

# TECHNOLOGY AND THE FUTURE: ON DREAMING THE IMPOSSIBLE

by *Frederick Ferré*

*Abstract.* My comment on *Ethics in an Age of Technology*, volume 2 of Ian G. Barbour's Gifford Lectures, acknowledges the excellence of Barbour's depictions of the social-cum-technological problems facing humanity in the coming millennium. Barbour's proposed solutions, too, are reasonable—but usually presuppose fundamental reforms in social values, especially within the powerful industrialized societies. Without further analysis of technology and values, this seems to make such solutions “impossible dreams.” My thesis is that clear analysis of the ideal aspects of technology (as itself the embodiment of knowledge and values), plus clues from Alfred North Whitehead on the dynamics of social change, can reinforce hope even in “impossible” dreams. First, technology, though embodied in solid material machinery and powerful social institutions, is no more “solid” than constant reaffirmation of the values behind it (as was the case with the Berlin Wall). Second, great ideals, over time, have the power to help create the conditions of their own possibility. Social change is both “pushed” by coercive forces (e.g., climate changes) and “pulled” by great values (e.g., human dignity). Therefore there are practical benefits to be gained from attending to, and celebrating, even currently “impossible” dreams as they work to make themselves possible.

*Keywords:* anarchic mentality; artifact; instrument; obscurantism; practical intelligence; praxis; speculative intelligence; technology; vertical integration.

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All who work in the borderlands among science, technology, and religion are in debt to Ian Barbour. His frameworks are comprehensive; his balanced, factually reliable accounts are illuminating; his proposals are wise. I am glad to have a public opportunity to express my admiration for this colleague and friend, with whose views I have been in steady dialogue for nearly forty years.

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I have been asked to respond to the second volume of Barbour's distinguished Gifford Lectures (Barbour 1993), with a special eye toward technology and the future. This assignment gives me cause to go first to the roots of technology, since what we think technology capable of *becoming* depends on what we think it *is*.

Technology, at heart, is the instrumental embodiment of intelligent purpose. As such, every artifact, however humble or grand, presupposes (and in this sense "contains" residues of) knowledge and value. There is no possibility of a technological solution to a practical problem without some degree of knowledge—at least of the sort we call "know-how," or practical intelligence. However strong the purpose, there could be no technology developed in a cognitive vacuum. Likewise (but vice versa), pure knowledge, devoid of any value or disvalue to motivate purpose, would result in no implemented activity at all. Technology is born only where knowledge and values breed. On the "meta"-level, this is how philosophy of science and philosophy of religion relate to the newer field we call philosophy of technology.<sup>1</sup>

This understanding of technology is meant to cover a very wide range. It excludes some domains of praxis, like the fine arts and religion, which are done for their own sakes and thus not "instrumental" in the sense I intend. But it includes artifacts of the simplest sort, like "found" objects (e.g., stone hand axes) used to achieve valued ends like hollowing dugout canoes or killing saber-toothed tigers. And it includes also complex social artifacts like universities or stock markets or multinational corporations. Our modern institutions, as methods of implementing knowledge some possess in achieving purposes some value, also are part of the technological face of the modern world.

Please note that a technological artifact need not be the product of consensus in values. Few are. One of the main grounds for dispute over different technologies is the conflict in values that are embodied in various implements. Whips and thumbscrews are not consensus items. For the slaves who feel their bite, they are terribly negative implements; for the masters who through them achieve domination, they are the order of the day.

These are punitive technologies out of the old, craft-tradition days of human practical arts. They require very little in the way of theoretical knowledge, though the discovery of the screw and lever were important breakthroughs for ancient science.

What is distinctive about modern technology, sometimes called "high" technology, is that the leadership role has been taken from age-old "know-how," that is, methods of practical intelligence (dis-

covered by chance, noticed by practical intelligence, and preserved by family lore or guild secrecy), and replaced by theoretical “know that.” James Clerk Maxwell’s mathematical equations and Heinrich Hertz’s laboratory demonstrations of electromagnetic waves, for example, were necessary conditions for Guglielmo Marconi’s patents for his wireless devices and thus for the birth of the broadcast industry. Albert Einstein’s further meditations on Maxwell’s equations are ingredients in each nuclear power plant and hydrogen bomb. Today our civilization’s characteristic technologies are by-products of theoretical possibilities, drawn from the sciences, joined to purposive values animating some group or class or nation. Since values often clash, a dream for one may be another’s nightmare.

Today, as Ian Barbour shows with great lucidity, many sensitive souls in the global North find themselves in a nightmarish situation, trapped in technological structures of forced consumerism, injustice, and environmental violence. These are institutional technologies, vertically integrated and interlocking in most areas of modern life. The apparently simple hamburger at the neighborhood fast-food franchise is tied by the back door to multinational investment strategies devouring rain forest desperately needed as “lungs” for the earth; by the front door it is tied to a colossal transportation complex including automobile manufacturers, highway (trucking, cement, rubber, steel, petroleum) interests, and political power beyond calculation. Similarly implacable webs of technical, economic, and political interconnection hold us immobile in an inequitable health-providing system literally beyond the control of those who would reform it.

No one tells about these interlocking problems more clearly than Ian Barbour. His book is a rich trove of information about the writhings of most of the great technological tentacles that modern scientific knowledge, combined with modern values of profit and control, have wrapped around the earth and its inhabitants, north and south. Yet the great fact remains that Barbour’s tone never approaches despair. His voice remains steady. Each discussion, and the book as a whole, ends on a note of hope, though repeatedly, in one way or another, he acknowledges that his prescriptions “would require major shifts from the values current in industrial societies” (Barbour 1993, 251).

Hope is a precious commodity. I want to share in it, too. Its alternative, despair, as Barbour rightly says, is “a self-fulfilling prophecy when it leads people to think that action is futile.” (Barbour 1993, 266). But how can we reasonably hope, when what we hope is clearly now an impossible dream?

Alfred North Whitehead is one who gives us grounds for reasonable hope if his analysis of technology, institutions, and historical change is anywhere near the mark. I plan therefore in what follows to unpack these grounds, in independence from the usual metaphysical issues raised by process thought (with which Barbour briefly states his sympathies) (Barbour 1993, 263–64) to push him a little further in the direction he already wants to go.

My main texts for this purpose will be Whitehead's relatively late books, *The Function of Reason* (1929) and *Adventures of Ideas* (1933). In the first of these, Whitehead defines the function of reason as "to live, to live well, to live better" (Whitehead 1929, 8). Mentality is the power of novelty, the capacity to deal with possibilities not actual in the immediate environment. Mentality is the ability to innovate some means of coping with a practical problem. But mentality needs self-control. By itself, undisciplined by actuality and running loose among possibilities, it is anarchic. Reason, then, is mentality rising to discipline itself. Reason is at work when some successful innovation is noticed and remembered and put to work again when needed. This is practical reason. It transforms a lucky "dodge" into a method. Combining at least a grain of knowledge, the memory of past success, with an urge toward life, it is the source of what I have called technology.

But methods, successful though they may be, tend to grow stale. Practical reason says, "If it ain't broke, don't fix it," thereby discouraging experimentation with potentially still better methods. After a while, even good methods, unimproved, lose quality. Fortunately, the anarchic tendency in mentality is still active. It draws us toward play for its own sake with pure possibilities. It disturbs the practical reason's status quo with gratuitous speculations. In this indirect way it aids the urge "to live well, to live better." But speculative reason also needs some internal principles of self-control. These are what we call logic. Logic provides method for the self-control of speculation. Logic does for speculative reason what practical reason does for sheer mentality. A particular logic, like any method, can grow stale and repressive unless gadfly mentality is allowed to probe and criticize even here. And so the endless process should advance, with better methods—embodied in technologies, great and small, generated within general "schemes" of fundamental ideas and values—constantly replacing more limited ones for the sake of "living better."

Unfortunately, the tendency of practical reason to rest content with existing methods, and the enormous investment of any age in its artifacts and institutions, collides head-on with the speculative

urge to criticize the actual. Whitehead (1929, 43) calls this effort to oppose the quest for new methods (artifacts and institutions as well as ways of thinking) “obscurantism.” The obscurantists are always more powerful, at least in the short run, since they stand firmly on the actualities of things with all the causal levers in their hands. “This is how it is done; this is how the world is; to get along, you must go along.”

This can hardly be the last word, however, in light of the deep historical changes that can be observed to have happened. The actual world is never permanent. Like the Berlin Wall, it is solid only so long as it is perpetuated, maintained by the “scheme” of general ideas, values, and material implements that give it institutional meaning, but for two main reasons these are subject to erosion and replacement. On one side are the coercive circumstances, the “brute” forces that push historical change. In the case of the Berlin Wall, among these must count the military forces of the NATO allies and the economic realities of bungled policy in the former Warsaw Pact countries. On the other side are the attractive powers of beautiful possibilities, the values that pull even before circumstances permit their realization. Human dignity, democracy, freedom—these kept their beacon shining, we now know, long before the wall came down.

These two poles of historical change, the push by efficient causes and the pull by final ones, must not be turned into an absolute dualism. The so-called brute forces are not without their conceptual poles. Every item of military hardware is the brainchild of someone’s knowledge animated by someone’s values and purposes. Economic reality essentially requires human valuing. A grand alliance is a supreme example of effective purpose sustained over time by constant renewal and refreshment.

The grip of the actual, then, is always and only “for the time being.” Even the worldwide mega-institutions of the modern technological colossus are fueled by ideas and values. How might we reasonably hope that a just and sustainable future, such as Barbour wants, might really rise against the grain of the actual and become actual?

First, our hope may reasonably be grounded, in part, on the coercive forces that are even now smashing against the foundations of the actual system. Whitehead, in *Adventures of Ideas*, makes reference to “the Barbarians” (who forced radical changes on Roman civilization) and “Steam” (which, in the Industrial Revolution, transformed Europe and America) (Whitehead, 1933, ch 1). In our age their equivalents are the environmental and resource

problems, of which Barbour writes with such authority, which simply will not allow themselves to be deconstructed as easily as someone's text. Our technological successes are killing us; change will come whether we are ready or not. The ozone hole grows; massive extinctions continue; water supplies and arable land dwindle; human populations rise. Dealing with these with the entrenched methods of modernity, in atomistic, piecemeal ways, while keeping sacrosanct the quantitative economic concerns of banks and multinational corporations, seems increasingly futile. The obscurantists who object to speculating about new ways are thus being coerced willy-nilly by agents of *efficient* causality into greater openness toward alternative methods. This is a ground of hope in the long term, though, as Barbour says, there may well be "a very high cost in social disruption and human suffering" (Barbour 1993, 266).

But, second, and on the other side, we may hope that dreaming great, impossible dreams—if they are clear and luminous enough—may have effect as *final* causality. This is why we need the impossible dreamers, as steady beacon lights to help us navigate through the difficult shoals ahead.

For this reason I would have liked Barbour to have been even more visionary, freer in his speculations toward the attractive postmodern order of things for which he rightly yearns. This is not to complain about what the book has actually accomplished. It ends with what for me is a satisfyingly romantic evocation of the image of Earth from space. It does have its moments of inspiration. Barbour's splendid, balanced work will long nourish those who turn to its pages.

But if Whitehead is right, our age calls for a fuller balance between "balance" itself and inspiration. Reasonable, fact-oriented concern for the future is one essential pole pushing toward needed change; but historical process demands also other more "anarchical" styles—such as preaching, prophecy, poetry, and play—in which ideal goals in all their naked attractiveness (and impossibility) may be kept in dance before our minds. The logic of practical reason needs to be needled and lured by the wilder logic of speculative reason.

Crazy ideals like these may be "only" such stuff as dreams are made of; but intangible dreams today could turn out to be nothing less than tomorrow's technologies and institutions. As Dom Helder Camara, quoted approvingly by Barbour, reminds us: "When we dream alone it is only a dream. When we dream together, it is no longer a dream but the beginning of reality" (Barbour 1993, 266).

#### NOTE

1. For development of these themes, see Ferré 1988, especially chapters 1–4.

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