Editorial

The New Politics of Technology

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The problem of technology—how to spread its fruits, limit its excesses, and save ourselves from its destructive side—ranks high among the great challenges of our time. The problem is so vast, so complicated, so many-faced—from stem cells to fuel cells to weapons of mass destruction—that it is often difficult to keep a level head about it, and often hard for even the most judicious scientists, statesmen, and citizens to know how to think and what to do.

As with so much else in our national life, the events of September 11 brought the problem of technology into focus. We realized the devastation that modern technology could cause us, especially if terrorists someday use high-tech weapons, not planes, to attack our cities. But we also recognized the superiority of our technological civilization to backward-looking fundamentalism, and took renewed pride in America's basic decency and great success. We realized how blind our comfortable Silicon Valley society had become to the presence of real danger and real evil, and to the fact that many people around the world deeply resent us for what we are and envy us for what we have. But we also came to recognize that only advanced technologies—like vaccines, missile defenses, and high-tech surveillance—could defend us against technological attack, and aid us in combating our most dangerous enemies with great precision and minimal casualties.

Taken together, we seem to be living in a strange moment—with the twin expectations of endless improvements and looming disaster, of perfected health and colossal death. How do we sort all this out? How do we live well and wisely amid the dreams, nightmares, and daily challenges of technological society? And how will the problems of technology transform our public life in the years ahead?

The aim of this journal is to help all of us to think a little more clearly about the burdens and blessings of modern technology—both in our national politics and our everyday life; to help us avoid the extremes of euphoria and despair that new technologies too often arouse; and to help us judge when mobilizing our technological prowess is sensible or necessary, and when the preservation of things that count requires limiting the kinds of technological power that would lessen, cheapen, or ultimately destroy us. It will consider the larger questions of technology, human nature, and modern democracy, and the practical questions of governing science.

We begin with three caveats:

The problem of technology is not exactly new. Restless innovation has been central to the American way of life from the beginning; the "rage for the new" is a deep-rooted part of the American character; and the resulting technological

achievements have been both indisputable and impressive. At the same time, the disruptions of progress have always caused many to lament the arrival of the "machine in the garden" or the microscope in the womb. On both the left and the right, many have worried that we might become too confident in our power over nature, too narrow in our aspiration for "improvement," and increasingly blind to the goodness of things not entirely of our own making. Moreover, the fear that our way of life might be destroyed in an instant, from afar, with little warning, is at least as old as the first atomic explosion, and was sustained for many decades amid the "mutually assured destruction" of the Cold War. When it comes to the dilemmas of technology, we are not exactly innocent, even if we are just emerging from a decade of adolescent optimism.

The problem of technology cannot be separated from the character of human life as a whole. Technological problems—from broken machines to bad computer code to medications with side effects—can often be fixed with technological solutions. But the problem of technology—our mixed and complicated technological condition—is here to stay. Living well with this condition often requires developing new and better technologies, and we should all be thankful that America produces and nourishes many brilliant and inventive minds. But the practical gifts of the technologist and the empirical knowledge of modern science provide little help in discerning when to mobilize, when to pause, when to retreat, and when to tolerate particular technological ends or means. This requires, instead, some idea of what the good life and the good society look like, some idea of the distinct virtues and limitations of one's own society, and some sense of the permanent limitations of human beings in all places and all times. Indeed, it is not the belief in Progress that should bind us most forcefully to the technological project, but the permanence of human imperfection, folly, and evil, which often makes developing new technologies a moral imperative.

Finally, the problem of technology is not the only problem worth thinking about, and better technology is not the only remedy worth seeking for the ills of human life. Indeed, one of the great shortcomings of modern society is that seeking remedies (or "technological therapy") becomes our overriding aim, crowding out the search for wisdom, love, excellence, and holiness that is central to living a full human life. It is one of the great paradoxes of being human that the kinds of vulnerability, danger, and suffering that technology aims to overcome often awaken our greatest souls to their greatest achievements. Many of the darkest uses of technology—for coercion and slaughter—often spur the kinds of witness, or insight, or excellence, or courage that even the most ingenious civilization still sees as somehow higher than ingenuity. This does not mean, of course, that we should go hunting after misery or disaster, which will never stop hunting us. It is only to suggest that long and healthy lives are not the only ends worth pursuing, and ingenuity not the only virtue worth honoring—great as both health and ingenuity surely are.

While this journal will direct its attention to technologies of information, exploration, warfare, industry, and entertainment, among many others, we will pay special attention to the complicated questions that surround biomedical science and biotechnology. Modern science and technology have always been distinctly concerned with biological life—how it works, how it fails, and how it might be improved. Perhaps more than any other area of emerging technology, advances in biotechnology will shape the character of human life in the years ahead. This includes both the possibility and expectation of better health and longer life, but also the fear of destruction and dehumanization, of agents that kill or powers that corrupt. Biologists are, at different times, the most utopian and most realistic of modern technologists: sometimes behaving as if the problems of life and death, body and psyche, might be overcome by their ingenuity, yet also developing vaccines and bio-defenses that are necessary precisely because of the perennial existence of human evil and mortal danger.

More profoundly, the new biology has altered the way human beings perceive the most significant elements of being human: *birth*, as a result of new powers of control over human procreation; *childhood*, as a result of new medications to "improve" or control the behavior of the young; *happiness*, as a result of new medications to alter moods and anesthetize demons; *human identity and responsibility*, as new maps of the mind and the genome redefine the individual in terms of biological machinery; and *human finitude and death*, as gratitude for the blessings of modern medicine deforms into a false expectation of endless life.

In recent years, the field of bioethics has been—with a handful of remarkable exceptions—largely adrift. It has too often disregarded the moral and religious views that shape the outlook of many citizens—giving them neither full voice nor adequate respect. And it has too often abandoned the deeper questions of human dignity and human nature to focus narrowly on maximizing personal choice ("autonomy") and distributing medical resources more equally ("social justice"). These are both important concerns, but they are not the only concerns, and they do not finally help us understand how biotechnology will change how we live, what we value, and who we are. One of the major purposes of this journal will be to refine and enlarge the vision of bioethics, and to connect the central concerns of bioethics to the larger questions of technology, progress, human nature, and the American character. In doing so, we will try to make the case for self-government and public deliberation in areas of science that are both controversial and complicated—precisely because they affect the whole of human society, not just their scientific practitioners.

This brings us, rightfully, to the subject of politics. Two general observations about the relationship between modern science and liberal democracy seem especially pertinent. First is the fact that the fathers of modern science envisioned their project, at least partly, as a remedy for the problems of politics. They

were not blind to human passions, human evil, or man's lack of innocence—which is to say, the very things that make politics both necessary and messy. But they sought to moderate men's passions by making men more comfortable, and to set aside those eternal questions that could never peacefully be answered in favor of a new science that provided reliable and useful knowledge. On the whole, their project has been a great success. Modern man is healthier, happier, and more peaceful than most of his ancestors. But the new science has not done away with the need or the virtue of political life, or the responsibility of finding right order or tolerable compromises among the human passions that even a triumphant technology could not fully extinguish.

Second is the fact that liberal democracy could not flourish without modern science and technology. At the heart of liberal freedom is the belief in a "better life," and central to achieving a better life is getting or making better technology. One wonders: Is it even possible to think about freedom or democracy today without technology—or a free nation that is not also an advancing nation? Yet, it remains an open question whether science and technology, seen as ends in themselves, need liberal democracy at all; or whether science and technology might flourish, at least for a time, in otherwise tyrannical and oppressive regimes. Nazi Germany and the Soviet Union are worth pondering in this regard, as is modern China. Liberal freedom clearly needs modern science, but modern science may not always need liberal freedom, and may on occasion find liberalism's special concern for human dignity and individual rights a distraction from the grand aims of the scientific enterprise. We should therefore remember that the ends of science and the ends of liberty are not always the same, and that when they conflict it may be necessary to act to defend liberal principles, rightly understood.

The politics of technology in America is as complicated as the state of technology itself, and as contested as the dueling images of man and nature that lie not far beneath the surface of all political debates. We are all technologists. We all believe in progress. But not all in the same way.

Modern liberalism and conservatism (or the Democratic and Republican parties) offer limited guidance for understanding the new politics of technology—both where it stands and where it is heading. Conservatives attack the FDA for slowing down medical research, while seeking new limitations on biotechnologies that manipulate nascent human life or potentially affect human nature. Liberals are repulsed by our hubristic exploitation of the environment, but celebrate biotechnical interventions in human life that involve far deeper manipulations of what is natural and sacred. Conservatives sow doubt about the feasibility of embryonic stem cell research, while championing with unabashed confidence grand technological projects like missile defense. Liberals claim a special commitment to protect vulnerable human subjects from research, and yet champion experimental techniques for making babies that put at risk the most vulner-

able and voiceless subjects of all: children-to-be. Meanwhile, on an issue like buying and selling human organs to increase supply, the right and the left both split down the middle: conservative devotion to the market battles with conservative reverence for life, liberal devotion to improving medicine battles with liberal concerns about the commodification of the body.

Among both liberals and conservatives, there are those that see modern life as inauthentic, profane, and corrosive of the good. But when it comes to protecting us against the things they fear most—destroying nascent human life for research, exploiting the environment for its resources—most liberals and conservatives turn to other, better, more ethical technologies as the solution, whether hydrogen cars or adult stem cells. Both see America's achievement as inextricable from its technological progress, if occasionally worrying that too much government is slowing us down (conservatives), or that the lack of government activism is depriving poor countries or poor citizens of the benefits of our technological success (liberals).

Taken as a whole, our mission and our moment is inseparable from facing up to our technological condition: savoring it, defending it, and improving it, but also coping with it, transcending it, and reining it in. There is nothing especially laudable in romanticizing lost worlds, or pretending that societies without running water or modern medicine are more "authentic" than our own, or believing that disarming ourselves will make the perils of technological power disappear. On the flip side, it is misguided to believe that lost worlds have nothing to teach us, or that our world is necessarily the finest human achievement yet on the scene, or that even politically necessary and morally justified uses of technological power (drilling, drugging, dissecting, destroying) are wholly innocent. For they usually are not.

Our problem—the problem that will determine whether America has reason to believe in the future, and whether the future we believe in is worthy of our devotion—is how we cope with the promise and perils of technology: What kinds of weapons do we build and when do we use them? In what ways do we use our growing knowledge of the human genome? When, if ever, do we intervene in the workings of the human brain to alter mind, mood, or memory? Will new genetic and information technologies endanger privacy, liberty, and modesty, and to what extent is high-tech surveillance a necessary cost of facing today's new threats to liberal society? How will watching warfare live on television change both the way we fight and our perception of war? How will watching video replays of life's great moments and worst horrors change our self-understanding, our memory, and our attitudes toward the future? How will new information technologies transform the way people encounter one another, form communities, and elect leaders? Will advanced societies pursue great technological proj-

ects—like going to Mars—that offer little obvious medical or national security benefits? Or will the NASA budget continue to decline while the NIH and Homeland Security budgets soar? How will new powers of control over human procreation on the one hand and new life-extending medicines on the other alter the relationship between the generations? How will advances in biotechnology and artificial intelligence change our relationship with animals and machines, and thus our perception of what is uniquely human?

Answering these questions will require clear thinking about scientific prospects, which means avoiding wild speculation divorced from scientific reality, but also describing scientific possibilities in a way that citizens and statesmen can judge and understand. It will require political leaders with a deeper understanding of science, and scientists who accept that superior expertise about how technologies work does not guarantee superior judgment about how they should be used, regulated, or governed.

In general, we will need to grapple with our *dependence* on modernity, the *failings* of modernity, and the *superiority* of modernity to past and present alternatives. We will need to make the case for technological society in parts of the world that often resent it, while facing up to the decadence (great and small) of technological society here at home. This is, perhaps, the political and philosophic challenge of our time, and it is one that falls, in exceptional ways, in American hands. For it is here—and perhaps in the decades ahead—that the following questions may largely be answered: Can modern life be preserved, and is modern life worth preserving? While the contributors to this journal will often disagree on the details, our answer to both these questions is a resounding, if sober, yes.

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