written was informed by basic beliefs espoused by lead hackers, such as Eric Raymond, that "information-sharing is a powerful, positive good, and that it is an ethical duty of hackers to share their expertise by writing open-source code and facilitating access to information and to computing resources" (Jesiek 2003).

The ethics and practice of open source software design offer an alternative politics of code to that offered by proprietary software and harbour a broader vision of a more transparent, open and inclusive Internet architecture more consistent with the norms and values of democratic citizenship. Firstly, in both procedure and substance the practice of open source code articulates and hardwires certain constitutional rights (access to source code and its subsequent development) and obligations (transparent, inclusive, and flexible design processes) into the coding of the Internet and new media. Secondly, in so far as open source code offers a counter-image of digital citizenship to that embodied in the opaque workings of proprietary code (controlled access, secrecy of source code, compulsory publicity for users, etc.), it constitutes a *hack* of cybercitizenship as it has been configured by Microsoft, AOL and others. Open source affords the possibility of users once again openly collaborating to assess,

revise and improve the technical codes that increasingly govern their lives, according to their needs, as they see fit. As Jesiek writes:

When key software technologies are developed in a closed-source, corporate environment, the negotiating power of marginalized social groups and users is...diminished. Various forms of resistance may appear...but these reactive efforts are constrained by the technical codes built into the technologies by those in power. In the open source world, actors have one more degree of freedom, allowing for the proactive shaping and modification of technologies, both in design and use (2003).

As such, open source fits with Galloway's injunction that we must avoid futile attempts to refuse code and, rather, "direct these protocological technologies, whose distributed structure is empowering indeed, toward what Hans Magnus Enzenberger calls an 'emancipated media' created by active social actors rather than passive users." (Galloway 2004, 16).

The image of technological citizenship that I argue is captured in the open source software movement is far from perfect. As a movement, it is prone to a certain technical elitism which produces forms of knowledge and discourse among members that average users often do not understand. As Jordan and Taylor argue, "[t]he purity of [open source's] commitment to elegant software hacks often isolate[s] it from vast areas of society which could never hope to use or understand the works of its adherents" (Jordan and Taylor 16). And yet, despite its flaws, open source prefigures a promising new politics of code and offers us a counterimage to the model of on-line citizenship embodied in the technological infrastructure of e-commerce.

Conclusion

To the extent that Internet users are subject to law-like codes regulating, enabling and constraining on-line behaviour and access to information, our understanding of technological citizenship in the digital era must transcend preoccupations with the digital divide, electronic voting and the like, to interrogate the terms and conditions of digitally encoded citizenship. We must examine more fully the socio-technical means by which Internet users become citizens of cyberspace via subtle processes of enculturation, inducement and coercion, as well as how they resist and rearticulate, through their daily practices and social appropriation of the technology, the terms and conditions of citizenship imposed by its current

configuration. What are the possibilities of the politics of code for the democratic reinvention of the cyberspace? What are the limits and dangers? Beginning to understand the imposition of a given Internet architecture, along with the ways in which users both acquiesce to and resist it helps us move beyond the limits of current thinking about the citizenship in the Internet era and to open up new branches of inquiry and critical reflection.

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¹ Not everyone would agree with this admittedly rather sanguine characterization of hacker values. Crude forms of sexism and libertarianism are also well-represented in the culture of computing and the Internet. Cf. Borsook 2000.

² A number of recent studies have cast doubt on the link between downloading, file-sharing and declining CD sales. General business conditions, such as a decline in overall consumer spending, and strategic failures and miscues on the part of industry itself, have also been blamed. Cf. Oberholzer et al. 2004.

The Technical Codes of Online Education

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Introduction: A Deterministic Politics of Online Education

Online education was invented by academics, and at its origin reflected their values and pedagogical conceptions. But they lacked resources for imposing their innovation on a wide scale. University computer centres were often uncooperative, administrations indifferent, and business prospects as yet unimagined. Individual faculty might gain support for small experiments, but online education seemed more a hobby of a few odd champions than a significant advance.

All this changed in the late 1990s, when university administrations realized they faced insoluble budgetary challenges in serving the coming generation of students and meeting the mounting demands from government and industry for a highly educated workforce. In this context, online education was called upon to solve some of the deepest economic, pedagogical, and organisational problems of the university. In solving these problems, however, online education was also expected to transform higher education in a way that would leave no corner of the institution untouched.

Computer and software companies saw a market in this transformation and suddenly online education was on the front page of the newspapers as the Next Big Thing. Those who had worked quietly in the field for the previous fifteen years were generally ignored in the rush to a technological revolution that, it became rapidly clear, was all about money—money to be saved by substituting capital for labour on campus along lines familiar from many earlier de-skilling of crafts and professions—with only secondary consideration given to the pedagogical and professional concerns that guided early experimentation and innovation.

In the late 1990s, online education thus emerged as an object of considerable political contention in the university. It became embedded in a rhetoric of reform which tended to set traditional structures and practices in fundamental opposition to the next evolutionary stage in higher education. The “virtual university” stood as a technological destiny, the logical replacement for the cumbersome, rigid, and anachronistic “traditional” institution.

In such evangelical discourses, online education was often represented as an inevitable challenge and a transformative force. In the stronger version of this rhetoric, brick-and-mortar universities would vanish, no doubt in a puff of pipe smoke and a rustle of tweeds, to be replaced by the effervescent movement of digital information in global telecommunication networks. The structural transformation of academic labour and the academic profession was depicted as both a necessary pre-requisite for and an inevitable consequence of the increasing technological mediation of higher education.

The zeal with which this evangelical vision was professed is perhaps difficult to remember in a more sober age.¹ Nevertheless, it was not so very many years ago that encomiums on the “death of the traditional university” were being uttered with little caution by university administrators, corporate CEOs, the heads of research organisations, government officials, and even some faculty. Peter Drucker’s (1997) prediction that traditional universities would become “wastelands” in the early decades of the twenty-first century was only an inflated version of a claim being made in calmer tones elsewhere. According to some, the virtualisation of the university would mean the replacement of “physical processes with new processes that can be accomplished over networks” (Katz & Oblinger 2000, 2). For others, the technology heralded the “unbundling of higher education services” with “different providers carrying out different functions: curricular development, delivery of instructional modules, provision of student services, student evaluation, and awarding credentials” (Wallhaus 2000, 22). The intensified division of labour made possible by breaking the faculty’s monopoly on education would demote professors to deprofessionalised “content experts,” or at least allow universities to “rationalize” their labour practices. One university professor, commenting on and offering admonishment to faculty resistant to online education, stated that

Universities are in the information business, and the information railroad is coming...we would be wise to ask whether the particularly quaint way that we manufacture, distribute and deliver that education will survive the arrival of the information railroad (Wulf 1998, 1-2).

It is this type of rhetoric that early critics of online education responded to and came to equate with the real developmental trajectories of the field despite the wide diversity of actual practice. For critics, the dissolution of the university into digital networks would make possible the further dissolution of the traditional

social and professional structures in which higher education had been embedded for close to a millennium. Thus, online education became a major focus of debate over the future of higher education. The debate, however, was one in which the question of online education an actually existing socio-technical movement with a complex history became inseparable from the simplistic rhetoric surrounding the technology underlying it. Once “online education” had been solidified as a rhetorical or discursive figure, the debate could be carried out with little detailed examination of ongoing socio-technical developments in the field. Its “nature” was fixed, and conflictual interests polarised around it.

Online education thus appears in one of two registers in debates over educational reform in the late 1990s. One side presents a story of the progressive development of technology as it is applied to the organisation of higher education, leading to pedagogical advances and to the new forms of administration required for the realisation of the technology’s full potentials, both pedagogical and economic. Peter Drucker’s famous claim, mentioned above, is a much-cited, if extreme, instance of this view, though it has had more recent and more sober-minded proponents as well: “[Universities] will need to transform [to take advantage of online education] or they will die” (Bates 2004).² Here, online education is understood as a concatenation of tools that impose certain adaptations and structural adjustments. The alignment of these changes with particular economic interests is regarded as merely incidental.³ Online education is neutralised to the point where any suggestion of a political context disappears behind a façade of technical inevitability.

The other side presents a socio-political account of the dynamics of corporate power in the contemporary university. Online education is seen as a lever of neoliberal reform, an extension to the university of a capitalism that is now digital, global, and knowledge-based. Information technology has supplied capital with a powerful means of integrating and transforming a site of social practice previously independent of markets and economic production. In David Noble’s words “...here as elsewhere technology is but a vehicle and a disarming disguise” (Noble 2002, 26).⁴ In this view, online education is reified around political-economic interests that it is claimed, unequivocally, to represent. Commodification, commercialisation, and corporatisation are understood as fundamental dimensions of the technology and its consequences for higher education and the university.

Both sides of the debate pay particular attention to the way in which technology will, for better or worse, transform the professional structure and pedagogical practices of university teaching. What one group conceives as a search for greater efficiency and accountability, the other sees as the increasing de-professionalisation (even the automation) of academic labour. What one side praises as greater flexibility for students, the other condemns as an extension of managerial control over instructors. What one side sees as a means of integrating higher education into a rapidly changing information society, the other regards as the death of the critical university and its subordination to commercial interests. What one side interprets as a pedagogical advance, the other criticizes as an attempt to wrestle profit out of an expensive and recalcitrant institution through the commodification of learning.

The problem with these accounts is not that their claims, taken individually, are entirely incorrect, nor that they point to insignificant trends in the university. The problem is the general philosophy of technology underlying *both* versions of the story. On each side, technology emerges as a *fait accompli* with which the university must comply or which it must reject out of hand in defence of traditional academic values and priorities. Educational technologies are supposedly uniquely compatible with neoliberalism, which supplies their ultimate meaning and supports the growth of online education as an instance of pure technical development. Both views, then, are based on essentially deterministic assumptions, drawing on a perspective that has been rigorously criticized in both philosophical and empirical study of technology.⁵

This has led to an unfortunate situation in which each account, while sharing an identical spontaneous philosophy of technology, appears exclusive of the other, divided between priorities and values that are imagined to be irreconcilable. One side tends to ignore or dismiss the political-economic climate within which online education has developed, externalising critical claims, while the other depicts technology as a static given, intrinsically biased in favour of capitalism and unresponsive to social pressures and choices. While some recent research has begun to note and respond to this situation,⁶ the debate largely continues to reproduce these polarised and reified terms.

This impasse is in need of redressing from within an alternative philosophical orientation that can widen the scope of critical debate over online education and the restructuring of the university. Critical theory of technology⁷ supplies such an orientation in its emphasis on the dynamics of technological design and

development as social and political processes. In order to resituate technology in the politics of the contemporary university we will examine the case of an early experiment in educational computer conferencing. In the final sections of this paper we will draw some conclusions from this case regarding methodology and policy in the online education debate.

From Commodification to Communication: Differing Socio-technical Paradigms

Critical observers of the potential “impacts” of the computer in higher education have, from early on, envisaged it in terms of the commodification of knowledge, the automation—or at least de-skilling—of instruction, and the subordination of education to economic ends. Lyotard, for example, sees the computer reducing knowledge to “quantities of information,” and as “rigorously [externalising knowledge] with respect to the knower” (Lyotard 1979, 13). Aronowitz (2000, 155) concurs: in computer-mediated education the student “responds to packaged material,” which is prepared by star academics but delivered by a casualised labour force. In Werry’s (1999) account, this casualised labour force is replaced by actors, presumably because once the content is supplied, its delivery is best handled by real experts. Noble (2002), too, follows this line, depicting online education as successor to the commodified educational products and Taylorised labour process of early twentieth century correspondence schools. The critics agree: computer mediation means a reduction of education to information, of faculty to deprofessionalised “content providers,” and of the university to a site of commercial information production.

Were these conclusions based on thorough empirical study, they could be challenged only by equally thorough studies. Indeed, the empirical reality of online education is a great deal more heterogeneous than the critical discourse, in its fear of a monolithic technical juggernaut, has allowed. Unfortunately, critics of online education have largely failed to capture the real situation. Rather, they have tended to argue from the numerous historical precedents for the process they believe themselves to be observing. Indeed, similar critiques have appeared throughout the history of educational technologies and media, from Plato’s attack on writing, to the fear in the 1950s that TV would usher in the era of “the automatic student and the robot professor” (Plato 1973; Smith 1958).

What Plato has to say about writing is not much different in substance from later critiques of educational broadcasting and computing, centring as it does on the

way in which the new medium offers a static embodiment of knowledge and a vehicle for distributing it independent of social relations, contexts, and structures. Plato was clearly thinking of the educational application of the computer—or perhaps the Internet—when he prophesied that “students will receive a quantity of information without proper instruction” (Plato 1973, 96). “Proper” instruction requires dynamic contexts of co-presence. As Lyotard later approaches the computer, so Plato approaches writing as a means of “externalising knowledge from the knower.” Both critiques are rooted in a formal conception of how writing or the computer act on information—the technologies are conceived as essentially *representational* in nature, and it is as such that they are understood to relate to and remodel the education process according to a narrow pedagogy of information delivery and acquisition (Blake & Standish 2000; Robins & Webster 2002).

Early educational applications of the computer such as computer assisted instruction (CAI) clearly reflect just such a reduction of education, and support both the commodification of content and an agenda of automation. Designed as basic drill-and-practice tools, CAI systems draw upon the affordances granted by the pre-network era computer as a stand-alone information processor—its capacity to record, store, analyse, represent, and organise information. The system presents a specific content and the student “interacts” with the technology by responding to prompts that cue movement through it. The system regulates the student’s progress by intermittently evaluating performance on standardised quizzes (Distefano 2004; Hiltz 1994). The social relations of education are here broken down along functional lines. Social interaction is replaced by interaction with technology and the static content it delivers, and the producers of knowledge are separated from the learners they traditionally encounter in the classroom.

This configuration of the computer in the education process is not limited to “classic” CAI, though the latter represents the most clearly automated form of computer-mediated education. The CD-ROM courseware disparaged by Noble reproduces a similar model, and offers education in a similarly commodified form alienated from human interaction and dialogue (Noble 2002). Contemporary learning management systems (LMS), such as WebCT, while they are not designed to support full automation, can and sometimes have been appropriated for deprofessionalised forms of computer-mediated education on the basis of an interpretation of the Internet as means of distributing computerized representations of knowledge. In that context, the computer is configured as an

information delivery device, and the educational process is divided into discrete production tasks. The work of the teacher is partly delegated to the system, and the remaining human tasks, such as information gathering, performance evaluation, and certification, can be handled by low paid clerical employees or part-time tutors.

It is easy to see why critics might disparage this version of computer-mediated education as a commodified pedagogy of information delivery. Reduced to information, education seemingly no longer requires its traditional social mediations—the physical classroom, the university as an institution, or the professional teacher. It can be organised like a process of industrial production of commodified goods consumed by isolated individual learners. It is also easy to imagine who might find such a redefinition of education attractive. It is a short step from a pedagogical model of information delivery to an industrial model of information production, and a commercial model of information marketing and consumption. The transformation of education into a product promises a new revenue stream for economically beleaguered universities. In economic terms this product resembles CDs or software, the marginal cost of which declines rapidly with the number of units produced. A popular “brand,” such as MIT, might become a sort of educational Britney Spears, milking “platinum” courseware for big profits. The university finally has a “business model.” University administrators eager to cut costs can find common ground here with commercial interests seeking access to the multi-billion dollar education market.

An economic logic which views education as simply another variety of “e-commerce,” with knowledge as a commodity to be packaged, marketed, and sold, appropriates the available technologies as a system for distributed representation. If these technologies can divest higher education of a need for classrooms, physical plant, and teachers, they can also reduce the operating costs of serving a fast growing student population. While often disguised behind claims of improved quality, accessibility, and a more flexible “student-centred” approach, the economic motives behind this pedagogical model are strong enough to tar educational technologies irredeemably with the brush of Mammon. On the university’s economic ledger pedagogical niceties are incidental to cost-efficient delivery of pre-packaged, standardised courseware, and access to globally dispersed learner markets.⁸

A pedagogy based on commodified, automated, decontextualised information delivery, the technologies of distance education, and the prevalence of an

economic discourse of higher education have been so tightly interwoven as to enable a critique of the one to imply, even stand in for, a critique of the others. Even where networked educational technologies are concerned—technologies that can and do support human interaction—the tendency has been to understand them in terms of the representational capacities of the computer rather than as redefining or resituating these capacities in the context of new forms of mediated communication.

But it is precisely this latter potential that opens the computer up for appropriation within pedagogical (and political) frameworks other than the delivery of information commodities, and so raises the possibility of directing the technology, and online education as a movement, away from a formal replication of teacher functions in a strategy of automation and deprofessionalisation. Networked learning can be based on the computer's *relational* rather than its *representational* capacities. The assumption that online education is equivalent to the organisation, presentation, and delivery of information ignores a vital impact of the convergence of telecommunication and computing, namely, the creation of an environment for social interaction between geographically and temporally distant users. While this might seem an obvious point, it has great significance for the politics of online education. A historical case may serve to clarify this significance.

Computer Conferencing at WBSI⁹

In the early 1980s, while CAI was still the dominant mode of educational computing, a number of academically-based experiments tested educational applications of asynchronous, text-based computer conferencing. Successful online discussion groups of a more general, voluntary, and sometimes random sort had emerged prior to this on such services as The Source and CompuServe. Educators critical of the information delivery model of CAI hoped to draw upon the capacity of conferencing systems to support group communication in order to realise a model of online education based on a dialogic pedagogy (Feenberg 1993; Kaye 1989; Kerr & Hiltz 1982; Mason & Kaye 1989). Among the early experiments were a series of teacher-training courses at the New Jersey Institute of Technology, some Adult and Continuing Education courses at the New York Institute of Technology, the New School's Connected Education program, and an experiment in mass education using computer conferencing at the Open University in the UK. The first organised online education programme, however, was the School of Management and Strategic Studies (SMSS), which opened in

January of 1982 at the Western Behavioural Sciences Institute (WBSI) in La Jolla, California.

The SMSS was a two-year executive education program dedicated to fostering critical humanistic dialogue around issues and problems of information societies in a rapidly globalizing economy. Participants came together at week long bi-annual meetings at the Institute, but otherwise their only link with the program and one another was the Electronic Information Exchange System (EIES)—the conferencing system employed in the SMSS. The program was divided into four semester-long courses, bracketed by the face-to-face meetings, with each course broken down into month-long seminars moderated by university faculty from all over the US. There were no assignments, no grades, and no certification—and yet despite the lack of the usual external motivations for study, the SMSS grew from a program with 8 initial participants, all but one in the US, to over 150 participants from two dozen countries around the world. So successful was the SMSS that it was ranked in Harvard Business School's top 5 executive education programs (Meeks 1987; Gottschalk 1983).¹⁰

While the success of an asynchronous, globally distributed online education program might appear in hindsight merely to confirm what everybody already knew about the “impacts” of new communications technologies on education—increased access and quality, user enthusiasm, and the potentials of “virtualisation”—the SMSS owed less to the abstract properties of new technologies than to the way in which their affordances and limitations were interpreted through specific pedagogical and social values and actively appropriated. WBSI's faculty and staff realised from the start that computer conferencing was not a means of information delivery but a context for social interaction, communication, and dialogue. However, since the medium was untried in education, no models for conducting an educational computer conference existed. Moreover, conferencing systems had not been designed with specifically educational applications in mind, but according to generic definitions of the communication process (Hiltz 1994; WBSI 1987). Faculty, staff, and participants in the SMSS had to invent online education as they went along, negotiating between various notions of alternative pedagogy and the affordances and constraints of the conferencing medium.

Distributed, asynchronous, text-based communication is the primary mode of interaction afforded by computer conferencing. Today there is a standard discourse for describing the advantages of this mode of interaction: flexible

anytime/anywhere learning, increased time for formulating considered contributions, egalitarian communication in the absence of visible status markers, and so on. But in the practical contexts of the early experiments, these features of computer conferencing bore an ambivalent relationship to the education process. Distribution and asynchronicity also meant the absence of a ready-made physical context for learning, and the devaluation of passive forms of participation that are perfectly legitimate in such contexts, where visible co-presence enables the easy flow of tacit communication. The verbal cues and situational norms that contextualise interaction in face-to-face settings are absent in text-based communication, making it awkwardly opaque and even intimidating for new users (Feenberg 1989). The ambivalence of these formal features of the technology raised a number of pedagogical challenges for faculty, staff and participants alike.

In CAI, learning is coded in the prescriptive structure of the system itself as a shell for organising a content and for evaluating student performance. Most contemporary learning management systems similarly provide a structure for the representation and acquisition of content and the configuration of tools and applications. In computer conferencing, by contrast, there are no pre-determined prescriptions for learning at all—the system provides a structure for interaction and basic tools to facilitate communication, but no more. Conferencing systems do not replicate teaching functions, nor do they supply an explicit pattern for focussed, cumulative, or directed engagement with content—central elements of learning. There is no content, as far as the system is concerned, apart from the participants' messages. However, regardless of the pure potential of the systems, interaction is by no means a given in the absence of technical prescriptions or social norms of participation.

Where a limited type of human-machine interaction is simply imposed by CAI, human to human interaction is a very real *problem* in computer conferencing—it is not pre-determined or prescribed technically, but has to be actively achieved. And, as was quickly discovered at WBSI, it had to be achieved in the absence of precedents: at first neither teachers nor students had ever been in an online classroom before. How do you achieve interaction, participation, and focused dialogue—in a word, education—in an environment in which there are no explicit social norms, in which visual cues are absent, and in which none of the participants are together in the moment of interaction? Whereas CAI systems answered these questions by delegating teaching functions and roles to the machine, at WBSI they were answered by communicative strategies. These

strategies focused primarily on the development of techniques of moderating online discussion.

Arriving at these techniques was not an easy process. Two pedagogical approaches were tried in the early weeks of the first session of the SMSS. One approach was rooted in a belief that the open communication structure of computer conferencing required a “low-impact” moderator. It was presumed that student interest, independent of the conferencing context itself, would drive discussion as it had in other non-educational online forums, and that the provision of a space for communication would suffice to generate focussed and meaningful interaction. Students, having completed a reading assignment, were asked to respond to the readings on the basis of very general questions. The questions were accompanied by a fleeting formal introduction to the course, the extent of which was “Greetings! Here we go.” No context or background was supplied through which participants could understand how they might engage substantively in discussion. No norms were proposed through which the participants could understand their roles and responsibilities in this strange environment. And in the absence of the pressures of co-presence there was no particular compulsion to engage at all. Understandably, little participation resulted.

The other approach came from the opposite direction, assuming that the “emptiness” of the computer conferencing environment needed to be filled with content to which students could react. A series of lengthy introductory messages, analogous to a lecture, was sent out detailing the substantive focus of the seminar, and followed up by a set of challenging and thought provoking problems to which participants were invited to respond. Whereas the “low-impact” approach did little to defuse the anxiety provoked by the blank computer screen, this “high-impact” approach increased the presence of the moderator to such an extent that it left little room for engagement and participation. As a consequence, it inadvertently transformed the conferencing system into yet another vehicle for delivering content rather than facilitating discussion. Again, little active participation followed from this approach.

Unlike interest-based discussion forums, educational computer conferencing begged for the strong, active presence of a live teacher employing a self-conscious pedagogy. Participation was a function of the moderator’s ability to both achieve and invite presence, to maintain coherence and direction, and to contextualise, both intellectually and socially, a highly ambiguous

communication environment. The moderator had to take on contextualising, prompting, synthesising, and facilitating functions and an active leadership role, in such a way as to provide enough structure to engage participants and enough openness to admit them into dialogue (Feenberg 1989; Kerr 1984). Providing context and background, establishing the norms and expectations for interaction, outlining a program and a set of goals, and monitoring the progress of participants—standard dimensions of teaching in the off-line world—were thus reinterpreted in the conferencing medium as a means of facilitating and sustaining educational interaction.

But contrary to a familiar division between “process” and “content,” the moderator could not carry out these organisational functions without being an expert in a field. Prompt responses to student questions and contributions were necessary in order to sustain the flow and coherence of dialogue in a context which tended towards fragmentation. But in the SMSS the dialogue itself consisted of humanistic inquiry into philosophical, social, and political-economic issues, as well as the historical and cultural backgrounds of emerging information societies. This called for an ability on the part of the moderator to evaluate and synthesise abstract concepts, provide historical background and contexts, and survey arguments within a field of inquiry.¹¹

WBSI faculty soon realised, however, that here expertise bore a different relation to the educational process than in their classrooms. In order to maintain a coherent and directed flow of dialogue and a high level of participation, the synthetic, contextualising, and reflective activity of the moderator had to be more “punctual” than persistent, but no less incisive than in traditional educational contexts. Providing background and delineating the scope of a problem to be explored, the moderator needed to guide discussion based on the contributions of the participants themselves that served to contextualise how subject expertise was brought to bear. Expertise took on a quality of responsiveness in conferencing that it does not have in information-delivery models of computer-mediated education. With the computer in charge rather than a teacher, expert knowledge is programmed in before the educational process actually begins and students simply respond to it as an unalterable context. Far from playing out an agenda of automation and commodification, however, WBSI’s model of online education innovated an active social role for the instructor in response to the specific constraints and affordances of the conferencing medium.

So far our discussion of the communicative functions of computer conferencing at WBSI seems to re-inscribe the traditional antinomy of human and machine. But this cliché does not in fact describe the evolution of the WBSI experiment. It soon became obvious to the group that created the SMSS that they would also have to reinvent computer conferencing if their enterprise was to succeed—to engage directly, that is, in the process of technical innovation. The communicative functions of moderating needed to be accompanied by the development of technical features that could support both the functions themselves and WBSI's pedagogical model. This recognition arose from the problems encountered in using a generic communication technology for specifically educational purposes.

The generic interpretation of communication in conferencing systems failed to take account of how communication differs across social settings. Communication within educational contexts is clearly conducted with different purposes, expectations, roles, values, and norms than is dinner-table conversation within the family, debates at political meetings, or discussions among hobbyists about their hobbies. At the very least, CAI came with a model, however impoverished, of how education took place, assigning roles, norms, and expectations in a coherent manner. Conferencing did not. The social and pedagogical functions of moderating at WBSI answered to, and in part derived from this situation. But they also acted as a framework within which certain design features became desirable, and on the basis of which additional features could be innovated.

These features could be as simple as an ability to track individual participants' progress through the conference, allowing the moderator to better facilitate the conversation on the basis of a clear view of everybody's location within it (WBSI 1987). They could be as complex as a subject indexing feature enabling both participants and moderators to follow different thematic threads and to weave these threads together at appropriate moments in summary comments useful for keeping the conversation on track (Feenberg 1989). Experiments at WBSI with this latter feature failed for lack of sufficient computing power, but later inspired the TextWeaver project discussed in a later section of this paper. Social roles and practices did not develop out of the prior presence of these features. Rather the features were seen as desirable from within the purview of a particular social practice and pedagogical model.

Another major problem with early conferencing was the complexity of the user interface. It required a page of instructions just to sign on to EIES; and once online, the user was faced with lengthy sets of commands for operations as simple and taken-for-granted as writing, editing, quoting, sending and receiving, reading messages, printing, and attaching documents. The so-called “quick reference card” for EIES was 16 pages long (NJIT 1986). The complexity of the system, however, was of a piece with its flexibility—in order to achieve as open and generic a communication environment as possible, designers merely added menus and command strings, to the point where flexibility seemed to reflect the needs and competences of a narrow stratum of technical designers and what came to be called “computer geeks” rather than students and teachers. The memorisation of non-intuitive command codes for the performance of intuitive social acts set a high bar for communication.

WBSI addressed this situation through the development of an original software application: a user-interface for educational computer conferencing called Passkey (WBSI 1987; 1986). Similar to Web browsers, Passkey was designed as a simplified command interface layered over the more complex communication structure supplied by the conferencing system. Its effect, like the Web browser’s for the Internet, was to make the process of online communication more accessible to lay users, obviating the need to rely upon an abstruse set of commands for conducting communication online. Designed with the experience of both moderators and participants in the SMSS conferences in mind, Passkey represented a technical expression of the social, pedagogical and programmatic framework developed over the first four years of the program. Once again, the case exhibits not acquiescence to a set of given technical prescriptions, but the adaptation of technology to the needs of a specific user group.

The desire to enact a dialogic pedagogy, the development of social rather than technical delegations in response to technical constraints, and the undertaking of technological development in response and deference to local social values and expectations tells a much different story of online education than is often portrayed in mainstream debates today. One reason for this difference lies in the proximity of both programmatic and technological development to the contexts of actual educational practice. Automation and commodification did not play as agendas in the SMSS, not only because the technology could not easily support them, but because the interests of instructors were directly present in the design and development contexts. The automation of certain moderating functions was suggested at NJIT, and implemented as yet another menu option, on the

assumption that participation could most easily be achieved by building in technical features that would require it (Hiltz 1982). If taken in that direction, the technology might have developed to support a similar agenda as information-delivery oriented CAI systems. But it was in providing an alternative to those systems that WBSI largely understood its work.

All in all, dynamic processes of negotiation and development between technical and social factors not only yielded an alternative model of online education, but in the present context they also open up a range of questions for the critical politics of online education, questions that need to be addressed less in terms of the formal properties of technologies as causative agents, and more in terms of the impact of social contexts of design, development, and pedagogical practice.

A Revised Politics of Online Education

Educational technologies only gain definition, functionality, and value in the framework of the pedagogical models they instantiate, the forms of social relationship they construct, and the educational goals they are applied to achieve. The technology only “works” within that model, those relationships, and those goals, which supply a set of guidelines for what education in general is. On an abstract, formal level, of course, it could be said that technologies like CAI, CD-ROM courseware, or content-based online education “transform” education according to a pedagogical model they in a sense “possess.” However, this model itself has its origins not in some abstracted technical realm, but at the point where pedagogical, social, and institutional values articulate with design principles, processes, and parameters—the point at which social values and choices come to be translated into technically rational design features.¹² Indeed, the design of technologies is predicated on a prior definition of the situation to which the technologies are to apply. Education must be defined in a functional, social, and organisational sense before a technology can be developed to support it. The technology may embody a pedagogical model that carries certain political implications for society or career consequences for professional educators, but it only does so through an iterative process through which pedagogical assumptions, values, and roles are delegated to technical systems.

Critical theory of technology calls this background of values, assumptions, definitions, and roles that guides technological design the “technical code” (Feenberg 2002; 1991). Technical codes define a framework of technical decision-making within which certain choices appear rational. These codes are a

function of the delineation and circumscription of technological development and design by particular social groups to which the ultimate form of the technology is relative. The technical code of online education is relative, then, to the interests, assumptions, and values of the actors who are engaged in the design and development process, and who are thus positioned as powerful interpreters of the technology and the social forms it mediates.

CAI, for example, is not simply a logical derivation from the abstract properties of the computer. It is the product of an interpretation of education which valorises the representational affordances of the computer and directs development towards automated and commodified forms. Computer conferencing, as the WBSI case shows, opened a completely different interpretive field for computer-mediated education in highlighting the functionality of the computer as a communications device. The alternative pedagogy developed at WBSI was not so much the result of the formal properties of computer conferencing as an appropriation of those properties. Conferencing's formal ambivalences with respect to education were addressed at WBSI through both social and technical adaptations aimed at realising an active, dialogic online pedagogy. Automation was never an option, not only because technical limitations at that early date precluded it, but because it was never a value for the developers of the SMSS program. It was incompatible with the technical code out of which WBSI's model of online education emerged.

Computer conferencing and CAI, then, are not just two different uses of the same technology, but supply two completely different paths for the educational appropriation of the computer. They draw upon and support two completely different pedagogical models. They delegate interaction in education in completely different ways. And they operate on two completely different dimensions of the social process of education. Automation and commodification, far from being inevitable consequences of online education, must be understood as contingent outcomes whose realisation depends on a particular configuration of the technology and a particular set of pedagogical choices. Here, as elsewhere, the crucial philosophical and political questions to be asked are: what does the technology stand in for in the educational process, how is it involved in delegating functions across that process, and how is a field of social interests delineated to encourage one iteration over other possible ones?

In information-centric iterations of computer-mediated education such as CAI the technology is designed to stand in for the teacher, to enable the technical

performance of the functions of human professionals. It is this that aligns it with a program of automation. Communication-centred models of computer-mediated education present a very different scenario. Here the technology stands in for the classroom as an environment for interaction, dialogue, and the formation of community. Rather than taking on a functional role within the educational process, it provides a more or less flexible structure for the negotiation of familiar social roles. Functional delegations are not simply built into the technology, but are actively configured out of a combination of social and technical options that, as in the case of the SMSS, include a role for the professional teacher.

Technologies, educational or otherwise, do not autonomously transform the social contexts into which they are introduced, though their influence in giving shape and substance to those contexts is considerable. Certainly writing transformed the process of learning, but it did not replace dynamic interaction with static information-gathering, as Plato predicted. Over the centuries, educators and students have managed to devise ways of situating writing within interactive social processes. Writing has added its capacities as an information technology to the communicative processes of teaching and learning in ways now so obvious and taken-for-granted that they are barely noted. Networked computing also provides a powerful means of organising, representing, and transmitting information, but to limit it to these capacities is to sub-optimize its potential as a communications medium. The integration of the technology into education is, however, ongoing, and its ultimate form is not yet decided. There is still time for intervention and re-direction in accordance with academic interests and values. Whether a positive evolution of the technology will emerge will depend, in part, upon the ability of academics themselves to move beyond the static oppositions and absolute positions that have characterised debates in the field.

Questions of Educational Technology

What are the implications of this analysis for technical design? The “interpretative flexibility” of computer networking is very great. It was easy for new actors with different goals to take over the original project of online education and to redefine it to mean something new. Very quickly, this new conception of the field was reflected in the design of the new “learning management systems” which have spread across North American campuses.

Online education was finally successful but in a form unrecognizable to its original inventors.

These learning management systems generally emphasize the representational rather than the relational potential of networked computers. Often, but not always, a web forum, equivalent to the computer conferences of old, is included in the product but given little attention by trainers preparing instructors to use the new technology. The interpretation of online education resisted by Noble and others was effectively inscribed in its technical code to the extent that this was technically and politically feasible. In response, resistance to online education has tended to accept this code as inevitable, mistaking a particular social design for the nature of the technology itself.

The WBSI case takes on its full significance against this background. True, it never achieved the widespread usage of the current systems. But it represents an existence proof of the alternative. It demonstrates the possibility of another line of development that would emphasize relational potentials rooted in traditional pedagogical conceptions shared by most faculty rather than the budgetary concerns of administrations and commercial strategists. The single most important constraint that flows from this alternative line of development is small classes, manageable by a living professor, rather than huge audiences or markets for semi-automated educational “products.” In this form online education must defend its value on a pedagogical basis because it cannot significantly contribute to cheapening education or selling educational products. There is no “business model” for learning as traditionally conceived, even when the classroom is virtual.

This line of development, too, is inscribed in a technical code. Insofar as the movement for open source educational software depends primarily on faculty input and support, this technical code is likely to emerge as its agenda. To illustrate this point, we will briefly describe two initiatives in this field.

The primitive web forums in most learning management systems have no educational features but are simple copies of old newsgroup software. Andrew Feenberg, one of the founders of the SMSS, has developed an open source alternative called TextWeaver. This is a conferencing application that includes features specifically designed for education that enhance online discourse by facilitating quotation from multiple messages and enable students and teachers to create and assign their own individual keywords for organizing the discussion

archive.¹³ These features serve specific pedagogical goals such as encouraging student-to-student interaction and periodic summations by the teacher.

On a much larger scale, the Sakai Project¹⁴ is a \$6.8M community source software development project founded by the University of Michigan, Indiana University, MIT, Stanford, the uPortal Consortium, and the Open Knowledge Initiative with the support of the Andrew W. Mellon Foundation. Sakai is, among other things, creating an open-source learning management system, the first version of which was released in July 2004. In addition to providing open source online education tools and applications, Sakai is also developing a “Tool Portability Protocol” which will provide a framework for universities to develop and share software. While the open-source license of Sakai does not prevent the commercialisation of its software, it ensures that the knowledge base upon which such developments are made remains open and sharable. Universities are thus able to retain a much greater level of control over development, adoption, support, and implementation than is possible with commercial systems. This project is perhaps the largest and most promising effort to free online education software development from commercial control, both for cost savings and, more importantly, to insure that faculty have significant input into the design of the software environments they will employ in their work.

The current state of online education is deeply ambiguous. Administrations have had to temper their ambitions as they discovered that the technology was not capable of delivering on the promise of cost-effectiveness without severely degrading educational quality. This was a prospect resisted by both faculty and students, notably in the California State University System where demonstrations at the state legislature and resolutions by faculty senates blocked a corporate sponsored attempt to “wire” the campuses. But before this realization had sunk in, universities invested millions in the infrastructure of online education. The basic software acquired in this context and used now on most campuses retains the representational emphasis reflecting the automating agenda of the commercial vendors who originally drove this process with unrealistic promises.

Meanwhile, faculty often, if not always, appropriate the available systems for a familiar pedagogical practice that combines representation of content, the online equivalent of the textbook, with the active use of a web forum, the online equivalent of classroom discussion. This is precisely the sort of thing envisaged at WBSI twenty years ago. But these practices are not often supported by corresponding reductions in teaching loads and class sizes to render the

interactive online pedagogy truly comparable with classroom teaching in terms of burden and effort. This confusing state of affairs may slowly give way to a satisfactory synthesis if open source initiatives are successful and faculty organizations aggressive. This is the outcome towards which we should work rather than resisting online education as such.

Conclusion: Policy and Design

The essential question to ask in a revised politics of online education is whether the technology will work to facilitate the transmission of static information, fostering standardised modes of interaction between human users, machines and commodified knowledge, or whether the technologies and online programmes can be rooted in an essentially social ideal of education, extending and enabling new forms of mediated interaction. Technology could potentially support either one of these programmes. But, as outcomes, they are in no sense given prior to specific appropriations within particular social settings.

Struggles over technological change take place in social contexts that have their own historical dynamics, and that provide their own affordances for action, authority, and intervention. The university is no exception. It is a complex social institution organised around an administrative core whose relative power has increased significantly over the past half century, but in which there is still a strong tradition of professional self-governance and participatory decision-making. Despite the growing discretionary power of both administrative bodies and state/corporate interests, faculty and students still have some power in the institution and can intervene in institutional change. Policy developments with respect to educational technologies and distance education show that the critique of online education can and must include an account of interventions through the community-based structures of the university and professional associations. These latter have acted for the incorporation of faculty interests into online education. They are also important sites for the enactment and analysis of an alternative critical politics of online education.

The American Association of University Professors (AAUP) and the Canadian Association of University Teachers (CAUT) have issued position statements on online and distance education that act as an important basis for local faculty intervention in the appropriation of educational technologies.¹⁵ In the case of the CAUT, these statements address issues of commercialisation, privatisation, and deprofessionalisation. By framing their position with respect to particular social

issues, CAUT establishes a basis for the alternative development of online education, and promotes critical engagement by local institutions in the appropriation of educational technologies.

The AAUP statement on distance education is framed in terms of the disjuncture between academic policies governing more traditional means of distance education and networked technologies. Recognition that the new technologies have the capacity to do something fundamentally different from the old correspondence school model and CAI suggests that they ought to be designed to better conform with basic academic values and priorities. Academic freedom, free access to information, freedom of teaching, intellectual property rights, and so on are central to the position-statement and outline clearly the need to embed new technologies and online programmes in traditional professional and institutional interests and structures. The responsibility for developing online education is situated within the academic community as a whole, with recognition that new technologies must be integrated into education through the normal academic channels.

But do these position statements have any impact on local policy? We have not surveyed the broad spectrum of institutions adopting the new technologies, but here at least is a significant example of the sort of developments we hope are widespread. San Diego State University's faculty senate has developed a comprehensive distance education policy that addresses the issues of automation, deskilling, and commercialisation.¹⁶ The policy grounds the development of distance education in the traditional mission, governance and decision-making structures, and value frameworks of the university. This policy mandates that distance education technologies be evaluated according to traditional pedagogical and professional principles, and that relationships with external organisations providing courseware and technology be open to scrutiny by faculty committees. Most importantly, the policy requires that both educational technologies and distance programmes be organised in a way that respects faculty autonomy, academic freedom, and intellectual property. The policy also contains guidelines for employment of adjunct and part-time non-tenured faculty, and thus engages directly and proactively with one of the main points of political contention in debates over online education—its role in the deprofessionalisation of university teaching.

These policies and position statements provide a framework for the development and implementation of online education and educational technologies *within* the

context of the values, norms, and expectations that typify universities as professional organisations. They strengthen the alternative technical code of online education worked out in early computer conferencing by placing that code within the larger institutional and organisational frameworks of universities and professional associations. And they address the concerns of online education's most vehement critics, appropriating critical discourse into socio-technical decision-making.

In the wake of the general disappointment with the exaggerated claims made for online education, there is now wide latitude for faculty intervention and participation in shaping the terms on which it will impact the academic labour process, the division of academic labour, and ownership of intellectual resources. It is now clear that online education will not destroy the university as we know it. What it will become will be determined ultimately by the politics of the very institution it promised to replace only a few years ago.

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¹ Contrast this evangelism with the contemporary language of "blended learning" or "instructional enhancement."

² It is ironic that when in the mid 1980s the Western Behavioral Sciences Institute invited Peter Drucker to speak to the first online educational program, he had his secretary send back a preprinted card declining the invitation. Apparently, it took a while for this futurologist to see the future and even then his vision turned out to be pretty fuzzy.

³ Cf. Naidu 2003; Inglis 2002; Smith 2002; Steeples and Jones 2002; Bates 2000; Katz and Oblinger 2000; Duderstadt 1999.

⁴ Cf. Moll 2001, 1997; Levidow 2002; Aronowitz 2000; Robins and Webster 1999; Schiller 1999.

⁵ Cf. Latour 1999, 1995, 1991; Callon and Latour 1981; Pinch and Bijker 1989; Winner 1986, 1977.

⁶ Cf. Cornford and Pollock 2003; Gunawardena and McIsaac 2004; Feenberg 2002, 1999b, 1993; Robins and Webster 2002.

⁷ Feenberg 2002, 1999a, 1995, 1991.

⁸ Cf. Galan 2001, 18-21.

⁹ Documentary material for this section was obtained from the WBSI archive in the Applied Communication and Technology Lab at Simon Fraser University.

¹⁰ For a more detailed account of the structure and legacy of the SMSS program, see Feenberg 1999b, 1993.

¹¹ For an account of the relation of communicative and intellectual functions in educational conferencing, see Xin 2003.

¹² Feenberg 2002, 1999, 1995; Latour 1995; Latour and Callon 1981.

¹³ <http://www.textweaver.org>.

¹⁴ <http://www.sakaiproject.org>.

¹⁵ Cf., www.aaup.org; www.caut.ca/english.

¹⁶ Cf., <http://www-rohan.sdsu.edu/faculty/feenberg/sdsudisted.html>.

Technological Euphoria and Contemporary Citizenship

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Perhaps the main reason why there is so little study of the relationship between the practice of democratic citizenship and the prevailing arrangements of technology in modern society is that few people take the matter seriously. In the country I know best, the United States, the much of this disinterest stems from a long standing euphoria about technological advance that precludes serious reflection about whether the arrival of a new technological device or system will truly be beneficial to political freedom and democratic governance. From the founding of the republic to the present day the rhetoric of American politicians, businessmen, educators, and journalists has always praised the coming of new tools and systems, predicting that they would contribute not only substantial benefits in the power, efficiency and profit, but also revitalize democratic society, enabling citizens to command the political and economic resources to become more effectively self-governing. The building of canals, railroads, factories, and electrical power plants as well as the introduction of the telegraph, telephone, automobile, airplane, radio, television and other instruments of modern society have all been accompanied by enthusiastic proclamations that the innovation would give ordinary folks greater access to resources, more power over key decisions and broader opportunities for political involvement.

It is not difficult to appreciate why Americans so readily embrace extravagant expectations about each new technology. The attitude the country prefers in general is a heavily ritualized optimism—"The American Dream" and "the power of positive thinking"—in its view of future prospects. Things are getting better, we like to believe, and the cultivation of an upbeat mindset is the best way to stimulate the growth of a better society. Because technologies of various kinds promise to change how people work, communicate, travel, etc., the most direct path to the good life is to endorse technologies enthusiastically as they emerge, adapting to their opportunities and requirements as quickly as possible. In contrast, criticisms of any serious kind or requests for wider debate about policy options in technology are often regarded as negative and obstructive. Especially when explore the problematic social, political and environmental consequences of technological choices, critical voices have often been labeled backward looking and unhelpful. As Benjamin Ide Wheeler, President of the University of California, summarized the nation's optimism in the early twentieth century, "America [is] producing a new race characterized by vitality, energy, good cheer,

high faith—bearing for its motto in golden letters on a field of blue the celestial bidding, ‘Boost, don’t knock’” (Brechin 1999, 303).

In another place I have discussed specific instances of technological euphoria in the U.S. and their effects upon public discourse and public policy (Winner 2003).¹ My purpose here is to discuss some contemporary manifestations of this mood and offer a suggestion about one pathway forward.

Today the most prominent focus for the recurring dream that technology will somehow revitalize democracy is the personal computer and Internet. Unlike some earlier episodes of techno-political enthusiasm, e.g., nuclear power, this one is at least superficially plausible. It is perfectly clear that the Internet has already become an important feature in contemporary political culture. Networked computing offers a space of symbolic practice in which people give meaning to their personal and public lives. This space is used by growing numbers as an opportunity for lively and diverse means of expression. In this respect it strongly resembles other domains of popular culture—entertainment, sports and consumerism among the more important—that have played what is arguably a democratizing role in modern society. Consumer goods, by comparison, have become a means through which people see themselves in what they buy, what they wear, what they possess and use, a fact central to today’s economy. In one way or another, the market must respond to popular tastes, desires and preferred identities. Hollywood films and television programs, similarly, reflect a democratic culture as they continually mirror and inform the fantasies of a mass audience. A substantial portion of the organization and content of Internet communication at present can be placed squarely in the same category, a contribution to a culture of widely shared, but highly commercialized symbols and meanings.

But do these cultural manifestations of democracy also become a genuine contribution to democracy in an explicitly political sense? Is the mobilization of people’s attention and activity effective when it comes to matters of power and policy? Does the Internet improve the quantity and quality of citizen participation?

Asking questions of this kind, one recognizes that the Internet cannot be seen as an entity that exists by itself, something isolated from other political practices and organizations. Enthusiasts of Internet democracy often argue in the following way. On one side we find the dominant patterns of politics as usual, the politics

of statecraft, political parties, and the like that used to be the focus of power. On the other side, the Internet side, there are wholly new patterns of computer networks where hierarchies have vanished, where power is up for grabs, where new expressions of citizenship are forming. This argument seems appealing until we notice that, of course, two political realms clearly occupy the same political space. If the activities of online communication do not substantially modify patterns of influence over key decisions making such influence more broadly shared than previously, then announcements of a democratic revolution are at best premature.

How these developments will work out in the longer term cannot be known for certain. The interpenetration of the Internet and political society is still in process and the outcomes highly uncertain. Who knows what our politics will look like in another twenty years? But one can take note of patterns that exist today which suggest that continuity, not rupture, is characteristic of the influence of online structures and practices upon politics and configurations of social power.

As regards voter turnout in the United States, for example, the Internet seems to have had little effect so far on the numbers of people who actually go to the polls. In the U.S., turnout is usually 50% or less. Even in the hotly contested presidential election of 2004, some sixty-one million registered voters did not bother to go to the polls. This means that between roughly 25% of the populace becomes an effective governing plurality while some 75% to 80% of the adult populace does not vote for the person who takes office. Swing voters in many elections—typically middle class men and women, concerned with tax rates, military spending, and “values” (anti-abortion and opposition to gay marriage, for example)—comprise an even smaller slice of the populace yet today receive a disproportionate share of the candidates’ attention. These trends in American elections are both worrisome and the occasion for a great deal of cynicism, a mood of embittered contempt for politics that skillful politicians manipulate to their advantage. Surely, voting trends of this kind cannot be counted a healthy development in what is nominally a democratic society. So far, the coming of the personal computer and the Internet have done little to alter the increasing tendency of a great many citizens to avoid going to the polls and of politicians to maneuver in ways that further reduce voter turnout.

The tendency of technology enthusiasts is to ignore such deeply ingrained problems and to shine the spotlight upon particular hopeful instances in the application of new technology. Thus, while proponents of computerized

democracy were enthralled by the possibilities for computer mediated citizen communication, small donor fund raising on the internet, candidate web sites with chat rooms, web logs (“blogs”), alternative news sources, and the like, the most powerful, lasting, and democratically debilitating uses of digital technology have proceeded almost unnoticed. For example, in drawing lines for redistricting congressional districting, the use of computer models enables predictions about voting preferences within a region to be accurate down to the level of particular street intersections in specific neighborhoods. As employed by political parties (especially by conservative Republicans) in processes of redistricting, decisions based on such data have shrunk the number of districts that are at all competitive in American elections to fewer than 40 of 435 seats in the House of Representatives. While tactics of “Gerrymandering”—district shaping for partisan ends—are as old as the American Revolution, new computer programs give this practice an especially lethal sting. Because most Americans live in districts that are consistently represented by only one party, many citizens conclude, reasonably enough, that their vote simply does not matter, so why bother? In this way, the miracle of digital technology has contributed to something widely evident in the U.S.A. at present, the enervation, not the widely predicted revitalization, of citizenship in actual practice.

But perhaps the evidence of sagging participation in voting is not as significant as it first seems. It may be that that people are finding new arenas for lively public discussion and citizen activity, arenas focused on particular interests, issues and campaigns, especially at the local level, using computers and the Internet in novel ways. There is something to be said for this argument. Indeed, the Internet-centered campaign of Howard Dean and subsequent efforts by his supporters to revitalize participation through “meet ups” and other varieties of direct, local involvement show considerable promise. But, again, such initiatives must be seen in broader perspective. If one considers overall levels of participation in American civic life, there does not seem to be an increase in the age of the Internet as compared the era of television or the newspaper. Indeed, Robert Putnam’s (2000) studies of civic culture show a steadily declining involvement of citizens in public life since World War II. The numbers of people who are willing to engage in citizen activities beyond paying their taxes and obeying the laws is dwindling. The vast majority of American adults are evidently not available to join what were once the organizations and activities crucial to community well-being. Yes, there remain the highly visible and vocal minority who fill in the space that others have left, a minority that now finds the Internet a godsend. Putnam considers many factors that have contributed to the

decline of public involvement, not the least of which is the tendency to stay home and watch television.² Evidently, people feel their politics can be expressed by just watching the screen. But if democracy means widespread involvement of ordinary people in matters of governance, current trends do not seem especially hopeful, unless one takes widespread torpor as a sign that people are basically contented.

What of the idea that democracy is experiencing a revival at least as regards the energy of political discussion, debate and information gathering within the online realm? The early reports are also not especially promising. The ideal of democratic discourse, as seen in the ancient polis, in the New England town meeting and celebrated in the writings of John Dewey and Jürgen Habermas, suggests that people with different commitments and points of view come together to discuss, argue, deliberate and, ultimately, decide on a course of action. In truly democratic settings it is the diversity and of participants, as well as their commitment to engage persons whose ideas differ from their own, that holds the promise good government at the end of the day.

Alas, the creation of forums that are open and diverse in their workings is not what characterizes habits of participation on the Net. Both anecdotal and more systematic social scientific studies suggest that what people typically do is to “customize” the sources of information that interests them, selecting for example only news stories on a particular business interest or their favorite sports team. The Net makes possible far greater selectivity than old fashioned newspapers allowed, papers that presented readers with a fairly wide range of topics because the editors had to appeal to a broad range of possible readers. Today, those who read news on the Web can eliminate the broader array of stories to focus on just what concerns them at the moment. Give me news I can use, just the information I like.

The same intellectually narrowing selectivity can be found in Internet chat groups and listservs. Like-minded people share information and ideas, reinforcing opinions they held in the first place. What we see here is not the cultivation of the kinds of broad-minded, well-informed persons found in textbook descriptions of the democratic citizen. On the Internet, as in face-to-face political settings, people are often uncomfortable with ambiguity, disagreement, and expressions of diverse points of view. But in face-to-face meetings there is sometimes a moment in which people feel the need to come together and seek compromise. Indeed, this is one of the great prizes of political

communication in democracy, a desire to speak one's mind, to listen to other points of view and then to seek common ground. Unfortunately, to this point it seems that many online forums lack this quality. Most of the time one finds people of similar persuasions talking to each other, making peremptory judgments about those who hold different views. When diverse viewpoints do emerge, there is often a nastiness characteristic of online discussion. People stay around long enough to deliver a few shots and then vanish, a luxury that the Internet allows, but that geographically situated communities often make less likely because one has to get up the next day and face one's neighbors. To this point, the Internet seems better suited for venting, flaming and withdrawing from politics than for seeking democratic solutions. I know of no conversations or practical initiatives that tackle this widely noted phenomenon.

A crucial element increasingly absent from American politics—on line and off line—is any direct, sustained engagement with persons in communities of concern to you and about issues and controversies that affect one's life. For many decades the political party system in America satisfied this condition to some extent, although in ways that were often less than fully democratic. Ordinary people would on occasion meet the local political party boss who organized forces for the party and who paid some attention to the needs of people in his ward. Party leaders at higher levels and in legislatures would then work out the deals that provided at least partial response to people's needs.

In this light, the Internet increasingly resembles television (a failed technological utopia) in that it serves as a replacement for direct contact between ordinary citizens and political leaders of sort formerly manifest in ordinary party politics. Although the Internet is to some extent "more interactive" than television in politics, it shares with TV a strong tendency to disconnect the everyday lives and immediate needs of everyday folks from the political process. Most Americans lack any immediate, face-to-face contact with those who are directly involved in politics or governance. The vast majority of citizens are simply not engaged in the substance of important public issues of the day; neither do they speak with persons who are.

Problems of waning participation are strongly connected to important, endemic structural problems in U.S. politics. To this point, personal computers and the Internet have done little to alter patterns of deeply entrenched economic power that have long defined the real workings of government. Powerful elites with home bases in the corporate and financial sectors strongly influence the choice of

candidates, shape the ideas of political parties, finance electoral campaigns, and ultimately control the outcomes of government policy making. The continuing lack of widespread citizen engagement is the underlying condition that allows contemporary varieties of oligarchy, plutocracy, imperialism, and even incipient neo-fascism to flourish in the “the land of the free.” Especially in the fear-ridden, security obsessed climate of post-9/11 America, the term “democracy” is fast becoming the brand name for political forms of a distinctly anti-democratic complexion.

The task of restoring democracy and revitalizing citizenship in our time is truly daunting. There are countless steps that must be taken in institutional and policy reform, especially those that would seek to diminish the power of corporatism and militarism, the most obvious causes of disease in the body politic at present. In this light a recurring opportunity presents itself—public involvement in choices that guide important emerging technologies and the policies that influence these choices. One domain in which debate, deliberation and broader experiences of citizenship are available (at least in principle) is in instances in which publicly supported, politically regulated technologies are taking shape. While participation in such activities is certainly not the only and probably not even the most important pathway for addressing major ills in American political society, it would certainly be a start.

Since change is clearly on the horizon, since our tax dollars support this change in important ways, and since we the citizens are arguably the ultimate stakeholders in the outcome, there are reasons to demand a larger, more effective role for citizens in technology-shaping.

A techno-political episode of this kind presented itself in the 1980s and 1990s. As a scholar and citizen who had pondered earlier cases in the relationship between technological change and the quality of public life, I decided to enter the debate. As it became increasingly clear that networked computing was an occasion for altering many of the practices and institutions of society, I argued to anybody that would listen: “What a great opportunity. Why not talk it over? Let’s open up the discussion to all parts of the polity. If our society is, as everybody says, undergoing an upheaval brought by digital electronics, let’s try to steer it in more favorable directions. Since a wide range of social practices and social structures are undergoing change anyway, we should use this moment address some of the sources of inequality and injustice, looking for ways to renew the fabric of social political life.”

My suggestions and those of other reformers were eventually answered in a particular way in Silicon Valley and in other places where the digital revolution was afire. It came as no surprise to find that the answer arose from the nation's grand tradition of techno-euphoria. Enthusiasts of digital technology argued, in effect, "Don't you see, computers and the Internet revolution are inherently democratic and do not need to be steered through deliberation and planning. There is no need for widespread political debate, citizen education or any steps that would bring greater involvement of government in our lives. We need to let the market work. Just allow the new technology to infuse society. There is no value in focused deliberation, imagination and discussion about the future of our political culture."

The ideology that surfaced to mold the conversation—the libertarian or, cyberlibertarian philosophy—is one now preferred by many business people and technical professionals in high tech industries, including those in Silicon Valley. It is now one of the counterfeit coins used to replace genuine freedom and democratic citizenship in today's political currency. Its message is: "Don't bother us with the challenge of thinking about the relationship between the shape of new technology and the condition of contemporary democracy. Let innovators innovate and entrepreneurs work their wonders. It will all work out fine." Originally considered a novel, progressive standpoint by many of its advocates, the cyberlibertarian position has now become a standard feature of the reactionary political language characteristic of American politics in the early twenty-first century.

In sum, during the 1980s and 1990s I found myself among the minority of thinkers who have long insisted that we needed a wide-ranging debate and important well-focused public decisions. Among such voices one could include the industrial reformers, utopian thinkers, populists, early twentieth century progressives, and writers in the tradition of Lewis Mumford, Theodore Roszak, Murray Bookchin and others who believed that intelligent choices about the form of technological society were both possible and urgently needed. As computing power reached into every corner of society in society and as the Internet was being constructed, requests for widespread debate about desirable and undesirable outcomes of these developments were, once again, not welcome among those in the relevant industries and political corridors. The consequences of this warped conversation became apparent at one key policy juncture—the drafting of the Telecommunications Act of 1996, a law that "deregulates" much

of the ownership and control of electronic communications in the U.S. Cyberlibertarians of the period—Esther Dyson, George Gilder, Alvin Toffler, and others—praised the legislation, largely because it promised to usher in the era of low cost broadband communications, a boon to freedom and democracy, in their view. Alas, conditions established in the Act immediately fostered a pungent concentration in the ownership of all communications media—newspapers, radio and television—in the hands of a few media giants, drastically constricting the range of social and political views that most people hear. Power of this kind, of course, has been a godsend for the oligarchic business and political coalition that dominates the U.S.A. at present, shaping consumer and political preferences, limiting dissent and debate on major policy issues. Then again, many households now “have broadband.”

What is to be done? While it is by no means the only or even the most important domain in which the claims of renewed citizenship need attention, there are is both a need and opportunity to involve much greater portions our populace much earlier in the shaping of social technical institutions, placing questions about the overall public good at the forefront of attention.

How could the technology contribute to general wellbeing, including people excluded from technological benefits in the past? How could social costs associated with it be handled? How can new technologies in energy, transportation, communication, education, and so forth be designed in ways that reflect our best understanding of freedom, social justice and the ongoing creation of a good society?

We cannot leave questions of this kind to eager technology promoters in the private sector; they have obvious conflicts of interest. We can no longer leave such questions solely to elected officials; they are all too often beholden to narrowly defined private interests. And we can no longer respond to crucial world-altering technological developments by channeling the rapture of techno-euphoria; its debilitating effects upon political speech and action are now all too obvious.

Finding ways to involve the public as a whole in processes of deliberation and choice about the dimensions, character and organization of emerging technologies, is an avenue for reform that few political societies have explored. Yet the promise of this political innovation is considerable—creating better technologies for widespread use while cultivating better citizens in the process.

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¹ The present essay is adapted in part from this source.

² In an earlier article Putnam searches through several possible causes for the decline of community involvement during the last half of the twentieth century. He writes, “I have discovered only one suspect against whom circumstantial evidence can be mounted, and in this case it turns out, some directly incriminating evidence has also turned up...The culprit is television” (Putnam 1995, 677).