PART 3 : TECHNOLOGY AND ENVIROMENT

LOOKING BACKWARD, LOOKING FORWARD: REFLECTIONS ON THE TWENTIETH CENTURY

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In the year 1888, Edward Bellamy published a prophetic science fiction novel entitled *Looking Backward: 2000-1887*. His insomniac hero sleeps hypnotized in an underground chamber where he survives the fire that destroys his house. Undiscovered amidst the ruins, he dozes on in suspended animation for more than a century, awakening finally in the year 2000 in a Boston transformed into a socialist utopia. Most of the book is taken up with his puzzled questions about his new surroundings and his hosts' lucid explanations of the workings of an ideal society.

Bellamy's book is now forgotten except by specialists but it quickly became one of the bestsellers of all times, read by millions of Americans from the closing years of the 19th Century until World War II. It articulated the hope in a rational society for several generations of readers.

In 1932, less than 50 years after Bellamy's famous book appeared, Aldous Huxley wrote *Brave New World*, a kind of refutation of *Looking Backward*. The exergue to Huxley's book is a dismal quotation from the Russian philosopher Berdiaeff regretting that "utopias appear to be far more realizable than used to be believed." Berdiaeff goes on: "...a new century is beginning, a century in which intellectuals and the cultivated clases will dream of the means of avoiding utopias and returning to a less 'perfect' and freer non-utopian society."

Unlike *Looking Backward, Brave New World* is still widely read. It is the model for many later "dystopias," fictions of a totally rationalized social order in which "the attempt to recreate human beings in the likeness of termites has been pushed almost to the limits of the possible" (Huxley, 1958: 24). Or, as Marshall McLuhan once put it, humans are becoming the "sex organs of the machine world."

We can now literally "look backwards" at the Twentieth Century and as we do so, the contrast between Bellamy's utopia and Huxley's dystopia is a useful one to simulate reflection on what went wrong. And, clearly, something very important did go wrong to confound the reasonable hopes of men and women of the late Nineteenth Century. While they expected that moral and social progress would continue in parallel with technical progress, in reality every forward advance seems to have been accompanied by catastrophes that call into question the very survival of the human race.

What happened to dash those hopes? Of course we are well aware of the big events of the century such as the two World Wars, the concentration camps, the perversion of socialism in Russia, and more recently, the threats from genocidal hatreds, environmental pollution, and nuclear war which we carry with us from the last century into the next. But underlying these frightening events and prospects, there must be some deeper failure that blocked the bright path to utopia so neatly traced by Bellamy. Our question concerns that deeper failure.

The question is often addressed in terms of a spiritual flaw in human nature or in

modernity responsible for the triumph of greed and violence. But Bellamy and his century knew all about greed and violence, the insatiable appetites, the pride, and the hatred lurking in the hearts of men. They understood the battle between Eros and Thanatos as much or as little as we do. What has changed is not our evaluation of human nature or modernity but the technical environment which has disrupted the delicate balance between the instincts that still left Bellamy's contemporaries room for hope, indeed for confident predictions of a better future.

We can begin to understand this technical shift by considering what is missing from Bellamy's description of society in the year 2000. His world is completely industrialized, with machines doing all the hardest work; productivity has increased to the point where there is enough of everything. Workers are drafted into an "industrial army" where a combination of strict hierarchy under expert command and equal pay respond to the claims of technical necessity and morality. Workers can freely choose their jobs after a brief period of manual labor at the end of regular schooling. Labor supply is matched voluntarily to demand by offering shorter workdays for less desirable jobs. Workers retire at 45 and devote themselves to the cultivation of their individuality and to the duties of full citizenship, which begins at retirement.

There are many collectivist elements in Bellamy's utopia, but paradoxically members of the society are depicted as highly differentiated individuals, each developing his or her own ideas, tastes, and talents in the generous allotment of leisure time made possible by the advanced technology of the day. Individuality flourishes around the free choice of hobbies, newspapers, music and art, religion, what we would call "continuing education," and democratic participation in government.

None of these activities are organized by the industrial army for the simple reason that there is no scientific-technical basis for any of them, hence no technology requiring expert administration, and no objective criteria of right and wrong, better or worse. The economies of scale that make industrial technology so productive in Bellamy's account have no place in these activities which depend on individual creativity.

Those who wish to act in the public domain through journalism, religious propaganda, or artistic production therefore withdraw from the industrial army as they accumulate sufficient "subscribers" to their services to justify the payment by the state of an equivalent of a regular worker's wage. The state provides basic resources such as newsprint to these cultural creators without regard for the content of their activities.

One immediately notes the radical difference between this imaginary socialism and the real thing as it was established in the Soviet Union only a few years after Bellamy's book was published. Bellamy's society is bipolar, half organized by scientific-technical reason and half devoted to *Bildung*, the reflectively rational pursuit of freedom and individuality. But this bipolarity is precisely what did *not* happen in the Twentieth Century under either socialism or capitalism. Instead, rational organization, rational at least in the sociological sense, prevailed throughout the social world and transformed the members of industrial societies into objects of technical control in every domain, and especially in everything touching on lifestyles and politics.

It is interesting to see how close Bellamy came to anticipating mass society. At a time when phone hookups still numbered in the thousands, he imagined a system of telephone broadcasting which, he predicted, would disseminate preaching and musical performances.

Each house would have a listening room and programs would be announced in a regular printed guide. Bellamy even understood that musical performance in the home would decline as broadcasts by professionals replaced it. So far his extrapolations are remarkably prophetic, but nowhere did Bellamy anticipate the emergence of gigantic audiences subjected to commercial and political propaganda. Nor did he suspect that the small publications of his day, individual artistic production, and personal preaching would be so marginalized in the future that they would be unable to sustain the individuating process he considered the ultimate goal of social life.

Higher culture, both religious and secular, had a moderating and civilizing effect in his century, so enlarging the space of its influence through a more generous provision of education and leisure promised social advance. In his vision the pursuit of control and standardization remained confined to the struggle with nature. What Norbert Wiener called "the human use of human beings" was unthinkable. But the replacement of higher culture in public consciousness by a mass culture dedicated to unrestrained acquisitiveness and violent political passions frustrated these hopes. The creation of the mass audiences of the Twentieth Century continued the industrial pattern of efficiency through economies of scale in the application of technology.

Brave New World, on the other hand, was written shortly after the first commercial radio broadcasts, which adumbrated a future of mass manipulation through the media. The rise of modern advertising and popular dictatorships informed Huxley's vision. He simply extrapolated from this emerging constellation to a social order so totally rationalized that human beings are little more than cogs in a vast mechanism. In *Brave New World*, the radical overextension of rationalization makes human beings into objects of technique on much the same basis as raw materials or machines. This same view underlies much Twentieth Century thought, for example, pessimistic social theories such as Max Weber's and the various philosophies of technology influenced by Martin Heidegger.

Heidegger's concept of enframing is intended to describe a state of affairs in which everything without exception has become an object of technique. Things are now defined by their place in a methodically planned and systematically controlled order of action. All being is raw materials in technical processes; nothing stands before being as the place of awareness. Complete meaninglessness threatens where the unique status of the human being, as the being through which the world is revealed, is so completely denied. Heidegger might be thought of as the philosopher of *Brave New World*, except that he would deny that what we have before us today is a "world" in the full sense of the term. Rather, we are surrounded by an "objectless" collection of fungible stuff that includes us.

His deep pessimism and a certain moral insensitivity are reflected in his shocking statement to the effect that "Agriculture is now the mechanized food industry, in essence the same as the manufacturing of corpses in gas chambers and extermination camps, the same as the blockade and starvation of nations, the same as the production of hydrogen bombs" (Quoted in Rockmore (1992: 241)).

After Heidegger, a number of other philosophers developed similarly pessimistic views of modern society. The Frankfurt School philosopher Herbert Marcuse was a student of Heidegger's and his critique of "one-dimensional society" continues in many aspects the Heideggerian critique in a Marxist guise. Heidegger distinguished between craft labor, which brings out the "truth" of its materials as it enables the finished work to emerge, and modern technology which incorporates its objects into its mechanism and reconstructs them wholly

under the power of a will and a plan. In Marcuse this Heideggerian approach continues essentially unchanged as the distinction between the intrinsic potentialities of things, that might be brought out by an appropriate art or technique, and the extrinsic values to which they are subordinated as raw materials in modern technological production. And like Heidegger Marcuse deplores the extension of the latter approach to human beings themselves.

But unlike Heidegger, Marcuse holds out the possibility in principle, if not much hope, that a new technology can be created that respects the potentialities of human beings and nature. This would be a "technology of liberation, product of a scientific imagination free to project and design the forms of a human universe without exploitation and toil" (Marcuse, 1969: 19).

These are what I call dystopian philosophies of technology and they are still quite influential. Contemporary thinkers in France such as Jean Baudrillard and Paul Virillio owe far more to these predecessors than they admit. American philosophers of technology such as Albert Borgmann are also influenced by this background. Basically, they too protest the brave new world in which they find themselves. However, as the 20th Century came to a close the dystopian position lost much of its authority. The critique of modernity came to be seen as nostalgic longing for a past that is forever lost and that was not so great in any case. According to this view, we belong wholly and completely to the technological society around us and do not represent nor should we await a suppressed alternative in which "man" or "Dasein" would achieve recognition independent of his tools.

Non-modern or post-modern thinkers such as Bruno Latour and Donna Haraway have put forward this revisionary approach with singular energy in books and essays with titles such as "We Have Never Been Modern," and "The Cyborg Manifesto." The very tone of these titles announces an agenda for the new millenium. We have passed through the experience of dystopia and come out on the other side. Our involvement with technology is now the unsurpassable horizon of our being. No longer opposed to technology, we join together with it in a more or less undifferentiated "cyborg" self. This "cyborg" identity creates "the possibility of webs of connection called solidarity in politics and shared conversations in epistemology" (Haraway, 1991: 91). It is up to us now to cease the rearguard resistance to technology and, embracing it once and for all, give its further development a benign direction.

The Internet supplies the essential social background to the wide interest in this non-dystopian view. Of course the authors did not have to go online to develop their ideas, but the credibility of their innovative vision depends on the emergence of computer networking and the new function of subjectivity it institutes. Without the widespread experience of computer interaction, it is unlikely that their influence would have spread beyond a narrow circle of researchers in science studies. However, given that experience, they appear to articulate a fundamental shift in the relation of human beings to machines, from antagonism to collaboration. This is important for our project here today since the Twenty-first Century will increasingly come under similar influences.

What is it about networking that has the effect of erasing dystopian consciousness? Instead of the passivity associated with participation in a broadcast audience, the online subject is constantly sollicited to "interact" either by making choices or responding to communications. This interactive relationship to the medium and through it to other users appears non-hierarchical and liberating. Like the automobile, that fetish of modernity, the Internet opens rather than closes vistas. But unlike the automobile, the Internet does not

merely transport individuals from one location to another; rather, it constitutes a "virtual" world in which the logic of action is participative and individual initiative supported rather than suppressed by technology. This explains the proliferation on the Internet of expressions with the pronoun "my," as in "My Yahoo," "My MP3," and so on.

It is noteworthy that this evolution of the network owes more to users than to its original designers who saw it as a system for the distribution of information. The real revolution occurred when the Internet became a medium for personal communication. As such it is a switched system like the telephone in which the corporate giants who manage the communication have no control at all over what is communicated. Such systems, called "common carriers" in English, extend the freedom of assembly and so are inherently liberating.

What is more, because computer networking supports group communication, both in real time and asynchronously, the Internet can host a wide variety of social activities, from work to education to exchanges about hobbies and the pursuit of dating partners. These social activities on the Internet take place in virtual worlds constructed out of words by the participants. The "written world" of the Internet is indeed a place where man and machine appear to be reconciled (Feenberg, 1989).

At this point, a note of caution is in order. The enthusiastic discourse of the Information Highway has become predictable and tedious. It awakens instant and to some extent justified skepticism. It is unlikely that the Twenty-first Century will realize the dream of a perfectly transparent, libertarian society in which everyone can work from their home, publish their own book, choose multiple identities and genders, find a life partner, buy personalized goods at an electronic mall, and complete their college education in their spare time for $49.99. It is reasonable to be suspicious of this vision. After all, someone devises the menus that offer the choices, and then makes money off the users. The choices are thus not really free in either the economic or the political sense. The dystopian critic finds here merely a more refined and disguised incorporation of the individual into the machine.

The Internet will certainly have an impact on society, but it will not revolutionize *everything*. It is ludicrous to compare it with the industrial revolution, which pulled nearly everyone off the farm and landed them in a radically different urban environment. My "migration" to virtual space over the last 20 years can hardly be compared with my ancestors' migration from the country to the city. Unless something far more innovative than the Internet comes along, the Twenty-first Century will be continuous with our world, not a radical and disruptive break. The real significance of the Internet lies not in the inauguration of a new era, but in what it reveals about social and technological change at the current level of advance.

The issue is not whether the Internet will liberate us, as though a technology had that power, but rather the subtle change in the conditions of public organization and activity introduced by networking. This change had already begun before the rise of the new medium, but intermittantly and laboriously. The Internet promises to enhance the ability of the population to intervene in the technical decisions so vital in a society like ours. This has to do with fundamental changes in the structure of democracy under conditions of technological advance.

So long as the population of modern societies is politically defined by traditional spatial districts, its influence on technical life is severely restricted. What can a local community do about the introduction of a technology that crosses all geographical boundaries, for example, a new medicine or a new method for producing food? The "public" which ought in principle

to be able to comment on such changes and influence them democratically is not locally defined. It is fragmented into subgroups which follow the lines of specific technical mediations. For the most part it can only act in the technical sphere through those subgroups, whether they be factory or clerical workers, students, patients, soldiers, or grocery shoppers.

The geographically bounded units of traditional politics may eventually integrate the various technically mediated subgroups through legal or regulatory decisions. But usually where politics in the familiar sense of the term is involved at all, it draws the conclusions of an initial round of struggle that follows the links in technical networks. Unfortunately, all too often the fragmentation of technical publics renders them politically impotent.

The significance of this situation was already recognized by John Dewey, whose early articulation of the problems of combining participation and representation remain pertinent today. Indeed, on technology issues contemporary political thinkers such as Rawls and Habermas are far less sophisticated than Dewey who, already in the 1920s argued for radical changes in democratic institutions to accomodate them to the "machine age." Dewey saw that the extreme mobility of a modern society was destructive of local community. Meanwhile, the new links being forged by the advancing technical system were still inarticulate. Dewey described the dilemma as follows:

> Indirect, extensive, enduring and serious consequences of conjoint and interacting behavior call a public into existence having a common interest in controlling these consequences. But the machine age has so enormously expanded, multiplied, intensified and complicated the scope of the indirect consequences, have formed such immense and consolidated unions in action, on an impersonal rather than a community basis, that the resultant public cannot identify and distinguish itself (Dewey, 1980: 126).

Dewey hoped that the free and cosmopolitan communication made possible by modern technology would to some extent mitigate this problem and revitalize local community. But the two terms of the dilemma--large scale technical systems as the form of our technological future, and local community as the site of democratic deliberation--remained fixed for him. Those who lacked Dewey's hopes for local community ended up drawing dystopian conclusions from the apparent inability of individuals to influence the organizations and technical systems that more and more determined their lives.

What the Internet has done is to make it so much easier for technically defined subgroups to identify themselves and mobilize that we are finally able to realize something like Dewey's dream, i.e., a public able to engage around the technical mediations that shape it. To be sure, the Internet itself is not essential to this evolution and the mere existence of the technology does not guarantee any particular usage. Before computer networking took off, technical publics emerged around other issues such as nuclear power, environmental pollution, and the AIDS crisis. In these cases too, participants in one or another technical network linked up to impose their demands and achieved significant political and technical changes. But the very exceptional nature of these occasions, and the extraordinary difficulty of putting together the long chains of activists scattered over huge territories indicates the importance of the Internet. The demonstrations in Seattle, Washington, and Prague against the International Monetary Fund have shown the power of the Internet in that regard. We can expect ever more of the same in fields like medicine, education, and the environment. Let me reiterate: this is not a claim that the Internet will liberate us, but rather that it will make it considerably easier to

address the problem that worried Dewey, the inability of geographically dispersed technical publics to articulate their concerns.

As we have seen, the Internet supports a vision of harmonious coexistence between humans and their machines. But these political applications of the Internet point to another dimension of modern technological society. Technology is a two-sided phenomenon: on the one hand there is the operator, on the other the object. Where both operator and object are human beings, technical action is an exercise of power. Where, further, society is organized around technology, technological power is the principle form of power in the society. This is its dystopian potential. What Marcuse called one-dimensionality results from the difficulty of criticizing this dystopian system in terms of traditional concepts of justice, freedom, equality, and so on. But the exercise of technical power evokes resistances immanent to the one-dimensional system. Technological advance unleashes social tensions whenever it slights human and natural needs. Where a vocal technical public emerges these tensions can issue in demands for changes in design and organization. Here dystopia is overcome in a democratizing movement the full extent of which we cannot yet measure.

Michel de Certeau offers an interesting account of these tensions (De Certeau, 1980). He distinguishes between what he calls the "strategies" of elite groups with an institutional base from which to exercise power and the "tactics" of those subject to that power and who, lacking a base for acting continuously and legitimately, maneuver and improvise micropolitical resistances. Technological systems impose technical management on human beings. Some manage, others are managed. These two positions correspond to the strategic and tactical standpoints in de Certeau.

The world appears quite differently from these two positions. The strategic standpoint is a system standpoint. It privileges considerations of control and efficiency and looks at the world in terms of affordances, precisely what Heidegger criticizes in technology. The tactical standpoint is far richer. It is the everyday lifeworld of a modern society in which devices form a nearly total environment. In this environment, the individuals identify and pursue meanings. Power is only tangentially at stake in most interactions, and when it imposes itself, resistance is temporary and limited in scope by the position of the individuals in the system. Yet insofar as masses of individuals are enrolled into technical systems, resistances will inevitably arise around the limitations of those systems. These resistances weigh on the future design and configuration of the systems and their products.

This two-sided interpretation of technology opens up a theory of technical politics better able to give insight into the contemporary world than anything in Heidegger or Marcuse. They adopt unthinkingly the strategic standpoint on technology while condemning it. They see technology as a system of control and overlook its role as a lifeworld. This is what leads them to such negative judgements and what ultimately explains Heidegger's hope that Nazism could, by mysteriously transforming our relation to technology from above, fulfill his program.

The introduction of a lifeworld perspective into the study of technological society completes the picture sketched by the post- or non-modern thinkers of today who attempt to transcend dystopianism in a new accomodation to technology. Without a humanistic criterion of resistance, there is a risk that their theories will lead to uncritical acceptance of the technological order. The theory of internal tensions works with the contradiction between technology as system and lifeworld that is part and parcel of a technologically advanced society. It calls attention to the struggles in the emerging technical public sphere.

The utopian and dystopian visions of the late nineteenth and early twentieth centuries were attempts to understand the fate of humanity in a radically new kind of society in which most social relations are technically mediated. The hope that such mediation would enrich humanity while sparing human beings themselves was disappointed. There is no way of extending technical control without incorporating human beings into the machinery. But what the dystopians failed to understand was that once inside the machine, human beings gained new powers they could and would increasingly use to change the system that dominated them. We can observe the faint beginnings of such a politics of technology today. How far it will be able to develop is less a matter for predictions than for practice.

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