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Review of Edward G. Ballard, *Man and Technology. Toward the Measurement of a Culture* and of Donald M. Borchert and David Stewart, eds., *Being Human in a Technological Age*

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Recommended Citation

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simply be said. Thus with Plato, one remains, as Dauenhauer also renders man, on the way. It is telling of Dauenhauer's opposition to Plato and classical philosophy that what is of utmost significance about the freedom of human action and about human speech is the ability to do and speak the "new" – not to establish virtuous habit or speak the truth.

Similarly, the anteriority of the pre-predicative for Husserl, desire for Hegel, perception for Merleau-Ponty, and tradition for Gadamer cannot adequately be accounted for in this treatment of silence. Each receives far too little treatment in this study. The treatment of desire, for example, suffers the difficulty of the book as a whole: though the overarching ontology makes man in some sense subordinate to the world, within the discussion of desire it is silence that shapes and focuses interest (the "active" aspect of desire, not "passive" emotion which Dauenhauer dismisses) rather than somehow the world or the worldliness of man in the world. The difficulty of articulating this active yielding, which Dauenhauer wants to attribute to silence through active interest, is why Heidegger insists that his *Gelassenheit* is beyond activity and passivity. To learn again from Heidegger with respect to this set of problems, Dauenhauer's ontology sets too strong a contrast between man and world. The Heideggerian view of man-in-the-world, which Dauenhauer wants to hold, is undermined by this too sharp polarity. He criticizes Merleau-Ponty, for example, for not making the distinction sharp enough.

More than these objections, there remains the larger question as to whether silence should play so large and fundamental a role in ontology, whether silence can be so thoroughly articulated, or whether silence should take over where ontology leaves off.

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Edward Goodwin Ballard, *Man and Technology. Toward the Measurement of a Culture*. Pittsburgh: Duquesne University Press, 1978. x + 251 pp. \$ 15.00 (cloth), \$ 8.95 (paper).

Donald M. Borchert and David Stewart, eds., *Being Human in a Technological Age*. Athens, Ohio: Ohio University Press, 1979. viii + 168 pp. \$ 12.00 (cloth), \$ 4.95 (paper).

The two books under review pursue separately what an appropriate philosophy of technology must accomplish: the articulation of an incisive and unified vision of the world on the one hand and on the other the consideration of the variety of ways in which technology shapes our lives and the search for fruitful counterforces to technology. Ballard's book attends to the first task, Borchert's and Stewart's anthology to the second. The two books also demonstrate that one task taken up without the other cannot be accomplished satisfactorily. Trenchant insight shows its force when it clarifies the vague uneasiness and the genuine sources of strength in our various and daily enterprises. Conversely, the consideration of the concrete details of our lives must, to avoid aimlessness, finally discover and articulate a crucial pattern in our dealing with the world.

Ballard undertakes his philosophy of technology in an appropriately ambitious and fundamental way. The subtitle of the essay puts it succinctly; it moves *Toward the Measurement of a Culture*. The kind of measurement is early characterized as qualitative, rather than quantitative (pp. 3–11).¹ The basis of this qualitative measure is a general ontology, and nearly three-quarters of the book are devoted to

its development (pp. 1–153). The ontology is rooted in the classical tradition from Plato to Kant. What gives it its character is a Heideggerian perspective. Like the later Heidegger, Ballard sees reality shaped in great historical epochs, each of which has its own, unsurpassable truth. The notion of human existence is akin to Heidegger's in *Being and Time*. The self is destined to take up the ever-open task of its completeness. But Heidegger's influence remains in the background, both in the text and the spirit of Ballard's book. Ballard's philosophical essay shows an admirably original and vigorous thinker at work, one who develops his view in a calm, meticulous, and demanding style.

What light does Ballard's fundamental ontology shed on technology? In agreement with the common view, Ballard sees modern science as a crucial ingredient of modern technology (pp. 155–90). Like all epochal forces in Ballard's view, modern science is an expression of subjectivity. Epochal or cultural meaning arises from subjectivity, but is also arises from fate (pp. 2 and 148–53) or, better, from the encounter of man and fate. But the rise of modern culture appears to be man's emancipation from fate, and how such an event can itself be fated Ballard is at a loss to say (pp. 153 and 234). This is of course no oversight or due to lack of attention, but the expression of a profound philosophical perplexity which to some extent is shared by Heidegger also, to whom Ballard obliquely refers (*ibid.*). Science, then, is Ballard's middle term between ontology and technology, and scientific research for him is essentially measurement (p. 164). What does this, in turn, yield for our understanding of technology? It provides both too much and too little.

In a popular tradition, shared by Gerald Kreyche (pp. 39 and 44) and Langston Gilkey (pp. 73–74, 78, 86), Ballard sees science and technology as fundamentally the same enterprise (p. 156). But this commits Ballard and the others to impossibly strong views on the nature of technology, for our understanding of technology, inasmuch as it allows us to recognize and propose reforms of technology, must now entail a reform of science as well. But while Ballard does in fact point up at least the direction in which a reform of technology will lie (pp. 233–34), there is not even a hint as to the ways in which modern science at its core, not simply in its sociological setting, could be reformed. On the other hand, the definition of what the "scientist-technician" (p. 156; cf. p. 220) does yields too little for the explication of technology. There is no reason why the objective quantification of nature should entail the energetic and pervasive transformation of the world or the peculiar direction and pattern of the transformation that we witness as technology. Indeed when Ballard turns more directly to technology, he is forced to add without further argument the elements of productivity and efficiency to the enterprise of quantification (pp. 197–204). Analogously, he must immediately add to the scientific theory of judging nature the technological practice of the disposal of nature and of the service to machines (p. 220).

Obviously, modern science has been a profound influence on our world; but to appraise that influence is difficult. The natural inclination is to see it as a straightforwardly and substantively harmful or beneficial force. The latter case, in nearly perfect symmetry to Ballard, is made by R.R. Wilson in his essay on "The Humanness of Physics" (pp. 25–35). For him, the scientific emancipation from fate is a liberating and ennobling event for humankind (p. 26); the scientific account of the beginning of the world "is a towering intellectual accomplishment, comparable to or even exceeding eighteenth-century poetry or even Renaissance painting" (p. 29). And further we are told: "When Ernest Lawrence built his cyclotrons with a dedicated passion he was not that different from Suger, also with a dedicated passion, building the cathedral St. Denis" (p. 31). Science gives rise, so he claims, to what Ballard calls "world-symbols," concrete and guiding expressions of the

meaning of one's world (p. 148), and Wilson's claim is supported by his editors: "One has but to see the Central Laboratory of Fermilab rising cathedral-like from the plains of Illinois to see the aptness of Wilson's comparison of accelerator builders to the cathedral builders of the thirteenth century" (p. 4). There seems to be an irresistible temptation to identify world-symbols in the realm of science and technology. The launching of the space shuttle provided an occasion. One writer saw it as a secular testing: "A people are testing themselves in relation to their heritage. . . . A people are testing their resolve to reach beyond the ordinary and thereby, if history repeats, magnify the human spirit."² Other writers saw in the shuttle "a space-age Taj Mahal that leapt into the sky on two pillars of impossibly bright yellow and blue flame." They praised the astronauts' heroism and "their willingness to trust their lives to an untested craft, a faith in technology and sheer scale that many Americans wish they could recapture."³ Ballard, to the contrary, asserts that our time has not developed its own world-symbols (pp. 151–53 and 234), and I think he has the better part of the argument. As he indicates (p. 150), world-symbols must be intelligible and accessible to all. They must be celebrated in rituals in which all can participate. Immersion in the work of Suger, in the construction, dedication, and use of medieval cathedrals, reveals that the latter are eminent embodiments of a world-symbol.⁴ Cathedrals and accelerators can be equated by a narrow and superficial analogy only.

If science neither provides orientation nor injures our world directly, how does it bear on our world? August Brunner's distinction between explanation (*Erklären*) and recognition (*Erkennen*) which Kreyche invokes in his reflections on "The Meaning of Humanness" points in the right direction (p. 44). To explain, in the venerable tradition of Hempel, is to bring events under laws. Scientific progress consists essentially in the discovery of ever more precise and comprehensive empirical laws and in the correspondingly incisive explanation of phenomena. Ballard is right that measurement is a crucial feature of this enterprise. But emphasis on this aspect obscures the central concern of the sciences: The description of the lawful behavior of all of reality. Such a formulation arouses of course the concern of Ballard and Kreyche that science advances an exclusive claim to our understanding of the world and consequently impoverishes our ways of dealing with the world. The common reaction to this threat is to circle the wagons in order to demarcate and protect a certain area or aspect of reality from the onslaught of the sciences. Kreyche tends in that direction, and Ballard obviously makes that move by removing the realm of quality, immediacy, and feeling from scientific jurisdiction (pp. 164–71 and 178–82). To achieve this by more than a definitional move, he must refute the natural suggestion that qualities and feelings are reducible to quantities or at least are scientifically explainable. Ballard pursues this question at some length by asking whether a computer can be programmed to simulate intelligence and feeling (pp. 109–16). Ballard takes his last stand on the simple assertion that feelings are simply not the kinds of things that are formalizable and programmable. As Dennett has pointed out, this may be so, but not necessarily because our knowledge of programming is wanting, but because we have no consistent view of what it is (e.g., pain) that we want to have programmed.⁵ There is finally a more direct and telling path to the question of whether feelings can be explained scientifically. Given that we are essentially bodily beings (as Kreyche emphasizes, p. 45), that the body is something physical, and that feelings occur in or to the body, are not these occurrences within the scope of scientific explanation? And once the feelings are so explained, does anything remain over in principle that needs further and non-scientific explanation? An affirmative answer must lead to dualism which on closer inspection will turn out to be mere epiphenomenalism.

We can do justice to science, I believe, only when we come to see that, in all explaining and understanding, scientific and poetical elements interpenetrate one another in an orderly way. The harmony of poetical and scientific reason which Ballard describes as an ancient ideal (pp. 82–83) is visible today also. To see something in its steadiness and relatedness is to see it in its lawfulness. To be struck by something as unique and remarkable is to acknowledge it in its unsurpassable givenness. Explanation and understanding, as Hempel has shown us, come to pass in the conjunction of laws and conditions.⁶ In scientific explanations, there is a preoccupation with laws, and conditions are often trivial and taken for granted. In poetical discourse, the marvel of things' givenness is celebrated, and it is taken for granted that things are lawfully anchored in reality; it would be tedious and distracting to make that explicit. Thus all poetical discourse, if it is understandable, has a background of steadiness and regularity which finally and in principle admits of scientific explication. And every scientific explanation of an event responds, however derivatively, to something that is given and stands out as worthy and in need of explanation. Thus the scientist wonders, as did mythic man, about the genesis of the world, and he traces its origin within physicochemical lawfulness. To reveal the origin of the world with scientific precision is, as Wilson has it (pp. 28–29), an admirable achievement. But due to the emphasis on laws, the eloquent presence of the world that opens up in the process is overlooked. Hence, Wilson to the contrary, scientific cosmogony and cosmology cannot compare with poetry in orienting force, nor can a scientific law with a haiku. But the mythic account of fruitful earth and ordering sky and of humans placed in their midst, the account that Ballard summarizes and explicates (pp. 11–16), can have guiding power. And yet myth in its turn becomes a playful story at best and an idiotic dogma at worst if one denies the possibility that the mythic account can be squared with science and if myth is seen as an explanation that competes with science rather than as one that represents what science passes over.

Similarly, quality is quantity that stands out in its givenness and strikes us as remarkable. And to certain qualities we respond and can only respond in the mode of feelings. This is itself a given that must be acknowledged, but it is also a given that is scientifically intelligible and explainable, i.e., subsumable under laws. What motivates some critics of scientific explanation to exempt feelings from scientific explanations is the belief that the scientific knowledge of what a feeling is will displace the feeling itself. But there is a difference between having a theory and instantiating a theory.⁷ We have theories of the origin and composition of rocks, but we do not instantiate them. In the case of feelings we do both, and perhaps at the same time, but not in the same respect. Feeling has its own, unsurpassable dignity.

What bearing does this view of science have on our understanding of the world and on technology? Things are naturally given at different scales. We talk about mountain ranges in one way, about forests in another, and about trees in a third without implying three separate realities. In the prescientific eras, regularities and laws were closely fitted to the life world and at the smallest scale to the natural kinds. With the progress of science, lawful insight proceeded to smaller and smaller scales and thus seemed to undercut the ultimate contours and features of the life world. The new scientific microtheories moreover disclosed an essential physicochemical sameness underlying the variety of natural kinds and stuffs. Thus the character of the life world seemed to be dissolved further. And finally the precise and principled insight into the fine structure of things made it possible to restructure them (and to construct new ones) from the ground up. To the fact that the new scientific theories no longer traced and guaranteed the outlines of the lived world and indeed made possible a fundamental transformation of that world, one

might react, and many did, with a feeling of disorientation and perhaps resentment. But such a reaction fails to remember that no scientific theory, however penetrating, is sufficient for an explanation and understanding of our world and so can never obviate the recognition and perhaps the reverence of what is given. It also forgets that science merely opens up transformative possibilities and that it takes a determination and a procedure of its own to act on those possibilities. Hence resentment about the transformation of our world aimed at science is misdirected.

Technology, I believe, is the appropriate title for this determination and procedure. How well does Ballard trace its pattern and course? An immediate shortcoming of his design is its failure to capture the attractiveness of technology which to me seems an obvious, if complex, datum. Gilkey, writing on "The Religious Dilemmas of a Scientific Culture" (pp. 73–88), provides an excellent sketch of the positive and hopeful spirit of technology. He rightly sees at the beginning of the modern era the founding promise of liberation from disaster, hunger, and disease and of enrichment with the goods of the earth, to be delivered through the power of scientific insight (pp. 74–78). He (p. 76) and, more forcefully, Kreyche (pp. 39–40) remind us that the promise has not been vain and that its blessings have been gladly received. Ballard considers these benefits briefly and argues that in technism, the final phase of technology, where technology becomes its own end, the needs to which technological benefits answer are strictly grist for the mills of technology. "Feeding the poor, generally improving the lot of men," he says (p. 203), "is to be justified by the contribution these humanitarian activities make to the advance of technology." One will have to grant Ballard at least that technology has not been an unmixed blessing and that its liabilities are being felt more deeply as it is reaching its mature phase. Kreyche too (pp. 40–41) points up the dehumanizing aspects of technology, and Gilkey, with his sense for the epochal character of technology, sees us approaching a fundamental crisis as the common trust in the promise of technology is beginning to crack.

A sense of crisis may just be a personal debility. Perhaps people at large continue to be confident of technology and to enjoy its fruits. Taking the measure of a culture becomes a precariously private enterprise if we are without assurance that our insights respond to the apprehensions and aspirations of the people. Wilson, Kreyche, Gilkey, and Ballard speak as thoughtful eyewitnesses of technology, and this is surely the appropriately philosophical procedure. But in a sustained investigation such as Ballard's, the question must be raised as to what kind of hold technology has on people, how this question is fruitfully raised, and what will here count as evidence. Ballard's unwillingness to turn to this problem must account in part for his narrow and schematic view of technology. The question is ably addressed by Daniel Yankelovich in "Two Truths: The View from the Social Sciences" (pp. 89–105).

The first question is of course whether people have any leeway in dealing with technology and, if so, how the scope of their action is structured. Paul Ricoeur's essay on "Ideology and Utopia as Cultural Imagination" (pp. 107–25) provides a general contribution to this question. He sees the function of ideology as one of filling the gap between the claims of government and the belief of the people, one of conserving a political order. The task of utopias, on the other hand, is to challenge the status quo by looking at the present from a radically alternative standpoint. Ideology is in tension between preserving and stifling; utopias move between reformation and escapism. And ideology and utopia are dialectically related in that the need to preserve admits the fault between what is and what ought to be, whereas the questioning of an (existing) order aims at the stability of a (new) order. Ricoeur's arguments are erudite, and they are symmetrical and elegant to a fault. But they leave the task of shedding light on our concrete predicament entirely

undone, and I am not even sure that they lead us to its threshold. Ricoeur seems to agree that the critique of ideology for all its vaunted unmasking is not a radically disclosive enterprise. It rests in turn, Ricoeur argues with Geertz (pp. 116–17), on a system of integrating society through symbolic formulation which needs explication and is in a position to receive it from a transfer of “some of the methods and results of literary criticism” (p. 116). Leaving aside the presently cataclysmic state of the latter discipline, it seems unlikely at best that the radical transformation of language and communication in technology will be tractable in terms that have grown out of the thoughtful concern with the language of Sophocles, Dante, and Shakespeare.

Yankelovich delimits the scope of social reform by departing from the nature–nurture controversy which he finds to be aligned with the conservative faction on the one side and its belief in an enduring social order based on immutable human nature and the liberals on the other side with their confidence in the flexibility of human nature and the possibility of radical social reform (pp. 89–91). The controversy illustrates the tendency of technology to slip away from the center of disputes and to insinuate itself as the efficient implementation of whatever policy. One would expect conservatives to be deeply suspicious of developments which within decades have uprooted us from relations and practices that have served and reflected human nature for hundreds of thousands of years. But conservatives and liberals are equally committed to technological progress and disagree only on how best to stimulate it and distribute its benefits.

I cannot agree with Yankelovich that what prevents social scientists from incisive analysis is their being trapped in an ill-conceived disjunction. Rather they have, I suspect, felt so at ease and consonant with the basic shape of technology that for them it was unquestionable and even invisible. Yankelovich makes an analogous point as regards the relation of people and technology. Departing from Durkheim, he rightly argues that the social order is constituted by a tacitly and commonly agreed upon understanding of our goals and ourselves. It would be fair to say that Yankelovich’s description of the features of this understanding and his illustration of these features through social scientific data provide detail and empirical confirmation to Gilkey’s sketch of the promise of technology. Yankelovich finds that, in the period from 1945 to 1965, there is implicit trust in the enrichment of our lives through the blessings of technology, a firm belief that our institutions served the goal of enrichment well, and a willingness to divide one’s life between securing and enjoying the blessings of technology (pp. 94–96).

But in the 1960s, a change took place. Darker sides of technology became apparent which, as mentioned above, have been noted by Ballard, Kreyche, and Gilkey too. In the critique of technology, there is among the authors something like an agreement on three points: (1) Technology is dehumanizing. (2) Technology subtly and radically transforms our lives and the conception we have of ourselves. (3) Technology is overtly unstable and destructive.

First, Ballard (pp. 217–27) agrees with Gilkey (pp. 79–82), Kreyche (p. 40), and Yankelovich (pp. 102 and 104) that technology has in some way grown into a force that confronts us as an overpowering and dehumanizing agent. Second, Ballard shows in detail how unlike the technological role in its one-sidedness is to the traditional self, seeking completeness (pp. 206–27). Similarly Kreyche remarks how in the technological mode we allow our personality to be attenuated to roles and our bodies to be conceived in the image of the machine (pp. 40–41). Gilkey notes the degradation of work and the passivity of consumption that technology brings in its train (p. 81), a point that is related to Yankelovich’s observation of the sharp split between labor and leisure in technology (p. 96). And third, Ballard maintains that technism must lead to violence which finally reaches the

point of self-destruction (pp. 228–33), and Gilkey agrees that if technology becomes “the exclusive form of reason and creativity,” it must lead “to its own destruction and the destruction of all it manipulates” (p. 86). Kreyche too is disturbed by the lethal force of technology (p. 40). Both Gilkey (pp. 82–84) and Yankelevich (p. 101) call attention to the ecologically precarious nature of technology.

These points are as commonly held as they are poorly grounded and interrelated. Kreyche, who asserts that “it is person who is the ground of value and meaning” (p. 44), and Gilkey, who sees in our desire and concupiscence “that demonic driving force behind our use of technology that ravishes the world” (p. 87), owe the reader a derivation of technological dehumanization from human subjectivity. And even if we grant Ballard the self’s turn to quantification as an unsurpassable epochal datum, we require, as said before, more insight into the turn from (scientific) quantification to (technological) production and subservience to machines. The absence of these connections leaves us uncertain as to where technology is finally centered and how we are to take responsibility for it. It is probably no accident that technology appears so poorly grounded or deduced. We would have to have a philosophically more explicit conception of what technology is and does to know whether it is derivable from traditional notions of subjectivity and, more importantly yet, whether derivation is at all a fruitful way of illuminating technology. The second critical point summarized above reflects attempts to grasp the unique and unprecedented way in which technology acts as a transformative force. I think it is here that the most disquieting aspects of technology become visible because they suggest that in technology we may suffer a radical loss of humanity which remains largely concealed, however, and may well be accompanied by an apparent feeling of comfort amidst material security.

I believe that there is among the people a dawning realization of that danger, and the present authors are clearly sensitive to it. But the lack of conjunction of concreteness and incisiveness, the fact that the issue always slips from explicit public attention, and simultaneously the enormity of the problem all conspire toward a final mistaking and misstating of the problem. To bring the subtle and crucial danger of technology to public attention, technology is presented as an overtly and physically destructive force as the third point above illustrates. But this is not only to abandon the crucial issue, it is also to resort to arguments of questionable force. I do not believe that technology will or is even likely to collapse or destroy itself. The stability of our civilization is a problem that has the public’s attention, is intelligible and tractable by technological norms, and is therefore likely to be solved. And accordingly, while I grant to Gilkey and Yankelevich that our trust in technology is suffering a crisis, I believe that the question of how radical and fruitful the crisis is remains all too open. The critic of technology shares his predicament with the environmentalist who, unsure whether respect for nature will be a publically effective force, defends nature on utilitarian grounds, and who thereby denies his deepest concern and uses arguments to which all too often there are, by his chosen standard, stronger counterarguments.

Due to the lack of an analysis of technology which is both incisive and concrete, it is difficult to understand how the promise of technology could have come to grief and how what is genuine in the promise can be clarified and recovered. Ballard’s call for a dialectic of the self’s completeness (p. 234), Kreyche’s call for the appreciation of the uniqueness of the person, Gilkey’s call for a religious redemption of technology, Yankelevich’s call for the humanization of technology, all strike us as so obvious and unhelpful at once, because on the basis of their analyses we remain unsure whether or, at any rate, how these counterforces can hope to meet technology fruitfully. We may in fact suspect that technology in its subtle and central force is immune to such talk of reform and may even welcome it

and use it for its own advancement.

The aimlessness of counterproposals to technology which are not based on a principled analysis of technology is further illustrated by two contributions to the Borchert and Stewart anthology that I have not mentioned so far, Seward Hiltner's "Theological Perspectives on Humanness" (pp. 51–71) and Troy Organ's "Humanness in Neo-Vedāntism" (pp. 127–64). Hiltner presents four pairs of Christian paradigms, animal and image of God, Humanity and divinity in Jesus Christ, pilgrim and saint, the kingdom of God: now and then, which must be recognized as paradoxes and kept in tension if heresy and an impoverished conception of humanity are to be avoided. Precisely the recent prominence of Christianity in the public and political realm shows how difficult and treacherous a task it is to recover the orienting force of gospel and church. Hiltner's learned and concise essay contributes nothing to that task, and if anything, makes it less accessible inasmuch as it exhibits an ironically technological tendency. Hiltner generalizes the danger of heresy and the need to avoid it in asserting that believer and unbeliever alike are subject to them (p. 65). More importantly, the advice of maintaining a paradox or a dialectical tension is at the least in danger of promising the kind of mastery of some thing which amounts to the loss of that thing. It sounds masterful when one says: "Not just this or just that, but both this and that at the same time." But if the conjuncts are inconsistent with one another and a resolution by a higher principle is not furnished, then to make the inconsistency a virtue and the mark of superior vision is to have superiority at the expense of vacuity.

Critics of technology at times turn to the wisdom of the East in an attempt to find a spirit of calmness and serenity in the face of technological aggressiveness and haste. Yankelovich invokes Japanese *amae*, a sense of basic trust and confidence (p. 105). According to Pirsig's great promise, he will teach us to see that "the Buddha, the Godhead, resides quite as comfortably in the circuits of a digital computer or the gears of a cycle transmission as he does at the top of a mountain or in the petals of a flower."⁸ And Schumacher has his memorable chapter on "Buddhist Economics" in *Small is Beautiful*.⁹ Thus an essay on Eastern philosophy is well placed in an anthology on being human in a technological age. Organ's contribution is a masterpiece of condensation and systematization. But it reads like a combination of a biographical dictionary and a college catalogue. Neo-Vedāntism is nearly captured with all its major figures and teachings. But the spirit of peace and reflection has escaped.

The courage to dwell here and now in place of the alibi of a brighter technological future, the faithful and active engagement in the great things and practices of our tradition instead of the passive and distracting consumption of technological commodities — these attitudes will be crucial in a reform of technology. But they remain in danger of being deflected until, in Dreyfus' words, we have succeeded in giving "an interpretation of our current cultural situation by finding a cultural paradigm . . . , which focuses our current practices."¹⁰ Among writers on technology in this country, Ihde has given an example of the concreteness and originality of description that is required to discover that paradigm.¹¹ Winner has discussed the all but overwhelming power of the current practice of technology that a reform proposal must meet.¹² Stanley has shown the substantive commitment and the scholarly circumspection that are essential to a principled reform of technology.¹³ Ballard's book stands as a monument of the firmness and depth that a foundation for a critique of technology must exhibit. Among the anthologies on technology in this country, Mitcham's and Mackey's collection assembles the most searching and influential theoretical positions on technology.¹⁴ Borchert's and Stewart's book has the virtue of giving a helpful picture of how contemporary technology directly and indirectly impresses and puzzles thoughtful witnesses.

NOTES

1. Parenthetical page references are to the Ballard or Borchert and Stewart books.
2. John Noble Wilford, "Space and the American Vision," *The New York Times Magazine*, 5 April 1981, p. 53.
3. "In Space to Stay," *Newsweek*, 27 April 1981, pp. 22 and 24.
4. See, e.g., Otto von Simson, *The Gothic Cathedral* (Princeton, 1974).
5. Daniel C. Dennett, *Brainstorms* (Montgomery, VT, 1978), pp. 190–229.
6. Carl G. Hempel, *Aspects of Scientific Explanation* (New York, 1965), pp. 331–489.
7. Cf. Dennett, *Brainstorms*, pp. 193–94.
8. Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance* (New York, 1974), p. 26.
9. E.F. Schumacher, *Small Is Beautiful* (New York, 1975), pp. 53–62.
10. Hubert L. Dreyfus, "Holism and Hermeneutics," *Review of Metaphysics* 34 (1980): 22.
11. Don Ihde, *Technics and Praxis* (Dordrecht, Holland, 1979).
12. Langdon Winner, *Autonomous Technology* (Cambridge, MA, 1977).
13. Manfred Stanley, *The Technological Conscience* (New York, 1978).
14. Carl Mitcham and Robert Mackey, eds., *Philosophy and Technology* (New York, 1972).

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