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On the Non-Neutrality of Technics:
a Critique of Marx on the Subject of Technology
and Alienation

Ken Yee Yip

葉敬儀

A Thesis in the Department of Philosophy
Presented in Partial Fulfillment of the Requirements
for the Degree of Master of Arts at
Concordia University, Montreal, Quebec, Canada

November 1994

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Abstract

On the Non-Neutrality of Technics: a Critique of Marx on the Subject of Technology and Alienation

Ken Yee Yip

Technics, including machinery, procedures, and organisations, can serve to promote or repress certain social arrangements and individual behaviours. To the extent that such effects can be and are deliberately brought about through the design and implementation of technics, technics can be said to be non-neutral. And to the extent that, as a result, we fail to recognise our human interests and fail to achieve them, technics can be said to be alienating. Marx conducted a philosophical inquiry into modern technics which brought together an understanding of its broad social and political ramifications as well as insight into its spiritual effects, but he erred in believing technics to be essentially neutral. Against this belief of neutrality, it will be argued in this thesis that; 1) technics are made to serve certain partisan interests and play an active political role, 2) technical practice imports into the social world a particular way of thinking and judging, 3) it is designed to effect deliberate changes upon society, and 4) the technical society contributes to the depoliticisation of its human constituents. And it will be concluded that attempts at social reform must, therefore, seriously address the political content of our technics.

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Introduction

According to Marx, man is in essence a being who is constantly engaged with the natural world. Not only is the meaning of human existence to be found in his physical activity, but the only plausible avenue of insight into the conditions and reasons of human history is to be found in the material dimensions of human life. Marx states in The German Ideology;

The essence of humanity is intimately related to the world

As individuals express their life, so they are. What they are, therefore, coincides with their production, both with *what* they produce and with *how* they produce. The nature of individuals thus depends on the material conditions determining their production.¹

For Marx there appears to be a strong if not a strict correlation between the mode in which one derives one's means of physical existence and what one is in a theoretical or spiritual sense. There is no way of meaningfully separating one from the other. We are all connected with the world outside ourselves to such a degree, at such a primal level, and in such a dependent manner that it has to be said that the material world is genuinely a part of ourselves.

Nature is man's *inorganic* body - nature, that is, in so far as it is not itself the human body. Man *lives* on nature - means that nature is his *body*, with which he must remain in continuous interchange if he is not to die.²

¹ Karl Marx and Friedrich Engels, The German Ideology, ed. C. J. Arthur (New York: International Publishers, 1947), 42.

² Karl Marx, Economic and Philosophic Manuscripts of 1844, trans. Martin Milligan, ed. Dirk J. Struik (New York: International Publishers, 1964), 112.

Among those things that distinguish human existence from that of the non-human world, the fact that we make heavy reliance on tools and on consciously developed techniques in our day-to-day lives must figure prominently in the list. Looking at it this way it is apparent why technological questions are important not only as corollaries to practical concerns but as crucial philosophical problems as well.

Technics is a mode of engagement with the world

Marx, to his credit, was among the first to grapple with questions of technology in a philosophical manner. At a time when the first industrial revolution had not yet reached its mature stages, and in a place where the empirical evidence could only nurture a preliminary attempt at sociological study of industrialised society, Karl Marx proved to be a truly innovative thinker, lending his efforts to the task of explaining the nature of this emerging form of society and offering a philosophical account of the part that modern technics played.

Before we go any further it would be useful to establish a rough definition of technics. In contrast to technology, which in this essay will be taken to mean the knowledge and the theory pertaining to technics, technics refers to the implementations of such know-how in the real world. Though as commonly understood, technology and its products are associated almost exclusively with tools, machinery, mechanical artefacts, the definition I will be using is far broader. If, as I suggest, we describe modern technics as applied science, what would be included within its scope are not only physical artefacts designed with the help of scientific knowledge but also methods, procedures, and functional organisations both of humans and of machines. In other words, what will be labelled as properly technical things will not only be functional artefacts constructed with

Technics is, in short, applied science

certain levels of sophistication but also such things as an educational curriculum which is designed according to principles acquired from studies in developmental psychology, for example, or the planning of a factory which applies scientific knowledge about the physiology of its workers or which is based on systematic, empirical studies of other factory situations.

Lewis Mumford emphasises the importance of design and deliberation in matters properly construed as technical when he states that,

... there was nothing uniquely human in early technology until it was modified by linguistic symbols, social organisation, and esthetic design. At that point symbol making leaped far ahead of toolmaking and, in turn, fostered neater technical facility.³

In agreement, Marx points out the difference between the architect and the bee, the former being distinguished by the fact that his/her actions are the end results of planning and rationalising. For both Marx and Mumford technics are things produced or practiced with a certain goal or purpose in mind.

While technics may be seen in terms of a continuous spectrum ranging from the most rudimentary examples of tool use and acquired skills right up to the present day state of the art, I would like to draw a line in the sand that would mark the boundary between modern and traditional technics. That line corresponds to the appearance of modern science. (No doubt this line will be every bit as blurred and as shifting as the line drawn between science and non-science). Craftsmanship and traditional know-how - large areas

³ Lewis Mumford, "Technics and the Nature of Man," in Philosophy and Technology, ed. Carl Mitcham and Robert Mackey (New York: The Free Press, 1972), 78.

of which have yet to be surpassed by modern technics - fall on one side of the line. Modern technics, that which has been designed in a manner informed by scientific principles, falls on the other. Be it a tangible machine or a systematic way of carrying out a task, modern technics is something 'engineered' in a scientifically rational way.

An additional aspect that may be included in the definition of a *particular* technics is its application in the real world. Don Ihde in his Technology and the Lifeworld uses the example of how clocks brought by the Jesuits and by western diplomats were received by the Chinese court. Though the Chinese were impressed by the ingenuity that evidently went into the construction of these clocks, they did not make any attempt to order the functioning of their society according to the precise timekeeping abilities of the clock as is done in western countries where large public clocks preside over the centres of cities and where the day to day routines of the people were accurately coordinated by them. The Chinese emperors eventually acquired a substantial collection of European made clocks, but, though the artefacts themselves were transferred to China, it could be said that the technics was not. When a piece of machinery has one definite function for one society but has another function for another - as means of measuring time, allocating resources, regulating the pace of daily activity, on the one hand, as little more than objets d'art or items of curiosity on the other - and if we take the particular applications of the technical artefact to be an essential aspect of what a technics is, then the clock cannot be regarded as being the same technics when it arrived in China as it was when fashioned in Europe.⁴

Its functioning within a social context is an aspect of the technics

⁴ Don Ihde, Technology and the Lifeworld (Bloomington and Indianapolis: Indiana University

This broader definition of technics which includes techniques and organisations in addition to artefacts, and which is also concerned with the actual way technics is put to use includes much of what falls under Marx's category of means of production, machinery in particular, and overlaps onto what he considered relations of production, orchestrated patterns of interaction between workers, or rationally designed managerial structures, for example.

In chapter 15 of Capital, vol.I Marx makes a definition of machinery distinguishing it from the instrument. For him a machine is not, as some accounts have it, a device put into motion by non-human power but a device which, firstly, replaces the work of a person by performing a task once done by hand and, secondly, does so to a significant degree automatically. A weaving loom which carries out a task which would have otherwise required five pairs of hands and at a pace which would have called for another five times as many people is a machine even if it is only powered by the foot of the person operating it. A machine is something exhibiting a function that is largely automatic, and its use in the workplace replaces or substitutes for an aspect of human activity. So a machine, unavoidably, would tend to displace the human component - the worker is removed from the role of directly investing his/her labour into the objects of production. As Marx puts it in the Grundrisse,

Marx's definition of machinery is that it substitutes for human labour

In no way does the machine appear as the individual worker's means of labour. Its distinguishing characteristic is not in the least, as with the means of labour, to transmit the worker's activity to the object; this activity, rather, is posited in such a way that it merely transmits the machine's work, the machine's action, on to the raw material -

supervises it and guards against interruptions. Not as with the instrument, which the worker animates and makes into his organ with his skill and strength, and whose handling therefore depends on his virtuosity.⁵

Marx is certainly quite aware of the impact of machinery and technical advances on the mode of production, i.e. how industry develops, but he does not seem to have anticipated how deeply technology would penetrate into the non occupational areas of life in industrialised societies. The world in which we live does not have technical characteristics only when we enter the workplace. These days we are intimately involved with technics in our interactions with other people, in our relationship to the state, institutions and corporations, and especially in our leisure activities. Technics in large proportion constitutes the environment in which we live and serves as the medium through which much of our experiences are derived. It has become much of what, for us, counts as the external world, and the scope of technical potentials has come to define for us the horizons of our hopes, fears and aspirations. In this light, Marx's words expressing the materialistic nature of human existence takes on a broader meaning.

Technics penetrates further than our purely productive lives

The worker can create nothing without *nature*, without the *sensuous external world*. It is the material on which his labor is realized, in which it is active, from which and by means of which it produces.⁶

In this light we are not only talking about human beings in their capacity as workers, we are talking about practically every aspect of life in modern society and the ubiquitous presence of technics. In this essay I intend to make the point that what follows

⁵ Karl Marx, *Grundrisse*, trans. Martin Nicolaus, Pelican Marx Library (London: Pelican Books, 1973; reprint, London: Penguin Books Ltd., 1993), 692-3.

⁶ Karl Marx, *E&PM*, 109.

from this is that technics is far more than mere practical means, i.e., instruments and practices which are powerful and efficient, oftentimes fascinating and mysterious in their complexity, and which testify convincingly to the cleverness of humankind but are otherwise uninteresting. Rather, technics, by virtue of the multi-faceted role it plays is a non-neutral factor on the political stage. To this end the following four claims will be argued for; 1) Technics, at times, are made to not just serve certain partisan interests but play an active role in setting the ground upon which subsequent moves in the political game is made. 2) Technical practice imports into the social world a particular way of thinking and judging, 3) It effects deliberate changes upon society, and 4) The technical society contributes to the depoliticisation of its human constituents. What results is a mode of alienation unique to technics. And it is my contention that it is Marx's overlooking of these aspects of technics which constitute the basic flaws of his sociology of industrial society and the reason for the inaccuracy of the forecasts he made for it.

Non-Neutrality of Technics

Marx's argument relates the alienation of the proletariat to the capitalist mode of production. According to his analysis the only essential characteristic underlying this alienation is the fact that the means of production are under the direct control of the capitalist class. For Marx life in industrialised society and, in particular, productive life under the auspices of the mechanised workplace and within the context of wage labour inflicts a spiritual violence upon the labouring class both in the manner in which it forces a division between the worker as a physical being and the worker as one whose essential nature is that of a producer, and in the manner in which it forces an

For Marx capitalist ownership is the root of alienation

antagonism between the worker and the powers that he/she brings into being but have now become forces hostile to his/her interests. Alienation for Marx is rooted in capitalist ownership of the means of production and in the process of appropriating the labour power of the worker. Marx states,

It requires no great penetration to grasp that, where e.g. free labour or wage labour arising out of the dissolution of bondage is the point of departure, there machines can only *arise* in antithesis to living labour, as property alien to it, and as a power hostile to it; i.e. that they must confront it as capital. But it is just as easy to perceive that machines will not cease to be agencies of social production when they become e.g. property of the associated workers.⁷

From assertions such as this, what comes across is not only his conviction that the proletariat exists in a condition of alienation under the institution of wage labour but also his confidence that the machine and the full extent of its productive powers can be extricated from this context and, at the same time, successfully kept intact. Marx did not see any necessary link between the machines in and of themselves and the alienation of those whose lives are committed to a daily engagement with them.

*Alienation ends
when the tech-
nics belong to
the workers*

As the above passage indicates Marx recognised the role of machinery as a factor in alienation and believed that capitalism can be disposed of while preserving the productive capacity of its technics. But we must ask the question, Is it the case that alienation will fully come to an end in just so straight-forward a manner? There does not appear to be any question that Marx is, in fact, relying on the premise that capitalism is the only active ingredient making for the spiritual disconnection between worker and his/her

⁷ Karl Marx, Grundrisse, 832-3.

productive activity, especially when he makes comments such the following,

The hand tool makes the worker independent - posits him as proprietor. Machinery - as fixed capital - posits him as dependent, posits him as appropriated. This effect of machinery holds *only in so far as it is cast into the role of fixed capital*, and this is only because the worker relates to it as wage-worker, and the active individual generally, as mere worker.⁸ [italics mine]

For Marx it apparently follows quite smoothly and automatically that, when the revolution takes place, the existing powers overthrown, and the means of production taken possession of by the labouring class, then alienation between worker and work will cease to exist. It would come to an end by virtue of the fact that, following the proletarian revolution, i.e interests served by the means of production will be precisely in accordance with all those who are directly involved in the activity of production, and the contradictions so painfully apparent under capitalism will be once and for all resolved.

During a socialist revolution and given the opportunity it offers, all it takes is the act of appropriating the actual means of production. The assumption is that the machinery or the means of production are essentially neutral. It is only under the capitalist mode of production that the machine performs a socio-economic role hostile to the worker. When it is no longer the case that the productive power of living labour is taken from the worker and serves to strengthen the hand of the class that exploits and oppresses him, private property will end, the worker will regain his independence, and he will then employ the very machines that once employed him.

Machines are essentially and exclusively means of production and politically neutral

⁸ Karl Marx, Grundrisse, 702.

But what if technical things, artefacts and systems, are not inherently neutral? What if they incorporate in their design certain presumptions and in practice demand certain preconditions for their effective utilisation? Then it is no longer a simple matter of who has formal ownership, and how the strings are pulled on a day-to-day basis. Perhaps the alienation which accompanies our relationships with technology runs deeper than just the external web of interconnections that it has with the economic world. In that case the possibility that the technics themselves are embodiments of social or political attitudes and predispositions, that they act as sources of alienation regardless of who is their official proprietor, would be an issue that needs to be considered. Hans Jonas poses this problem to us when he writes,

Perhaps technics are not completely neutral

Marxist literature does not mean alienation from the process and object of labour through the machine, but rather alienation of the maker from his product by the alien ownership of the means of production. This "alienation" is remedied by the workers' ownership of the means of production and of the product of his labor, thus by socialization, which rather intensifies "technological alienation" still further by encouraging the utmost of rationalization.⁹

The Mode of Production

The application of technology by capitalism has had an obvious impact on the historical development of industrialised society. Marx's entire sociological theory revolves around the idea that the mode of production is the fundamental dynamic underlying and powering all other social, political, and philosophical

Marx's view is deterministic with regard to the mode of production

⁹ Hans Jonas, The Imperative of Responsibility (Chicago: University of Chicago Press, 1984), 154.

development. In fact Marx tends to emphasise this point to such an extent that he is often, and with some justification, labelled a technical determinist.¹⁰ More will be said on this topic later.

As for the question of whether or not the mode of production as a whole is politically neutral, Marx is quite unequivocal. The particular mode of production will yield its fruit only if we conform to it. We must play by its rules.

A banker's fortune, consisting of paper, cannot be taken at all, without the taker's submitting to the conditions of production and intercourse of the country taken. Similarly the total industrial capital of a modern industrial country.¹¹

And in places Marx describes what today is referred to as the 'technological imperative', namely, that new forms of technics make definite practical demands on other areas of economic activity. The impact can be seen to ripple through all branches of industry and commerce, reverberating back with increasing momentum, animating the entire process of technical development and ultimately acting as the driving force behind historical development.

The transformation of the mode of production in one sphere of industry necessitates a similar transformation in other spheres. ... Thus machine spinning made machine weaving necessary, and both together made a mechanical and chemical revolution compulsory in bleaching.¹²

¹⁰ The perennial controversy revolving around the statement in The Poverty of Philosophy, "The handmill gives you society with the feudal lord; the steam-mill society with the industrial capitalist," is indicative of the concern there is over the matter and of the ambiguity in the reading of Marx's works.

¹¹ Karl Marx and Friedrich Engels, The German Ideology, 90.

¹² Karl Marx, Capital, vol.I, trans. Ben Fowkes, Pelican Marx Library (New York: Vintage Books/Random House, 1976), 505.

But in all these instances where it is suggested that technical entities play a central role on the socio-political stage, they are never active participants in the drama but only instruments under the command of more familiar characters who occupy more traditional roles - for example, feudal lord and proprietor, bourgeoisie and capitalist. Others have commented that Marx seemed divided on the question of the inherent neutrality or non-neutrality of technics.¹¹ But where these viewpoints stumble is on the distinction that should have been recognised between the technical things themselves and the particular mode of production within which they figure. For Marx the technics themselves are considered to be neutral whereas the mode of production - i.e. capitalist production, or the complex of social goals and practices that involve the technics - is decidedly partisan. Like the example of the clock (the technical artefact) having two separate identities in the two separate contexts, so it is with technics in general. For Marx the technics of the capitalist mode of production, taken in isolation, are neutral and can be transferred without any apparent difficulty into the hands of the proletariat, but the capitalist mode of production, in contrast, must be abolished and replaced by the socialist mode of production when the transfer takes place. If technics are biased, then they are so only in the sense that they are, at the moment, in the service of one set of interests rather than another, but in the end they can just as well serve either and have no pre-ordained loyalties.

But a distinction must be maintained between the means and the mode of production

¹¹ MacKenzie writes, "Unfortunately, Marx himself equivocated on this crucial question. Sometimes he appears to treat machines as subject to the abuse by capital but not in their design inherently capitalist. ... He also writes, however, that a 'specifically capitalist form of production comes into being (at the technological level too)" (Capital vol.I, p.554-5). Donald MacKenzie, "Marx and the Machine," Technology and Culture 25:3 (1984).

For example, Marx writes in volume I of Capital, regarding the pressures felt by entrepreneurial owners of sewing machines to increase the scale of their facilities and integrate associated areas of production. *Technical progress is initiated by proprietary interests*

This tendency is nurtured by the very nature of the sewing machine, its manifold uses which tend to compel the concentration, under one roof and one management, of previously separated branches of trade.¹⁴

Here there is what sounds like an assertion that the sewing machines themselves are the force behind this kind of economic re-structuring. But, Marx goes on to explain, the ratio of the costs of fixed capital in the form of sewing machines, rent, raw materials, etc. to the price of the finished product is more advantageous to the capitalist when the machines are gathered in one place - i.e. the factory - than if they were scattered throughout the homes of individual workers. Or, to render it in more modern jargon, there is a lower rate of overhead per productive unit. This is why there is pressure to expand and integrate. The sewing machines are still sewing machines whether they are inside the factory or outside, and they remain the same technical and labour-saving devices in either case. The compulsion to bring them en masse under the factory roof is a compulsion felt by competing capitalists and as a result of their desire to realise a greater rate of profit by doing so. Where there is a socio-economic pressure to introduce changes, its source is in that particular *mode* of production that happens to involve sewing machines. The sewing machines in and of themselves are therefore innocent of any such partisan intrigue.

Even where Marx describes the significant historical changes brought about *The mode of production is the motor force of history*

¹⁴ Karl Marx, Capital, vol.I, 603.

with the intimate involvement of new technics, it would not be right to characterise his viewpoint as being technically deterministic in the sense of identifying machines or instruments as the primal force in history (and in the sense that his much quoted comment about the hand-mill and the power-mill would tend to suggest). Echoing Marx and reiterating the thesis in rather grandiose language that it is the development of productive forces which is the determining factor in historical evolution, Kostas Axelos is true to Marx's thought when he broadens the scope of the subject matter beyond that of the simple machine or technical artefact to what he terms 'technique' or the society's ensemble of technical means.

Technique is not reducible simply to machines and limited industrial production. It is the motor force of history, the power that transforms nature into history, the engine of movement for universal history. It is, therefore, at the same time the point of departure and the point of arrival (from which one sets off again).¹⁵

The progressive development in the methods of subsistence and survival has been an ongoing process throughout human (and pre-human) history. In fact the stages of historical development and anthropological categories have been labelled by us, rightly or wrongly, according to such terms as hunter-gatherer, settled agriculture, pastoral, industrial, stone age, iron age, computer age, etc. Marx, in contrast, always looked to the predominant *relations* of production to distinguish one historical stage from another or one society from another. His sociological accounts revolved around terms such feudal, Asiatic, capitalist, or socialist.

Marx's sociological categories focus on relations of production rather than the means

¹⁵ Kostas Axelos, *Alienation, Praxis, and Techne in the Thought of Karl Marx*, trans. Ronald Bruzina (Austin: University of Texas Press, 1976), 325.

Therefore it can be said that for Marx a technics is, to a large extent, its actual application in the real world. Its significance for the present time is to be found not only in what it is in and of itself but within the broader context in which it functions. With this position I readily concur, but the problem is that Marx assumed for the most part that the web of interconnections which inevitably attend a technics' use in the world is merely incidental and is only a function of the relations of production surrounding it. The result is the lack of attention he pays to the direct role of technics outside of the purely economic realm. Granted, modern technics arose alongside of capitalism and particular technics were selected and cultivated with the interests of the dominant class in mind, giving us what we have today, a symbiotic ensemble of means and relations of production, neither of which can be properly understood apart from one another. But there are more tenacious links between technics and the rest of society, and they are not so well-behaved as to remain entirely within the boundaries of the economic sphere. Marx breaches the economic/political divide in his study of the relations of production but leaves the means of production behind on the economic side.

Marx assumed the technics themselves are neutral precluding an examination of their other social ties

Technics

The machine as a means of production, according to Marx, is an offspring of capitalism.

Modern technics thus far has been a product of capitalism

The development of the means of labour into machinery is not an accidental moment of capital, but is rather the historical reshaping of the traditional, inherited means of labour into a form adequate to capital.¹⁶

¹⁶ Karl Marx, Grundrisse, 694.

And it is the capitalist mode of production that has presided over the development of modern technics in general. Max Weber, in addition, makes the point that there is an essential link between modern technics and capitalism on the level of the brand of rationalism of which they both partake.

... the main emphasis at all times, and especially the present has lain in the economic determination of technological development. Had not rational calculation formed the basis of economic activity, had there not been certain very particular conditions in its economic background, rational technology could never have come into existence.¹⁷

Modern technics is uniquely a product of capitalism and of its specific conditions, but does it bears the marks of its pedigree? Marx does not believe that it does inherently. Herbert Marcuse and Andrew Feenberg, on the other hand, both proponents of critical theory, differ with their philosophical forefather on this issue as indicated in the following passages.

“Technologies,” defined as developed ensembles of technical elements, are greater than the sum of their parts. They meet social criteria of purpose in the very selection and arrangement of the intrinsically neutral elements from which they are built. These social purposes can be understood as “embodied” in the technology and not simply as an extrinsic use to which a neutral tool might be put.¹⁸

Technics help structure and also prescribe particular social arrangements

The embodiment of specific purposes is achieved through the ‘fit’ of the technology and its social environment. The technical ideas combined in the technology are neutral, but the study of any specific technology can trace in it the impress of a mesh of social determinations which preconstruct a whole domain of social activity aimed at definite social

¹⁷ Max Weber, Economy and Society, ed. Guenther Roth & Claus Wittich (New York: Bedminster Press, 1968), 67.

¹⁸ Andrew Feenberg, “The Bias of Technology,” in Marcuse: Critical Theory & the Promise of Utopia, ed. R. Pippin, A. Feenberg, C.P. Webel (Massachusetts: Bergin & Garvey Publishers Inc., 1988), 233.

goals.¹⁹

The universal effectiveness and productivity of the apparatus under which they are subsumed veil the particular interests that organize the apparatus. In other words, technology has become the great vehicle of *reification* - reification in its most mature and effective form.²⁰

Both Marcuse and Feenberg here contend that technics incorporate and ultimately make manifest the socio-political goals and ideals that motivated their creation. According to them, if we care to examine our technics carefully and critically, then it would be revealed how they not only help maintain the basic social structures that conceived them but also how they serve to suppress the political alternatives that challenge them. In these examples both authors emphasise the particular organisation of the technics and the goals towards which they are oriented. Feenberg contends that the 'parts' are neutral, but both agree that biases can and are built-in in a deliberate manner. As Marcuse puts it, "Specific purposes and interests of domination are not foisted upon technology 'subsequently' and from the outside; they enter the very construction of the technical apparatus."²¹ Looking at it from this point of view, it would no longer be so easy to distinguish the means of production from the relations of production within which they are entangled.

Marx's own attitude was always that it was the productive capacities of the technics, by opening up new possibilities and changing existing circumstances, that

Technics may, therefore, be active players on the political stage

¹⁹ Andrew Feenberg, Critical Theory of Technology (New York: Oxford University Press, 1991), 81.

²⁰ Herbert Marcuse, One-Dimensional Man (Boston: Beacon Press, 1964), 168-9.

²¹ Herbert Marcuse, "Industrialization and Capitalism in the Work of Max Weber," in Negations: Essays in Critical Theory, trans. Jeremy Shapiro (Boston: Beacon Press, 1968), 224.

guided the changes that taking on the social level, but the motivation was ultimately the compulsion on the part of the capitalist to realise greater rates of profit. The technics itself remain essentially passive in this regard. The active political elements were those who had the authority to make and enforce decisions of social consequence. But the thesis concerning the non-neutrality of technics turns things around - the technics becomes an active player on the political stage - no longer merely a powerful and sophisticated instrument at the service of the powers that be. It becomes a 'vehicle' as Marcuse puts it, that enters into the lives of the people and works to structure the way we perceive and interact with the world and with each other. It becomes an agent in the service of its masters, automatically shaping the social environment for ends other than our own.

The alternative technology movement, for example, is premised on the idea that particular technics embody and ultimately reproduce certain social structures. Lewis Mumford can be regarded as one of the seminal figures in this school of thought. One of his major contributions is the idea that there are technics that, by their very nature, promote an authoritarian political structure, and that there are others that foster a democratic and independent way of life. Large scale agriculture, or nuclear energy, or atomic weapons, to take the most extreme example, make it a necessity that power and control be centralised in the hands of those with substantial financial means, technical and scientific expertise, or military and political authority. Furthermore, it is the case that such forms of technics are exactly those favoured, cultivated and promoted by authoritarian interests.

Granted, one cannot expect technics charged with a political mission to carry out its duties with any great degree of precision. Given all the unpredictable ramifications of technical impacts on society, it does not appear feasible to try to engineer very detailed adjustments to society in this fashion - by remote control. Rather, what is far more clearly identifiable are the cases of capitalist enterprises exercising their political power through direct manipulation of the state apparatus and by determining various pieces of governmental legislation. But it is also not too hard to point out instances where technical undertakings have been the route by which political aims have been pursued.

There are clear examples of political motives behind technical undertakings

Langdon Winner in his essay "Do Artifacts Have Politics" describes a number of instances where machines and items of urban infrastructure were designed with political aims in mind. For example, many of the overpasses constructed over roads in Long Island, New York were designed by Robert Moses, an individual with strong social-class and racial prejudices. His overpasses were made high enough to allow small, private cars to pass under but too low to accommodate buses. The intention was to reserve areas of Long Island for those wealthy enough to afford private transportation by making them inaccessible to those dependent on public transport. Other examples include Universities, after the experience of student protests in the late sixties and early seventies, being built with large open spaces and wide thoroughfares so that student gatherings could be more easily dispersed and demonstrations effectively suppressed, or the case of one iron foundry which designed and implemented a mechanical technique to cast iron solely as a ploy to

undermine their workers' union.²²

Instances of political action through technical means without such clear-cut and specific intentions are more common. Right now we are being inundated with the heady talk about the information super-highway. Not only is this apparent technical millenarianism rife with economic promises, it is also infused with hope of a social and intellectual re-invigoration of American society - smarter, faster, more competitive. And the different political persuasions in the country can now be heard in the debates over whether or how to implement, as part of the highway 'infrastructure', toll booths and off-ramps, means of controlling the flow of information and governmental privileges of tapping encrypted data.

One notable approach has been taken by Bruno Latour in which it is argued that moral principles are explicitly built into our artefacts, and that morally guided intentions are put into practice when such artefacts are implemented. As he states,

Artefacts are designed to embody moral principles and prescribe programs of action.

Students of technology are never faced with people on the one hand and things in the other, they are faced with programs of action, sections of which are endowed to *parts* of humans, while other sections are entrusted to parts of nonhumans.²³

According to this point of view people are not the only players in society's ethical space. Technics can be and, indeed, are active participants and take part in so-called 'programs of action'. As examples, Latour points to the beepers in automobiles that urge

²² Langdon Winner, "Do Artifacts Have Politics?," *Daedalus* 109:1 (1980).

²³ Bruno Latour, "Where Are the Missing Masses? The Sociology of a Few Mundane Artifacts," in *Shaping Technology/Building Society: Studies in Sociotechnical Change*, ed. Wiebe E. Bijker and John Law (Cambridge, Mass.: The MIT Press, 1992), 254.

you to fasten your seatbelt - acting like a policeman to force you to observe a certain law; heavy weights added to hotel keychains to encourage a greater proportion of the clientele to return their keys - given that verbal instructions to that effect are not entirely effective; and the spring-loaded door closer which automatically performs a duty otherwise charged to those who pass through the doorway. What is common to all these examples is that there are, on one level, prescribed actions to be carried out, and, more fundamentally, underlying principles that motivate these actions - principles concerning safety and health in the case of seatbelts, property and work with the hotel keys, comfort and security with the door closer.

There are varying ratios to which the artefact and the person share the given responsibilities, but share them they do. And those of us who use these artefacts or who live and work in and around them are usually bound to comply with the programs of actions already built into them. To some extent, then, we are relieved of the burden to perform so many duties or to conscientiously observe so many rules, but, on the other hand, it is apparent that many of our actions are therefore forced on us and are carried out by us in a manner not entirely consciously or willfully.

We have been able to delegate to nonhumans not only force as we have known it for centuries but also values, duties, and ethics. It is because of this morality that we, humans, behave so ethically, no matter how wicked we feel we are.²⁴

²⁴ Bruno Latour, 232.

Any given technical apparatus has an ostensible function, one or more goals that it is meant to realise, which are almost always its only declared *raison d'être*. The more effectively it carries out its stated objectives and the less attention it demands in its application, the more closely would it approach the ideal of the perfect commodity and the pure use-value. In its smooth and reliable functioning the technics melts into the background. It becomes transparent and unobtrusive as a technical artefact and presents itself to us immediately and exclusively as a use-value. But at the same time as its technical complexities become better concealed, whatever additional intentions that may be built into it and objectified in its underlying structure become increasingly well hidden. In effect, the more effective and 'user-friendly' our technics are, the more oblivious we may be to their political content. In a passage that parallels Marcuse concerning the tendency of technics to reify and, at the same time, conceal the interests that structure it, Georg Lukács states concerning the ontological status of the commodity,

The more technically sophisticated a technic the more effective is the reification and concealment

In the region of social being ... the process of emergence is a teleological one. This has the result that its product only assumes the phenomenal form of something ready and complete, in which its own genesis directly vanishes, if the outcome corresponds to the goal aimed at. ...The particular character of the relation of appearance and essence in social being also involves action governed by interest, and if this involves the interests of social groups, as is generally the case, then science can easily slip out of its controlling role and become an instrument which serves to conceal the essence and make it vanish...²⁵

Indeed, to paraphrase Marx, there may be things more wonderful in the brains of our

²⁵ Georg Lukács, Marx's Basic Ontological Principles: The Ontology of Social Being, trans. David Fernbach (London: Merlin Press, 1978), 17.

artefacts than if they were to begin dancing of their own free wills.²⁶ But, though Marx started us off on the road to the analysis of the social relations embodied within our economic artefacts, in particular, the dynamic relation between labour and price that plays itself out in the marketplace, he did not go far enough in revealing the presence of more explicitly political motives built into technics.

Individuals and groups who are committed to a different political structure, as consequence, cannot afford to overlook the fact that technics is a significant variable in the game, and that politics has to be conducted on the technical playing field as well. To effect change means that in many cases one has to effect changes to our technics. Just changing the relations of production or focusing on questions of formal ownership and control is not enough. As Winner puts it,

Political action must therefore become technological

... even when the revolution is in season, its orientation toward things technical lays it wide open to the reverse adaptation of its best ends. To the horrors of its partisans, it is forced slavishly to obey imperatives left by a system supposedly killed and buried. Technological politics does away with much of the villainy in history, but it leaves the tragedy intact.²⁷

Technical Rationality

Because their design can be oriented towards particular goals and ways of doing things, technics can promote only those political structures which are compatible with such ends and means, and they thereby act as obstacles against individual or social goals

²⁶ Karl Marx, Capital, vol.I, 163-4.

²⁷ Langdon Winner, Autonomous Technology: Technics-out-of-control as a Theme in Political Thought (Cambridge, Mass.: MIT Press, 1977), 276-7.

which conflict with them. But the form and function of technical entities is not the only manner by which technics can cause our pursuits to be deflected or even reversed from the course they would have otherwise assumed under ideal conditions. Through society's commitment to technical practices and its immersion in a world created and continuously recreated by it, we have absorbed into the cultural sphere the kind of thinking that is indigenous to the technical sphere (and which, according to some accounts, ought to remain there). The brand of rationality that serves us with such efficacy on the level of practical concerns has penetrated deeply into the ways in which we take up the tasks of social and political practice.

Marx

Marx evidently sensed that the modern mode of production has the unique power of stripping away the cultural constructs built up around people and things, reducing them from a complex amalgam of physical and cultural characteristics down to their simple, functional basis, so that they appear in the eyes of their beholders as only that which the mode of production takes them to be.

Productive forces strip away qualitative aspects of persons and things.

The bourgeoisie has stripped of its halo every occupation hitherto honoured and looked up to with reverent awe. It has converted the physician, the lawyer, the priest, the poet, the man of science into its paid wage-labourers. The bourgeoisie has torn away from the family its sentimental veil, and has reduced the family relation to a mere money relation.²⁸

And in the section on the fetishism of the commodity from Capital, vol.I, Marx states in a

²⁸ Karl Marx and Friedrich Engels, The Communist Manifesto, trans. Samuel Moore (Baltimore: Penguin Books, 1967), 82.

rather approving tone that such impediments to economic progress as traditional and religious attitudes towards nature and other persons are dispelled once the mode of production has attained a certain level of development.

These real limitations are reflected in the ancient worship of nature, and in other elements of tribal religions. The religious reflections of the real world can, in any case, vanish only when the practical relations of everyday life between man and man, and man and nature, generally present themselves in a transparent and rational form. The veil is not removed from the countenance of the social life-process, i.e. the process of material production, until it becomes production by freely associated men, and stands under their conscious and planned control.²⁹

The changing mode of production, then, is understood as an impetus towards breaking down the barriers erected by religious thinking. For Marx this was generally a positive aspect of capitalism. To him this represented a progressive and revolutionary dimension, unrivalled in prior history with respect to the speed and thoroughness with which it throws off the stultifying fetters and blindfolds of tradition and draws all aspects of the world into the rational light of modernity. Admittedly, this rationalising does have its disadvantages in rendering human relationships into those of 'mere money relations', but he sees this particular excess as manifested only where the relationship is primarily an economic one and only when in effect within the context of the capitalism. Taken to its extreme, all economic relations become transformed into the paradigmatic type existing within that system, namely, that which endures between wage-labourer and his/her employer. When removed from this mode of production, human beings would not in any way cease to be economic agents whose lives are centred on their

*Marx is an
advocate of
rationality*

²⁹ Karl Marx, Capital, vol.I, 173.

productive activities. Instead what comes to an end is one's status as a market commodity and the specific social relations that attend to it.

Capitalism incubates the social forces that will eventually supersede it. It clears the ground and readies the productive forces that will make possible the transition to socialism. Thanks to capitalism the emerging communist society will be able to enjoy a social environment free of religious distortions and prejudices, and will possess means of production of the utmost productivity and efficiency. In addition, among the tools that capitalism brings into being is a system of economic organisation and management functioning on a local scale within an integrated factory, for example, and between various places of production with each one taking responsibility for a particular stage in producing the final product, or functioning on a larger scale as do banks and state bureaucracies, capable of exercising a mitigating influence on the excesses of the system or providing assistance to areas it chooses to promote. The capitalist system has already covered much of the distance on the road towards socialised production.

Capitalism readies the material forces for a communist future

Though from a communist perspective this system of socialised production is at best rudimentary and geared towards inappropriate ends, it nevertheless is a substantial step toward the kind of institutional infrastructures that would make a planned economy possible. For Marx one of the promises of a communist society was the prospect of escaping the irrationality of the marketplace and the 'anarchy of production', and making the transition to a rational mode of economic interchange where activities are coordinated and production is carried out cooperatively with the express goal of promoting the collective good. Once again the key to making this a reality was the

Socialism stands to benefit from the appropriation of existing technics and technical rationality

revolutionary act of appropriation by the labouring class. In this case the appropriation is to be of the state apparatus and the institutional hierarchies behind capitalist industry rather than the means of production themselves. The proletariat is to exercise dictatorship over a kingdom of capitalist making, and make it their own merely by virtue of formal proprietorship. In the end, the rationality cultivated under the capitalist mode of production, the rationality of means, is in large part preserved - especially in practical areas where productivity and efficiency are the aims - and adapted to collective rather than individual ends.

Marx recognised the existence of opposing aspects of rationality in the capitalist system. On the one hand it was thoroughly rational in terms of the technical advancements it brought about. No other stage in history had demonstrated an equal aptitude towards the systematic and calculated improvement of productive means whether it be in the form of machinery, or organisation, or management. But on the other hand, there was no overall purpose to the entire enterprise. Taken in a broader perspective it was a chaotic and reckless adventure where day-to-day success was measured in terms of the material wealth accumulated, but where there was no ultimate end. What was not in question for Marx was that the system proves to be vigorous and innovative in its narrow pursuits but as a whole was destructive and quickly reaching a crisis point.

Capitalism has no ultimate end and is fundamentally irrational

Weber

On this theme of rationality Max Weber contributed a more detailed analysis. For him rationality of the instrumental kind is what uniquely characterises

Capitalism is characterised a certain kind instrumental rationality

capitalist society. In contrast to Marx, Weber doesn't point to the money-commodity-money cycle or the wage labour relation as the identifying mark of our stage of history. Rather, it is the adoption of a certain conduct and perspective with respect to practical concerns which occupies the centre of the picture. The economy and its associated ideology stand to the sides, or as Karl Löwith puts it,

... the spirit of capitalism exists for him only in so far as there is a general tendency towards a rational conduct of life, borne along by the bourgeois stratum of society, which establishes an elective affinity between the capitalist economy on the one side and the Protestant ethic on the other.³⁰

In Weber's view, the capitalist mode of existence exercises a formal rationality on the level of means. It does not exercise a *substantive* rationality on the level of ultimate ends. Its thinking does not venture into the arena of ethical debate and neither does it grapple with questions of values or ultimate ends.

... by "rationalization" Weber means something like technical reasoning, a kind of calculative thinking whose end is the determination of the most effective means to attain a given objective. It is a mode of reasoning concerned with process and thus utterly indifferent to the value of the ends it strives to attain. When value spheres are rationalized, according to Weber, action within these various domains is likewise formalized and instrumentalized.³¹

Rather, the tendency is to conceive of values in terms of merely subjective wants which can be weighed, compared and compromised according to some

The notion of values or ultimate ends is undermined

³⁰ Karl Löwith, Max Weber and Karl Marx, trans. Hans Fantel, ed. Tom Bottomore and William Outhwaite (London: George Allen & Unwin, 1960), 102.

³¹ Gilbert G. Germain, A Discourse on Disenchantment: Reflections on Politics and Technology (Albany: State University of New York, 1993), 39.

calculable ratio. In contrast to this is what Weber terms a value-rational approach in which only the means to the ends are open to choice and compromise, not the ends themselves. And it is this latter mode of thinking that is losing currency in modern times. For values understood as more than just a set of accidental and arbitrary aesthetic dispositions, the trend, therefore, is toward a general erosion of their legitimacy.

From the... point of view [in which values are taken only as subjective wants], however, value-rationality is always irrational. Indeed, the more the value to which action is oriented is elevated to the status of an absolute value, the more "irrational" in this sense the corresponding action is.³²

The technical reasoning that is applied to the design and control of things does not peter out when it approaches the gates of the cultural domain. People in modern society are now subject to the same rationalised forms of management as the rest of the physical world. Workers' daily lives are regimented and precisely orchestrated. Administrators in government and business are placed in rigid hierarchical command structures where they are expected to perform explicitly defined duties, according to a specified procedure, and in an 'objective', passionless manner. And individuals, when dealing with some facet of such organisations, are confronted with either a reliable, predictable 'machine' which dutifully responds to their precisely worded commands or else a faceless and apparently autonomous entity with directions entirely its own.

The rationality pervades other areas of life

If a technically organised world is as Weber describes, and if it is as pervasive as to be involved in almost all spheres of practical life, then it appears inevitable that some

³² Max Weber, Economy and Society, 26.

distortion will be effected with regard to the interests that are being served by the system. What is to be expected of a mode of organisation that is immensely powerful, is focused exclusively on refining and developing technical means, and is not balanced by any ethical or political practice that can keep pace with it? The very real threat is that our technical devices, especially in the form of bureaucracy, comes to dominate those it was originally intended to serve. When the rationality of the capitalist spirit comes to prevail, we lose sight of the ethical values which fall outside the scope of its concerns, beyond the limits of its competence. And the very reasons that keep human beings at the centre of social concerns have now become inscrutable and untenable, and are set aside.

The threat is that we become, once again, alienated from the very world that we ourselves have brought into being through technics. Instead of it being the means by which we come to gain control of our environment for our authentic ends, the tables are turned, and we find ourselves in the service of a system that dominates us. We abandon ourselves and are engineered to fit the prevailing reality.

We lose sight of our true interests and fall under the domination of our technics

Bureaucracy... induces an ethic of adjustment, of 'adaptation to the possible', an ethic that discourages the value-oriented striving that Weber sees as central to the development of autonomous moral personality.³¹

Weber's account of the rationality of the modern world suggests that a Faustian bargain has been struck. In return for technical power, we have given up an essential component of what makes us human. In committing ourselves to realising the potential of

³¹ Rogers Brubaker, The Limits of Rationality: an Essay on the Social and Moral Thought of Max Weber (London: George Allen & Unwin, 1984), 22.

technics to effectively and efficiently achieve calculable ends, to that degree have we embraced an instrumentally rational mode of thinking, and to a corresponding degree have we relinquished the possibility of a genuinely ethical practice.

Technics is a way of doing things. It functions in a social context where the interests of people are involved. Particular examples of or even entire families of technics are not usually bound to perform only one social function, kept on the same track by the unyielding hand of some callous god. There is a multiplicity of ends that any technics can attend to, and for any given problem calling for technical solutions there is oftentimes a variety of viable alternatives. Judgements have to be made, and judgements are, in fact, made that decide between the many choices offered by technics. So it must be that some element is at play that functions outside of the exclusively technical sphere. Stephen Goldman points out that,

...engineering also poses a distinctive set of metaphysical problems. The judgment that engineering solutions “work” is a social judgment; sociologized factors must be brought directly into engineering epistemology and ontology.³⁴

But that doesn't preclude the possibility that our moral vision is growing ever narrower or that our moral convictions are growing weaker. The somber outlook recommended by Weber's account would have it that rationality's role in modern society has resulted in an undermining of our capacity to recognise and appreciate human interests and in a limiting of the scope of possible conduct - a 'disenchantment' from the

Our moral vision has narrowed and our freedom to act curtailed

³⁴ Stephen L. Goldman, "Philosophy, Engineering, and Western Culture," in Broad and Narrow Interpretations of Philosophy of Technology, ed. Paul T. Durbin (Dordrecht: Kluwer Academic Publishers, 1990), 134.

irrational realm of values and ultimate ends, and a confinement within the so-called 'iron cage'. In Hans Jonas' words,

... the movement of modern knowledge has by a necessary complementarity eroded the foundations from which norms could be derived; it has destroyed the very idea of norm as such. ... Now we shiver in the nakedness of a nihilism in which near-omnipotence is paired with near emptiness, greatest capacity with knowing least for what ends to use it.³⁵

If this is so, then technics comes to exist, more and more, in an ethical vacuum. It becomes detached from the living, feeling beings who created it in the hope that they would be served by it.

Heidegger

One of the most forceful critics of technics is Martin Heidegger, and his focus is on the type of rationality that is both operative in the direct practice of technical methods and, in his view, pervasive in the society that sustains it. In contrast to the approaches of Marx and Weber, Heidegger's concern is neither primarily political nor economic. What he worries about are questions of metaphysics, questions of being. Though not directly concerned with alienation or domination, his views are relevant to these themes for they reveal what he believes to be the underlying structures of thinking that characterise the rationality of technically immersed humanity. This, according to Heidegger, is the essence of technics.

Heidegger focused on the question of being rather than of politics or economics

Michael Zimmerman points out that,

For Heidegger, "modern technology" had three interrelated meanings:

³⁵ Hans Jonas, 22-3.

first, the techniques, devices, systems, and production processes usually associated with *industrialism*; second, the rationalist, scientific, commercialist, utilitarian, anthropocentric, secular worldview usually associated with *modernity*; third the contemporary *mode of understanding or disclosing things* which make possible both industrial production processes and the modernist world view.³⁶

Where Marx and Weber, respectively, associate themselves more closely with the first two themes, it is attention paid to the third which is Heidegger's main contribution to a philosophical analysis of technics. For him it is neither the means of production nor the rigorous practical-mindedness but the particular metaphysical perspective exemplified by modern technics that distinguishes the present age. And this characteristic outlook is one that renders all things into the aspects of orderable, explicable and rationalisable entities amenable not only to the corresponding theoretical approach of modern science, but also to the manipulative and transformative projects of modern technical practices. As Heidegger puts it,

Beings themselves appear as actualities in the interaction of cause and effect. We encounter beings as actualities in a calculative business-like way, but also scientifically and by way of philosophy, with explanations and proofs. ... With such statements we believe that we confront the mystery.³⁷

According to Heidegger, we as members of modern society have adopted an aggressive posture towards beings in the world, no longer permitting them to reveal themselves in their unique fashion, denying them their full reality. Instead we

Our rationality is based upon an aggressive and dominating posture towards the world

³⁶ Michael E. Zimmerman, Heidegger's Confrontation with Modernity: Technology, Politics, and Art (Bloomington & Indianapolis: Indiana University Press, 1990), xiii.

³⁷ Martin Heidegger, "Letter on Humanism," in Basic Writings, trans. William Lovitt, ed. David Farrell Krell (San Francisco: Harper Collins, 1977), 199.

impose ourselves upon them. Our mode of perception is one conditioned by a desire to dominate, to exercise our will over things, and, as a result, the ways in which we make even the most rudimentary inquiries into the world are shaped according to it. Modern science too, as a sophisticated example of our perceptions of and investigations into the real world, is for Heidegger one more aspect of technical thinking, another corollary to this general metaphysical outlook. Its manner of inquiring is one that insists on compliance. It calls on the natural world to show itself subjected to the confines of the framework we impose, and it relies on the fact that nature is, indeed, able to reveal an aspect of itself which complies with such expectations.

Here physics, in retreat from the kind of representation that turns only to objects, which has been the sole standard until recently, will never be able to renounce this one thing: that nature reports itself in some way or other that is identifiable through calculation and that it remains orderable as a system of information.³⁸

What this amounts to for Heidegger is that our modern way of thinking has become an almost exclusively instrumental way of thinking - everything is perceived in terms of the uses that it can be put to, the value that it is equivalent to, the potential for its being transformed into a commodity. As a result, things which fall under the attention of technical thinking are allowed to show themselves only in terms of their practical capacities and potentialities. In our actual interactions with them they are 'challenged' by us, forced to yield that aspect of themselves that we demand. This metaphysical demand that we make universally, this imposition of a pre-conceived

Enframing imposes a manner of revealing but also conceals many essential aspects

³⁸ Martin Heidegger, "The Question Concerning Technology," in Basic Writings, trans. William Lovitt, ed. David Farrell Krell (San Francisco: Harper Collins, 1977), 304.

structure to the natural world, Heidegger calls an enframing. Though it has proved to be highly productive in supplying us with a wealth of material means and physical powers, it has, in another sense, caused us to lose the world;

Heidegger's point, then, is that at the same time as modern technology, illustrated in such sciences as botany and geography, reveals a world called into being by different forms of technological perspectives, it also tends to hide or occult another, more "natural" world.³⁹

It renders all things into objects that can be ordered, stored, manipulated and transformed. What things truly are in and of themselves are lost to us. A river is a source of hydro-electric power, a piece of land is a coal reserve, a human being is labour power. Everything dons the habits of tool and resource and assumes the role of 'standing-reserve' ready and waiting for us to call it upon the stage to obediently perform its scripted part. "Where enframing holds sway, regulating and securing of standing-reserve mark all revealing."⁴⁰ The false metaphysics of modern times is pervasive and threatens to catch even us in its net. We risk losing ourselves in much the same way that we lose the world around us.

As soon as what is unconcealed no longer concerns man even as object, but exclusively as standing-reserve, then he comes to the brink of a precipitous fall, that is, he comes to the point where he himself will have to be taken as standing-reserve.⁴¹

³⁹ Tom Rockmore, On Heidegger's Nazism and Philosophy (Berkeley: University of California Press, 1992), 209.

⁴⁰ Heidegger, QCT, 309.

⁴¹ Heidegger, QCT, 308.

Concerns over technics for Heidegger are secondary with respect to his main focus which is metaphysics. Political issues or ramifications of technics in the social sphere are even more peripheral. In contrast to Marx and to the Marxist viewpoint in general, Heidegger does not acknowledge the incipient crisis in the modern world as being in any way caused or significantly influenced by facts on the ground. Particularly in his later writings he describes the shift in our metaphysical attitudes almost as if it were a phenomenon independent of human will - a process in which humanity figures only as passive objects assimilated by technics, an historical movement dictated by fate against which we have no power and towards which we assume no responsibility.

Heidegger often denies any political or even human factor in the progress of metaphysics

Despite his infamous foray into politics in the 1930's, Heidegger later tries to distance himself and his philosophy from political affairs in practice and in theory. The rationality of technics he depicted as a totalitarian force overtaking the realm of human beings with perilous consequences, but the only hope we have in the face of it is not any kind of concerted effort on the part of human society. "Only a god can save us," is what he says. On the subject of what alternatives humanity does or doesn't have, Zimmerman writes concerning Heidegger's point of view,

Nothing can stand in the path of this drive to mastery. Because of the fundamental nature of this new view of reality, all particular human institutions - economic, social, political, artistic - come under its sway. "Political" action, for example, is not the way to rescue man from his current predicament, according to Heidegger, for such action tends to strengthen the subjectivism of modern man.⁴²

⁴² Michael Zimmerman, "Heidegger and Marcuse: Technology as Ideology," Research in Philosophy and Technology 2 (1979): 250.

Tom Rockmore, on the other hand, makes the case for interpreting Heidegger's philosophy as essentially political arguing that Heidegger's involvement with Nazism - which did not end with his rectorateship or with the defeat of Germany in the world war - was not at all an accidental episode with respect to his overall philosophical views but a necessary corollary.

But Heidegger did see a relationship between technology and political action

... Heidegger believed that Nazism offered an incomplete effort to react against nihilism, in whose space modern technology flourishes. ... We can understand Heidegger's turn to Nazism and his views of technology, then, as a further effort to restore meaningfulness in a world measured by social decline through insight into a socially appropriate, or authentic, technological form.⁴³

For Heidegger, then, even if the progress of modern, technical metaphysics has no anthropological roots, it nevertheless calls upon humanity to enter the political arena in response to it. Technics and its accompanying technological comportment towards the world undermines our capacity to discover the world and ourselves in their fullness and truth. The solution, ultimately, was to instigate a revolution in our metaphysics, and political action may be an indirect means to that end - however distasteful Heidegger may have found this brand of instrumental reasoning to be. (Though the actual tactics employed by the Nazis did not seem to have bothered him very much).

Heidegger's depiction of metaphysics as almost having a life of its own, and of it drawing the real world along with it on an historical adventure across dangerous and uncharted lands is, arguably, an over-ambitious reification. The

Heidegger helps to counter the reductionistic tendencies of Marx

⁴³ Tom Rockmore, "Heidegger on Technology, Nazism, and the Thought of Being," in Research in Philosophy & Technology, Volume 13, ed. Joan Rothschild and Frederick Ferre (Greenwich, Connecticut: Jai Press Inc., 1993), 278-9.

notion of metaphysics being an independent and disconnected force that appears as modern technics where it sets foot upon solid ground does not jibe well with the fact that technics is essentially a part of a socially embedded practice. But, in the assessments we make of technical society, where the value of Heidegger's contribution lies is in its promotion of a fairer distribution of weight in favour of more metaphysical considerations, or in other words, the rationality that structures our perceptions, understanding, and expectations of what there is in the real world and how it relates to us. In this regard it serves to mitigate against the perhaps overly reductionistic aspects of Marx's historical account where the emphasis is laid squarely and almost exclusively on material and productive factors. Greater attention paid to the particular metaphysical and ontological outlooks that we as a society have espoused can very well shed some light on the reasons why the grip of technically mediated modes of domination is as tenacious as it is and why the many glaring contradictions that cry out for resolution have remained outstanding while, at the same time, the means to resolve them have so often been within our grasp.

Marcuse

Herbert Marcuse also grapples with the question of technics in contemporary society, and one of the issues that concerns him is also that of rationality. For Marcuse, as with Weber, Heidegger, and, to a significant extent, Marx, it is a particular mode of thinking, in particular, that characterises the present historical stage. In some of Marcuse's writing can be heard an echo of Weber's views. For example, in One-Dimensional Man he writes that,

Marcuse's concerns also centre on questions of rationality

While science freed nature from inherent ends and stripped matter of all but quantifiable qualities, society freed men from the "natural" hierarchy

of personal dependence and related them to each other in accordance with quantifiable qualities - namely, as units of abstract labour power, calculable in units of time.⁴⁴

Here one can perceive a distinct resonance with Weber's account of the disenchantment of the world and the division between rational and irrational spheres of discourse and conduct. One can also find woven into it a few threads of Marx's line of thinking, especially that regarding the rationalising and revolutionary aspects of the bourgeois class and of capitalist production.

In the following passage from Marcuse concerning scientific laws, we can find an even more sympathetic resonance with Weber's analysis of rationality, particularly with respect to the distinction Weber makes between formal and substantive rationality, i.e., between the mode of thinking concerned with the quantifiable and technically manipulable, on the one hand, and that which is concerned with the ethical and irreducibly human, on the other. The former Marcuse sees as being unable to accommodate the latter and oftentimes displacing it.

... these laws [which reduce reality to its physical and mathematical structure] govern human beings insofar as they are purely physical and biological matter. In all other aspects, humans are *eliminated* from nature, or rather the reality aimed at and acknowledged by the scientific method becomes a reality independent of individual and social facticity.⁴⁵

But Marcuse goes another step further. Whereas for Weber, the capitalist economy was the epitome of rationality in a certain restricted sense, for Marcuse

In contrast to Weber, industrialised society is irrational

⁴⁴ Herbert Marcuse, One-Dimensional Man, 157.

⁴⁵ Herbert Marcuse, "From Ontology to Technology: Fundamental Tendencies of Industrial Society," in Critical Theory and Society, trans. Micheline Ishay, ed. Stephen Bronner & Douglas Kellner (New York: Routledge, 1989), 120.

modern capitalism has developed into a system that no longer conforms to any standard of rationality. Nearly all the old contradictions that Marx himself worried about are still manifested - the disparities between rich and poor, employer and worker - problems that a system such as ours could have and should have made some progress in resolving. The system manages to keep the necessary few paces ahead of the objectively real crisis that would ensue if significant numbers of people were left to literally starve, but does not do what it is capable of doing in meeting the needs of society at large - it merely pacifies without satisfying. The standards of efficiency and effectiveness are also set aside as evidenced by the enormous waste and redundant activities that our industries are actively and consciously engaged in - pollution, over-consumption, planned obsolescence. In this way it manages to meet the qualifications of neither a substantive nor a formal rationality in that it is neither oriented towards any ultimate ends nor functions in accordance with any exact principles of conduct. What keeps the system afloat is not a positive consensus on the part of the constituents of the society. What allows it to carry on is the false consensus that arises from an utter lack of criticism on the part of those who live and function within the system. The status quo becomes its own justification.

It reflects the belief that the real is rational, and that the established system, in spite of everything, delivers the goods. The people are led to find in the productive apparatus the effective agent of thought and action to which their personal thought can and must be surrendered. And in this transfer, the apparatus also assumes the role of a moral agent.⁴⁶

The debate that should be taking place concerning the role of government,

The system persists thanks to submissiveness

⁴⁶ Herbert Marcuse, One-Dimensional Man, 79.

industry, and technics is not occurring to the degree that circumstances warrant nor with the popularity that corresponds to the pervasiveness of the phenomena. In fact, to engage in such a debate would be to find oneself contradicting the sense of 'rationality' that prevails.

In the contemporary period, the questions as to the "end of government" have subsided. It seems that the continued functioning of society is sufficient justification for its legality and its claim for obedience, and "functioning" seems defined negatively as absence of civil war, massive discords, economic collapse. Otherwise anything goes...⁴⁷

It is a rationality that reigns not by virtue of consciously given consent, but, rather, by force and by faith. In a way Marcuse returns to a rather Heideggerian approach in describing the radical narrowing of our universe of discourse. *Marcuse assimilates a Heideggerian critique but pushes the political dimensions to the fore*

Heidegger's theme of false metaphysics can be heard in the background when Marcuse, in commenting on our awareness of the world, states that, "...the descriptive analysis of the facts blocks the apprehension of the facts and becomes an element of the ideology that sustains the facts."⁴⁸ The way that we have come to see things have caused us to lose the grasp on the essence of what things are. In this case the crucial aspects that have been occulted pertain to the definitely political content embedded in our technics. What we are left with is a shallow background against which and a constricted boundary within which to reflect upon ourselves and our surroundings. The result is that the existing state of affairs is rendered apparently unproblematic, and we are left vulnerable to manipulation and domination by interests which, in fact, exercise authority.

⁴⁷ Herbert Marcuse, An Essay on Liberation (Boston: Beacon Press, 1969), 67.

⁴⁸ Herbert Marcuse, One-Dimensional Man, 119.

In contrast to Heidegger, Marcuse places an emphasis on distinctively political issues in his account of the rationality of late capitalism. Rather than the concealing or revealing of the being of things that Heidegger talks about, Marcuse talks about mystification and desublimation, referring primarily to the purposive, ideological components that underlie social, industrial, and cultural technics. Rather than regarding technics and technological ideology in terms of social conditions that call for a political response after the fact, Marcuse's understanding of technics sees a definite political content built into it from the start.

We need to uncover the political motivations reified in our technics

The technical achievement of advanced industrial society, and the effective manipulation of mental and material productivity have brought about a *shift in the laws of mystification*. If it is meaningful to say that the ideology comes to be embodied in the process of production itself, it may also be meaningful to suggest that, in this society, the rational rather than the irrational becomes the most effective vehicle of mystification. ... It was the total mobilization of the material and mental machinery which did the job and installed its mystifying power over society. It served to make the individual incapable of seeing "behind" the machinery those who used it, those who profited from it, and those who paid for it.⁴⁹

And for Marcuse what is concealed and what needs to be revealed, therefore, are the political structures that lies hidden behind our technics and the ideology it sustains. To that end what we need to restore are our critical faculties, the 'power of negative thinking', an authentic rationality. What we need to get *at* are the political forces which are the de facto essence of technical society.

Both Weber and Heidegger seemed to subscribe to the assumption that the technical rationality prevalent today is the only economic or productive rationality

Marcuse advocates a new kind of rationality

⁴⁹ Herbert Marcuse, One-Dimensional Man, 189.

there is. According to Weber technical rationality and capitalism are basically two sides of the same coin - the focus on means rather than ends, together with an orientation towards the standards of quantity and efficiency, is the alloy from which it is struck. Heidegger, even more so, with his stress on the autonomous progress of metaphysics in history, allowed for the emergence of only this one kind of rationality. Marcuse, on the other hand, saw the technical world as open to alternatives, even radically different alternatives, and proposes that we work to build just that.

Marcuse in his critique of positivism has not attacked all possible forms of cognition as contributing to domination; indeed he has theorized that we can create a "new" cognition which will no longer satisfy the ideological needs of capitalism. In fact, Marcuse has also conceived a "new" technology which would liberate nature.⁵⁰

Marcuse's strategy, though never explicitly described, was one which tried to get the best of both worlds - overcome the deficiencies of the present social order but, at the same time, retain the virtues which have resulted in so much knowledge and power being put at our disposal. This position, to some extent, also sets Marcuse apart from Marx, for although Marx may have often hinted at a new socialist consciousness, his enthusiasm for the productive capacity of industrial technics and his faith in progress and science does not suggest that he would call for a real attack against technics and against much of the thinking that underlies it.

But Marcuse has not gone any further than to hint at some kind of new rationality. He leaves it shrouded in a dreamy, tantalising vagueness. It remains to be seen if anyone,

⁵⁰ Ben Agger, "Marcuse and Habermas on New Science," *Polity* IX:2 (Winter 1976): 165.

following his lead, can find the path that will take us there - a path which will keep one foot on the reliable ground of technical rationality and the other foot on the ground of our emancipated and desublimated human spirit, a route that would give us something of both Marx and Heidegger.

Contemporary Industrialised Society

Marx never really contemplated the possibility that the capitalist system could effectively overcome the contradictions that are some of its inherent features or that it would be able to keep pace with the crises that emerged from within it.

Marx was wrong about the inevitability of the socialist revolution

For him it was always the case that the revolution was just around the corner and that it was the historical fate of capitalism to ultimately succumb to its proletarian nemesis. For Marx it was the structure and dynamics inherent to capitalist society that would cause social forces antagonistic to the system to coalesce and grow and eventually to overthrow it. But after a century-long pregnancy with no socialist offspring to speak of, even orthodox Marxists are sympathetic to the notion that perhaps what looked like a revolution incubating in the womb of capitalism is only an endemic but manageable condition - not terminal, only chronic.

To this day only a small number of predominantly agrarian societies have seen uprisings and coup d'états undertaken in the name of Marxism. None have succeeded in achieving what their working ideologies initially promised. Industrialised societies, on the other hand, have become ad hoc patchworks of basically capitalist economics and socialist remedies that have proven to be highly innovative and resilient. What the latter yield are societies which are affluent but still unjust, powerful but not liberating, functional but

meaningless.

No revolutionary consciousness ever really developed, goaded on by the unbearable conditions of deprivation and marginalisation that are supposedly the inevitable products of capitalism. Private interests have been wise enough to regulate themselves through governmental and legislative mechanisms, and all those who have a role to play in the economic system have been given reason to commit themselves to its continued existence. Those who have been left outside, in our urban ghettos, for example, cry loudly for a recognition of their human rights and for a fair opportunity to be accepted into the mainstream.

The expected basis for social criticism has been undermined

The wastefulness, destructiveness, and violence of our economies and our nation-states have certainly not gone unnoticed. Serious questions have been posed, but no effective challenges have been mounted. In the context of the prevailing rationality, in this closed universe of discourse, there is little firm ground upon which to launch a convincing critique or formulate an alternative that holds appeal to significant numbers. Challenges that come from outside are discredited even before they are heard. Albert Borgmann contends that, "above all one must understand, explicitly or implicitly, that the peril of technology lies not in this or that of its manifestations but in *the pervasiveness and consistency of its pattern.*"⁵¹ And from the looks of things it is a pattern that has encroached upon and assimilated the specifically social sphere. The place where political and axiological concerns belong, the arena in which dialogue and debate is meant to take

⁵¹ Albert Borgmann, Technology and the Character of Contemporary Life: a Philosophical Inquiry (Chicago: University of Chicago Press, 1984), 208.

place is being overshadowed and suffocated by the industrial and institutional infrastructures in which it is immersed.

The industrialised nations, to their credit, have generally managed to ensure a fairly secure existence for its constituents, i.e., ourselves, and offered ample scope for our ambitions. But they have, at the same time, undermined, firstly, the prospects for establishing an end to life that is as credible to us as the technical means we have at our disposal, and, secondly, our willingness and aptitude for setting our sights beyond the narrow confines of working and consuming that have been safely enclosed within the scope of our technical rationalisation. What exists is hardly even a political awareness much less a revolutionary practice - passive choices rather than active participation.

What we have instead is a condition that is secure but nihilistic

Langdon Winner, in relating the results of a study on the social attitudes of businesspeople, writes that, "The authors of the report observe that patterns of authority that work effectively in the corporation become for businessmen 'the desirable model against which to compare political and economic relationships in the rest of society' ".⁵² Andrew Feenberg concurs with this point of view when he states that, "It is as though the discursive framework of scientific rationality has escaped the confines of inquiry to become a cultural principle and a basis of social organization."⁵³ And Jürgen Habermas has much to say in his essay "Technology and Science as

Technological values tend to become universalised

⁵² Langdon Winner, "Do Artifacts Have Politics?," p.133. Quotation taken from, Leonard Silk & David Vogel, Ethics and Profits: The Crisis of Confidence in American Business (New York: Simon & Schuster, 1976), 191.

⁵³ Andrew Feenberg, Critical Theory of Technology, 174-5.

Ideology” where he states,

The solution of technical problems is not dependent on public discussion. Rather public discussions could render problematic the framework within which the tasks of government action present themselves as technical ones. Therefore the new politics of state interventionism requires a depoliticization of the mass of the population.⁵⁴

But after a certain point it no longer makes much sense to keep viewing the process as an encroachment into the political sphere or as an outside force acting upon the social realm. Technics has been thoroughly incorporated into our society to such a degree that, like it or not, it has to be accepted as being an inherent part of our society. And any consideration of what is to be done must start from within our technical context and work within the scope of possibilities opened up by it. As Hans Jonas puts it,

Our world has to be accepted as a truly technical one

The difference between the artificial and the natural has vanished, the natural is swallowed up in the sphere of the artificial, and at the same time the total artifact (the works of man that have become “the world” and as such envelop their makers) generates a “nature” of its own, that is, a necessity with which human freedom has to cope in an entirely new sense.⁵⁵

The danger is that the technics will define the political issues and dictate the results of the discussion. Already it has been noted how, according to Weber, much of the moral content of our world have been purged, and how, according to Heidegger and Marcuse, we are failing to grasp the full significance of technics and have not questioned it but, rather, allowed it to structure and guide our worldview. In the

We therefore have to be aware of a kind of danger never anticipated by Marx

⁵⁴ Jürgen Habermas, “Technology and Science as ‘Ideology’,” in Towards a Rational Society, trans. Jeremy J. Shapiro (Boston: Beacon Press, 1970), 103-4.

⁵⁵ Hans Jonas, 10.

absence of a sustained critical attitude towards technics and without a committed effort to establish and pursue a focused set of values, we leave ourselves vulnerable to subjugation by the technical forces we work to build, and those agencies which have control over portions of the system, corporate and bureaucratic institutions, for all intents and purposes become our masters.

To a large extent we have, as Marx envisioned, rescued ourselves from the 'violence of things'. But in escaping the chaos and turbulence of free-market capitalism, we have fettered ourselves to the 'rationality of things' - imprisoned ourselves within Weber's 'iron cage'. Once new constraints have been imposed or new possibilities opened up, they quickly and automatically melt into the background, and it all becomes just another stage in the progress of the technical horizon - which has been evolving throughout history but which, if Marcuse is right, is today accepted without reflection and taken in isolation from all the alternatives that were initially at hand. In short, we forget the fact that choices were available and not aware that our vision isn't penetrating through the bars of the cage.

Political Control Over Technics

Unless attended by controversy at the outset or unless they fail to carry out their expected functions, technics tend to become inconspicuous not long after they have been put into place. As taken-for-granted features of the world, they shift away from the centre of attention once their novelty wears off, and therefore escape the glare of criticism. Madeleine Akrich writes,

Once implemented technics quickly become uncontroversial.

They [technical objects] may change social relations, but they also stabilize, naturalize, depoliticize, and translate these into other media.

After the event, the processes involved in building up technical objects are concealed. The causal links they establish are naturalized. There was, or so it seems, never any possibility that it could have been otherwise.⁵⁶

Even the very definition of what qualifies as a specific form of technics - what is the right way to carry out a task - becomes fixed.

Design standards are only controversial while they are in flux. Resolved conflicts over technology are quickly forgotten. Their outcomes, a welter of taken-for-granted technical and legal standards, are embodied in a stable code and form the background against which economic actors manipulate the unstable portions of the environment...⁵⁷

This may be so after the technics and its codes have been put into place, but prior to this, when viable alternatives were still actively in contention, it must have been the case that some persons or organisations were weighing the costs and benefits of competing choices and making the decisions. After the decisions are finalised and during their operation, technics still remains fundamentally a socially embedded practice with some human element at every level and across every area. Somebody must be following the rules, setting the standards, and calling for the specific developments that are continuously being undertaken. The next question is who or what is involved in making these decisions. Who or what has the role in modern society of engaging in deliberations over the directions that technics take? The prevailing ideology proclaims that it is the discriminating voter and the consumer in the eminently 'democratic' marketplace who,

But somebody must make the decisions and administer the system on a daily basis

⁵⁶ Madeleine Akrich, "The De-Description of Technical Objects," in Shaping Technology/Building Society: Studies in Sociotechnical Change, ed. Wiebe E. Bijker and John Law (Cambridge, Mass.: The MIT Press, 1992), 222.

⁵⁷ Andrew Feenberg, "Subversive Rationalization: Technology, Power, and Democracy," Inquiry 35 (1992): 314.

ultimately, set the agenda and decide the outcome.

No doubt, the decisions and behaviour of individuals in society have some part to play in actually determining the directions taken by technical developments.

*Power over
technics is
conceded to the
experts*

I.C. Jarvie, for example, comments, "When a physicist seeks the relationship between mass and energy he does not ask society what it wants the outcome to be. But in technology it is not as simple as that."⁵⁸ But to take this a little further, it has to be said that it is neither as simple as the proponents of free-market ideology would have us believe. The state of the art has gone well beyond the point where any individual can have enough technical knowledge to confidently pass judgement over all the aspects of the technics affecting him or her. Such confidence is reserved for the specialists in each field, and, as a corollary, credibility in each area is distributed in exactly the same way. In a social context where the rationality of technical practice holds sway, it is to be expected that those whose areas of expertise include the mode of discourse appropriate to the technics in question will have more influence over it than those who do not. Those who have expertise over the instrumental aspects, i.e. can design, build, implement or maintain the technics, will inevitably enjoy an advantage over those whose experience of the technics can only be described in qualitative terms. It is a power conceded to the experts by the individuals themselves in modern society, the more so the more they subscribe to the prevailing rationality and the more sophisticated the technics in question happens to be.

⁵⁸ I.C. Jarvie, "Technology and the Structure of Knowledge," in Philosophy and Technology, ed. Carl Mitcham and Robert Mackey (New York: The Free Press, 1972), 59.

Given this state of affairs one can see how there develops a tendency to exclude the non-expert from full participation in debates over technics - to politically marginalise those who are at the receiving end of technical practices.

Technical practice leads to disenfranchisement and alienation for the majority

Concerning the relationship between bureaucratic organisations and those of us it affects, Rogers Brubaker tells us that, "...the more important role played by technical expertise in the functioning of a bureaucratic organisation, the less responsive the organisation will be to the control of those who lack such expertise: bureaucracy, in short, invites technocracy."⁵⁹ And Steven Goldman, in the same vein, warns us about the role that engineering plays on the social and political scene, suggesting that not only is there an inherent tendency to exclude the general populace and concentrate power in certain hands, but that it often becomes a deliberate political strategy:

Engineering, through technology, is directly implicated in changing the world. It is, therefore, directly implicated in the struggles for power among institutions and individuals in society who see threats to their interests in new technologies, or who see in it opportunities for expanding those interests. One consequence of this fact is that there is a vested interest among powerful forces in society in not having the public appreciate the role played by engineering in technological innovation.⁶⁰

Under capitalism it is supposedly the consumer who ultimately finances the technical undertakings, and, as the story goes, the consumer has the last say in the matter even if his or her decision is not communicated on a conscious or rational level. But what the consumer wants or doesn't want does not *directly* determine the course of action. The

⁵⁹ Rogers Brubaker, 22.

⁶⁰ Stephen L. Goldman, 145.

behaviour of the end user, at best, may define the contours of the ground upon which those who exercise power may move (if it is the case that they make it their business to respond to the end user), but the consumer is not actively involved in the decision-making process. And in the end the interests of the consumer as a human being are rarely the prime objective behind most technical enterprises. Under modern capitalism it is, rather, the act of consumption that is of central concern - the consumer as an economic entity.

Social relations functioning within a technical context, and especially when *Technics are inherently hegemonic* involving technical devices and systems, set up arrangements of unequal power between certain groups. Even if we take Karl Marx's advice and fundamentally change the relations of production, it is still not obvious how such discrepancies will be overcome. Given the fact that greater influence over the design and use of technical means very quickly and very easily translates into greater control over people and things in the real world, and so long as it remains the case that technical knowledge is regarded as more reliable and hence more legitimate knowledge, there will be a tendency towards manipulation and control over those who do not possess technical competence in certain areas by those who do. This may be so even if mercenary interests have been removed from the position of ownership over most technical means - even if proprietorship legally belongs to the masses. Without a challenge directed against the form of rationality which awards top priority to concerns over instrumental means, without an alternative to the way of thinking dedicated to production and organisation, an ostensibly socialist society would likely reproduce or preserve many of the same hegemonic structures existing today.

Marx's solution, basically, was to abolish capitalist economic relationships and the legal provisions that upheld them by appropriating the means of production and taking control of governmental infrastructures. For him formal ownership is the key. Effective control would follow as a result. But even in his time it was apparent that capitalist production was increasingly socialising the mode of production and subjecting it to greater and greater degrees of organisation and co-ordination. No longer was the marketplace a free-for-all turmoil of competition between individual, private interests but was gradually coming under the comprehensive regulation and control of bureaucratic structures in the form of joint-stock companies, large corporations, and governments.⁶¹ Capitalist enterprises were getting larger and more co-operative, and, in accordance with their rationalised mode of functioning, were easing off on redundant expenditures of energy and curbing the constant unpredictability of market situations that comes with competition. Max Weber argues that,

As a result of greater regulation the free market no longer exists.

Today it is primarily the capitalist market economy which demands that the official business of the administration be discharged precisely, unambiguously, continuously, and with as much speed as possible. Normally the large, modern capitalist enterprises are themselves unequalled models of strict bureaucratic organization.⁶²

⁶¹ Derek Sayer, Capitalism and Modernity: an Excursus on Marx and Weber (New York: Routledge, 1991), 42-5.

⁶² Max Weber, From Max Weber: Essays in Sociology, trans. H.H. Gerth and C. Wright Mills, ed. H.H. Gerth and C. Wright Mills (New York: Oxford University Press, 1958), 215.

And instead of aggravating the contradictions and social inequities that lead to crisis and social upheaval, the progress of the capitalist mode of production has demonstrated a tendency to automatically mitigate against such contingencies.

Social tensions have eased and the risk of serious upheavals eliminated

Again, according to Weber, "bureaucratic organization has usually come into power on the basis of a leveling of economic and social differences."⁶³ It undermines the prospects for a revolution of the type Marx expected in industrialised society.

...the risk of crises, while it has certainly not disappeared, has diminished in relative importance, since the entrepreneurs have moved from ruthless competition to cartelisation, or in other words to the attempt to eliminate competition to a large extent by regulating prices and sales; and ... the big banks ... have moved to the point of seeing to it, by regulating the granting of credit, that periods of over speculation also occur to a much lesser extent than before.⁶⁴

With the stock market collapse of 1929 - a disaster brought on by several years of frenzied, capitalistic over-speculation - taking place only a few years after his death, Weber would appear to have been premature in his diagnoses. But, in light of the fiscal and monetary technics used to successfully bring the American economy out of the ensuing depression, and in light of the fact that government today is much more involved in its capacity as administrator than ever before, Weber's analysis seems to have been borne out.

⁶³ Weber, From Max Weber, 224.

⁶⁴ Max Weber, "Socialism," in Max Weber: Selections in translation, trans. E. Matthews, ed. W. G. Runciman (Cambridge: Cambridge University Press, 1978), 259.

Prospects for the Future

The road that Marx charted leading out from capitalism towards socialism has been effectively closed. The lopsided efficiency and power of technics wedded to capitalism has not pushed the socio-economic system to the breaking point and triggered off its collapse. With the help of organisation and regulation structural problems that appeared so threatening have turned out to be manageable, but the alienating aspects of life under capitalism, on the other hand, have not been attenuated to the same degree. The worker - more and more of whom are in service industries rather than in material production - receives a greater share of the material wealth of the nation and is accorded some token input into governmental affairs through elections. But at a more substantial level and despite his or her security in terms of necessities and amenities, the person in what is variously called the 'affluent society', the 'post-scarcity society', the 'age of mass high consumption' has not been as successful in securing, in proportion, a share of the control or influence over the system as a whole. Without doubt we now enjoy far greater powers and freedoms than preceding generations, owing in no small part to technical advances and to the command over much broader ranges of physical resources that it affords us. But in general as technical systems and their corresponding power expand further and further beyond the level of the individual, the community, and the political practices that we have successfully cultivated, we as political agents are not keeping pace and are losing our relative share of power. The balance is continuously shifting towards the side of more intensive and more comprehensive technical organisation. As a result individuals are assuming the role of object of technical powers at a greater rate than that

The contemporary person is losing ground in the face of technical domination

of master. Fears about this trend are expressed by social critics such as Murray Bookchin;

...technology is transformed into a force above man, orchestrating his life according to a score contrived by an industrial bureaucracy; not *men*, I repeat, but a *bureaucracy*, a *social machine*. With the arrival of mass production as the predominant mode of production, man became an extension of the machine, and not only of mechanical devices in the productive process but also of social devices in the social process.⁶⁵

Although Marx, himself, was not oblivious to the dominating tendencies of bureaucracy, he did not take it as seriously as he should have. He was quite aware of bureaucracy's tendency to take possession of the political sphere and to exclude the participation of those whom it administers. For example, he writes in his "Critique of Hegel's Philosophy of Right",

Marx regarded technical organisations neutral

Bureaucracy holds in its possession the essence of the state, the spiritual essence of society, it is its private property. The general spirit of bureaucracy is secret, mystery, safeguarded inside itself by hierarchy and outside by its nature as a closed corporation. Thus public political spirit and also political mentality appear to bureaucracy as a betrayal of its secret.⁶⁶

But he does not appear to have considered the possibility that this tendency manifests itself in bureaucratic institutions not only in the context of the bourgeois state but would perhaps do so under supposedly socialist masters as well - that perhaps this tendency is a feature of technical organisations in general and is not just a reflection of the ideological commitments of those who happen to be running the system at the time.

⁶⁵ Murray Bookchin, Post-Scarcity Anarchism (Montreal: Black Rose Books, 1971), 132.

⁶⁶ Karl Marx, "Critique of Hegel's Philosophy of Right," in Selected Writings, ed. David McLellan (Oxford: Oxford University Press, 1977), 31.

Marx's conception of the revolution that was looming on the horizon focused on a change of consciousness more than on a change in the material processes of production. The latter have largely been taken care of by the capitalist mode of production, and industrial society, as he saw it, was ripe for revolution. All that was required now was, first of all, the appropriate awareness among the labouring class of their true interests, of the objective facts in society, and of their special place in world history. The material means so well developed under capitalism he believed could be simply taken as is and turned to the service of the socialist cause. The proletariat he expected would storm the seat of government and take hold of the state apparatus. Although it posed many substantial obstacles, it was understood by Marx that capitalism essentially paved the way for this next stage in human history. Of course, there would be difficulties along the way, but, through praxis guided by the appropriate understanding of events, things would work themselves out. The whole idea, thus, counted on the assumption that the already existing means of production and administrative structures would function in the hands of the proletariat as faithfully as it did when in the hands of the capitalist. And the second necessary ingredient was the supposedly inevitable crisis of capitalism that would trigger everything off.

Marx's account of revolution relied on the assumption of neutrality

Unfortunately for the prospects of a revolution of this type and under present circumstances, a number of these ingredients are either of the wrong kind or are absent altogether; A) the technics are not neutral with respect to the socio-political structures around them and are not as amenable to service under a different social ethos as one may like, B) the social technics have developed to the point that they successfully

As a result of these errors, Marx's forecast failed

administer the system despite its amazing complexity, thus, greatly reducing the probability of lethal crises, C) the social divisions and class antagonisms - 'the history of all hitherto existing society', no less - have been alleviated and brought down to a safe level, and D) the prospects of a revolutionary consciousness on the part of those crucial segments of society has drowned in one broad and consistent ocean of instrumental rationality.

Marx may be faulted for being too materialistic and not giving a fair assessment of the impact of ideas. For him the material mode of production was the only real variable in the equation. Ideological constructions, be they ethics, metaphysics, religion, or science, rose and fell in accordance with the changing winds of production. For Weber, Heidegger and Marcuse, on the other hand, ideas and interpretive perspectives were of primary importance. For them technical society is as much founded on a philosophical outlook as it was on technical devices and organisations. Their works tell us that the essence of modern technics is a particular mode of comportment towards the world. And the conclusion is basically that technics, as a factor in the social realm, is not something neutral.

More attention should have been paid to the rationality of technics

Although within the localised context of means, technical thinking is eminently rational, taken on a broader level where ultimate ends themselves are brought into the picture, its limits are clear. Technical thinking cannot aid us in either identifying such ends, or in arbitrating between incompatible goals. The danger we face is that the rationality of technics will escape the boundaries of our instrumental pursuits and become the standard by which we perceive and interact with not only the physical world but with the human

world as well. The consequence would be the loss of the meaningfulness of our existence and the emergence of obstacles against the prospect of retrieving it. Indeed this is, according to Weber, Heidegger and Marcuse, exactly what has happened. Although each depicts the situation in different terms - disenchantment, enframing, desublimation - they each try to alert us to the disastrous loss of the spiritual aspects of our existence, and they point to the totalitarian nature of technical society.

“Technics is the manifestation of the human will to control and dominate”. This statement goes for all four of our thinkers. They understand technics as a part of our drive to take possession of the physical world and make it useful for ourselves. They were aware that as tools in the hands of certain political interests, the technics can be turned against the majority of humankind and serve just as effectively in our oppression. Marx was perhaps the most emphatic when it came to stressing the role of technics as a central factor in the condition of alienation, but he failed to recognise the full extent of technics’ interconnection with other facets of human world, especially on the political level, or of technics’ impact on our philosophical outlooks. These connections turn out to be, to the detriment of his sociology of industrial society, more direct, more ingrained and more significant than he had believed.

Cause and Effect in Human-Technical Relationships

In some ways Marx subscribed to the notion that the directions taken by technical development are dictated by the interests of those who have formal control or ownership of the technical means of production. In other ways, particularly in his historical theories, he believed that the mode of production is the primary force behind

There are two sides to Marx's view

social and political change, and that for the most part its progress is pre-determined.

Ownership and Appropriation

On the first point, a look at Marx's views on how things will change following a successful proletarian uprising reveals his emphasis on the central role of ownership in the social and cultural sphere. Anticipating the conditions that would prevail after the proletarian revolution, Marx envisions a world no longer marked by alienation and foretells of a way of life for the majority of humanity in which their powers and freedoms have been realised in full. For example, in The German Ideology he writes,

On the one hand, proprietorship is a determining factor

Only at this stage does self-activity coincide with material life, which corresponds to the development of individuals into complete individuals and the casting-off of all natural limitations. ... With the appropriation of the total productive forces through united individuals, private property comes to an end.⁶⁷

And on this subject of formal control over the whole of society's technical means (or 'technique' as he puts it) Kostas Axelos points out that, according to Marx,

Once technicist alienation is overcome, technique will be able to develop in a manner that is integral and non-alienating if it is kept under the control of the whole of the human community. The comprehensive planning of technical production should prevent it from generating alienation and disorder.⁶⁸

The result is that, as has been pointed out earlier in this essay, in Marx's view technics are a factor in our alienation only by virtue of the fact that they are presently under the control and in the service of political interests different from our own -

Alienation stems from capitalist ownership

⁶⁷ Karl Marx and Friedrich Engels, The German Ideology, 93.

⁶⁸ Kostas Axelos, 84.

interests which depend on and seek to perpetuate our subjugation and servitude. Although it may be otherwise on the broader, historical scale, on a day-to-day level it is the actual owners of the technics who determine its functioning. Against this perhaps too simplistic account, Albert Borgmann warns,

It is only a short step from saying that the capitalists are principally at fault to concluding that not much else is wrong. A fortiori nothing is really wrong with technology except that it has been abused by the capitalists.⁶⁹

Although Marx goes too far when he locates the basis of alienation as being entirely on the side of the relations of production rather than as being partially in the technics themselves, he highlights the fact that economic power and political power are almost always just two sides of the same coin. Especially in modern times, as traditional forms of authority have largely collapsed in the face of science and liberalism, real power falls to the segments in society which have command over more concrete elements of the world. Extraordinary powers and privileges based on claims to special relations to gods or noble descent no longer carry as much weight as they once did. It is economic power and the technical, productive means associated with it that today constitute the basis of political authority. It is control over the society's productive apparatus which, at this stage in history, places the capitalist in the centre of the picture, and it is the capitalist's unprecedented energy when it comes to spurring on greater and greater technical progress that mark the present age as being, in its own way, truly revolutionary.

The real basis of political power is economics

Marx understood that the bourgeoisie dominated the political arena in England in

⁶⁹ Albert Borgmann, 84.

his time and that they occupy that position as a result of historical circumstances and of the economic means developed by them and which they have at their disposal. Of other nations where industrialisation is taking place or is about to take place the same thing is to be expected. To Marx, not only was it the case that progress in the mode of production swept the capitalist class into power, it was also apparent that their specific form of hegemony is perpetuated by the relations of dependence and social structures that they deliberately cultivate. The labourer reproduces through his/her physical efforts not only himself but also the social relations that obtain in the rest of the system. Much the same can be said for the capitalist, the element in modern society commanding the forces of production and the one truly willful agency having the prerogative of setting goals and deciding policy. It is their monopolisation of the means of production that wins the capitalists this special position, and the institution of private property which helps to secure it.

For Marx the issue of ownership extends further yet. It also defines one's class. The relation that prevails between the individual and the means of production defines the economic category to which one belongs, and it also places that individual on one side or another of a political boundary. Especially in the case of capitalist production in which the worker's life activity takes place within the context of wage labour, what you possess and what you exchange is of central significance to what you are. The bourgeoisie own, command, and accumulate. The proletariat are bereft of the objects of their production, dispossessed of their productive activity, and alienated from the forces of production. Although Marx argued that alienation, in the sense of the dispossession of the

Furthermore, ownership is the basis of Marx's social ontology

objects of production from the worker, is prior to and actually produces private property⁷⁰, in other respects Marx treated ownership as a fundamental aspect of alienation.

Whether you figure among the proletarian class or the bourgeois, the intelligentsia or lumpen-proletariat all depends on the particular relationship you have to the productive elements in society. Your political position follows as a direct correlate. The very first line of The Communist Manifesto is the provocative assertion that all preceding history has been the history of class struggle. Though to be true to Marx's overall work, we should not take this line of rhetoric too seriously, it does reflect the significance of class division in Marx's understanding of social change. And if class standing depends as much on the issue of ownership as is contended above, then Marx's entire social and historical ontology relies heavily on the status of proprietorship - specifically, proprietorship over society's productive technics.

Those who have present control of the technical infrastructure also have the greatest influence on its future. It is to a large degree true that he who pays the piper will call the tune that the rest of us will dance to, or, in other words, those who foot the bill for the R&D decide what kind of world will be allowed to develop.

Ownership of present technics is control over future technics

The birth of Renaissance science is a birth within technological garb and institutionally wed to the same sources of finance as today's Big Science. It is only the nineteenth-century successful myth that has convinced us that it was ever otherwise. Here, too, is the doubled

⁷⁰ For example, Marx writes in the Economic and Philosophic Manuscripts, "...it is as a result of the *movement of private property* that we have obtained the concept of *alienated labor* from political economy. But on analysis of this concept it become clear that though private property appears to be the source, the cause of alienated labor, it is rather its consequence, just as the gods are *originally* not the cause but the effect of man's intellectual confusion. Later this relationship becomes reciprocal." (E&PM, p117).

relation to technology that occurs at the birth of *modern* science. It is embodied in a matrix of engineering and linked to the largest-scale patronage available.⁷¹

Determinism

But, for Marx, the great irony is that despite the fact that the bourgeoisie has control over the technics and ownership of society's material wealth, they cannot protect themselves from the currents of historical change, the course of which will see them quickly and thoroughly ousted from their present position of dominance and replaced by the very class whom they now exploit. In fact the resourcefulness and enthusiasm with which the capitalists carry out their projects and pursue their ambitions only hasten their downfall. As Marx puts it, "What the bourgeoisie, therefore, produces, above all, is its own grave-diggers."⁷² The reason for this has nothing to do with the willful intentions of any individual capitalist since it is a prospect that none of them could possibly desire. But at the same time, it has everything to do with the decisions and actions of individual capitalists since they are the ones who command each and every technical device and organisation that together constitute the productive basis of this society.

On the other hand, the capitalist class is still captive to the flow of history

The point to be made is that the functioning of the whole is qualitatively different from that of its components, and that an understanding of the whole requires a perspective which encompasses the whole rather than a model

Certain phenomena emerge from the whole of social activities

⁷¹ Don Ihde, 195.

⁷² Karl Marx and Friedrich Engels, The Communist Manifesto, 94.

constructed vertically, built up from extrapolations from its parts. To this end Marx's economics involves also political science, sociology, and history, and what it has to tell us is that the dynamics and progress of the capitalist system is leading it to a crisis point at which its social and political foundations are vulnerable to complete collapse. It suggests that this outcome is predictable but not avoidable given the particular form and functioning which is the essence of industrialised capitalist society.

A simple analogy can be drawn to the traffic congestion that is a daily occurrence on our major roadways. Of every person involved in a traffic jam, not one wants it, but it occurs with the utmost regularity during the morning and evening 'rush hours', and it occurs as a result of the willful and conscientious behaviour of individual drivers who are in full control of their individual automobiles and on their way to their individual destinations. The traffic jam, in contrast to the driving of each car, is a collective affair and can be explained only when account is taken of the structural characteristics of the context within which it takes place, i.e., the physical infrastructure of the roadways, the organisational structure of the nine-to-five workday. In like manner the existing economy will lead straight to crisis and collapse as the unintended but foreseeable result of the activity within its given framework.

Understood in this way, the significance of individual actions seem to fade into the shadows. For Marx it is this approach that adequately explains the existing conditions and progress of society. It is not the individual person or technics which is of primary importance but the larger social structures within which it is embedded. This viewpoint is reflected in "The Preface to a Critique of Political Economy" where he writes,

In certain respects Marx may justly be called a technical determinist

The sum total of these relations of production constitutes the economic

structure of society, the real foundation, on which rises a legal and political superstructure and to which correspond definite forms of social consciousness. The mode of production of material life conditions the social, political, and intellectual life process in general. It is not the consciousness of men that determines their being, but, on the contrary, their social being that determines their consciousness.⁷³

It is on this score that Marx often earns himself the label of technical determinist. When it comes to historical progress human intentions don't seem to count for much at all except when, as an aggregate, they form a social class in history that significantly effects the relations of production as a whole. And when it gets to this point the dynamics of this corporate entity are such that it does not necessarily answer to any identifiable human agency whatsoever. Only on a limited scale localised in space and time, therefore, is the willfulness of individual persons teleologically relevant. In this sense no-one is really in control of the forces of production. In fact, according to much of what Marx tries to explain, it is the other way around - material forces are what ultimately determine the nature of social progress. On this subject William Shaw, a proponent of the technical determinist interpretation of Marx, states that,

While allowing for reciprocal influence and dialectical interplay between the relations of production and the productive forces, Marx always considered the productive forces to be the long-run determinant of historical change.⁷⁴

Much has already been said about how Marx's structuralist account of *But at its core Marx's account does involve social factors*

⁷³ Karl Marx, "Preface to a Critique of Political Economy," in Selected Writings, ed. David McLellan (Oxford: Oxford University Press, 1977), 389.

⁷⁴ William H. Shaw, "The Handmill Gives you the Feudal Lord: Marx's Technological Determinism," History and Theory 18 (1979): 160.

history bears the stamp of Hegel's metaphysics and how each in his own way pushes human will away from the centre of the picture and hands control over to an historical force which is largely autonomous. Heidegger also bears some parallels to Marx and Hegel on this count. Michael Zimmerman writes,

While Marxists have accused Heidegger of being an idealist who explained history not in terms of practical human action but in terms of the processes of mystical ontological movements, Marx himself explained history in terms of the development of economic formations, including the movement of capital, which also undermined the importance of human agency.⁷⁵

But Marx's historical analysis is one which does involve the influence of human action and human social conditions in a fundamental way. It does, as Shaw states above, admit of a dialectical interplay between the purely social realm, on the one hand, and the technics of our productive life, on the other. To borrow from a couple of Marx's own aphorisms, we can say that though the teachers may at first need to be taught, they in turn will teach. And it may be the case that human society is tutored in the 'language of real life', but the social consciousness that is fostered by it will eventually change not only the relations of production but the forces of production as well, thus changing the facts on the ground and therefore the basis for the next step in historical development. In other words, for Marx the forces of production are not a fully *independent* variable in the historical equation. Nathan Rosenberg, for example, an opponent of the characterisation of Marx as a technical determinist, argues for the relevance of broader, uniquely social concerns in Marx's account of technical progress, stating that,

⁷⁵ Michael E. Zimmerman, Heidegger's Confrontation with Modernity, 253.

Marx is insistent that technology has to be understood as a social process. The history of invention is, most emphatically, not the history of inventors. ... Rather, one needs to examine the way in which larger social forces continually alter the focus of technological problems which require solutions.⁷⁶

Autonomous Technics

Now the question is, how much influence and control does society exercise over the technics that continually grow up around it. Certainly humanity has an impact on the nature of technics and vice versa, but to what degree is that impact deliberately made and in what measure does it satisfy the intentions, in the long run, of those who supposedly command it and design it? Those such as Weber or Marcuse, who argue that our technical society, is on a fundamental level, irrational, lend their weight to the argument that the functioning of our technics is not necessarily consistent with the authentic values and goals of human society, whatever those goals might be. And though the ontological basis of Heidegger's views on technology may be questionable, the sentiments expressed by his comment, "Technology is in its essence something which man cannot master by himself,"⁷⁷ are sentiments fairly widespread in the present age.

How much control do people have over technical progress

Marx himself offers little comfort to those of us who daily confront the nihilism and sense of powerlessness that is a part of our modern, technically mediated existence. What he tells us is that we are not free in the face of the material modes of production

⁷⁶ Nathan Rosenberg, "Marx as a Student of Technology," Monthly Review 28:3 (July-Aug, 1976): 70-1.

⁷⁷ Martin Heidegger, "Only A God Can Save Us: Der Spiegel's interview with Martin Heidegger," Philosophy Today 20 (Winter 1976): 276.

upon which we depend. He only offers us a hope of revolution after which humanity will truly come into its own, powerful and liberated, when the real history of *humanity* will begin. But meanwhile, we remain on this side of the revolutionary break with the prospects for a radical change neither as probable nor as promising as Marx's portrait would lead us to believe. And all the time the technical juggernaut rolls on under the rubric of 'progress'.

No longer is the threat of social upheaval the spectre that haunts the economic system. Instead, it is the growing awareness of the limits of the natural world against which our technics are straining often to the breaking point. As a result there is now active discussion over the role of technics in society and in civilisation in general. But all indications are that the system will be able to accommodate environmental concerns and in much the same manner it manages social problems - alleviate them without any real intention of resolving them. The system would have to broaden the scope of its administration and perhaps designate the environment as state property - basically get the system working reliably given some new elements to contend with. For most people the limits set by nature are essentially technical problems calling for technical answers. But as a preliminary step, a certain item of ideology has to be demoted in priority or channelled into new directions. That is, namely, the unreservedly optimistic idea of progress. A more discriminating application of the concept is called for.

The concept of progress has changed only superficially

The optimistic notion of technical progress was one to which Marx definitely subscribed. For him the great virtue of capitalism was its unprecedented ability to promote the development of technics and the spread of industrialisation. It is a notion that has lost

much of its glamour in recent times, but it has suffered perhaps only in terms of its positive connotations. The idea of society's ensemble of technics having a natural and spontaneous direction of development or that its continuous development is a manifestation of some sort of inherent imperative is an idea that still persists. Only the assumption that 'progress' is by default a good thing is no longer so prevalent.

Langdon Winner, who has written extensively on the theme of autonomous technics, states that, "The idea of autonomous technology and the idea of progress are at present merely two sides of the same coin. Both sides are satisfied in the belief that 'man in fact has no choice'."⁷⁸ And to a certain extent he concurs with Marcuse's diagnosis of modern society as being uncritical and passively accepting of any and all technical change. He writes,

The notion of autonomous technics lives on

In effect, we are committed to following a drift - accumulated unanticipated consequences - given the name *progress*. If the term *determinism* still applies to this pattern of change, it is, paradoxically, a *voluntary determinism*, one which serves us as long as we avoid demanding to know the outcomes too early.⁷⁹

There is a sense that technics develop and advance without anyone's explicit approval and towards ends not foreseen, and that we are all going along for the ride. When Heidegger writes, "Everything is functioning. This is exactly what is so uncanny, that everything is functioning and that the functioning drives us more and more to even further functioning, and that technology tears men loose from the earth and uproots

⁷⁸ Langdon Winner, "On Criticizing Technology," in Technology and Man's Future, ed. Albert H. Teich (New York: St. Martin's Press, 1977), 361.

⁷⁹ Langdon Winner, Autonomous Technology, 99.

them,"⁸⁰ he expresses what many may be feeling with regard to technical progress - unfamiliarity with its workings as a whole, disenfranchisement in terms of participation and control, as subordinate and dispensable rather than as the instigators and the ultimate ends. The ensemble of technics takes on the aspects of something alien and enigmatic, following its own rationality and observing its own initiatives.

Jacques Ellul, an unrelenting critic of technical society, also picks up on the theme of how the entire ensemble of technical systems and organisations (or technique, as he puts it) is in effect a closed system, self sufficient with regard to means and ends. In the following passage there is an obvious affinity with some of Weber's views on the role of values in modern times, especially with respect to the theme of disenchantment.

The technical ensemble has succeeded in bootstrapping itself into a self-sustaining cycle

... the invasion of technique desacralizes the world in which man is called upon to live. For technique nothing is sacred, there is no mystery, no taboo. Autonomy makes this so. Technique does not accept the existence of rules outside itself, or of any norm. Still less will it accept any judgement upon it. As a consequence, no matter where it penetrates, what it does is permitted, lawful, justified.⁸¹

In Weber's writings there is some consonance with Marx's structuralist brand of sociology. Weber believed that after capitalism has developed to a sufficient degree and after technical rationality has succeeded in organising and managing those aspects of society falling under its administrative jurisdiction, the ethical principles that gave it birth need no longer be a part of the system. The rationalised system is, at this point, able to

⁸⁰ Martin Heidegger, "Only A God Can Save Us," 277.

⁸¹ Jacques Ellul, "from The Technological Society," in Technology and Man's Future, ed. Albert H. Teich (New York: St. Martin's Press, 1977), 125.

generate its own justification. The system then becomes just that more autonomous and detached from human control, and to that degree do individuals become mere objects in relation to the workings of a machine. As Wolfgang Mommsen explains,

Weber, in fact, came very close to Marx's position when he argued that mature capitalism can survive without the specific mentality which was the offspring of puritan asceticism. In an almost Marxist fashion he described the modern capitalist system as an irresistible social force which coerces men to subject themselves quasi-voluntarily to its objective social conditions, regardless of whether they like them or not.⁸²

Cybernetic Model

One could characterise the apparent autonomy of the technical world by saying that it abides by its own rationale. But perhaps it is more accurate to say that it functions according to its own particular and very complex dynamics and that it is only our personification of the phenomenon that leads us to read some sort of rationality or willful agency into it. An approach that could accommodate the seemingly lifelike behaviour of 'autonomous technics' without unduly personifying the system might be some sort of a cybernetic model.

A different model of human-technical relationships is needed

Already we have noted the ambivalence between perspectives which see technics as subject to control by people and that see the ensemble of technics as largely independent. Marx advocated a dialectical model which puts the two sides together allowing for an active two-way interaction between the tangible and intangible aspects of

⁸² Wolfgang J. Mommsen, The Age of Bureaucracy: Perspectives on the Sociology of Max Weber (Oxford: Basil Blackwell, 1974), 55.

the human world. But his model weighs in too heavily on the side of a simplistic technical determinism, and does not go far enough in explaining how and why the social sphere changes in response to material circumstances.

There is never a strict correspondence between any social situation and the technics that may be brought to bear upon it - one does not entirely determine the other. The availability of particular technics certainly imposes limits on the choices that can be made, but it can also keep the door open to a variety of different courses of action. In addition, it is also frequently pointed out to us that technical changes can and often do have far-reaching ramifications and, for all intents and purposes, have unpredictable results. Don Ihde, for example, emphasises the idea that there is always an element of multiplicity in all technical artefacts and practices, saying that,

Technics always offers a range of choices and expands the scope of our freedoms

The double ambiguity of (a) any technological artifact being plausible in multiple use-contexts, balanced by (b) any technological intention being fulfillable by a range of possible technologies, introduces a certain indeterminacy to all human-technological directions.⁸³

In this light it is not always obvious why there would be any trajectory that a technical society is inevitably bound to follow. A huge variety of alternatives, some successful and some ultimately not so successful, being put into practice is what one might expect to see. And instead of society being regimented and stripped of diversity by a totalitarian 'megamachine', our technics would be promoting a flourishing array of ambitions, lifestyles, and schools of thought. Contrary to the dire prospects prophesied by such as Heidegger, Marcuse or Ellul, this is indeed what we find in the industrialised world. The

⁸³ Don Ihde, 139.

choices in life that have been made available to people in present-day, industrialised societies far surpass anything that could even have been dreamed of only a couple of generations ago. There has also been a corresponding proliferation of sub-cultures and alternative lifestyles within populations that had previously been much more homogeneous. And this is in addition to the highly and increasingly multicultural character of all modern societies. These things our technical societies are able to provide for and accommodate.

But, on the other hand, there are still those contradictions that Marcuse pointed out to us. There are still those states of affairs that don't make sense and problems that don't appear to be improving despite the increasing power of our technics and the increasing sophistication of our capacity to administer - things that belie the assumption that the workings of our system are rational in terms of either formal principles or substantive ends. Large segments of the population of industrialised nations exist as an economically and politically disenfranchised underclass, industries thrive on destructive excesses of waste and overconsumption, the state is animated by a war mentality constantly mobilised for aggression against its neighbours and against its own populations. These contradictions persist accompanied by a surprising level of tolerance and commitment to the system on the part of its constituents. The technical multiplicity thesis doesn't quite address this situation. The sub-text of the thesis is that, in the end, humanity is freer as a result of technical advances and that choices are, in fact, being made by human agents given the opportunity for conscientious deliberation, not by some over-arching, autonomous, technical superstructure. However, the fact is that people have

But outstanding problems indicate serious failings of our political practice

generally not made a concerted effort to respond to ethical impulses, to effectively claim (or establish) an effective political space, or to cultivate active political participation within the core of the socio-technical context. This could be taken as an indication that neither are human beings fully autonomous agencies under these circumstances.

On more than one occasion Marx insists that “circumstances make men as much as men make circumstances.”⁸⁴ Knowing what we know now, a more promising approach might be one that goes one step further and begins with the premise that social circumstances and social beings themselves are *engineered* much in the same manner as the material world is subjected to engineering. More and more is it the case that social behaviours and practices, particularly those outside the limited scope of economic production, are being designed and implemented with practical ends in mind. Political and commercial propaganda, for example, is today much more than just rhetoric and the art of persuasion - it’s a full-fledged branch of modern technics. And, in addition, it is the vast array of technical means at our disposal that make this possible, from electronic media to test-group studies to applied psychology. Although Marx’s dialectics, to its credit, does deal with processes as well as things, successive transformations as well as cycles of interaction, it leaves out an element crucial to the understanding of the dynamics of the social-technical evolution presently underway, namely, deliberate actions carried out by certain social forces to effect significant changes to the very social environment of which these particular forces form a part. In other words, an account must

The social world should be recognised as having become an object of engineering

⁸⁴ Karl Marx and Friedrich Engels, The German Ideology, 59.

be made particularly of such practices, something I will refer to as *political technics*.

As a significant part of the economic system, the role of the worker is nowadays no longer confined to the workplace. Firstly, as consumer, the worker plays a role that the present economy cannot do without. Contrary to Marx's predictions of the excessive exploitation and eventual destitution of the proletarian class, the very opposite has occurred. Ours is a culture of mass high consumption, and not only the bourgeoisie but, most importantly, the ordinary worker must be a consumer, usually consuming well in excess of his or her real needs. Rather than being marginalised and deprived as a side-effect of the wage-labour system the working class is needed well within the embrace of the economic cycle as the prime beneficiary of its material production. Secondly, the worker is a commodity in one of the largest industries in the industrialised world, advertising. The vast bulk of our mass media in the forms of television, radio, newspapers, and magazines are essentially vehicles for advertising, and a large proportion, if not the majority of our leisure time, is devoted to these media. What the advertisers purchase from the media outlet and what the media cultivate and sell is the viewer/listener/readers' attention. The worker, therefore, as target of advertising and as potential purchaser of what is being promoted, has become a commodity in much of his/her recreational time. And thirdly, as according to Marx's own model, the worker is also a means of production.

In our technically dominated societies, people and social environments not only happen to serve such roles by circumstance. They are to a significant degree designed and manipulated to do so. Industries through their capacity to advertise and through their influence over the media and cultural industries have helped to foster a national lifestyle

oriented towards mass production goods. And in their influence over public policy they have determined to their advantage the foods we eat, the way we travel, the lifestyles we aspire to, etc. With respect to our role as advertising commodities, not only do our lifestyles revolve around many of the media which carry these advertisements, our society is such that these media, in their technical sophistication, are able to reach us no matter where we are and don't leave us alone. And finally, in regard to ourselves as means of production, we always hear repeated the notion that education is a sound 'investment', and we can point to examples of educational curricula specifically devised to endow students with the skills called for by particular industrial sectors. The restructuring of American school systems in response to the space race, for instance, was perhaps the clearest example of such a project - an attempt to develop an entire generation with new work skills.

Our society as a whole has become the object of technical endeavours. Many of the changes occurring in the social world and many of the characteristics already prevailing are the results of deliberate and well planned efforts. Particular interests are being served and their intentions being carried out informed by the best of our scientific know-how. What we have are political technics.

Such practices pose a serious challenge to the ways in which we have, in the past, taken account of the significance of technics. As Gilbert Hottois argues,

Previous modes of analysis are insufficient

If humanity should be the measure of technology, it cannot if as center of reference it is essentially affected by what is to be measured. But technoscience continually manifests the manipulability of humanity even in the most essential dimensions of its natural-cultural condition; in conception, birth, growing old, death, language, emotions, embodiment,

specific nature, etc.⁸⁵

A different approach, therefore, needs to be taken to arrive at an understanding of the present state of affairs. It has been commented that,

The means of classical logic prove to be inadequate for such a plan, however, because the presupposition that thinking and reality are related in a hierarchical manner results in a system that places thinking above being. Therefore, the failing of classical logic to treat self-referentiality is not surprising.⁸⁶

Andrew Feenberg also touches upon the subject, and with regard to it he finds reason for optimism.

The separation of the (controlling) metalevel and the (controlled) object level reflects the logical structure of operational autonomy. In contrast, the idea of a self-programming or self-organizing system has a paradoxical structure and emancipatory implications: in a democracy, all individuals are both objects of administration and administrators of each other.⁸⁷

The traditional notions of autonomy, causality, and teleology, therefore, ought to be largely set aside when we prepare to tangle with the dynamics and complexities of present-day society. Even Marx's dialectics, custom made for dealing with objects and processes having metamorphic capacities, is inadequate.

If we accept the idea of a political technics, the idea of rational and *Technics under such terms are non-neutral*

⁸⁵ Gilbert Hottois, "Technoscience: Nihilistic Power Versus a New Ethical Consciousness," in Technology and Responsibility, ed. Paul T. Durbin (Dordrecht: D. Reidel Publishing Co., 1987), 75.

⁸⁶ Arno Bammé, Ernst Kotzmann, and Ulrike Oberheber, "Basic Questions About the Metaphysics of Technology: Spengler, Heidegger, Günther," The Journal of Speculative Philosophy VII:2 (1993): 144.

⁸⁷ Andrew Feenberg, Critical Theory of Technology, 103.

scientifically sound practices having as their objective a modification of the social world, then the particular technics that are pressed into the service of such undertakings must be regarded as being products of and agents for particular political interests and, in their intended functioning, as embodying both the political principles that call them into action and the theoretical models of human society that inform their design. Once again we have technics which are decidedly non-neutral - especially if designed as means to exercise control over people - and alienating if put into practice without their explicit consent or for ends other than their own.

In his "Introduction to a Critique of Political Economy" Marx writes that,

The need felt for the object is induced by the perception of the object. An *objet d'art* creates a public that has artistic taste and is able to enjoy beauty - and the same can be said of any other product. Production accordingly produces not only an object for the subject, but also a subject for the object.⁸⁸

Marx didn't recognise the significance of political technics

And he adds that "each appears as a means of the other, as being induced by it." In writing this he gives us an indication of how deep, in his eyes, the mutual interaction between person and thing is supposed to be. It is an almost mechanical cause and effect relationship that he is talking about - induction, as of something automatic, arising somehow from the act of perceiving. He does not even begin to imagine anything like today's commercial advertising let alone the broader project of cultivating an entire culture of consumerism. The division between subject and object is never breached, and it never occurs to him that technics, as an integral part of subjective action, may be engaged directly with the social

⁸⁸ Karl Marx, "Introduction to a Critique of Political Economy," in The German Ideology, ed. C. J. Arthur (New York: International Publishers, 1947), 133.

world in a way that treats society itself as its primary object.

Marx saw how the factory system and its increasingly automated functioning made fewer and less stringent demands for special skills. As a consequence the factory owner could avail himself of the greater supply of labour capable of carrying out the required tasks and benefited from the lower costs attendant to it. The proletarian class constituted for the most part of poorly skilled labourers is what the system ultimately produced on the societal level. Although an advantage to the capitalist mode of production this process of deskilling and the emergence of the proletariat was only an epiphenomenal consequence and not brought about consciously or purposely. The destruction of all the weaving looms in India, however, is an example, albeit crude, of social engineering that Marx must have been aware of - done in order to create a market for the, then, growing textile factories of Manchester. That was a part of a formal policy enacted and carried out by the colonial state apparatus. It is an example of capitalism in a more mature form but still lacking the finesse and technical sophistication of the capitalism of today.

Our society's technics have demonstrated that they are effective vehicles for control. Winner states, "In our times people are often willing to make drastic changes in the way they live to accord with technological innovation at the same time they would resist similar kinds of changes justified on political grounds."⁸⁹ As a simple example, consider how difficult it would be to get everyone to change their daily routines by doing everything they would normally do but do it one hour earlier. The

Technics are persuasive and effective means for changing social behaviour

⁸⁹ Langdon Winner, "Do Artifacts Have Politics?," 135.

solution that immediately springs to mind is to get everyone to set their clocks ahead one hour. There doesn't appear to be any plausible alternative to this strategy. On the part of most people there is a tendency to regard technics as we would a 'fact of life', accept it as we might accept the incontrovertible law of gravity. The reason for the institution of daylight savings time is, we are told, to help reduce fuel costs and energy consumption, and our dependence on the clock and recognition of it as the objective measure of time has made it an effective tool for altering our behaviour to this end, but how many people are fully aware of this justification when they dutifully reset their clocks two times a year?

Even those who propose that technics are essentially neutral are conscious of the fact that individuals as well as social institutions are fundamentally changed by the technical infrastructures built up around them. They adapt to their changing world. Marx, for example, alludes to the radically different upbringing necessary to prepare a worker for certain types of industrial labour, stating that, "All work at a machine requires the worker to be taught from childhood upwards, in order that he may learn to adapt his own movements to the uniform and unceasing motion of an automaton."⁹⁰ And on this subject of adaptation between the social and the technical Jürgen Habermas writes,

Rather than merely adaptation by society there is a deliberate engineering of society

From the very beginning the pattern of human socio-cultural development has been determined by a growing power of technical control over the external conditions of existence on the one hand, and a more or less passive adaptation of the institutional framework to the expanded subsystems of purposive-rational action on the other.⁹¹

In contrast, the concept of adaptation to technical ensembles that Langdon Winner

⁹⁰ Karl Marx, *Capital*, vol.I, 546.

⁹¹ Jürgen Habermas, "Technology and Science as 'Ideology'," 115.

outlines, and to which he applies the label 'reverse adaptation', is more in line with the concept of political technics that is being proposed here. Among the patterns of reverse adaptation, he lists; 1) the technical system, especially in the case of large corporations, controls the markets relevant to its operations, 2) controls or strongly influences the political processes that ostensibly regulate its output and operating conditions, 3) seeks a 'mission' to match its technical capabilities, 4) propagates and/or manipulates the needs that it also serves, and 5) discovers or creates a crisis to justify its own further expansion.⁹² In this sense it is not any longer a process of adaptation on the part of society to the objective facts of the real world but is, instead, a targeting of the social sphere, including it among the raw material of technical practices and among the objects of control.

Prospects for Political Practice

In the face of technics' ever growing power and the concomitant increase in the responsibility we should bear, and in the shadow of the techniques of social manipulation and the resulting need to counterbalance it with some steadfast vision of human ends, there is ample reason to commit ourselves to practices of thought and deed which are both social and ethical. But, to the extent that is necessary in order to effectively take control of our technics and thereby our lives, we have as yet not dedicated ourselves to the required political action, and, as will be argued presently, it is the nature of our technics which works against the prospects of our doing so.

⁹² Langdon Winner, Autonomous Technology, 242-50.

'Nothing to Lose Except Their Chains'

Although much is left to be desired in terms of equitable distribution, the industrialised economies have been eminently successful in providing for nearly all the material needs of its populations. For the majority of people in those countries there have been significant and continuous increases in the material standard of living for many successive generations. Things considered luxuries in one generation have come to be counted as necessities in the next. Even for the segments of the population that have been marginalised and excluded from the economic mainstream, there is still something to be had, enough to keep them quiet, at least. The masses have certainly not suffered the downward spiral of exploitation, impoverishment and eventual destitution that Marx had predicted.

In the Communist Manifesto Marx and Engels write of the bourgeois class that,

Capitalism poses no real constraints against the growth of productive forces

It is unfit to rule because it is incompetent to assure an existence to its slave within his slavery, because it cannot help letting him sink into such a state that it has to feed him, instead of being fed by him. Society can no longer live under the bourgeoisie, in other words, its existence is no longer compatible with society.⁹³

In hindsight there's no avoiding the conclusion that this diagnosis was well off the mark in 1848 and is even wider of the target today. What is interesting in the above passage is that Marx and Engels are in effect, arguing that the legitimacy of the capitalist, ruling class is in large part premised upon their ability to fulfill certain economic and productive

⁹³ Karl Marx and Friedrich Engels, The Communist Manifesto, 93.

obligations - that to some extent the bourgeoisie earn their privileged standing in society and position in history by 'delivering the goods'. In the course of the historical dialectic, it is when the mode of production has outgrown the existing socio-political system that we should expect a political upheaval and a change in the political order. In contrast, when the social system does not hinder, or better yet, when it actively fosters technical progress, then history is on their side and the principal players will remain those who are the motivating forces behind the progress. Today the capitalist economies are still advancing the limits of technical capabilities and, if anything, moving faster than ever. Countries such as China or the Soviet Union which tried to run in a slightly different direction have since changed course and now follow the lead of the western economies.

Marx regarded the technical basis of capitalist society as the basic groundwork for a communist society. By reducing the amount of drudgery or toil previously necessary for subsistence, we are to that degree spared that amount of tiresome and onerous labour unfulfilling for our existence as human beings and to that degree afforded the freedom to realise our true selves. With a very positive attitude towards the liberating potential of technics, in particular those productive forces brought into being by capitalist production, Marx writes, "capital here - quite unintentionally - reduces human labour, expenditure of energy, to a minimum. This will rebound to the benefit of emancipated labour, and is the condition of its emancipation."⁹⁴ Herbert Marcuse is in agreement with Marx on this point. For him modern technics, in some form,

Productive forces are the basis of post-revolutionary emancipation

⁹⁴ Karl Marx, Grundrisse, 701.

would be an indispensable part of the post-revolutionary society - should that revolutionary break ever come to pass.

If the completion of the technological project involves a break with the prevailing technological rationality, the break in turn depends on the continued existence of the technical base itself. For it is this base which has rendered possible the satisfaction of needs and the reduction of toil - it remains the very base of all forms of human freedom.⁹⁵

On this point Marx and Marcuse may be correct, but without the political initiative on the part of the people to take control of the economic system for themselves, all this talk about the relationship of technics to freedom and emancipation remains purely hypothetical. Such is the case in the industrialised societies, including the so-called 'communist' ones.

The paradox is not only that modern society has not re-oriented itself away from material pursuits and towards more humanistic concerns despite the opportunity offered us by the powers of our technics, but also that it has not done so *because* of the power of those very technics. There is no catastrophic crisis that is pushing the system to brink of collapse. On the contrary, everything is manageable and under control. Meanwhile, our society cultivates those aspirations which do not make 'unreasonable' demands on the system, and it does everything it can to convince us that if we follow the rules we can hope to find true happiness. In this respect it has done a fairly good job - if we can find it within ourselves to be satisfied with what is possible inside the confines of the capitalistic system, then we would find that it can be very persuasive in its

Instead material productivity has forestalled the demand for radical reform

⁹⁵ Herbert Marcuse, One-Dimensional Man, 231.

financial rewards, distracting in its endless variety of choices and novelties, and alluring in its promises of more and more. But even if we are not completely satisfied, we can still afford to be complacent - again there is no immediate crisis spelling the end of the status quo, there is no absolutely compelling reason to overhaul the system. There's no reason to think that we as individuals would be any more comfortable in our daily existence if we commit ourselves to revolutionary views and engage in political action. Quite the opposite is the case. The Communist Manifesto ends with the stirring phrase, "The proletarians have nothing to lose except their chains. They have a world to win." In this day and age not much else can be further from the truth. If we try to be too adventurous what we put at risk is a fairly secure and comfortable way of life where the burden of worrying about and being responsible for the outstanding problems of our world is placed on the shoulders of 'professionals' rather than our own.

What capitalism offers may be in end an illusion, but on the surface there are things that you can hold in your hands. The purveyors of 'socialist' ideologies have exploited and abused a host of noble aspirations, but at the end of the day their attempts have never been able to equal the capitalist system in terms of the quantity and variety of consumer goods that it can deliver to its constituents. Gilbert Germain argues that,

And it has undermined the standards for any political practice

... the eclipse of communism can be ascribed to the fact that over time the economic system most closely associated with it - the so-called "command economy" - has proved to be less efficient in delivery than the mixed economies of the First World. Communism is dying because it finds itself increasingly unable to justify in ideological terms an economic system that has failed to measure up to the only criterion of legitimacy in

the technological era, the standard of efficiency.⁹⁶

According to Nathan Rotenstreich there are two primary aims to the workers' movement, freedom and a better standard of living, and "since the technological civilization makes possible an ever-increasing rise in the standard of living, it is to blame for the present wane of attention and interest in the liberation of man."⁹⁷ And Herbert Marcuse weighs in on this topic making essentially the same point - that our fixation on our material well-being has effectively drowned out our concerns for our own spiritual well-being.

... the close interrelation between technical and political-manipulative know-how, between profitable productivity and domination, lends to the conquest of scarcity the weapons for containing liberation. To a great extent, it is the sheer *quantity* of goods, services, work, and recreation in the overdeveloped countries which effectuates this containment.⁹⁸

Marx held that the old social and political structures will fall if and when they become too much of a constraint on the ever expanding forces of production.

Under such circumstances we are not free

Looking at present circumstances through this interpretive framework and seeing that the rate of technical change is all the time increasing, it would appear that the forces of production are enjoying their freedom. Looking at the human condition with an eye that sees a lack of conscious control over one's own destiny as an indication of alienation, it would appear that we are not.

Ours is a culture of consumerism where politics, i.e., ethical practice on a

We have become consumers rather than political agents

⁹⁶ Gilbert G. Germain, 139.

⁹⁷ Nathan Rotenstreich, "Technology and Politics," in Philosophy and Technology, ed. Carl Mitcham and Robert Mackey (New York: The Free Press, 1972), 152.

⁹⁸ Herbert Marcuse, One-Dimensional Man, 241-2.

social level, assumes secondary status in our list of priorities. For the vast majority of people in the quasi-democratic, capitalist countries the only conscious political activity we engage in comes once every five years when we mark an electoral ballot and in effect hand over our decision-making powers on five-year leases to groups of political professionals. For the rest of the time we 'vote with their dollars', letting our patterns of employment and consumption influence the course of events on the political level. The governmental bureaucracy and the marketplace react to take advantage of or accommodate the mass behaviour of its constituents, but are neither commanded by us nor necessarily motivated by the desire to see to our best interests. The consumer passively and uncritically accepts the range of choices offered to him/her and from it selects the items he/she finds most appealing. The questions of who and why rarely come to the surface, and, if they do, rarely penetrate to any great depth. Generally speaking, our political reality commences with the packaged products already neatly arranged and put on display either on the supermarket shelf or behind the candidates' podium.

According to Marx's understanding of humanity, the imperative to act in our capacity as social and political beings is, in large part, what makes us human. *Political agency is part of the essence of humanity*

Our comportment towards others and towards ourselves is not one which treats persons as simple individuals but is a relationship conditioned by the understanding that people are necessarily dependent on others in both their productive and their spiritual lives. Only as a social entity can the individual hope to realise his or her authentic goals. As Marx puts it,

The actual individual man must take the abstract citizen back into himself and, as an individual man in his empirical life, in his individual work and individual relationships become a species-being; man must recognize his own forces as social forces, organize them, and thus no longer separate social forces from himself in the form of political forces. Only

when this has been achieved will human emancipation be completed.⁹⁹

Despite differences with Marx on other points, if we agree with him that human beings are in essence social beings, that ethical discourse and moral action in cooperation with others is a crucial part of what we ought to be, then the circumstances under which we live in industrialised society is a threat to this inner core of our being. It is a danger as much as a boon, for, while it supplies us in generous excess with all our basic material needs, it eliminates the practical imperative to find an alternative to the status quo and undermines the will to insist that our lives be conducted in accordance with some definite rhyme or reason. The danger is that we are relinquishing an essential aspect of our selves and thereby passing up the opportunity to make of ourselves everything that we can be.

Perhaps more subtle than being assimilated into the instrumental mode of reasoning or becoming the object of social engineering is this erosion of the desire and interest to participate in ethical practice. Here it is not just the case that we no longer have a clear idea of what our guiding, moral principles are nor is it the case that we are rendered powerless by forces beyond our control and understanding. The situation often is one in which people genuinely do not care. Borgmann states that, “complacency bespeaks a general acceptance of the technological society,”¹⁰⁰ and in a more accusatory tone, “I believe that what shows itself in the vacuity or arbitrariness of most private moral

⁹⁹ Karl Marx, “On the Jewish Question,” in *Selected Writings*, ed. David McLellan (Oxford: Oxford University Press, 1977), 57.

¹⁰⁰ Albert Borgmann, 108.

discourse is neither ethical pluralism nor ethical chaos but complicity with technology."¹⁰¹ He also points out the results of a study indicating that the largest segment of the non-voting constituency are people who are apathetic out of contentment.¹⁰² The result is that we are often immersed within a technically produced environment while at the same time effectively disengaged from it.

Nevertheless, all indications are that, on the whole, people have become more politically conscious and involved than ever before thanks to higher levels of education, vastly improved communications systems, and the spare time needed to devote attention to social issues, all fruits of the technical society, but the amount of power that technics have placed in our hands has multiplied and, in conjunction, so has the magnitude of the responsibility that bears down upon our shoulders. The need for participation on the part of those who are affected by technics is therefore a calling that is more insistent than ever before, but our role seems to be shrinking in comparison to the unregulated growth of our technics. Especially in a society in which the concept of democracy is perhaps the most cherished item of ideology, a continuous diminution of the relative significance of human agency in practically all areas of social concern is a dangerous weakening of the ethical commitments that maintain any sense of purpose in what we are doing.

Despite greater opportunity for political involvement we are falling behind

Emmanuel Mesthene, clearly an optimist with respect to the issue of *We need to take control*

¹⁰¹ Albert Borgmann, 173.

¹⁰² In reference to Arthur T. Hadley, The Empty Polling Booth (Englewood Cliffs, N.J.: Prentice-Hall, 1978), 15-26.

technics' place in society, states that "the most fundamental *political* task of a technological world ... is that of systematizing and institutionalizing the social expectation of the changes that technology will continue to bring about,"¹⁰³ but is this really the appropriate response if the diagnosis of present situation is not that we are unduly fearful, uncertain and apprehensive about what the future holds but, rather, that we as a society have abandoned ourselves to the caprice of technical progress? If the problem is one of a lack of control over technical change and a complacent attitude towards its social ramifications - i.e., that in effect "we accept the role of experimental subjects in a process of minimally controlled change, later looking back upon what we have done to ourselves as a topic of curiosity"¹⁰⁴ - then the solution has to be some way of pushing our values and goals onto the centre of the stage where the processes of technical innovation and implementation are carried out, some way of collectively arriving at a set of political goals and forcing a correspondence between that and the direction of technical change, not some way of easing our reluctance to go any further.

Narrowing of the Political Arena

However, for that to happen people must become critically engaged with what is going on with the technics they encounter. On the one hand, we need some vision of the proper ends to human existence towards which technics ought to be applied, and, on the other hand, an understanding of the functionings of both the actually

We lack the expertise to pass judgement on most technical matters

¹⁰³ Emmanuel G. Mesthene, "How Technology Will Shape the Future," in Philosophy and Technology, ed. Carl Mitcham and Robert Mackey (New York: The Free Press, 1972), 129.

¹⁰⁴ Langdon Winner, Autonomous Technology, 100.

implemented technics and any proposed new ones. We need to get an idea of what is involved in building them and operating them, and what are the likely consequences of changes done to them or of alternatives chosen over them. Against this prospect Marcuse writes, “the new touch of the magic-ritual language rather is that people don’t believe it, or don’t care, and yet act accordingly. One does not ‘believe’ the statement of an operational concept but it justifies itself in action - in getting the job done...”¹⁰⁵

With respect to the requirement of having a technical grasp of the way that many of our technics function, most have little choice but to be left out. Their sheer complexity and the sophistication of the concepts needed to account for them are oftentimes well beyond the competence of the average person. Therefore, as far as personal assessments go, there is usually little alternative except to be satisfied with the fact that the technics ostensibly perform in the manner that the engineers or technicians say they would. Apart from that we are dependent on the expert commentator to describe for us, in terms we can easily understand, what the practical and moral significance the given technics has. Taken from this perspective the realm of discourse concerning such technics takes on the character of a realm both occult and out of reach. In most cases we are forced to suspend our judgement concerning the official account of what’s going on beneath the surface because we don’t really understand enough about it to make up our minds, and from this point on it’s a simple matter to let our vigilance lapse and allow the political discussion to be taken up entirely by the experts and the technocrats.

¹⁰⁵ Herbert Marcuse, One-Dimensional Man, 103.

The only space left where we can still feel at home is inside the narrow confines of work and consumption. With a practically infinite range of products to choose from and the constant excitement drummed up by the industry over the supposed importance of choosing one brand name over another, there remains at least the illusion of freedom and real power over an aspect of our lives as well as a sense of significance to the task of decision-making. But in reality, regardless of how well conceived are the mechanisms of control or to what degree is the social system dependent on the wishes of the consumer or voter, if there is no real conscious and deliberate participation then there is no real exercise of freedom. In other words, if our input into the decision-making process as individuals and as members of the society cannot be carried out with some measure of competence and confidence and with a clear idea of what it is we want, then the only avenues left would be either uncritical acceptance, rejection, or apathy - attitudes which tend to leave our goals unguarded and neglected and leave ourselves vulnerable to manipulation by others. Our political life would in fact be an illusion, and our physical life the only reality.

As a result we are left without the capacity to freely decide

Without a grasp of the nature of our technics and of the vital relation that it bears to our existence, this existence, to a considerable degree, will resemble the gloomy portrait that Heidegger paints of the contemporary world; out of touch with the essence of the world around us, ignorant of the full extent of its possibilities, unaware and incapable of realising our true selves, and enclosed within the narrow horizon of producing and consuming. As Michael Zimmerman puts it,

The ever-expanding cycle of production and consumption, which discloses everything only as raw material for fueling the technological system, resembles all too closely the life of the animal, benumbed by its

environment, living within a self-circumscribing circle of instinctual behavior, incapable of encountering entities as such.¹⁰⁶

Heidegger admittedly was not an advocate of political activism, but he did have some insight into the type of disconnectedness and meaninglessness characteristic of life in modern, technical society. He saw the ensemble of technics energetically propelling us further and further in the direction of greater mastery over the physical world and greater accumulation of material wealth, but what it achieves is not necessarily in accordance with what is required to fulfill our, broadly speaking, spiritual needs. In many ways, it conspires against it.

In the interest of the smooth working of the technical ensemble, it is usually best that there be no real political debate. In the interest of getting things done according to plan, disagreement and controversy over issues that will never be definitively resolved can only be seen as introducing into the game untamed elements that are difficult to accommodate, difficult to assess and inherently unpredictable. In the end, discussion and debate is regarded simply as disruptive, contributing nothing to the efficiency and reliability of the system which are the only legitimate criteria of success within the 'rational' value schemes of purely technical practice. For the most part, when attempts are made to engage in political or moral debate, the rationalised structuring of social institutions as well as the well laid out procedures already in place in all areas of our lives confront us as antagonists. As Bruce Berman points out, it goes against the grain of bureaucratic organisation to tolerate such messy affairs.

Ethical practice is often incompatible with technical imperatives and standards

¹⁰⁶ Michael E. Zimmerman, Heidegger's Confrontation with Modernity, 198.

The more persuasive element in bureaucratic discourses is a hostility to *politics*, understood as the disorderly, corrupt and unpredictable arena of conflict and clashing self-interest. 'Politics' represents the antithesis of everything achieved by the discipline of bureaucracy in the application of science and the refinement of instrumental rationality.¹⁰⁷

The usual tendency, therefore, is to develop techniques to manage the problems that arise rather than make the daring attempt to treat moral and political problems as such - for example, effecting reforms to the judicial system in response to changing patterns of criminal behaviour rather than undertaking concerted efforts to address the social inequities at the root of the problem. An attempt may be made at a political solution, though, if it has the verdict of a cost-benefit analysis in its favour, or in other words, if we expect some measurable variable to be optimised by adopting this approach, i.e., it costs less to provide education to people when they are children than to send a portion of them to prison when they are older.

Between the moral and the technical, the latter is usually the preferred solution

Ethical practice will have to take a back seat if it is to intrude upon the 'real' world where matters of 'real' concern take precedence. Considering the very ephemeral status of so-called 'soft values' at present, it is not all that surprising to note the widespread attitude that regards strong commitment to ethical principles as being 'idealistic' and utopian, and attention paid to such concerns, particularly in the public realm, as an unproductive distraction from the serious business of making a living and managing our affairs. But the consequence of not assertively pushing fundamentally ethical issues to the fore and openly challenging the autonomous tendencies of the technical

The values underlying political practice are less credible than those of the technical

¹⁰⁷ Bruce J. Berman, "Perfecting the Machine: Instrumental Rationality and the Bureaucratic Ideologies of the State," *World Futures* 28:1-4 (1990): 153.

ensemble (not to mention the destructive tendencies and coercive intents of many of those who have immediate control over parts of it) is the continued neglect of human interests and lack of sufficient public participation in the ongoing process of technical development.

This is how it now stands according to Habermas,

The direction of technical progress is still largely determined today by social interests that arise autochthonously out of the compulsion of the reproduction of social life without being reflected upon and confronted with the declared political self-understanding of social groups. In consequence, new technical capacities erupt without preparation into existing forms of life activity and conduct.¹⁰⁸

By avoiding the responsibility to take up the difficult task of political and ethical practice in the face of technics, we effectively give up our freedom and power to pursue our genuine interests. Instead we tacitly commit ourselves to drift with the currents of progress. Still we are subject to 'the violence of things' - only in this case we are subject to the arbitrary and drastic upheavals brought about by technical change rather than the unpredictable economic forces of the marketplace as Marx originally meant when coining that phrase. Still we are not fully ourselves, not the makers of history but all too often the victims and the accomplices. Where the blind impulses of the technical ensemble go we follow. What it produces above and beyond the intentions of the individuals within its composite being we teach ourselves to accept.

In the end we are not deciding our fate. It is left up to no-one

The kind of progress that we find ourselves with has the dynamic attributes of a positive feedback system whose progress only incites it to go further in the same direction

¹⁰⁸ Jürgen Habermas, "Technical Progress and the Social Life-World," in Towards a Rational Society, trans. Jeremy J. Shapiro (Boston: Beacon Press, 1970), 60.

- a vicious circle, in other words, spiralling out of control. Internally it is quite adept at keeping itself intact while expanding in every direction simultaneously and remaining stable as it leaps from one level of sophistication to the next. However, on a broader perspective and over the long term, there is no point of equilibrium towards which the system naturally converges. Instead it races towards the extremes until finally checked by some external constraint. Hans Jonas interprets the character of our present social progress in similar terms, identifying the physical limits of the earth's environment and biosphere as the ultimate boundary, and demanding that something be done to establish some mechanism of control over the vicious cycle within which we find ourselves turning.

Power over the power is required now before the halt is called by catastrophe itself - the power to overcome that impotence over against the self-feeding compulsion of power to its progressive exercise. After the first-degree power, directed at a seemingly inexhaustible nature, has changed into a second-degree power which wrested control of the first from the user's hands, it is now up to a third-degree power to enforce the self limitation of the rule that carries along the ruler, before it shatters on the barriers of nature.¹⁰⁹

But regardless of where we may end up, whether we ruin ourselves by destroying the planet we live on or whether we end up trapped for all eternity in Orwell's or Huxley's distopias, if we as human beings are neither the *raison d'être* of nor the conscious agency behind our technics as a whole, and if we fail to bring technics under the precepts of our political principles, then we are fated to exist in a condition of alienation. This is, in fact, the present situation, one in which our fundamental interests are not being looked after when it comes to technical practices. And as evidenced by circumstances in

*Unsuccessful in
humanising our
technics it be-
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¹⁰⁹ Hans Jonas, 141-2.

which people become the objects of technical procedures and/or suffer its undesirable but predictable consequences, such fundamental interests are all too often neither being respected nor even tolerated. It can be said that what we experience today is precisely what we were warned about in the stories of Faustus and Frankenstein - the powers we first created in imagination and then made real no longer belong to us. For Marx they are alienated from us when they are transferred into the hands of the capitalist. For us, on the other hand, technics do appear to have a life of their own, but they are alien by virtue of the fact that they are no longer the means by which we can realise ourselves, no longer a road which leads back to ourselves as the final destination.

Conclusion

In the relationship between worker and technics, Marx saw that in many respects it is the human component which is demoted in status from that of subject in the act of production to what amounts to little more than an appendage to the machine. The tasks that the proletariat are called upon to perform are ever more mechanical and mindless, while at the same time technical devices and economic institutions grow ever more powerful, sophisticated and automatic. In Capital, for example, Marx writes,

... the machine does not free the worker from the work, but rather deprives the work itself of all content. Every kind of capitalist production, in so far as it is not only a labour process but also capital's process of valorization, has this in common, but it is not the worker who employs the conditions of his work, but rather the reverse, the conditions of work employ the worker. However, it is only with the coming of machinery that this inversion first acquires a technical and palpable reality.¹¹⁰

¹¹⁰ Karl Marx, Capital, vol.I, 548.

For the capitalist, however, technics translates very directly into real power, both physical and political. On the physical level, it has delivered to them an undreamed of degree of control over the natural world and an unequalled return in material wealth for a given amount of human labour. On the political level, modern technics has not only given the bourgeoisie the leverage to make themselves the dominant class in present society, it has helped make them the first truly revolutionary class. The bourgeoisie have overthrown the previous order, not to consolidate a new status quo, but to continuously recreate itself and the world around it, driven restlessly onward along the road of technical progress.

Marx saw how technics related to the broader issue of political domination

For the proletariat, a condition of alienation is what characterises their existence. As their productive life, where the essence of what it is to be human is supposed to be realised, becomes no longer the sphere within which they exercise their rational faculties, no longer the expression of their power and aspirations, and no longer the activity of realising their desires, but instead the means by which to win merely the necessities of material subsistence, then in their spiritual life they find themselves reduced to an almost animal level. The very actions by which they secure their survival is turned against them and feeds the technical and economic system that dehumanises them, and the further the process goes the more are they evacuated of their true selves and the more is the artificial world endowed with a life of its own. Not even the capitalist class is entirely immune from some measure of alienation. Marx writes in the 1844 manuscripts,

And he accurately diagnoses aspects of alienation in present modern society

The less you *are*, the less you express your own life, the greater is your *alienated* life, the more you *have*, the greater is the store of your estranged being. Everything which the political economist takes from

you in life and in humanity, he replaces for you in *money* and in *wealth*; and all the things which you cannot do, your money can do.¹¹¹

Marx evidently recognised the patterns of alienation developing in early capitalism and anticipated many of the central problems that worry us today. But he failed to notice certain key features of modern technics, and it is due to these oversights that his sociological forecasts went amiss in the ways they did.

But there were crucial oversights

To begin with, Marx's distinction between means of production and relations of production is an unrealistic abstraction. A particular technics cannot be so easily understood apart from its actual, working context. The technical determinist side of Marx seemed to have a sense of the web of connections that technics carried with it. The millenarianist side of him with the cheerful forecasts of a bright new world freed from the fetters of capitalist institutions relied on the assumption that technics is neutral. Undoubtedly the choices offered by new technics is immeasurably influential in determining the subsequent directions society will take, but as it has been pointed out earlier, for Marx technics is never the instigator of social and political change, only instruments in the arsenal of those who have ownership over it, not the primary compulsion behind patterns of change, only the available avenues along which the capitalists may chase their dreams. In fact in Marx's sociology, technics in the form of means of production is a relevant factor in historical progress only in the age of capitalism. It was not such a significant factor leading up to it nor is it expected to have such a central role in the anticipated communist era, where a thorough dedication to human interests

Technics cannot be so easily separated from their actual contexts

¹¹¹ Karl Marx, E&PM, 150.

would prevail and the undisciplined excesses of the capitalist love affair with technics would no longer be a problem. In his account of the transition from capitalism to socialism, therefore, little attention is paid to the fact that not only do technics emerge as a product of the social context but also presuppose certain social conditions and predispose us to sustain and reproduce them. Marx was correct to see that technics is not the prime mover in history, but he did not fully recognise a deterministic aspect of it that is more secondary in nature.

The result is that Marx did not grasp the potential that technics had for specifically political applications. Or perhaps it would be more fair to say that Marx didn't *anticipate* the political nature of technics, for this aspect of it did not really come into its own until science and its accompanying technics were developed enough to rise above the level of the mechanical device and be able to include among its raw materials and among its objects of engineering the human world as well as the material, or before the very environment which sustains our society inside and outside of the workplace had become a thoroughly technical one. Although the appearance of technics in the economic sphere had profound impacts on the wider socio-political scene with an immediate effect on the day-to-day lives of the labouring class and ramifications of revolutionary significance for the whole of society, for Marx technics remained an essentially neutral facet of modern life. Although in the hands of the capitalist class the technical means of production were the main instruments in the alienation of humankind, as he saw it there were no necessary connections between the technics and the spiritual deprivation it was implicated in. Technics was seen as serving purely economic aims - a

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servant whose traffic was solely between the physical world and the coffers of the capitalist. Whatever social upheavals or disruptions appeared in its wake were merely incidental and accidental. Whatever additional ambitions the capitalist pursued outside his/her capacity as an economic agent were also outside the scope of technics' limited concerns.

It is the intent of this essay to argue that technics, in fact, penetrates far deeper than this. Technics can and sometimes are designed according to deliberate political motives or selected according to the expected impacts that their application would have on the social world. Marx did touch upon the issue of deskilling and its effect on the labour market in terms of decreasing the wages, increasing the pool of available labour, and facilitating the mobility of the working class. But at the time, though it was a beneficial side effect as far as the employers were concerned, it amounted to little more than a serendipitous epiphenomenon much in the same way that the gathering together of the proletariat into common workplaces and into urban areas, by posing a threat to centralised governments, was an unintended disadvantage. In contrast, what can be seen today are examples of technics being implemented with the expectation that they would effect definite social changes. Technics are, in particular cases, implemented deliberately in order to impose certain constraints and promote or suppress certain patterns of behaviour. Considerations of this sort guide technical projects we hear about every day, for example, in urban planning, workplace design, educational curricula, etc.

Technics has spread beyond the workplace, beyond the physical engagement with the natural world. It has come to define our way of life in our recreational

Our technics has helped to fundamentally change the way we think

pursuits, in the way we learn about ourselves, in how we keep track of the world around us. It has fundamentally restructured the very manner in which we think and reason and value. Weber, Heidegger, and Marcuse each take a different approach to the issue, but they agree that the distinguishing feature of contemporary society is a particular form of rationality - a rationality intimately linked to our technics.

Technics has become a part of our culture and a part of our philosophic outlook. It is technics' direct contact with these less tangible aspects of social reality that Marx largely overlooks. Though we need not follow Heidegger all the way to the opposite extreme of completely disregarding any economic considerations, due acknowledgement ought to be given to the consciousness that prevails in society. It is not merely a consequence of some other supposedly primary mechanisms in society, nor does it figure only peripherally among those factors relevant to the directions of social change. Rather, it is an intimately related aspect of our technics which in the end is a social practice, and, according to certain accounts, it is the rationality of technical practice which is the essence of contemporary society.

As a factor in our alienation, the pervasiveness of technical rationality strikes even closer to home than any external ensemble of technical artefacts or organisations possibly could. We not only find ourselves thwarted from the pursuit of our authentic interests as a result of the control exercised over us by technical means or find our energies channelled in directions contrary to our intentions by the patterns and contours of the technical environment. In fact, we find that the detrimental role played by technical rationality extends the condition of alienation directly into the centre of our

Technical rationality is a detriment to our ability to maintain a sense of values and ends

spiritual lives.

By undermining the prospects for even coming to terms with our values and priorities, in the face of the power and vigour of the technical world it leaves us empty-handed at the moment when what we need most is precisely that capacity to set the agenda and spell out the limits of our actions. At the same time our technical prowess is carrying us across one threshold after another and advancing on every one of its frontiers, our aptitude for steering the entire technical ensemble and guiding it in accordance with some set of moral principles is lagging further and further behind. The formal rationality that patterns the functioning of the ensemble has the wherewithal to keep the entire affair not just running but growing as well. Abandoned to its own devices, this is exactly what is happening. For the majority of us the uniquely human component is falling out of the loop, so to speak, no longer exercising its share of influence within the ever broadening cycle of technical expansion. And in all too many respects we abandon ourselves to the 'machine' - opening the door to domination through bureaucratic administration, inviting it to count us among those things which it may measure, allocate, and engineer, looking to it to take the reins which we no longer feel we have a legitimate right to hold.

With the increasing sophistication of technics and science and the widening scope of its powers, the entire social realm is becoming territory governed by technics. Herein lies another aspect of contemporary society that Marx did not fully anticipate - the extent to which society itself can become the direct and deliberate object of technical manipulation. Marx's analysis, in short, overlooks the possibility of a political technics.

Our technics has grown to include the social world as an object of manipulation

In a manner of speaking we can say either that the technical ensemble has taken on a life of its own or that a particular mode of rationality has seized control, but, upon closer inspection, what we find is not that some mysterious force has taken possession of the world, but that the dynamics of the subject-object interchange has evolved into something qualitatively different. Marx understood that what we do with regard to the physical world inevitably reflects back upon ourselves. His whole account of historical progress, for example, posits humanity as the active ingredient and points to humankind's mode of engagement with the physical world as the driving force which powers this progress. But for Marx this dialectical cycle, although complete as a circuit of cause and effect, is broken at the teleological level - i.e., we don't engage in technics with an eye on how we wish to alter our very selves. In actual practice this is no longer the case. The teleological loop has tightened and closed. As willful agents most of us are left outside this circle, but as constituents of the technical society none of us are left unaffected. Today technics are often designed and implemented with the avowed intention of changing the social environment onto which it is unleashed, and examples of such technics, as a result, are immediately and unambiguously political. Where the interests served by these endeavours are not our own and where we play the part of objects rather than subjects is where we will find ourselves alienated.

Marx's hopes for overcoming our alienation, are premised on the prospects for revolution. Revolution he thought would be made inevitable, on the one hand, by the proletariat's growing awareness of their special historical and political role, and on the other hand, by the increasingly intolerable conditions of life under capitalist

Its successes have undermined the desire for political action

exploitation. Time has proven Marx wrong on this count. Neither are the masses desperate and destitute nor politically conscious and motivated by the desire to make revolution. The economic system that has evolved since Marx's time no longer resembles the cold-blooded, mercenary, free market as much as it may have in his time. It is now a reasonably functional system that has proven itself capable of maintaining at least our physical well-being by providing for our material needs, and, if our ambitions call for it, there is almost no absolute limit to the quantity of wealth that we can personally accumulate and no end to the variety of diversions we can lose ourselves in. Unfortunately, given this opportunity, we have allowed ourselves to be thoroughly distracted by its exuberance and satiated by its lavishness. In the final analysis there is nothing that compels us to plunge into the unpromising waters of political activism, and there is no immediate mortal danger in letting ourselves be transported along by the tides of technical progress even if the price we pay is our own freedom.

The conclusion, then, is that technics is not the innocent player that it is often taken to be. It can and often does have a definite political content and can serve as an effective vehicle for particular interests. As an instrument of domination it has the additional virtue of being able to get the job done. For that very reason, technics is eminently persuasive in advocating those ideological points of view that motivate its design and effective in putting them into practice. Technics is political, and must be dealt with accordingly.

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