[Text of a paper for the conference on The Legacy of Herbert Marcuse, University of California, Berkeley, November 7, 1998]

Can Technology Incorporate Values? Marcuse's Answer to the Question of the Age

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Prologue

Why delve back into the philosophical past to reanimate Marcuse's theory of technology. Wasn't he an old technophobe, an opaque Marxist ideologue, a pre-post-modern elitist? What can we still learn from him that hasn't been refuted by a new generation of computer savvy techno-commentators or better formulated by Baudrillard?

I ask these impertinent questions to motivate this paper, which is not merely commemorative in intent. On the contrary, I believe that Marcuse is fundamentally important for us today as one of the first thinkers who not only faced the tragic implications of modern technology but also formulated a technological response. Whether that response is entirely successful is less important than the new relation to technology it implies. This is what I want to bring out in the reflections which follow.

The Question of the Age

The problem of the relation of technique to values appears for the first time in Plato's *Gorgias*. In this dialogue, Socrates debates the nature of the *techne*, or "art," of rhetoric. He distinguishes between true arts that are based on a *logos*, and what he calls in the English translation mere knacks, *empiriae* in Greek, that is, rules of thumb based on experience but without an underlying rationale.

For Plato, such a rationale or *logos* necessarily includes a reference to the good served by the art. If the art is shipbuilding, its *logos* will not only instruct the builder in putting together boards in some sort of arrangement, but more specifically will guide him in making a ship that is strong and safe. The doctor's art includes not only various notions about herbs but also a curative mission that governs their use.

In this, these arts are different from a mere knack of combining pieces of wood or herbs without an underlying order and purpose. Technical logic and values are joined in true arts while knacks serve merely subjective purposes. But because we are prone to accept appearances for reality, and pursue pleasure instead of the good, for each art there is some knack that imitates its effects and misleads its victims. Medicine correlates with cosmetics, which gives the appearance of health without the reality. Rhetoric, the power

to substitute appearance for reality in language, is the supreme and most dangerous knack. In a debate on shipbuilding or medicine, the orator will silence the expert every time. Means triumph over ends.

The most articulate advocate of the knack of rhetoric in the *Gorgias* is Callicles, who has an unlimited appetite for power and pleasure and intends to get them through his mastery of the tricks of language. That ambition was not merely a personal idiosyncrasy is clear from a reading of Aristophanes, Thucydides and other contemporary authors, all of whom denounced the moral degeneration and egoism of the imperialistic Athens of the late 5th Century. The Athenians acted as though their military effectiveness justified the possession and exercise of power over their neighbors. Plato's version of the question of his age was thus, quite simply, does might make right? His answer to this question is the basis of rational ethical thought in the West.

In one sense Plato's idea of *techne* seems obvious. Technologies are in fact subordinated to purposes which appear in the technical disciplines as a guide to resources and procedures. A software engineer working for Rolls-Royce Aircraft explained to me that 10 percent of his time was spent writing software to control the engines and 90 percent was spent testing it to insure the safety of those who fly in the airplanes he designs. Plato would no doubt approve: the *logos* is at work at Rolls-Royce.

Yet we moderns can no longer generalize from such examples as Plato did. For every aircraft designer, there is a bomb builder somewhere. We can still relate to Plato's emphasis on the need for a rationale, a *logos*, but we're not so sure it includes an idea of the good. In fact we tend to think of technologies as normless, as serving subjective purposes very much as did Plato's knacks. What has happened to disconnect *techne* and value in modern times?

The foremost theoretician of our modern view is Max Weber. Weber distinguished between substantive and formal rationality in a way that corresponds in one significant respect to Plato's distinction between *techne* and knack. Substantive rationality posits a good and adjusts means to the attainment of it. Many public institutions work on this basis: universal education is a good which determines appropriate means, that is, classrooms and teachers. Formal rationality is concerned uniquely with the efficiency of means and contains no reference to a good. Its ends come from outside it, from its users. Thus formal rationality is value neutral, like the Platonic *empiria*. Modernization consists in the triumph of formal rationality over a more or less substantively rational order inherited from the past. The market is the primary instrument of this transformation, substituting the cash nexus for the planned pursuit of values. Bureaucracy and management are other domains in which formal rationality eventually prevails.

The knack in Plato is subservient to the power drive of the individual subject, Callicles, for example. No larger meaning prevails through this purely individual subjectivity. Callicles' triumph could only lead to tyranny and the anarchic reaction that follows. Value neutrality in Weber implies a similarly subjective purpose, however market and political

processes do provide it with a larger meaning of some sort. The question is what is that meaning? Weber himself was rather pessimistic. He foresaw an iron cage of bureaucracy closing on Western civilization. The logic of the technical means employed in Western society had prevailed over Enlightenment values of freedom and individuality. An order was emerging that lacked any higher purpose or significance, but that was, at least, an order. This is what Weber meant by the "differentiation" of spheres. Now the *empiria* has its own logic as a system of means institutionalized in markets and bureaucracies, and that logic will impose itself independent of human will and any conception of the good. This is the difference between the individual tyranny Plato feared, and the tyranny of rational means that haunted Weber.

Weber's peculiarly modern brand of pessimism reaches its paroxysm with Heidegger. Writing a generation after Weber, Heidegger shifts the emphasis from markets and bureaucracy to technology. His iron cage is a system of research and development, a technoscience. Heidegger argues that reality is fundamentally restructured by this technoscience in a way that strips it completely of its instrinsic potentialities and exposes it to domination in service to subjective ends. The overall effect of this process is to destroy both man and nature. A world "enframed" by technology is radically alien and hostile. Even the modern Callicles is caught in the system he thinks he masters. Technoscience is otherwise dangerous than rhetoric or markets. The danger is not merely in nuclear weapons or some similar threat to survival, but in the obliteration of humanity's special status and dignity as the being through whom the world takes on intelligibility and meaning; for human beings have become mere raw materials like the nature they pretend to dominate.

Plato would not have been entirely surprised although the shift in accent, from the abuse of *empiria* by its users to the inherent destructiveness of technology itself, is peculiarly modern. This shift results from the fact that technology does not merely manipulate appearances in language but imposes itself on reality as a system. In Heidegger, the question of the age is therefore reformulated. Now we are less concerned about the justification of political power than with the sheer challenge of its sublime presence as technology. Our question is: can we live with technology, i.e. with power in its modern form? The ethical problem of right and might is superceded by the ontological problem of the destructive transformation technology operates on both its users and its objects. We are less worried about whether Callicles' descendants are justified than with whether the world they dominate can survive the means set in motion by their vaulting ambition.

At this point, we seem to have come full circle. Value neutral technology turns out to contain a value in itself after all, and that value is pure domination. This is the paradox of Heidegger's position. As he writes, "The outstanding feature of modern technology lies in the fact that it is not at all any longer merely 'means' and no longer merely stands in 'service' for others, but instead...unfolds a specific character of domination" (Quoted in Zimmerman, 1990: 214).

The Tyranny of Reason

This background sets the stage for a discussion of Marcuse's theory of technology. Marcuse was of course a student of Heidegger and deeply influenced by classical philosophy as well. His approach to the question of the age was not so different from Plato's and Heidegger's. He too was concerned about the triumph of apparently normless means over ends, of domination over every other value. He too wondered how we could survive our own drive toward power over nature now that it was objectified in a system and no longer restrained by a *logos*.

As with Heidegger's critique, so with Marcuse's, the chief theoretical difficulty lies in the simultaneous assertion of the neutrality of technology and its bias toward domination. How can merely neutral means favor domination over liberation? Isn't the neutrality of the means a guarantee of its indifference with respect to ends?
Marcuse takes up these questions most explicitly in *One-Dimensional Man* (1964). He returns there to the understanding of reason and truth in classical ontology for a response. For the ancient Greeks reason is the faculty which distinguishes between true and false not only in the realm of propositions but also in the realm of being itself. All being aspires to its end, to a perfected form which realizes its finality, its purpose. Actual being is imperfect and hence false. The rational judgment of such being therefore implies an imperative: the is is also an ought.

This ontological conception of reason explains the Platonic notion of *techne*. The role of the arts is to bring existence to its essential form. Implicit in every art is a finality which corresponds to the perfection of its objects. The art of government aims to make men just; the art of education strives to develop the rational faculty that is the human essence. No such finality is implicit in modern technology. Modern technical reason aims at classification, quantification, and control. It recognizes only empirical existence as real. The tension between true and false being that points beyond the empirical has no meaning for it. What ancient ontology takes for an intrinsic finality--the perfected form of things--is treated as a personal preference by modern reason. This reason flattens out the difference between the inherent potentialities of things and merely subjective desires. This is the reason that is at the basis of modern science and technology.

Modern reason is said to be value-neutral in the sense that any and all goals can be achieved through rational means. However, this neutrality also shows up in the refusal to distinguish between preferences and potentialities. For example, an analysis of the state conducted on classical terms would relate it immediately to ethical ends, e.g. justice. The modern approach, since Machiavelli, focuses exclusively on the machinery of coercion and consent without regard for the purpose of the whole. But how can the end of government, justice, be placed on the same plane as the will to power of a Callicles? A bias reveals itself in this equivalence, a bias which is all to the benefit of Callicles whose ambition is now taken no less seriously than a true public purpose since both are regarded as merely subjective. It is this abstention from any judgement as to what is accidental and what essential that is the original violence of modern reason, which places it in the service of the status quo.

The class system benefits from this refusal to identify potentialities in the empirically given. Its survival rests on suppressing the potential for a pacified and egalitarian social order made possible by technological advance. In so far as domination is built into the inherited structure of society, Marcuse argues, formal rationality contributes to maintaining and reproducing it.

The world of work is the chief domain in which the class system depends on the continuity of domination. If workers' self-government and self-actualization are treated as subjective preferences rather than as a human potentials, they lose the normative force to counter capital's drive for profit and efficiency. That drive, embodied in a technology requiring deskilling and top down management, seemingly refutes these supposedly subjective humanitarian ends. Self-government and self-actualization on an assembly line remain the merest fantasies while real products roll off the line and prove its worth. This is what Marcuse meant when he wrote "Theoretical reason, remaining pure and neutral, entered into the service of practical reason....Today, domination perpetuates and extends itself not only through technology that *as* technology, and the latter provides the great legitimation of expanding political power, which absorbs all spheres of culture" (1964: 158).

While the general lines of Marcuse's critique of value neutrality have a certain similarity to Heidegger's, Marcuse sticks much closer to the classical ontological demand for finality. As a result, his thinking is far more positive and accessible than his teachers'. Starting out from actual suffering and struggles under technological domination, Marcuse, unlike Heidegger, responded to the reasonable demand for a concrete solution, an alternative. Somehow the suppressed potentials must be released to free development. Marxism seemed ready-made to explain how, but history has overtaken its emphasis on property relations and its technological optimism. Modern technology cannot simply be set in motion to realize radical ends. The logic of its normal operations contradicts them. What sense would it make to try to turn the assembly line into a scene of self-expression, or to broadcast propaganda for culture and free thought? The systemic character of modern technology blocks recourse to it for these purposes. Marcuse concluded that science and technology need to be reformed at the most fundamental level, the level of technological rationality itself. He wrote: "Freedom indeed depends largely on technical progress, on the advancement of science. But this fact easily obscures the essential precondition: in order to become vehicles of freedom, science and technology would have to change their present direction and goals; they would have to be reconstructed in accord with a new sensibilitythe demands of the life instincts. Then one could speak of a technology of liberation, product of a scientific imagination free to project and design the forms of a human universe without exploitation and toil" (Marcuse, 1969: 19).

Not just the *ends* of production, but the *means* must be transformed insofar as they incorporate domination in their structure. A true alternative would have to change the material base as well as the institutional superstructures. This is a radical departure from traditional Marxism. Marx, Engels, and Lenin condemned the existing society for

its inability to develop the existing technological base to the utmost. The problem today, Marcuse argued, is not so much to develop that base as to use it to create a new and different base.

This emphasis on transformation also distinguishes Marcuse's critique of technology from both Heidegger and most of the Frankfurt School. True, technology has the power and consequences Heidegger and Adorno denounce, but it also continues to hold a promise. In Heidegger the most one can hope for is a "free relation to technology," a salutary change in attitude; and Adorno offers little more with his concept of Enlightenment tempered by "mindfulness of nature." Far more radical, Marcuse calls for change in the very nature of instrumentality, which would be fundamentally modified by the abolition of class society and its associated performance principle. Thus Marcuse gives the question of the age a further twist. It is not only an ontological question of what technology is making of us; that question needs to be posed, to be sure, but we must also ask the political question of what we can make of technology.

The Return to Techne

Marcuse argued that the health and well being of the objective world is in our hands, and our own survival and happiness depends on recognizing its potentialities rather than dominating it destructively. A postrevolutionary society could create a new science and technology which would achieve this goal and place us in harmony rather than in conflict with nature. The new science and technology would treat nature as another subject instead of as mere raw materials. Human beings would learn to achieve their aims through realizing natures inherent potentialities instead of laying it waste for the sake of power and profit.

Implicit in this approach is a modern revival of the classical conception of *techne*. Technology is to be reconstructed around a conception of the good, in Marcuse's terminology, around *Eros*. The new technical *logos* must include a grasp of essences, and technology must be oriented toward realizing inherent potentialities. As Marcuse writes, "What is at stake is the redefinition of values in *technical terms*, as elements in the technological process. The new ends, as technical ends, would then operate in the project and in the construction of the machinery, and not only in its utilization" (1964: 232). Marcuse thus demanded the reversal of the process of neutralization by which formal rationality had been split off from substantive rationality and subserved to domination.

But much as we might like to revive the ancient concept of *techne*, it rests on an outdated ontology with socially conformist implications. The standards in terms of which potentialities were assigned to things in antiquity were community standards, accepted uncritically by philosophers. For example, it seemed obvious that "man is a rational animal" to philosophers whose society valued contemplation over work. Greek philosophy betrayed an unconscious fidelity to historically surpassable limitations of its society. Modern philosophy cannot proceed in this naive fashion but demands reasons, ultimate grounds. How can Marcuse justify a normative conception of potentiality? What, for ex-

ample, are the grounds for preferring enhanced freedom on the workplace to class domination?

Marcuse's response to this question was to historicize the notion of essence. This is not so implausible as it sounds. The Greek conception of the thing, substance, was not static. It included an inherent movement toward higher forms. In fact the Greek word "dynamis," translated as "potential," already implies a kind of energy and striving. These higher forms could be identified by a special kind of abstractive intelligence that stripped away contingent features (125-126). The struggle of being for form is negatively evident in experience itself, in the suffering and striving world the internal tensions of which reason analyzes.

Ancient philosophy joined *Logos* to *Eros* in its combination of theoretical abstraction and striving toward the good. But it lacked historical self-consciousness. The temporal dynamic it found in things was specific to an individual or species. Each type of thing had its own essence, and, although these essences were objects of striving, they themselves did not exist in time. Hence ancient philosophy arrived at a static conception of essence that could even take the form of eternal ideas.

Today such an unhistorical conception of essence is unacceptable. Not just individual things are caught up in time, but essences as well. This is especially obvious in our modern understanding of human affairs. We have learned that human beings make themselves and their world in the course of history. If we are to revive the language of essence today, its conceptualization must follow rather than lead the observation of that history. Marcuse's ambition was thus to reconstruct both *Logos* and *Eros* as historical categories, that is, to reinterpret the observable tensions in reality as part of a larger historical process.

This Marcusean historicism avoids an exclusively rationalistic conception of the grounds for identifying potentialities, and links his thought to the materialism and anti-utopianism of the Marxist tradition. Dialectics, as a logic of the interconnections and contexts revealed in historical strife, offers a modern alternative to ancient dogmatism. Thus despite Marcuse's references to essences, biology, instincts, and suchlike, he never entertained a static conception of human nature. Criteria of social advance such as ending unnecessary suffering are not grounded on biology or derived from an ideal of man, but are rather reflections of actual demands and struggles.

Marcuse calls the most general dialectical concepts critical or "substantive" universals. These universals are not quite ideals in the usual sense but function as the conceptual articulation of social tensions that reveal repression and constraint. For example, the "ideal" of freedom, understood as free development of an autonomous object, simply validates the striving to realize potentialities. The content of a universal such as this derives from tensions in reality rather than from a preconceived speculative notion or an uncritically accepted social consensus.

Still, this historical dimension of dialectics is insufficient by itself to ground the theory. Actual struggles may teach us the existence of repressed potentialities that could be realized in a freer society. But the articulation of the content of those potentialities and the ranking of some above others, presupposes concepts, a language, a tradition that are not entirely reducible to those struggles. There remains a gap between empirical reality with all its internal tensions and the vision of a better society. Marcuse fills that gap with three dialectical mediations: an analysis of the technically feasible improvements in the human situation under the given conditions; the heritage of the Western philosophical tradition in which the substantive universals first developed and acquired their basic contours; and the projections of an imaginative reason free to encounter reality aesthetically. The theoretical heritage, going back to the Greeks, is translated into practical terms by a modern *techne* that responds to the internal tensions in reality with technical solutions guided by aesthetic experience.

Technology and Aesthetics

Why aesthetics? Surely this is a strange place to look for a solution to the problems of modern technology. Yet consider the difficulties of Marcuse's position. Technology, he has argued, is a powerful system with a logic of its own independent of the goals it serves and which dominates everything it touches. That logic is rooted in the refusal to recognize inherent potentials; all goals are attributed to human subjectivity. To the extent that this is true, merely changing goals would not change that logic, which is the source of the ultimate threat. To make a difference at that level, technology must be transformed to recognize inherent potentialities.

But Marcuse also accepts the modern view that essences can neither be based on existing traditions and community standards nor speculatively derived in a metaphysics of some sort. What he calls "one-dimensional thinking" plays out that modern skepticism by rejecting the idea of essence altogether and remaining at the level of empirical observation. It thereby avoids tradition-bound conformism and outdated metaphysics but only by sharing the premises of technological thinking. It can recognize inherent potentialities no more than can technology and so offers no guidance to technological reform. How then can technology be informed with essential values? To what can Marcuse appeal for criteria?

While these difficult theoretical problems set the stage, it is the twin influences on his thought, the Frankfurt School and phenomenology, that suggest an aesthetic solution. From the Frankfurt School, Marcuse derived the notion of a richer, original mode of experience that was shattered by the narrowed focus of the struggle for survival in class society. The realm of art was differentiated out as the imagination and reason split apart in this context. Reason became technical while the imagination conserved images of a perfected existence, a persistant negativity that was safely confined to a marginal artistic realm. From phenomenology, Marcuse derived the notion of an "aesthetic *Lebenswelt*" as the locus of a different order of experience which reveals the aesthetic qualities of objects. Aesthetic experience is a marginalized domain today, put out of action when it

comes to matters of importance such as technical mastery of the environment, but it can become central in a liberated society.

Marcuse's primary phenomenological influence appears to be Heidegger, although he scarcely acknowledges him, perhaps because of their deep political disagreements. Like Heidegger he sees technology as more than technical, as more even than political; it is the form of modern experience itself, the prinicipal way in which the world is revealed. For both philosophers "technology" thus extends its reach far beyond the bounds of actual equipment. It signifies a way of thinking and a style of practice involving a quasi-transcendental restructuring of reality as an object of technical control. Release from this form of experience can only come through another form of experience. In Heideggerian terms, as Dreyfus explains them, Marcuse calls for a new disclosure of being through a transformation of basic practices (Dreyfus, 1995).

These phenomenological considerations explain why the existing instrumental reason cannot serve radical ends. These "ends" are not merely goals to be sought with appropriate technical means, but the apriori forms of a new type of experience belonging to a new social order. For these ends to operate in the structure of the machinery, as Marcuse requires, they must first appear in the structure of the objects themselves, as essences, and not as the desires or wishes of subjects.

How are essences apprehended in aesthetic experience? This is the question of the mode of abstraction appropriate to a modern reconstruction of the concept of essence. Once metaphysics and tradition are ruled out of order, it is only through the imaginative grasp of reality that reason can go beyond the mere cataloguing and quantification of objects in the pursuit of control toward an appreciation of their essential truth. Reflection on aesthetic experience supports a type of rational judgement that can identify the significant "Form" of reality, distinguishing essence from accident, higher potentiality from mutilated empirical existence. Following Hegel, Marcuse calls this abstractive act associated with aesthetic perception an "aesthetic reduction" (1964: 239). It consists in stripping away the contingent aspects of objects that restrict and stunt them in order to get at what they could be if released to their free development.

The aesthetic reduction carries the dialectical theory of essence beyond theory; it verifies at the theoretical level the claims of aesthetic experience and translates that experience into positive images. Here beauty is the symbol of the good, the disclosure of being in its fullness. The imagination overflows the boundaries of class society and, in becoming "productive," guides technical practice in the work of "pacifying existence." A transformed reason "free for the liberating exigencies of the imagination," arrives at very different ways of mastering the world (1969: 31).

Artistic practice offers Marcuse a model of a transformed instrumentality different from the conquest of nature characteristic of class society. Like the early twentieth century artistic avant-gardes, Marcuse believed that the age old split between aesthetic experience and daily life could be transcended through fusing reason and imagination. Science and art would be joined in the creation of a new technical base. This notion recalls the

slogan of the French May Events, All Power to the Imagination, and in fact *An Essay on Liberation* (1969) is dedicated to the young militants of May 68.

Making Sense of Marcuse

All this hangs together at the level of pure theory, but concretely, what would a modern *techne* be like? Marcuse argues that it would incorporates values in its very structure, that it would be essentially oriented toward a good. But what would that mean in practice? Most of Marcuse's critics have wavered between two obvious possibilities.

1) If the new aestheticized technological rationality will have to be based on completely new technical principles, then the whole theory is quite unbelievable. Who is going to invent those principles, and what will they be like? But although it sometimes sounds as though Marcuse intends a total break with the past, the transformation of technological rationality that interested him was not supposed to refute elementary arithmetic, change a decimal place in *pi*, or find aesthetically pleasing substitutes for the lever and the wheel. Nor would it, as Habermas has suggested, require personal communication with nature rather than technical control of it. Marcuse did not believe it possible to replace technology with some sort of mystical unity of man and nature. That is the view he attributes to his old friend Norman Brown and distinguishes sharply from his own materialist position.

2) Perhaps Marcuse had more modest ambitions and merely hoped that technology as we know it would be used to enhance rather than to destroy life. But if he intended nothing more innovative than this, it is difficult to figure out how *practically* his position differs from a simple change of goals. Of course we could get rid of assembly lines and commercials, but would that require truly *fundamental* technological change? If the new technology is simply a collection of new applications based on the existing technical principles, then it is difficult to see what all the hoopla is about. But Marcuse himself rejects this modest position and consistently talks in terms of the need for a change in instrumental rationality and not merely in technological applications.

Neither of these interpretations accords with the texts, which explicitly reject them both. This is the Marcusean enigma that has bedevilled all of his interpreters. I can see only one solution to it. It is not a solution Marcuse himself formulated, but I think he could have accepted it, that it is consistent with his thought.
The difficulty interpreting Marcuse stems from the confusion of terms and levels to which his formulations lend themselves. The key term "technological rationality" is sometimes equated with the *ratio* of technology in general, or the existing technology only, or sometimes employed in modified forms such as "post-technological rationality" to refer to a future liberated *techne*. Furthermore, because Marcuse analyzes no concrete examples, it is not easy to disentangle his concept of technological rationality from two other more familiar dimensions of technology, namely, basic technical principles, and concrete applications. Yet it must surely be different from both or Marcuse would have used ordinary language to refer to it. What, then, is it supposed to be?

A commonplace reading stemming from Habermas identifies "technological rationality" in Marcuse with the generic interest in technical control, abstract efficiency. But this leads straight to the two unacceptable interpetations sketched above: either Marcuse meant for us to invent a new kind of technology that would not involve control and efficiency at all, a nonsensical idea, or he merely wrote in a confusing way about the need to apply technological control and efficiency to new purposes, a trivial idea.

I suggest a different interpretation that at least does not take Marcuse for a dreamer or an obscurantist, and that accords with his own emphasis on the importance of situating abstract concepts like "efficiency" in a concrete social context. From that standpoint, his concept of technological rationality cannot be identical with the formal concepts of efficiency and control, but must have a social content as a socially specific pattern of goal orientation.

There is in fact a need for such a concept, intermediary between the formal principles of economics and engineering and the applications of those principles in actual devices and systems. Technical principles only become historically active through a culture of technology. Applications are not designed in function of abstract technical principles alone but incorporate those principles only as they are embodied in concrete technical disciplines. As social institutions, those disciplines operate under various types of constraints, including social imperatives which influence their formulation of technical problems and solutions and show up in the applications they design.

I suspect that what Marcuse meant by his term "technological rationality" was the most fundamental social imperatives *in the form in which they are internalized by a technical culture.* Such fundamental imperatives tie technology not just to a particular local experience but to consistent features of basic social formations such as class society, capitalism, socialism. They are embodied in the technical devices and systems that emerge from that culture and reinforce its basic values. In this sense technology can be said to be "political" without mystification or risk of confusion.

I can make sense of Marcuse's theory if it is conceived on these terms. At the level of the concrete historical forms of technical culture, there is room for a variety of different rationalities, and it is up to us to judge between them and chose the best. None are truly "neutral," not even modern technology which is no longer oriented toward a good in Plato's sense. Each embodies a historical project, a particular way of resolving the technically underdetermined aspects of the design of devices and systems.

It is true that capitalist technological rationality emerged through the destruction of inherited *technai* based on traditional values incompatible with the new system of production. It declared its "neutrality" over against the essences toward which these values oriented earlier *technai*. It is this abstention from essentializing that gives modern technology its peculiar positivist self-understanding and makes it appear to be "pure" of social influences. However, as Marcuse argued, the rejection of essentialized goals accomodated other values linked to problems of control of labor and resources encountered

by capitalism in the course of its development. Far from being value neutral, modern technology is rooted in a specific valuative framework just like all other technologies. It differs only in that its most basic link to values is not explicitly formulated as an end as in a *techne,* but implicit in its systems of control.

Marcuse's appeal to aesthetic experience for a new locus of technological values was an attempt to introduce the claims of human beings and nature for a greater measure of peace, freedom, and fulfillment into the construction of technological rationality. The return of *techne* on a modern basis would not overthrow the technical principles under-lying the existing technological rationality, but reorder them around other social im-peratives and no doubt eventually lead to the discovery of new ones.

As we have seen, Marcuse was led to an aesthetic criterion for the technical *logos* in an attempt to reconstruct the concept of essence in a modern theoretical context. It is cer-tainly possible to disagree with this criterion, but if one rejects Marcuse's approach, it seems to me one should be prepared to offer another one. For, the question of the age remains the one he addressed. Let me reformulate it in conclusion: how are we to bring technology under the conscious control of normative principles rather than moving blindly forward under the momentum of an inherited system shaped by scarcities and struggles that can now be overcome in the rich and powerful society technology itself has created?