



Dædalus

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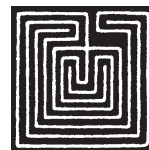
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Inside front cover: Detail from Hieronymus Bosch's "Ascent of the Blessed to Paradise" (c. 1500), oil on wood, Palazzo Ducale, Venice, Italy. "The modern faith in progress is the offspring of a marriage between seeming rivals – the lingering influence of Christian faith and the growing power of science – in early-nineteenth-century Europe. . . . Modern projects of universal emancipation are earthly renditions of the Christian promise of salvation." See John Gray on *An illusion with a future*, pages 10 – 17. Photograph © Scala/Art Resource, N.Y.

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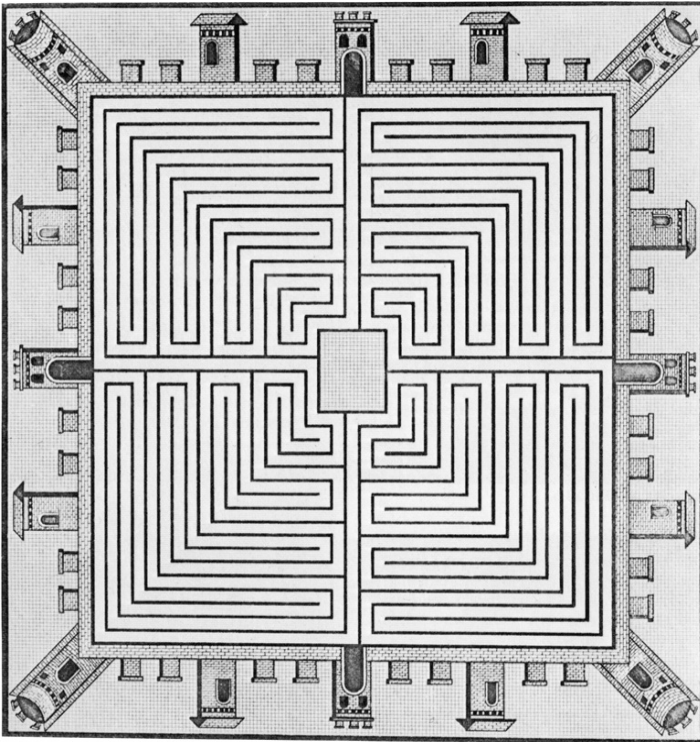
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Nineteenth-century depiction of a Roman mosaic labyrinth, now lost, found in Villa di Diomede, Pompeii

Dædalus was founded in 1955 and established as a quarterly in 1958. The journal's namesake was renowned in ancient Greece as an inventor, scientist, and unriddler of riddles. Its emblem, a maze seen from above, symbolizes the aspiration of its founders to “lift each of us above his cell in the labyrinth of learning in order that he may see the entire structure as if from above, where each separate part loses its comfortable separateness.”

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Torture in Iraq & the rule of law in America

Doubts about the legal and moral legitimacy of American interrogation practices in the war on terror first emerged in regard to Afghanistan. In January of 2003, for example, *The Economist* published a remarkable set of articles on torture, detailing some of America's more dubious practices. Yet as the editors of *The Economist* noted, within the United States itself the discussion of torture was "desultory."

That all changed in May of 2004, when the CBS television program *60 Minutes* and *The New Yorker* released photographs from the Abu Ghraib prison in Iraq. These pictures provoked worldwide outrage and, even more importantly, sparked a long overdue public debate in the United States about torture and the permissible limits of interrogation in the aftermath of the September 11 attacks.

As one might expect in a legalistic culture such as ours, some of this debate has revolved around the definition of torture itself. Common lay understandings of torture are in fact quite different from those articulated by many American lawyers. One reason is that the U.S.

Senate, when ratifying in 1994 the United Nations Convention Against Torture and Other Cruel, Inhuman, or Degrading Treatment or Punishment, offered what one might call a more 'interrogator-friendly' definition of torture than that adopted by the UN negotiators. Thus the Senate, as is its prerogative, stipulated while consenting to the Convention that

the United States understands that, in order to constitute torture, an act must be *specifically intended* to inflict *severe* physical or mental pain or suffering and that mental pain or suffering refers to *prolonged* mental harm caused by or resulting from: the intentional infliction or threatened infliction of *severe* physical pain or suffering; the administration or application, or threatened administration or application, of mind-altering substances or other procedures calculated to *disrupt profoundly* the senses or personality; the threat of *imminent* death; or the threat that another person will *imminently* be subjected to death, severe physical pain or suffering, or the administration or application of mind-altering substances or other procedures calculated to *disrupt profoundly* the senses or personality. (emphases added)

Each and every term I have italicized here in the 1994 Senate resolution was diligently parsed in the recently disclosed Pentagon "Working Group Report on Detainee Interrogations in the Global War on Terrorism," submitted in March of 2003 to Secretary of Defense Donald Rumsfeld. Given the Senate's

Sanford Levinson is W. St. John Garwood and W. St. John Garwood, Jr. Centennial Chair in Law and professor of government at the University of Texas at Austin. He is the author of "Constitutional Faith" (1988) and "Written in Stone" (1998) and the editor of "Torture: A Collection" (2004).

highly qualified endorsement of the UN Convention, it is not at all surprising that the report submitted to Rumsfeld appears to have maximized the scope of authority (and power) allowed American interrogators who wish to operate within the law.

The Pentagon report closely followed an analysis submitted to White House Counsel Alberto Gonzales in 2002 by the Office of Legal Counsel (OLC) within the Justice Department. According to the OLC, “acts must be of an extreme nature to rise to the level of torture Physical pain amounting to torture must be equivalent in intensity to the pain accompanying serious physical injury, such as organ failure, impairment of bodily function, or even death.” The infliction of anything less intense than such extreme pain, according to Jay Bybee, then head of the OLC (and now a federal judge on the Ninth Circuit Court of Appeals), would not, technically speaking, be torture at all. It would merely be inhuman and degrading treatment, a subject of little apparent concern to the Bush administration’s lawyers.

The current debate has sometimes gone beyond terminological quibbles. In the past few months, some experts have forthrightly defended the propriety of torture, however defined, at least in some very limited situations. Harvard Law professor Alan Dershowitz, who has taken such a position, nonetheless is extremely concerned to minimize the use of torture. He has, therefore, vigorously defended the idea that the executive branch should be forced to go to independent judges in order to obtain “torture warrants,” which could be issued only after careful examination of executive branch arguments as to the ostensible necessity of torture in a given instance.

Still other experts, including Dershowitz’s Harvard colleague Philip Heymann and U.S. federal judge Richard Posner, have disagreed, arguing that such warrants would inevitably prove chimerical as a genuine control and would instead normalize torture as an interrogational tool. Perhaps torture is proper under very restricted circumstances, as Posner in particular agrees, but far better that it be defended *ex post* (after the fact) through specific claims of necessity or self-defense than *ex ante* (before the fact) through the issuing of a warrant.

This debate has been informed both by current events and, for some, by the views of the men who drafted the U.S. Constitution. On the one hand, there is a growing sense (articulated by writers like Philip Bobbitt) that war in the future, at least where the United States is concerned, is unlikely to fit the traditional pattern of threats by states, and is far more likely to involve threats from organizations that have no capitals at which traditional retaliation can be directed.¹ Rules and understandings developed to constrain the conduct of wars between states – where, among other things, mutual self-interest dictates limits on what can be done even to one’s enemies – may be inadequate or even, as suggested by White House Counsel Gonzales in a memorandum to the president, “obsolete” in regard to the so-called asymmetric warfare of the twenty-first century. Such new modes of warfare require that we rethink our basic approach to waging war – and also the basic principles of law and morality.

On the other hand, it is equally important to grasp just what the basic princi-

1 See Philip Bobbitt’s magisterial study, *The Shield of Achilles: War, Peace, and the Course of History* (New York: Knopf, 2002).

ples of law and morality have been in the United States. As recent work on the origins of the U.S. Constitution has demonstrated, the founding fathers hoped to create a government strong enough to defend the fledgling nation against its many potential enemies, including European powers as well as Indian tribes much closer to home.² Among the key provisions of the 1787 Constitution were those authorizing a standing army and effectively unlimited taxing authority to Congress to pay for “the common defense.”

James Madison and Alexander Hamilton, for all their notable differences, seemed to be in agreement on the importance of this point. Thus Madison, in *Federalist* No. 41, asked if it was “necessary to give [the new government] an INDEFINITE POWER of raising TROOPS, as well as providing fleets; and of maintaining both in PEACE as well as in WAR?” He believed that the answer was “so obvious and conclusive as scarcely to justify” any real discussion of anti-Federalist criticisms of the very idea of a standing army. The United States had to structure its own policies by anticipating the likely actions of other states: “The means of security can only be regulated by the means and the danger of attack. They will, in fact, be ever determined by these rules and by no others.” Hamilton expressed a related conviction in *Federalist* No. 23: “[I]t must be admitted as a necessary consequence that there *can be no limitation of that authority* which is to provide for the defense and protection of the community in any matter essential

to its efficacy – that is, in any matter essential to the *formulation, direction, or support of the NATIONAL FORCES*” (first emphasis added). Thomas Hobbes could have done no better in defending the absolute authority of the sovereign.

The Constitution may proclaim that sovereignty rests with “We the People.” But the implication of both Madison’s and Hamilton’s arguments is that, practically speaking, at least in times of war, sovereignty really rests with a handful of government officials – not with “the People.”

Now consider the following maxim: “There exists no norm that is applicable to chaos.” It comes not from Madison or Hamilton, but from Carl Schmitt, the leading German philosopher of law during the Nazi period. Schmitt contended that legal norms were only applicable in stable and peaceful situations – and not in times of war, when the state confronted “a mortal enemy, with the threat of violent death at the hands of a hostile group.” It follows that conventional legal norms are no longer applicable in a state of emergency, when war and chaos pose a standing threat to public safety. To adopt the language of American constitutional law, every norm is subject to limitation when a compelling interest is successfully asserted, and it is hard to think of a more compelling interest than the prevention of violent death at the hands of a hostile group.

But what this means is that one can never have confidence that *any* particular constitutional norm – beyond that of preserving the state itself – will be adhered to. Any attempts within the Constitution to tie the government’s hands with regard to defending the nation, then, may be mere “parchment barriers,” to use Madison’s dismissive term (which he conceived during the period

2 See particularly David C. Hendrickson, *Peace Pact: The Lost World of the American Founding* (Lawrence: University of Kansas Press, 2003); and Max M. Edling, *A Revolution in Favor of Government: Origins of the U.S. Constitution and the Making of the American State* (Oxford: Oxford University Press, 2003).

when he doubted the wisdom of adding a Bill of Rights to the Constitution). Both Madison and Schmitt suggest, then, the most likely response to such barriers is a “*necessary* usurpation of power” (as Madison put it in *Federalist* No. 41; emphasis added).

Schmitt, described by Herbert Marcuse as the most brilliant Nazi theorist, may have much to tell us about the legal world within which we live and, even more certainly, seem to be careening. Although some analysts have suggested that the Bush administration has operated under the guidance of the ideas of German émigré Leo Strauss, it seems far more plausible to suggest that the true *éminence grise* of the administration, particularly with regard to issues surrounding the possible propriety of torture, is Schmitt.

September 11, it is said, changed everything. What this means, among other things, is that for many the existing world of ‘the normal’ vanished in an instant, to be replaced by the specter of terrorist groups armed with weapons of mass destruction. And what *this* means is that pre-September 11 norms and expectations are being reconfigured in terms of this new ‘normality’ of endless, frightening threats posed by ‘a mortal enemy.’ Ordinary norms – whether the assumption that anyone arrested by American police will have an opportunity to consult with a lawyer, or the assumption that the United States will be faithful to its public pronouncements denouncing torture (as well as to its commitment under the UN Convention absolutely to refrain from torture whatever the circumstances) – are now up for grabs. “Sovereign is he,” wrote Schmitt, “who decides on the state of the exception,” or, much the same, who is allowed to redescribe what is ‘normal.’

Administration lawyers whose memoranda have only recently been disclosed

seem completely willing to view George W. Bush as the de facto sovereign. Their documents display what can only be called contempt not only for international law, but also for the very idea that any other institution of the American government, whether Congress or the Judiciary, has any role to play. Thus both the Working Group Report submitted to Secretary Rumsfeld and the memorandum prepared earlier by the OLC argued that the Constitution’s designation of the president as commander in chief means that “the President enjoys *complete discretion* . . . in conducting operations against hostile forces” (emphasis added). Complete discretion, of course, is a power enjoyed *only* by sovereigns. Non-sovereigns, by definition, are subject to the constraint of some overriding authority. The president, according to administration lawyers, has no authority to which he must answer. Prohibitions of international and domestic law regarding the absolute impropriety of torture simply do not apply to him. “In order to respect the President’s inherent constitutional authority to manage a military campaign, [federal laws against torture] must be construed as inapplicable to interrogations undertaken pursuant to his Commander-in-Chief authority,” the OLC advised. “Congress lacks authority . . . to set the terms and conditions under which the President may exercise his authority as Commander-in-Chief to control the conduct of operations during a war.”

It is impossible to predict whether these quite astonishing arguments (which seem to authorize the president and designated subordinates simply to make disappear those they deem adversaries, as happened in Chile and Argentina in what the Argentines aptly labeled their “dirty war”) would prevail before a court of law. We shall know more after

the Supreme Court rules in several cases it heard in the spring of 2004 regarding the detention in Guantanamo of foreign combatants and at least one American citizen (Jose Padilla, who has been accorded almost no legal rights since his 2002 arrest at O'Hare International Airport).

Far more important, however, is the articulation, on behalf of the Bush administration, of a view of presidential authority that is all too close to the power that Schmitt was willing to accord his own Führer.

One temptation is to stop right here, especially if one shares my own doubts about both George W. Bush and the war in Iraq. But that would be too easy, for a number of reasons. One is that there *are* mortal enemies of the United States who *do* threaten violent death. No political leader could suggest that it is *not* a compelling interest to prevent future replications of September 11. Moreover, as already indicated, one can cite not only the egregious (though brilliant) Schmitt, but also such American icons as Madison and Hamilton for views that are not really so completely different from those enunciated by the Bush administration.

And so we already have many well-credentialed lawyers, several of them distinguished legal academics, who are quick to defend everything that is being done (or proposed) by the Bush administration as passing constitutional muster. They have enlisted in defending a war on terror that is almost certainly of infinite duration. They appear recklessly indifferent to the fact that their arguments, if accepted, would transform the United States into at least a soft version of 1984, where our own version of Big Brother will declare to us who is our enemy *du jour* and assert his own version of a "triumph of the will" to do everything and anything – including torture – in order to prevail.

A final quotation from Carl Schmitt is illuminating: "A normal situation has to be created, and sovereign is he who definitively decides whether this normal state actually obtains. All law is 'situation law.' The sovereign creates and guarantees the situation as a whole in its totality. He has the monopoly on this ultimate decision." This is precisely the argument being made by lawyers within the Bush administration.

The debate about torture is only one relatively small part of a far more profound debate that we should be having during this most important of election years. Do "We the People," the ostensible sovereigns within the American system of government, accept the vision of the American president articulated by the Bush administration? And if we do, what, then, is left of the vaunted vision of the rule of law that the United States ostensibly exemplifies?

– June 21, 2004

John Gray

An illusion with a future

Questioning the idea of progress at the start of the twenty-first century is a bit like casting doubt on the existence of the Deity in Victorian times. The stock reaction is one of incredulity, followed by anger, then moral panic. It is not so much that belief in progress is unshakable as that we are terrified of losing it.

The idea of progress embodies the faith – for it is a faith, not the result of any kind of empirical inquiry – that the advance that has occurred in science can be replicated in ethics and politics. The line of reasoning proceeds as follows: Science is a cumulative activity. Today we know more than any previous generation, and there is no obvious limit to what we may come to know in the future. In the same way, we can indefinitely improve the human condition. Just as human knowledge continues to increase

beyond anything dreamt of in earlier times, the human condition can be better in the future than it has ever been in the past.

This is a very recent creed. Nothing like it existed before it emerged in Europe around two centuries ago. Yet today it seems to have become indispensable. No one imagines progress to be inevitable, but to deny that it is *possible* seems tantamount to snuffing out all hope. In terms of mass killing of humans by humans, the twentieth century was the worst in history; but surely – it will be objected – we must believe that such horrors can be avoided in the future. How else can we go on?

To reject the very idea of progress must appear extreme, if not willfully perverse. Yet the idea is found in none of the world's religions and was unknown among the ancient philosophers. For Aristotle, history was a series of processes of growth and decline no more meaningful than those we observe in the lives of plants and animals. Early modern thinkers such as Machiavelli and some thinkers of the Enlightenment shared this view. David Hume believed that history is cyclical, with periods of peace and freedom being regularly followed by war and tyranny. For the great Scottish skeptic, the oscillation between civiliza-

John Gray is professor of European thought at the London School of Economics. The author of many books on political theory, he is a regular contributor to "The New Statesman" and "The Independent." His most recent books are "Straw Dogs: Thoughts on Humans and Other Animals" (2002), "Al Qaeda and What It Means To Be Modern" (2003), and "Heresies: Against Progress and Other Illusions" (2004).

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tion and barbarism was coeval with human history; in ethical and political terms the future was bound to be much like the past. The same view is found in Hobbes, and even Voltaire was at times inclined to it.

These thinkers never doubted that some periods of history are better than others. None of them was tempted to deny the fact of improvement, where it existed; but they never imagined it could be continuous. They knew there would be times of peace and freedom in the future, as there had been in the past; but they believed that what was gained in one generation would surely be lost in another. They believed that in ethics and politics there is no progress, only recurring gain and loss.

This seems to me to be the lesson of any view of the human prospect that is not befogged by groundless hopes. Progress is an illusion – a view of human life and history that answers to the needs of the heart, not reason. In his book *The Future of an Illusion*, published in 1927, Freud argued that religion is an illusion. Illusions need not be all false; they may contain grains of truth. Even so, they are believed not because of any truth they may contain, but because they answer to the human need for meaning and consolation.

Believers in progress have identified a fundamental truth about modern life – its continuous transformation by science; but they have invested this undoubted fact with hopes and values inherited from religion. They seek in the idea of progress what theists found in the idea of providence – an assurance that history need not be meaningless. Those who hold to the possibility of progress insist that they do because history supports it. They cling to it because it allows them to believe that history can be more than a tale told by an idiot.

If today life without the possibility of progress seems insupportable, it is worth asking how this state of affairs has come about. Most human beings who have ever lived lacked any such hope, and yet a great many of them had happy lives. Why are we so different?

The answer lies in our history. The modern faith in progress is the offspring of a marriage between seeming rivals – the lingering influence of Christian faith and the growing power of science – in early-nineteenth-century Europe. From the eschatological hopes of Christianity we inherit the belief that meaning and even salvation can be found in the flux of history. From the accelerating advance of scientific knowledge we acquire the belief in a similar advance by humanity itself.

From one angle, the idea of progress is a secular version of Christian eschatology. In Christianity, history cannot be senseless: it is a moral drama, beginning with a rebellion against God and ending with the Last Judgment. Christians therefore think of salvation as a historical event. For Hindus and Buddhists, on the other hand, it means liberation from time. It meant the same in Mithraism – a mystery cult that for a time among the Romans rivaled Christianity. Thus the mystical vision of liberation from time entered deeply into European philosophy, with Plato affirming that only eternal things can be fully real. History was a realm of illusions, a dream or a nightmare from which the wise seek to awaken.

Before the coming of Christianity it was taken for granted that history is without meaning. True, the belief that God reveals himself in history can be found in the Old Testament, but it is a reading of the history of the Jewish people, not of that of the species. It was only after Saint Paul turned the teaching of

Jesus into a universal religion that the Old Testament was interpreted as an account of history as a whole. This move to universalism is commonly seen as a major advance, but I am unconvinced. The political religions that wrought such havoc in the twentieth century were secular versions of the Christian promise of universal salvation. A world without such transcendent political hopes would still have suffered from ethnic and religious violence; but mass murder would not have been committed with the aim of perfecting humanity.

The role of eschatological beliefs in modern political movements has not been much studied. Amongst analytical philosophers, ignorance of religion is a point of professional honor, while social science continues to be dominated by theories of secularization that were falsified generations ago. Yet the connection between Christian eschatology and modern revolutionary movements has not gone entirely unnoticed. It is the central theme of Norman Cohn's book, *The Pursuit of the Millennium: Revolutionary Millenarians and Mystical Anarchists of the Middle Ages*. First published in 1957, Cohn's masterly study is indispensable to understanding twentieth-century politics.

The late medieval movements Cohn describes held to a radical version of the Christian eschatology: the old world was coming to an end, and a new one was coming into being without any of the flaws that had disfigured human society throughout history. The same view of history and the human future was reproduced in modern radical ideologies. Cohn's mystical anarchists believed that God would bring about this transformation in human affairs. Bakunin and Marx believed – even more incredibly – that humankind could do so unaided. A similar fantasy animated Fukuya-

ma's absurd announcement of the end of history.

It is no accident that Europe is the birthplace of Marxism, and America of neoliberalism. Neither could have arisen, or even be fully understood, outside a culture pervaded by the belief that salvation is an event in history. Modern projects of universal emancipation are earthly renditions of the Christian promise of salvation.

In contrast, the pagan world was remarkable for the extreme modesty of its hopes. For Marcus Aurelius and Epicurus, the good life would always remain the privilege of a few. The notion that the mass of humanity could be saved – or was worth saving – was unknown. Only with Christianity did the notion enter European antiquity that all humankind – or all of it that accepted the Christian message – could be saved. In holding out the prospect of an improvement in the human condition, secular humanists are renewing the vast hopes kindled by Christianity in the ancient world.

Although – unlike Bakunin, Marx, and Fukuyama – they don't proclaim an end of history, most of our secular humanists do look forward to a better world than any that history records. The catastrophes of the twentieth century may have taught them social progress is a matter of inching along rather than of great leaps forward, but they continue to believe that human action can remake the world. The method may be piecemeal social engineering rather than – as in Marx or Bakunin – revolutionary transformation; but the aim is the same.

The current conception of progress is a secular religion, but it has another and no less important source in science. Intermittent throughout most of history, the growth of human knowledge is now continuous and accelerating. Short of a

catastrophe greater than any that can be realistically imagined, the advance of science is unstoppable. This fact is the second source of the modern faith in progress.

The reality of scientific progress is demonstrated by increasing human power. There are more humans alive today than ever. The face of Earth is being transformed by human expansion. Unnumbered species of flora and fauna are being driven into extinction, and the global climate is changing. The root of this increase in human power is the growth of human knowledge. Philosophers may dispute the validity of scientific knowledge; cultural anthropologists may represent science as one belief system among others – yet, faced with the fact of growing human power, skepticism about the validity of scientific knowledge is pointless.

Still, there is loss as well as gain in the advance of science. There is no built-in harmony between human well-being and the growth of knowledge. The most predictable by-product of scientific progress, for instance, is an increase in the intensity of war. The long-term impact could be to make Earth uninhabitable to humans. Even so, it is frivolous to deny scientific progress – as some postmodernist thinkers seem to want to do. The error in the dominant modern worldview is not that it affirms progress in science to be a reality when it is not. Rather, its mistake is to imagine that the progress that has occurred in science can be replicated in other areas of human life. Human knowledge changes, but human needs stay much the same. Humans use their growing knowledge to satisfy their conflicting needs. As they do, they remain as prone to frailty and folly as they have ever been.

To question the idea of progress is not to cast doubt on the improvements that

have actually occurred. Nor does it entail rejecting the reality of universal human values. There are postmodernist thinkers who maintain that we cannot pass moral judgments on other cultures and epochs: there are only different forms of life, each with its own ideals and standards. If this were so, it would make no sense to evaluate history in terms of progress – or decline. Ethics would be like art, in which judgments can be made regarding progress and decline within particular traditions, but not between traditions whose styles vary widely. Lacking universal standards, there would be no way to judge that one culture or period in history was an improvement on any other.

There are affinities between art and ethics. The notion that one way of life could be best for everybody is like saying that one style of art could be better than every other. That is obviously absurd, but it does not mean we cannot judge different cultures and eras. No way of life is best for everybody, but some are bad for everyone.

For humans as for other animals there are species-wide goods and evils. Drawing up a list is not easy, but fortunately that is not necessary. As soon as we find a value that looks universal, we see that it clashes with other, equally universal values. Justice clashes with mercy, equality with excellence, personal autonomy with social cohesion. Freedom from arbitrary power is a great good – but so is the avoidance of anarchy. Moreover, goods may rest on evils: peace on conquest, high cultural achievement on gross inequalities. There is no natural harmony among the goods of human life.

Conflicts among basic human values do not arise only in extreme situations. In good times they may be masked, but they flow from the endemic conflicts of human needs, and they are permanent.

Ethics and politics are practical skills that humans have devised to cope with these conflicts. Unlike scientific knowledge, the skills of ethics and politics are not easily transmitted. They have to be learnt afresh with each new generation, and they are easily lost.

Humans are intensely curious, but they fear the truth; they long for peace, but they are excited by violence; they dream of a world of harmony, but they are at war with themselves. Despite tireless efforts to show that their values cohere in a single vision of the good, they do not and never will. Each value expresses an enduring human need but clashes with other human needs, equally urgent and no less permanent.

The perception that humans are somehow radically defective appears in the myths of cultures separated by long stretches of time and space. Formulated in the doctrine of Original Sin, human imperfectability is expressed most powerfully in the biblical myth of the Fall. In the form of an assertion of ingrained human delusion, it is also found in Hinduism and Buddhism. It forms part of what may be called a human orthodoxy, which recognizes that the human animal is incorrigibly flawed.

In contrast, secular humanists believe that the growth of knowledge can somehow make humans more rational. From Auguste Comte and John Stuart Mill to John Dewey and Bertrand Russell, it has been believed that progress in science would be matched by progress in society. These thinkers accepted that if intellectual progress were to falter or stop, progress in society would cease too. Yet none of them ever imagined that while the growth of knowledge continued to accelerate, ethical and political life could regress. Yet that was the reality during most of the last century, and there is no

reason to think the present reality will be any different.

The most dangerous threats confronting us today are the results of the interaction of expanding human knowledge with unchanging human needs. The spread of weapons of mass destruction is a response to intractable political conflicts; but it is also a by-product of the diffusion of scientific knowledge. Science has enabled living standards to be raised in advanced industrial societies; but worldwide industrialization is triggering a struggle for the control of scarce natural resources. It is the practical application of science that has made the present size of the human population possible; but the mix of population growth with advancing industrialization is the human cause of climate change. Science brings knowledge, but knowledge is not an unmixed good. It can be as much a curse as a blessing.

This is a thought that goes very much against the grain of Western philosophy, which, after all, was founded in the faith that knowledge and virtue go together. Socrates was able to affirm that the unexamined life is not worth living because – in Plato’s account, at any rate – he did not doubt that the true and the good are one and the same; that beyond the shifting realm of the senses there is another world in which all goods are reconciled in perfect harmony; that by knowing this other realm we can be free. This mystical faith pervades Western philosophy and underpins the modern creed of progress, in which growing knowledge is seen as the pathway to human emancipation.

The myth of Genesis has a different message. In the biblical story, the Fall of Man follows his eating from the fruit of the tree of knowledge. The result is an intoxicating sense of power, accompa-

nied by all the ills that come when flawed creatures use knowledge to pursue their conflicting ends. Greek myth teaches the same lesson when it tells of Prometheus chained to a rock for stealing fire from the gods. Knowledge is one thing, the good life another.

The power of these myths comes from the insight that humanity cannot go back. Contrary to the proclamations of Rousseau and some Green thinkers today, we cannot revert to a simple life. Once we have eaten from the tree of knowledge we must somehow cope with the consequences.

The core of the idea of progress is the illusion that knowledge enhances human freedom. The reality is that it merely increases human power. Science cannot end history; it can only add another, extremely potent ingredient to history's continuing conflicts. This is the truth intimated in the biblical myth and demonstrated in the history of the twentieth century.

Despite the evidence of experience, progress has had many evangelists over the past two hundred years. In their different ways, Hegel and Marx, Bakunin and Mill, Popper and Hayek, Habermas and Fukuyama all preach the same faith: knowledge is liberating; science can be used to create a world better than any history has known. But the most successful propagandists for the idea of progress were the French positivists Henri de Saint-Simon and Auguste Comte, who in the first half of the nineteenth century developed a cult – the Religion of Humanity, as they called it – that offered salvation through science.

Positivism is a complex body of ideas, but the tenet of the positivist creed that is relevant to my present theme is the belief that the growth of scientific knowledge enables the intractable conflicts of history to be left behind. Saint-

Simon and Comte believed that with the advance of knowledge, ethics and politics could become sciences. Once the debris of metaphysics and religion had been cleared away, science would be the source of our view of the world. A new terrestrial morality – a scheme of values having the authority of science – would be formulated. Applying this new morality, science could bring into being a global civilization without poverty or war, in which the conflicts of the past would be only memories.

Unlike many who were influenced by their ideas, the positivists did not think that religion would disappear in the new world. They recognized that it answered to enduring human needs, and they set about devising a new faith: a bizarre but, for a time, hugely successful cult, with its own priesthood and liturgy, daily observances based on the 'science' of phrenology, and even a special sort of costume fashioned – with buttons sewn up the back so that dressing and undressing could only be done with the help of others – to promote social cooperation.

The Religion of Humanity is a ridiculous confection, but the central ideas of the positivists have had an enormous influence. J. S. Mill, Karl Marx, and Herbert Spencer are only a few of the nineteenth-century thinkers who absorbed the positivist belief that science would enable the abolition of poverty and war. Lenin's project of a stateless socialist society was an echo of Marx's formula that when communism is achieved the government of men will be replaced by the administration of things – a formula Marx owed (via the French utopian socialist Louis Blanc) to Saint-Simon. At the end of the twentieth century, the positivist belief that the diffusion of science and technology would engender a universal civilization resurfaced in the neoliberal cult of the global free market.

Now, as in the past, the Enlightenment ideal of a universal civilization has triggered a violent backlash. In the late eighteenth and early nineteenth centuries, romantic and Counter-Enlightenment thinkers such as J. G. Herder and Joseph de Maistre proclaimed the value of faith and the singularity of cultures. In the twentieth century, the Nazis exalted race and instinct. Today religious fundamentalists seek to resist the advance of science by returning to a prelapsarian condition of doubt-free innocence. Such movements claim to reject the modern world and the faith in progress that drives it, but a little examination shows this to be self-deception.

The Nazis certainly rejected Enlightenment values of human equality, personal liberty, and toleration; but they affirmed the Enlightenment idea that a new humanity without the flaws of the old could be created. Comte's project of a science of sociology based on physiology was taken up by Cesare Lombroso, the founder of criminal anthropology, and later became an element in Nazi scientific racism. The Nazi conception of progress condemned much of humanity to slavery or extermination; it was not by accident that it produced the worst genocide in history. Even so, the Nazis shared with the positivists the goal of using science to develop a new humanity – a peculiarly modern project. With Nietzsche they shared the modern faith that human life can be transformed by an act of will.

A similar belief is evident in radical Islam. From its inception as a body of thought in the mid-twentieth century, radical Islam has seen itself – and been seen by others – as a profoundly anti-Western movement. But in fact many of its themes have been borrowed from radical Western thought. The idea that the world can be regenerated by spectac-

ular acts of violence echoes the orthodoxy of French Jacobinism, nineteenth-century European and Russian anarchism, and Lenin's Bolshevism. Movements such as Nazism and radical Islam do not offer an alternative to the modern faith in progress but an exacerbation of it.

Like older faiths, progress and the Religion of Humanity are illusions. But whereas the illusions of older faiths embody enduring human realities, the faith in progress depends on suppressing them. It represses the conflicts of human needs and denies the unalterable moral ambiguity of human knowledge.

Nothing is more commonplace than the insistence that what we do with scientific knowledge is up to us. But we – enlightened thinkers, friends of reason and humanity – are few and feeble, and no doubt as deluded as the rest of the species, if not more so. The hopes to which believers in progress cling are only the values of their time and place, shifting eddies in the shallow current of conventional opinion. Today *bien-pensant* economists are adamant that human prosperity can only be secured by a universal regime of free markets; a generation ago they believed only managed markets could do the trick. A generation before that, many were missionaries for central planning. Current beliefs about free markets and globalization are just the latest in a series of intellectual fashions, each convinced of its finality, every one of them superseded by events. Only those who are blessed with short memories can believe that the history of ideas is a tale of progress.

Still, giving up the idea of progress is a drastic step. It may be an illusion, but it has sometimes been a benign one. Would we have seen the abolition of slavery, or the prohibition of torture,

without the hope of a better future? Instead of giving up the idea of progress, why not suitably revise it?

There are alternative visions of progress more attractive than the discredited dogmas of the last twenty years. Like the Marxists of a couple of generations ago, neoliberals believe one economic system is best everywhere. But the free market is not the terminus of history; different countries with varying histories and present circumstances may need different economic arrangements. Again, neoliberals follow Marxists in thinking of economic development in terms of increasing human power over the natural environment; but – as the former Soviet Union demonstrated all too clearly – the end result of that approach is ecological devastation. Neoliberals will insist (they always insist) that free markets can deal with natural scarcity; but Western political leaders appear not to share their confidence. The last major war of the twentieth century – the Gulf War – was a conflict over the control of oil. The present century looks as if it will contain more conflicts of this kind – mainly over energy supplies, but also fresh water. Rather than leave Earth’s depleting natural resources to the vagaries of the price mechanism punctuated by resource wars, would it not be better to seek to moderate the human impact on the planet, and thereby foster a more sustainable kind of development?

I am sure it would be better if we had a vision of progress that respected the limits of Earth. In other writings, I have tried to sketch some such view. Yet I have come to doubt that such theoretical constructions can ever prevail against the power of human passions. When vital necessities appear threatened, humans will act as they have always done: They will try to secure them now – even if the result is war, and the ruin of all. Belief in progress is harmful because it

obscures these realities. Far more than the religions of the past, it clouds our perception of the human condition.

In his great poem “Aubade,” Philip Larkin wrote of religious faith as “that vast moth-eaten musical brocade” – a system of falsehoods contrived to shield humans from their fear of death. His description may once have contained some truth, but it is better applied nowadays to the secular faith in progress. Whatever their faults, traditional religions are less fantastical. They may promise a better world beyond the grave, but they do not imagine that science can deliver humanity from itself.

Can modern men and women do without the moth-eaten musical brocade of progressive hope? I think not. Faith in the liberating power of knowledge is encrypted into modern life. Drawing on some of Europe’s most ancient traditions, and daily reinforced by the quickening advance of science, it cannot be given up by an act of will. The interaction of quickening scientific advance with unchanging human needs is a fate that we may perhaps temper, but cannot overcome.

In time, no doubt, the religion of progress will disappear, as the way of life it animates fades from the world. Other faiths will appear, more or less remote from human realities, but equally irrational. Who now remembers Mithraism, or the curious faith of the Gnostics? These religions sustained and consoled millions of people over many centuries, only to vanish almost without trace. Yet those who hold to the possibility of progress need not fear. The illusion that through science humans can remake the world is an integral part of the modern condition. Renewing the eschatological hopes of the past, progress is an illusion with a future.

Joseph E. Stiglitz

Evaluating economic change

In recent years there have been enormous changes in our technology, our economy, and our society. But has there been progress?

From most economists the first reaction to this question is: Of course there must have been progress! After all, the growth of new technologies expands opportunity sets, what we can do, the amount of output per unit input. We can choose either to have more output, more goods and services, or to work less. However we make the choice, surely we are better off.

But what, then, about the sweeping changes we associate with the phenomenon of globalization? For several years I have been actively involved in debates around the world about the costs and benefits of this phenomenon. As a result

of globalization, the countries of the world are more closely integrated. Goods and services move more freely from one country to another. This is the result of the lowering of transportation and communication costs through changes in technology, and of the elimination or reduction of many man-made barriers such as tariffs. The countries that have been most successful at both increasing incomes and reducing poverty – the countries of East Asia – have grown largely because of globalization. They took advantage of global markets for their goods; they recognized that what separates developed from less developed countries is a disparity not only in resources but also in knowledge; they tapped into the pool of global knowledge to close that gap; and most even opened themselves up to the flow of international capital.

But in the countries that have been less successful, globalization is often viewed with suspicion. As I have argued elsewhere, there is a great deal of validity to the complaints of those who are discontent. In much of the world, there has been in recent years a slowing of growth, an increase in poverty, a degradation of the environment, and a deterioration of national cultures and of a sense of cultural identity. Globalization proves that

Joseph E. Stiglitz, a Fellow of the American Academy since 1983, is University Professor at Columbia University. He won the Nobel Prize in economic science in 2001. His recent books include "Globalization and Its Discontents" (2002) and "The Roaring Nineties: A New History of the World's Most Prosperous Decade" (2003). He is indebted to the MacArthur, Mott, and Ford Foundations for financial support.

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change does not invariably produce progress.

In America we have also seen change, and seemingly at an ever faster pace – but here, too, it is not clear if most Americans are better off. Recent numbers suggest that productivity growth is increasing at the impressive speed of over 4 percent per annum. Americans who work are working longer hours, while more and more Americans are not working: some are openly unemployed; some are so discouraged by the lack of jobs that they have stopped looking (and therefore are no longer included in the unemployment statistics); and some have even applied for, and have begun to receive, disability payments that they would not have sought had there been a job available. Recent decades have seen a concomitant change in values. Forty years ago, the best graduating students sought jobs in which they could work to ensure the civil rights of all Americans, to fight the war on poverty both within the United States and abroad, or to pursue the advance of knowledge; in the 1990s, the best students wanted jobs on Wall Street or with the big law firms. No doubt this shift was brought about in large part by the disproportionate salaries of that decade; these seemed to say, in effect, how much more society valued the work of corporate executives over that of the researchers whose high-tech, biotech, and Internet innovations helped fuel the boom.

Many are concerned, moreover, by the seeming erosion of moral values, exhibited so strikingly in the corporate scandals that rocked the country in the last few years, from Enron to Arthur Andersen, from WorldCom to the New York Stock Exchange – scandals that involved virtually all our major accounting firms, most of our major banks, many of our

mutual funds, and a large proportion of our major corporations.

Of course, every society has its rotten apples.¹ But when such apples are so pervasive, one has to look for systemic problems. This seeming erosion of moral values is just one change (the increasing bleakness of the suburban landscape in which so many Americans live is another) that does not seem to indicate progress.

How can this happen? How can improvements in technology, which seemingly increase opportunities, and therefore should also increase societal well-being, so often have adverse consequences, bringing about change that is not progress? In the way that I have posed the question, I have implicitly defined what I mean as progress: an improvement in well-being, or at least in the perception of well-being. But that begs part of the question: whose well-being, and in whose perception?

An economy is a complicated system. The price of steel, for instance, depends on wages, interest rates, and the price of iron ore, coke, and limestone. Each of these in turn depends on the prices of other goods and services, in one vast, complicated, and interrelated system. The marvel of the market is that, somehow, it has solved this system of simultaneous equations – solved it before there were any computers that could even approach a problem of such mathematical complexity.

A disturbance to any one part of the system causes ripples throughout it. While improvements in technology improve opportunity sets and in principle could make everyone better off, in

1 See Joseph E. Stiglitz, *The Roaring Nineties: A New History of the World's Most Prosperous Decade* (New York: W. W. Norton, 2003).

practice they often do not. A change in technology that enables a machine to replace an unskilled worker reduces the demand for unskilled workers, thereby lowering their wages and increasing income inequality. Poverty may also increase. Of course, the gains of those who are better off may be greater than the losses of those who are worse off; if so, the government may tax the new gains and redistribute the proceeds to those who lose, in such a way as to make everyone better off. Making everyone better off is what I mean by progress.

But ideology and interests may preclude that. Conservative philosophers will say that it is the right of each individual to keep the produce of his own efforts. But this is a misleading argument, because the notion of individual labor and effort is not well defined. The tools and technology that an individual uses, for instance, are probably not the result of his own labor. They may well be the result instead of public expenditures, of the kind of government investments in research and technology that created the Internet. And, in the first place, government-financed advances in biomedical research may have resulted in the individual even being alive and able to produce anything at all.

Interests buttress ideologies. While some conservatives may resort to philosophical arguments for why there should not be redistribution, those at the top of the income distribution – who have seen their incomes rise much in recent years – have a self-interest in arguing against progressivity. They are unlikely to approach the question from any of the perspectives from which the issue of social justice has been posed – such as that of Rawls, who asks, in effect, what would be a fair tax system, were we to have to decide such a question from behind a veil of ignorance, before we knew

whether we were to end up rich or poor, skilled or unskilled? But, of course, people know how the dice has been rolled, so they argue for what is right from the perspective of their current advantage.

Economists have traditionally been loath to talk about morals. Indeed, traditional economists have tried to argue that individuals pursuing their self-interest necessarily advance the interests of society. This is Adam Smith's fundamental insight, summed up in his famous analogy of the invisible hand: Markets lead individuals, in the pursuit of their own self-interest, as if by an invisible hand, to the pursuit of the general interest. Selfishness is elevated to a moral virtue.

Much of the research of the two centuries following Smith's original insight has been devoted to understanding the sense in which, and the conditions under which, he was right. His insight grew into, among other things, the idea that the pursuit of self-interested profit-maximizing activity leads to an economic efficiency in which no one can be made better off without making someone else better off. (This concept is called Paretian efficiency, after the great Italian economist Vilfredo Pareto.) It took a long time before the assumptions underlying the theory – perfect competition, perfect markets, perfect information, etc. – were fully understood.

By focusing on the consequences of imperfect information, my own research (with Bruce Greenwald of Columbia University) has challenged the Smithian conclusion.² We have showed that when information is imperfect, and especially

² See, in particular, Bruce Greenwald and Joseph E. Stiglitz, "Externalities in Economies with Imperfect Information and Incomplete Markets," *Quarterly Journal of Economics* 101 (2) (May 1986): 229 – 264.

when there are asymmetries of information (that is, different individuals knowing different things), then the economy is essentially never Pareto efficient. Sometimes, in other words, the invisible hand is not visible simply because it is simply not there. Markets do not lead to efficient outcomes, let alone outcomes that comport with social justice. As a result, there is often good reason for government intervention to improve the efficiency of the market.³

Just as the Great Depression should have made it evident that the market often does not work as well as its advocates claim, our recent Roaring Nineties should have made it self-evident that the pursuit of self-interest does not necessarily lead to overall economic efficiency. The executives of Enron, Arthur Andersen, WorldCom, etc. were rewarded with stock options, and they did everything they could to pump up the price of their shares and maximize their own returns; and many of them managed to sell while the prices remained pumped up. But those who were not privy to this kind of inside information held on to their shares, and when the stock prices collapsed, their wealth was wiped out. At Enron, workers lost not only their jobs but their pensions. It is hard to see how the pursuit of self-interest – the corporate greed that seemed so unbridled – advanced the general interest.

Advances in the economics of information (especially in that branch that deals with the problem that is, interest-

3 Of course, it should have been obvious that something was wrong with Smith's conclusions. The Great Depression, during which a very large fraction of the country's resources were left idle, at great social cost, seemed to demonstrate that sometimes the market economy did not work well. Nevertheless, supporters of free markets claimed that the Great Depression was caused not by the failure of markets, but of government.

ingly, referred to as 'moral hazard') help explain the seeming contradiction. Problems of information mean that decisions inevitably have to be delegated. The shareholders have to delegate responsibility for making decisions, but their lack of information makes it virtually impossible for them to ensure that the managers to whom they have entrusted their wealth and the care of the company will act in their best interests. The manager has a *fiduciary responsibility*. He is supposed to act *on behalf of others*. It is his *moral obligation*. But standard economic theory says that he should act in *his own interests*. There is, accordingly, a *conflict of interest*.

In the 1990s, as I have argued elsewhere, such conflicts became rampant. Accounting firms that made more money in providing consulting services than in providing good accounts no longer took as seriously their responsibility to provide accurate accounts. Analysts made more money by touting stocks they knew were far overvalued than by providing accurate information to their unwary customers who depended on them.

Consciences may be salved by the doctrine that the pursuit of self-interest will in fact make everyone better off. But the pursuit of self-interest does not in general lead to economic well-being, and societies in which there are high levels of trust, loyalty, and honesty actually perform better economically than those in which these virtues are absent. Economists are just beginning to discover how non-economic values, or 'good norms,' actually enhance economic performance.

But some economic changes may corrode these values, for several reasons. We have already drawn attention to two: Such changes may produce new conflicts of interest and new contexts in which

the pursuit of self-interest clashes with societal well-being. When people see others benefiting from such conditions, a new norm of greed emerges. CEOs defend their rapacious salaries by referring to what others are getting; some even argue that such salaries are required to provide them the appropriate incentives for making 'the hard decisions.'

There is a third way in which economic change may undermine norms, particularly in developing countries. To be maintained, norms have to be enforced; there have to be consequences for violating them. Greater mobility typically weakens social mechanisms for the enforcement of norms. Even when there is not greater mobility, greater societal change and uncertainty results in putting less weight on the future, more weight on the short-run benefits from violating a norm than on the long-run costs. In many Western societies this shift, with its increased emphasis on the individual, has undermined many social norms, along with the sense of community.

Changes in technology, in laws, and in norms may all exacerbate conflicts of interest, and, in doing so, may actually impair the overall efficiency of the economy. The notion that change is necessarily welfare enhancing is typically supported by the same simplistic notions, sometimes referred to as market fundamentalism, that assert that markets necessarily lead to efficient outcomes. If the economy is always efficient, then any change that increases the output per unit input must enhance welfare. But if the economy is not necessarily efficient, then there can be changes that exacerbate the inefficiencies. For instance, the presence of competition is one of the requirements for market efficiency; if

changes in technology result in one firm's dominating the market, competition is reduced, and with it, welfare.

More generally, there is no theorem that ensures the efficiency of the economy in the production of innovations. The theorems concerning the efficiency of the economy are all predicated on the assumption that there is no change in technology, or at least no change in technology that is the result of deliberate actions on the part of firms or individuals. In short, standard economic theory is of little relevance in discussions about the efficiency of markets in the production of knowledge. This itself should come as no surprise, for knowledge can be viewed as a special form of information, and the general result referred to earlier about the lack of efficiency of markets with imperfect information extends to this case.

To take another example, there have been notable innovations in financial markets. These have some important advantages. For instance, they enable risks to be shifted from those less able to bear them to those more able to do so. But some financial innovations have made it more difficult to monitor what a firm and its managers are doing, thus worsening the information problem. Many of these innovations were the result of a corporate desire to minimize tax burdens; companies did not want to bear their fair share, so they devised ways of hiding, legally, income from the tax authorities. One of the big intellectual breakthroughs of the 1990s was the realization that these same techniques could be used to provide distorted information to investors; costs could be hidden, and revenues increased. With *reported* profits thereby enhanced, share prices also increased. But because share prices were based on distorted information, resources were misallocated. And

when the bubble to which this misinformation contributed broke, the resulting downturn was greater than it otherwise would have been.

Curiously, stock options, which underlay many of these problems, were at one time viewed as an innovation; they were heralded as providing better incentives for managers to align their interests with those of the shareholders. This argument was more than a little disingenuous: in fact, the typical stock-option package, especially as it was put into practice, did not provide better incentives. While pay went up when stock prices went up, much of the increase in the stock price had nothing to do with the managers' performance; it just reflected overall movements in the market. It would have been better to base pay on relative performance. Moreover, when, as in 2000 and 2001, share prices fell, management pay did not fall. It simply took on other forms. This is another example of an innovation that was not, in any real sense, progress.

Now consider some examples of putative reforms. Especially in the area of economic policy, a combination of misguided economic analysis, ideology, and special interests often results in reforms that are not, in fact, welfare enhancing – even though they are billed as progress. For instance, in Mexico tax revenues as a share of GDP are so small that the public sector cannot perform many of its essential functions; there is underinvestment in science and technology, education, health, and infrastructure. Among the reforms the Fox government has advocated are tax changes that would increase revenues – but whether society as a whole would benefit depends in part on how the tax revenues are increased. Conservatives have long advocated the VAT (a uniform tax, common in Europe, that is levied at each stage of produc-

tion), but within the Clinton administration it was summarily dismissed because it is not a progressive tax, a matter of particular concern in a country like Mexico with such a high level of inequality. There were alternative proposals for raising taxes – such as on the profits of the oligopolies and monopolies – that would have been more efficient and equitable.

Elsewhere, policies sold as 'reform' – opening up markets to destabilizing speculative short-term capital flows – have exposed countries to huge risks. The East Asian crisis of 1997, the global financial crisis of 1998, the Latin American crises of recent years – all are at least partly attributable to these short-term flows. Just as there is no general theorem assuring us that changes in technology produced by the economy are welfare enhancing, so too there is no general theorem assuring us that the policy reforms that emerge out of the political process – whether at the national or international level – are welfare enhancing. There are, in fact, numerous analyses that suggest quite the opposite.

In economics, the dominant strand of thinking has evolved out of physics. And so economies are analyzed in terms of equilibrium. The consequence of change is to move an economy from one equilibrium to another. Much of what I have said so far can be summarized as follows: Once we recognize that the equilibrium that naturally emerges in an economy may not be efficient, then a change that moves us from one equilibrium to a new equilibrium may not be welfare enhancing.

Another strand of thought in economics owes its origins to a misunderstanding of evolutionary biology. Darwin's notion of natural selection was not teleological, but some of those who extend-

ed Darwinian ideas to the social context argued as if it were. If only the fittest survived, then society, reasoned such social Darwinists, must also be increasingly fit. This misunderstanding of Darwin became central to the Spencerian doctrines of social Darwinism. Darwin himself was far more subtle. He realized that one could not define 'fit' in isolation of the elements of the ecological system; that different species occupy different niches; that there are, in effect, multiple equilibria. He realized that the species that survive on one of the Galapagos Islands are not necessarily better or worse in any sense than those that survive on other islands.⁴

Indeed, there is again no theorem that assures us that evolutionary processes are, in any sense, welfare enhancing. They may, in fact, be highly myopic. A species that might do well in the long run may not borrow against its future prosperity, and hence may be edged out in the competition for survival by a species that is better suited for the environment of the moment.⁵

Precisely this kind of myopia was evidenced in the competitive struggles of the 1990s. Those investment banks whose analysts provided distorted information to their customers did best. Repeatedly, the investment banks explained that they had no choice but to engage in such tactics if they were to survive. While the most egregious corporations and accountants – the En-

rons, Arthur Andersen, Tycos, and WorldComs – had their comeuppances, others survived, even prospered. And many continue to defend their practices and tactics, opposing fair disclosure of information and accounting procedures that would allow ordinary shareholders to ascertain both the levels of executive compensation and the extent of the dilution of share value through stock options.

The connection between technology and the evolution of society has long been recognized. The innovations that led to the assembly line increased productivity, but almost surely reduced individual autonomy. The movement from an agrarian, rural economy to an urban, industrial economy caused enormous societal change. While this Great Transformation is often viewed as progress, it did not leave everyone better off;⁶ so too with the transformations that the New Economy and globalization are bringing about in the societies of the advanced industrial countries and, even more so, of the developing world. While some of these changes open up the possibility of greater individual autonomy, others simultaneously pre-empt a weakening of the sense of community. Even the community of the workplace may be weakened.

Still, I do not believe in either economic or technological determinism. The adverse consequences of some of the changes that I have noted are not inevitable. We have followed one evolutionary path; there are others. Much of the political and social struggle going on today is an attempt to change that path. Those in positions of political power in

4 For an elaboration of these ideas, see Karla Hoff and Joseph E. Stiglitz, "Modern Economic Theory and Development," in *Frontiers of Development Economics: The Future in Perspective*, ed. Gerald Meier and Joseph E. Stiglitz (Oxford: Oxford University Press, 2000), 389–459.

5 These ideas are discussed briefly in Joseph E. Stiglitz, *Whither Socialism?* (Cambridge, Mass.: MIT Press, 1994).

6 See Karl Polanyi, *The Great Transformation: The Political and Economic Origins of Our Time* (Boston: Beacon Press, 2001), with a foreword by Joseph E. Stiglitz, vii–xvii.

fact play an important role in shaping the evolution both of society and technology – for instance, by creating within the tax system rewards and incentives for certain business practices.

At the global level, America's status as the sole superpower has allowed it to stymie progress to greater democracy within the international arena. Globalization has entailed the closer economic integration of the countries of the world, and with that closer integration there is a need for more collective action, as global public goods and externalities have taken on increasing importance. But political globalization has not kept pace with economic globalization. Rather than engaging in democratic processes of decision making, America has repeatedly attempted to impose its views on the rest of the world unilaterally.

In this essay, I have challenged the thesis that improvements in, say, technology necessarily result in an enhancement of well-being. Increases in income can enrich individual lives. They can enable individuals access to more knowledge. They can reduce the corrosive anxieties associated with insecurities about well-being – one of the problems repeatedly noted in surveys attempting to ascertain the dimensions of poverty. In doing all this, improvements in technology can help free individuals from the bonds of materialism.

But unfortunately, all that goes under the name of progress does not truly represent progress, even in the narrow economic sense of the term. I have emphasized that there are innovations, changes in technology, that, while they represent increases in efficiency, lower economic well-being, at least for a significant fraction of the population.

In the end, every change ought to be evaluated in terms of its consequences. Neither economic theory nor historical

experience assures us that the changes that get adopted during the natural evolution of society and of the economy necessarily constitute progress. Moreover, neither political theory nor historical experience can assure us that attempts to redirect development will necessarily guarantee better outcomes. A recognition of this is, in my mind, itself progress, and lays the foundation for attempts to structure economic and political processes in ways that make it more likely that the changes we face will in fact constitute meaningful progress.

Richard A. Shweder

George W. Bush & the missionary position

Jesus Christ is George W. Bush's favorite political philosopher – or so he said in a Republican primary debate leading up to his nomination. And the president's sense of mission runs deep. Speaking with evangelical zeal well over a year before the invasion of Iraq, President Bush delivered one of his earliest and most broadly appealing justifications for the project of global nation building as a moral crusade. He spoke with an uncanny prescience and with intimations of the preemptive use of American force to promote human progress.

The date was January 29, 2002. The occasion was Mr. Bush's first State of the Union address to Congress and the nation after the terrorist attacks of September 11. Listen carefully to his augury:

Richard A. Shweder, a cultural anthropologist, is the William Claude Reavis Distinguished Service Professor of Human Development at the University of Chicago, a Carnegie Scholar, and the author of "Why Do Men Barbecue?: Recipes for Cultural Psychology" (2003). He has been a Fellow of the American Academy since 1997. Parts of this essay are drawn from a keynote address, "The Idea of Moral Progress: Bush versus Posner versus Berlin," presented at the 2003 meeting of the Philosophy of Education Society.

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America will lead by defending liberty and justice because they are right and true and unchanging for all people everywhere. No nation owns these aspirations and no nation is exempt from them. We have no intention of imposing our culture, but America will always stand firm for the non-negotiable demands of human dignity, the rule of law, limits on the power of the state, respect for women, private property, free speech, equal justice and religious tolerance.

Those are weighty and portentous words from a leader who believes that American wealth and power should be used to uphold a universal framework for promoting social, political, and moral development on a global scale – a framework, the speech strongly implies, that is governed by a transcendent moral force.

This State of the Union message subsequently became one of the philosophical foundations for U.S. foreign policy. The president's words seemed convincing to a majority of Americans, regardless of their location on the political spectrum. In the fifteen months leading up to the war against Iraq it became apparent that one did not have to be a born-again Christian to be inspired by his address. Mr. Bush's perfectly pitched and high-minded imperial tone of moral progressivism and his discourse of liber-

ation and human rights struck a chord that was music to the ears of interventionists on both the Left and the Right. His words produced a harmonic (and hormonal) patriotic response from religious fundamentalists and 'American exceptionalists' such as the neoconservative commentator David Brooks, for whom the mere mention of moral equivalence – the idea that the American way of life, while unique, is only one among many morally decent and rationally defensible ways of life – is a sign of self-hatred or ethical weakness.

His sense of mission was also ardently embraced by liberals of many stripes – Tony Blair, Hillary Clinton, Thomas Friedman, human rights activists like Michael Ignatieff, sexual revolutionaries, as well as first-world feminists, many of whom believe that female gender interests are universal and that the sisters of the world should unite against any form of life that deviates from first-world feminist conceptions of work, family, sexuality, and gender roles.

Even a good many citizens who have a profound secular aversion to the invocation of Jesus Christ in public political forums or a strong humanistic distaste for jingoism or for strident nationalistic political conservatism supported the military campaign, in some measure because of their faith in the existence of natural or inalienable values and non-negotiable demands of precisely the sort invoked by President Bush. Thus many Americans both on the Right and on the Left felt neither shocked nor awed, but rather proud and justified, when the bombs that fell on Baghdad in the spring of 2003 were dropped carrying the Orwellian inscription "Operation Iraqi Freedom."

The president's address gave forceful expression to the idea that America has

an obligation – a burden, as the British once called it – to promulgate objective and universally binding moral standards, for example, by "defending liberty and justice because they are right and true and unchanging for all people everywhere." This intellectual stance may be called *missionary moral progressivism*. Here I want to focus on three of George W. Bush's key claims in his 2002 State of the Union address:

1. that there are non-negotiable demands for the design of any decent society;
2. that those demands are non-negotiable precisely because they are grounded on matters of fact concerning universal moral truths, and not simply because the president or the people of the most powerful and wealthy nation in the world happen to like them or embrace them as their own ideals; and
3. that these universal moral truths can be defined in ways that are (a) substantial enough to allow the United States to lead the world in the direction of progressive social, political, and cultural reform, and also (b) objective enough to avoid the hazards of cultural parochialism and ethnocentrism – for, as he states, "we have no intention of imposing our culture."

More recently, on April 4, 2004, in a public denunciation of the Iraqi insurgency movement, Mr. Bush made these points this way: "We love freedom and they hate freedom – that's where the clash occurs. Freedom is not America's gift to the world; it is God's gift to the world."

The idea of "right and true" moral ideals (or, for those who are more theologically minded, of "God's gift to the world") is potentially appealing. After all, if such truths exist, then they can be

used to define an objective universal standard for assessing moral progress. The existence of objective goods – universally binding moral values or inalienable natural rights – would place everyone (insiders and outsiders, minority and majority factions) within a single frame of reference for judging what is right and wrong. It would lend rational authority to those who are well positioned or well organized enough to do the right thing. Interventions (political, economic, or military) might then be justified, so long as they are done for the sake of what is right and true – or, as Bob Dylan once facetiously put it, “with God on our side.”

If there really does exist a blueprint (for example, the Constitution of the United States of America) for the design of the single best human society, then resistance to the impulse to promote human progress on a global scale is irrational. But that is a very big ‘if.’ In the face of righteous appeals to use this country’s power and wealth to promote universal moral progress, a particular doubt sometimes arises in the minds of thoughtful people. Let’s call it the Bob Dylan question: Is it really possible to formulate a meaningful statement about moral rights, goods, duties, and values that is free of ethnocentrism, political self-interest, or the hazards of projecting one’s own local or denominational point of view? Those who have rational doubts, or even fears, about righteous crusades justified in the name of universal moral progress harbor such anxieties because they suspect that the whole enterprise is a form of high-minded imperial domination by those who are powerful or wealthy enough to mandate that everyone should see and value the world in only one way, namely, according to the dominant group’s pre-

ferred (and quite possibly parochial) set of values.

It is one thing to assert that there are universal objective truths about the physical world – for example, that force equals mass times acceleration everywhere you go on the globe. It is quite another to assert that the existing contemporary social norms and moral judgments of one’s own group are not products of local history, context, preference, or taste, but rather are accurate representations of universal moral facts. Human arrogance assumes many forms, but it appears undisguised when those in possession of power and wealth assert that whatever they desire is the kind of thing that all morally decent and fully rational human beings ought to desire, regardless of history, context, and culture. Or so the worry goes.

One way to get a better sense of the skeptic’s response to such generalized moral progressivism is to reflect on a counterclaim that is common to the doctrines of pluralism, relativism, subjectivism, and contextualism. While those four doctrines are distinguishable from each other (for example, not all pluralists are subjectivists), they share the conviction that anyone who asserts that his or her own particular moral judgments are universally right and true is probably wrong. Consider, for example, the critique of the idea of non-negotiable moral demands and right and true values developed by U.S. Appellate Judge (and University of Chicago legal scholar) Richard Posner, who is both a moral subjectivist and a moral relativist of sorts.

In his 1997 Oliver Wendell Holmes Lectures at Harvard University titled “The Problematics of Moral and Legal Theory,” Judge Posner states:

I shall be arguing first of all that morality is local, and that there are no interesting

moral universals. There are tautological ones, such as “murder is wrong,” where “murder” means “wrongful killing,” or “bribery is wrong,” where bribery means “wrongful paying.” But what counts as murder, or as bribery, varies enormously from society to society. There are a handful of rudimentary principles of social cooperation – such as don’t lie all the time or don’t break promises without any reason or kill your relatives or neighbors indiscriminately – that may be common to all human societies, and if one wants to call these rudimentary principles the universal moral law, that is fine with me. But they are too abstract to be criterial. Meaningful moral realism is therefore out, and a form (not every form) of moral relativism is in. Relativism in turn invites an adaptationist conception of morality, in which morality is judged – nonmorally, in the way that a hammer might be judged well or poorly adapted to its goal of hammering nails into wood or plaster – by its contribution to the survival, or other ultimate goals, of a society or some group within it. Moral relativism implies that the expression “moral progress” must be used with great caution, because it is perspectival rather than objective; moral progress is in the eye of the beholder.¹

In his Harvard lectures, Judge Posner offers a sustained attack on the idea that there are right and true universal moral facts that can be usefully applied by leaders to resolve moral disputes between groups. He embraces moral subjectivism, in the sense that he believes that there are no reasonably concrete transcultural moral truths – thus, in effect, implying that there is no independent or

transcendent or objective domain of the right and the true, no “objective order of goodness” to which one might appeal to rationally justify one’s particular judgments about what is right or wrong. Posner allows that he is a moral relativist, in that he believes “that the criteria for pronouncing a moral claim valid are given by the culture in which the claim is advanced rather than by some transcultural (‘universal’) source of moral values, so that we cannot, except for polemical effect, call another immoral unless we add ‘by our lights.’”² He argues that “many moral claims are just the gift wrapping of theoretically ungrounded (and ungroundable) preferences and aversions.” Those relatively few moral claims that are unchanging for all people everywhere, he suggests, are unchanging and universal primarily because they are empty truisms or abstract tautologies, devoid of any useful content. It is possible that Judge Posner might admire President Bush’s speech for its polemical effect, but presumably not for the truth of its message.

Another kind of skeptical response to missionary moral progressivism involves considering the character and implications of the historical and cross-cultural persistence of deep human disagreements about the design of a good society. Consider, for example, what the philosopher Stuart Hampshire, writing ten years prior to the events of September 11, had to say about what he describes as “the outstanding political problem of our time.”

The political problem, as Hampshire perceives it, is the relation between “self-consciously traditional societies” and “liberal democratic societies.” In

1 Richard A. Posner, *The Problematics of Moral and Legal Theory* (Cambridge, Mass.: Harvard University Press, 1999), 6; and Posner, “The Oliver Wendell Holmes Lectures: The Problematics of Moral and Legal Theory,” *Harvard Law Review* 111 (7) (1998): 1637–1717.

2 Posner, *The Problematics of Moral and Legal Theory*, 8.

self-consciously traditional societies, he suggests, “priests of the church, or rabbis or imams or mullahs, and other experts in the will of God maintain a single conception of the good which determines the way of life of the society as a whole.” Liberal democratic societies, in contrast, “permit, or encourage, a plurality of conceptions of the good.” By his account:

The severity of this problem was for a long time concealed by the belief in a positivist theory of modernization, a theory that is traceable to the French Enlightenment. The positivists believed that all societies across the globe will gradually discard their traditional attachments to supernatural forces because of the need for rational, scientific and experimental methods of thought which a modern industrial economy involves. This is the old faith, widespread in the 19th Century, that there must be a step-by-step convergence on liberal values, on “our values.” We now know that there is no “must” about it and that all such theories of human history have a predictive value of zero.

Hampshire goes on to say:

In fact, it is not only possible but, on the present evidence, probable that most conceptions of the good, and most ways of life, which are typical of commercial, liberal, industrialized societies will often seem altogether hateful to substantial minorities within these societies and even more hateful to most of the populations within traditional societies in other continents. As a liberal by philosophical conviction, I think I ought to expect to be hated, and to be found to be superficial and contemptible, by a large part of mankind. In looking for principles of minimum justice, one needs to see that one’s way of life and habits of speech and of thought, not only seem wrong to large populations [but] can be repugnant in

very much the same way in which alien habits of eating, or alien sexual customs, can be repugnant.³

If Hampshire is right, then that sense of repugnance is likely to be mutual. Witness, for example, the utter contempt with which human rights activists – hailing mostly from liberal commercial industrialized societies and from descendents of Westernized elite populations in former first-world colonies – often react to the beliefs and practices concerning gender, discipline, sexuality, modesty, dress, reproduction, family life, etc. endorsed by majority populations in Africa and Asia. If Hampshire is right, then that mutual sense of repugnance is not likely to go away, in part because there are just too many values, and no universally binding and rational way to determine for all times and places which of them ought to be given priority in the design of the good society. Under such conditions of rational uncertainty, political wisdom may favor the balancing of power, rather than the mere assertion of it, for the sake of a sustainable live-and-let-live policy of mutual co-existence. Whether mutual repugnance might then one day be transformed into mutual sufferance, or even mutual toleration, remains to be seen. Hoping for a mutuality of understanding may be asking for too much – though one still may hope.

For some years my colleagues and I have been conducting research on moral reasoning by women and men in a Hindu temple town in India and in a secular middle-class community in the United

3 Stuart Hampshire, “Nationalism,” in Edna Margalit and Avishai Margalit, eds., *Isaiah Berlin: A Celebration* (London: Hogarth Press, 1991); and Hampshire, “1991 Presidential Address,” *American Philosophical Association Proceedings* 65 (1991): 19 – 27.

States. The moral judgments of the residents of these two communities diverge on many issues – for example, on whether an arranged marriage is preferable to a ‘love marriage’; whether family honor is more important than personal freedom; whether a refusal to treat a patient at a hospital is more serious or less serious than a violation of pollution norms or of food taboos; and whether the sexual division of labor in the family is moral or immoral.

The moral views of the men and women within each of the two cultural communities are very similar. But across the two cultural communities the moral views of members of the same sex differ in many ways: when one looks at concrete moral judgments worldwide, there is no universal moral ‘sisterhood,’ just as there is no universal moral ‘brotherhood.’ Moreover, each community has somewhat different conceptions of which values and moral goods are most important in life. The predominantly secular middle-class Americans (female and male) emphasize what might be called the ethics of autonomy, which includes an elaborate discourse about the freedom to have the things you want, social equality, and human rights. Meanwhile, the Hindus (female and male) in the Indian temple town emphasize what might be called the ethics of community and the ethics of divinity, which includes an elaborate discourse about duty, sacrifice, loyalty, purity, pollution, and personal sanctity.⁴

4 See, for example, Richard A. Shweder, Manamohan Mahapatra, and Joan G. Miller, “Culture and Moral Development,” in James Stigler, Richard A. Shweder, and Gilbert Herdt, eds., *Cultural Psychology: Essays in the Comparative Study of Human Development* (New York: Cambridge University Press, 1990); originally published in Jerome Kagan and Sharon Lamb, eds., *The Emergence of Morality in Young Children* (Chicago: University of Chicago Press, 1987). Rich-

When conducting this type of research in comparative ethics, one witnesses two historically grounded communities, each full of men and women who invoke local conceptions of truth and virtue, and who justify their social norms in the light of those conceptions. While conducting this type of research one also frequently observes the astonishment, dismay, and at times outrage and revulsion experienced by members of each community when they realize just how different their convictions, judgments, and feelings about right and wrong can be from those of people in other lands. Of course, the existence of persistent differences in values or in views about the nature of a good society does not necessarily imply a hostile or aggressive clash of cultures; after all, human history – aside from the intermittent periods of conflict – has been about finding a way to live and let live in a world of unavoidable differences. Only monists and missionaries think that differences must be removed, or that differences will just disappear once everyone is ‘liberated’ and free to see the light.

There is a third way to get a better sense of the skeptic’s response to missionary moral progressivism – by recognizing that right and true values are not lived timelessly and in the abstract but, rather, that they are always made manifest and given character in some here and now, in some local, thickly substantive, and history-laden tradition of value.

ard A. Shweder, Nancy C. Much, Manamohan Mahapatra, and Lawrence Park, “The Big Three of Morality (Autonomy, Community and Divinity) and the Big Three Explanations of Suffering,” in Richard A. Shweder, *Why Do Men Barbecue?: Recipes for Cultural Psychology* (Cambridge, Mass.: Harvard University Press, 2003); originally published in Allan Brandt and Paul Rozin, eds., *Morality and Health* (New York: Routledge, 1997).

In his State of the Union address, President Bush called on Americans to defend and promote right and true values that are unchanging for all people everywhere, such as free speech, respect for women, and limits on the power of the state – but he added the disarming qualification that “We have no intention of imposing our culture.” His words seem to suggest that he wants the United States to exercise moral leadership (i.e., to use our wealth and military power to build new nations), but without being parochial or ethnocentric in our conception of progress.

All this sounds well and good, at least in the abstract – but what do his words mean concretely? One might interpret them as implying that he is not an American exceptionalist; that he is not in possession of an imperial vision of a single best way of life to be enforced or promoted by well-financed, powerful, and coercive national (or first-world) institutions; that he does not really believe that the currently occupied or soon to be occupied peoples or nations of the world should be strongly encouraged or reshaped to be just like the United States in their social, political, family, and gender norms. Taken literally and seriously, his qualification that “We have no intention of imposing our culture” might even suggest that Mr. Bush recognizes that the abstract ideals of free speech, equal justice, religious tolerance, respect for women, and so forth may take very different forms in different religious, cultural, moral, and legal traditions. His words might even lead us to suppose that he recognizes that right and true values are often in conflict with each other and may be weighed and balanced differently and valued in different degrees by rational and morally decent people in other societies.

On the other hand, perhaps the president’s careful language should not be

taken seriously. It is possible to read his qualification simply as an ambiguous aside, or even as a calculated rhetorical device designed to counter accusations that the United States is not a humble nation and is really just intent on controlling the world and spreading its way of life hither and yon. So before following the president on his moral mission, one would like to be clear about what precisely he has in mind when he appeals to universal values and enumerates his non-negotiable demands. What are the specific shape and substance of those demands? What are their policy implications?

For example, are we to believe that current interpretations of the right to freedom of speech in the United States should be universally binding? In the United States, the right to freedom of speech allows public expressions of hatred for ethnic, racial, and religious groups. That is not true in India and many other parts of the world where ethnic conflict is a potential threat to social order, and hence communal hate speech and even blasphemy is against the law. Would Mr. Bush, having no intention to impose our culture on others, accept that other nations might legitimately interpret the right to free speech more restrictively, or at least have a different view of what counts as a clear and present danger?

Are we to believe that our principle of the separation of church and state, which disallows the promulgation of theological doctrines in our public schools, should be universally binding? Or would the president allow, out of respect for cultural differences, that Germany, like other European nations where religious instruction is an option in the public schools, is entitled to its somewhat different design for society, guided by its own historical lights? Are we to believe that current interpreta-

tions of the right to family privacy in the United States are non-negotiable? In the United States, the right to family privacy makes it unthinkable that the power of the state could be exercised to create the kind of laws restricting the number of children allowed per family that China has enacted to counter overpopulation. Would our president accept that other nations might legitimately interpret the right to family privacy differently?

What about the ideal of respect for women? Is that ideal compatible with Muslim and Hindu traditions of family values in which women gain power and feel dignified by virtue of being guardians of the home?⁵ Would the president, not wanting to impose our culture on others, grant that there are cultural locations in the world where wearing sexually suggestive, or ‘immodest,’ modes of dress in public is socially prohibited in some measure out of respect for women?

In other words, before embracing this crusade one wants to know whether there is a specific face to Mr. Bush’s moral vision – for example, the face of bourgeois liberal feminism, or the face of American constitutionalism as interpreted by our current Supreme Court, or the face of middle-class Judeo-Christian family life in the United States today. Most importantly, since public policy and proposals for nation building require that leaders make the move from the abstract to the concrete, it seems reasonable to wonder how it is possible to enforce a universal vision of moral progress without imposing one’s own paro-

chial conception of things on others. Once the substance of Mr. Bush’s moral vision is made transparent, all may not be well and good, given the hazards of ethnocentrism.

A skeptical response to missionary moral progressivism does not entail rejecting the very idea of moral progress – but it does require remaining alert to the ways in which this idea may be abused and dangerously misused. Moral progress means having more and more of something that is ‘desirable,’ that is to say, something that ought to be desired because it is good. Moral decline means having less and less of it. Thus, the transcendental semantics of the concept are pretty clear. At times the application of the idea can be clear, too, especially if we are able to agree on our description of a specific good (e.g., taking care of parents in their old age, reducing the frequency of contagious diseases, increasing personal freedom). We can then make objective judgments about moral progress and decline, with respect to that good. Indeed, arguably there are non-negotiable demands of human reason that apply universally in international attempts to understand and evaluate any particular political tradition or cultural way of life. For example, the requirement that ‘insiders’ should be willing and able to justify themselves (to anyone who is willing and able to listen in an open-minded way) by pointing to one or more of the recognizable goods served by their own social, cultural, and political norms and practices. Also, for example, the requirement that ‘outsiders’ should be willing and able to listen to others in an open-minded sort of way – fully aware of the hazards of provincialism, parochialism, and ethnocentrism.

We can, of course, go even further, morally mapping the world. Thus, if increasing the likelihood of child survival

5 See, for example, Usha Menon, “Neither Victim Nor Rebel: Feminism and the Morality of Gender and Family Life in a Hindu Temple Town,” in Richard A. Shweder, Martha Minow, and Hazel Markus, eds., *Engaging Cultural Differences: The Multicultural Challenge in Liberal Democracies* (New York: Russell Sage Foundation Press, 2002).

during the first nine months after birth is the measure of moral progress, then Europe and the United States are objectively more morally advanced than India and Brazil. If increasing the likelihood of child survival during the first nine months after conception is the measure of moral progress, then Tunisia and Mexico (where abortion rates are relatively low) are objectively more morally advanced than Eastern Europe and the United States (where abortion rates are relatively high – 50 percent in parts of Eastern Europe and nearly 25 percent in the United States when I last looked). The result of this exercise depends entirely on what we elect to include in our list of moral goods.

One does not have to subscribe fully to Richard Posner's particular version of moral subjectivism-relativism; seemingly empty or tautological moral abstractions (such as "treat like cases alike and different cases differently") and ethical truisms (such as "cruelty is wicked") may still be valuable in starting the right type of conversations (about the relevant, and irrelevant, ways particular cases are alike or different; about which deliberate inflictions of pain are arbitrary and unjustified, and which not, and why). Nor does one have to endorse (as I do) Stuart Hampshire's particular version of rationally irreconcilable conceptions of a good society, to recognize that there is much that is discretionary in any decision about how to name and identify specific goods and how to map the world morally.⁶ For example, the sheer quantity of life, or reproductive fitness, is the measure used by evolutionary biologists for estimating the success of a population. By that standard, how are we to evaluate the birth control pill, the legal-

ization of abortion, and the reduction of family size in the high-tech societies of the first world? Do we narrate a story of cultural decline? The mapping of the relative moral progress of nations, cultures, or human societies can be as subjective, hazardous, and polemical as it is seductive and beguiling – which is yet one more reason for the skeptic's response.

Nation building through bombing may appear to be an ironic perversion of the idea of promoting moral progress. Nevertheless, there is really nothing new in President Bush's claim of a moral high ground to justify the dropping of bombs. Long before the invention of hellfire missiles and five-thousand-pound bunker busters, missionary moral progressives – some armed with a secular sense of a great Northern European Enlightenment, others armed with a religious sense of a great Christian Awakening – felt entitled to civilize and uplift non-Western peoples; to assume military, political, and economic control over their lands in order to liberate and enlighten them, if not save their souls.

These moral crusaders didn't think of themselves as invaders or intruders, but rather as architects of a more just social order, as bearers of transcendent gifts, bringing the blessings of education, democracy, and human rights to peoples they pitied (or loathed) as backward, primitive, or barbaric. Saving the children, for example, is what Australia's 'enlightened' liberal Anglo-Saxon population thought it was doing when it took children away from their Aboriginal par-

realism ("moral universalism without the uniformity"), see Richard A. Shweder, "Moral Realism without the Ethnocentrism: Is It Just a List of Empty Truisms?" in András Sajó, ed., *Human Rights with Modesty: The Problem of Universalism* (Leiden: Martinus Nijhoff Publishers, 2004).

6 For a more detailed evaluation of the philosophical stances of Posner, Hampshire, and Bush, a discussion of the hazards of ethnocentrism, and a defense of one version of moral

ents and placed them in mainstream middle-class homes and missionary schools.

Perhaps the most famous version of missionary moral progressivism was the nineteenth-century British understanding of the 'white man's burden,' which obligated the Victorian generation to protect the unfortunate residents of the 'dark continents' of the world, to rid the populations of Africa and Asia of poverty, savagery, tyranny, ignorance, and disease. In that era, the French and the Germans, like the British, believed their wealth and power were divine signs of their virtue. Like George Bush today, they assumed that Western views were "right and true and unchanging for all people everywhere" – so universally right and true that people everywhere would soon enough acknowledge these views as their own.

In the light of that history, Mr. Bush should not be surprised by the fierce resistance his American missionaries now face in Iraq – which is perhaps the latest evidence that even the most impeccably 'enlightened' or liberal moral views about political legitimacy, gender relations, and the specific character and application of human rights are in fact *not* universally regarded as right and true by all people everywhere.

Until relatively recently, the president's views about America's moral role in the world had relatively broad support, and spanned the political spectrum in the United States, producing some strange bedfellows: Paul Wolfowitz and Hillary Clinton, Donald Rumsfeld and Michael Ignatieff, Thomas Friedman and William Safire. Nevertheless, not every American was enthralled with the president's 2002 State of the Union address, nor did every American feel a strong sense of solidarity with the imperial alliance of neoconservatives and liberals

that eventually fostered the invasion of Iraq.

Fifteen months after the president's speech, I watched a television broadcast of an American flag being lifted by a marine over the Iraqi port town of Umm Qasr. As I watched, I wondered whether we were at risk of losing our way as a people. Indeed, throughout the occupation, the stream of images from Iraq continues to feel disturbingly discordant with our national identity. Something seems terribly wrong with the picture when it is our country that begins to look like the Empire (rather than the Federation) in the *Star Wars* trilogy. Something seems to have gone terribly wrong with human understanding (and, of course, with international diplomacy) when grievances of the sort enumerated in our own Declaration of Independence ("Quartering large bodies of troops among us," "depriving us in many cases, of the benefits of Trial by Jury," "declaring themselves vested with the power to legislate for us") are taken up for use as accusations against the United States.

As the world has gone to pieces, such feelings and judgments are being more frequently expressed. There was, and increasingly there is, a notable divide in reactions to the president's use of American wealth and power to promote a global conception of human progress. But the divide is not between Left and Right, liberal and conservative, Democrat and Republican. It hints at a tension of a different kind. The split is between those who embrace universalizing missionary efforts of either a religious (Christian, Islamic) or secular (human rights, international liberationist) sort – and those who react to such missions with diffidence, doubt, distrust, indignation, and even fear.

When powerful, highly motivated, well-intended, well-connected, and well-financed public or private activists

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decide to launch global campaigns to spread 'the good news,' enlighten the ignorant, civilize the savages, or impose some unitary conception of truth or of the good life, there are still many people in the world who think there is good reason to get nervous – and to raise the standard for critically evaluating the conviction that there is only one God and that we are acting with Him (or Her) on our side.

Sakiko Fukuda-Parr

Cultural freedom & human development today

A dangerous fear is spreading around the world – a fear of cultures that seem threatening, for one reason or another.¹ This fear has generated questions about the role of culture in human progress that have increasingly come to dominate public debates. For example: Does Hispanic immigration erode the American culture and threaten identity? Is Islam an obstacle to democracy? Does the power of traditional cultures explain stagnation in Africa? Will the conflicts between Shiite and Sunni communities lead to civil war in Iraq?

At the same time, much recent literature in the social sciences has approached culture in purely instrumental terms – as if culture were merely a means to some other end (modernization, for example), rather than an end in itself and one of the chief *goals* of human development.

In what follows I will argue that the ability to choose an attachment to one or

more cultures is an intrinsic value, to be protected and promoted as a basic human freedom. Individuals acting alone cannot achieve this goal: only public policies can ensure that distinct cultures and cultural identities coexist within the borders of any given state (a recognition of different cultures often referred to as ‘multiculturalism’). As economic globalization advances, states must also devise policies that expand rather than reduce cultural diversity. But before I say more about the reasons for regarding culture as an intrinsic value, it will be helpful to discuss my understanding of progress in terms of human development.

As the economist and philosopher Amartya Sen has recently argued, human development is a process of expanding capabilities – of ensuring that people have the freedom to lead full and creative lives according to what they value. Along with the capabilities of being educated, people value being able to enjoy as long and healthy a life as possible, and also to participate in the political life

Sakiko Fukuda-Parr is director of the Human Development Report Office for the United Nations Development Programme (UNDP). She was chief author of the UNDP report for 2004, “Expanding Cultural Liberty in Today’s Diverse World.”

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¹ This essay draws from *Human Development Report 2004: Expanding Cultural Liberty in Today’s Diverse World* (New York: Oxford University Press, 2004), which I helped write as lead author. The views expressed here are strictly my own, and not necessarily those of the United Nations Development Programme.

of their community. In addition, Sen argues, and I agree, people value the freedom to choose a cultural identity of their own.² All people want to live in dignity, without suffering discrimination or ridicule from the larger society, and without being restricted from following their own chosen way of life. These freedoms are entrenched in universal human rights, and states have an obligation to protect and promote them.

Exercising such cultural freedom entails being able to choose *multiple* identities – to identify oneself as Belgian and Flemish, or Muslim and Indian. It also entails being able to participate in shaping the culture of the groups with which one identifies – to scrutinize and reinterpret their values, habits, and norms of behavior, and to introduce new modes of expression into them.

Despite the wish of all people to choose a cultural identity freely and to live in dignity, suppression of cultural freedom is widespread around the world. According to the Minorities at Risk data set, about nine hundred million people, or one in seven, belong to groups that face some form of exclusion based on their ethnicity, religion, or language.³

Cultural exclusion takes two forms. One is participation exclusion, which prevents people who belong to specific cultural groups from participating in social, economic, or political opportunities, such as in schools, jobs, or elected

office. The other is living-mode exclusion, which denies recognition and accommodation of a lifestyle or of a chosen cultural identity. Examples include religious oppression and the insistence that immigrants or indigenous people speak the language of the state in schools or courts. Such exclusions are deeply rooted in history. Through the centuries, on every continent, conquerors and settlers, despots and democratically elected governments, have tried to impose their language, religion, and way of life on the people under their rule in an effort to build loyalty through a common and single cultural identity.

Cultural exclusion results from deliberate state policy involving brutal repression or institutionalized suppression. But more frequently it comes from a simple but pervasive lack of respect for the culture and heritage of a people. This lack of respect is reflected in state policies that disregard excluded groups, in national calendars that do not observe their religious holidays, in schoolbooks that leave out the achievements of their leaders, and in support for the arts that ignores their artistic heritage.

Living-mode exclusion often overlaps with participation exclusion through discrimination and disadvantage in employment, housing, schooling, and political representation. From indigenous groups in Latin America to blacks in South Africa to the Roma in Central Europe – minority groups and oppressed majorities are often the poorest, have the lowest health and educational outcomes, are treated the worst by the legal systems, and so on. Many groups, especially large minorities such as the Kurds in Turkey and the indigenous people of Guatemala, are excluded from political participation and economic opportunities because the state does not recognize their language in schools, law courts,

2 Amartya Sen, “Cultural Freedom and Human Development,” background paper for the *Human Development Report 2004*; Sen, *Reason Before Identity* (Oxford: Oxford University Press, 1999); and Sen, “Democracy and its Global Roots,” *The New Republic*, 6 October 2003.

3 See the Minorities at Risk data set, a project of the University of Maryland, <<http://www.cidcm.umd.edu/inscr/mar/index.asp>>.

and other official arenas. This of course has often led to intense fighting.

Sometimes, however, living-mode and participation exclusion do not overlap. For instance, some economically dominant minorities such as the Chinese in Southeast Asia have been pressured to take on local names and restrict their use of their native language.

While cultural exclusion is nothing new, what is new today is the rise of identity politics and the growing assertiveness of groups in claiming cultural recognition. From indigenous people in Latin America to religious minorities in South Asia to ethnic minorities in the Balkans and Africa to immigrants in Western Europe – people in vastly different contexts and by vastly different methods are mobilizing anew around old grievances along ethnic and religious lines. The spread of democracy has enlarged the political space for such action, and global networks have strengthened these movements. And in this era of globalization a new class of political claims and demands has emerged: indigenous people protest investments in mining and logging that undermine their livelihoods; local communities fear the loss of their national cultures with the unprecedented increase in immigration; and immigrants, in turn, want to keep much stronger ties with their countries of origin as they reject involuntary assimilation.

Whatever the context, states today face an urgent challenge to respond to these claims. If handled badly, these struggles over identity can turn violent, sow the seeds of conflict for years to come, and retard development. Repressing identities is not the solution – not only because it violates the rights of people but because this approach is no longer feasible. It may have worked in

authoritarian states, and involuntary assimilation may have worked in democratic ones, but today people are increasingly assertive about mobilizing politically against cultural exclusion. People feel strongly about their identities. And denigration of culture is an affront to human dignity, leaving scars and outrage that may live on for decades or even centuries.

States need to find ways of forging national unity amid this diversity. An economically interdependent world cannot function unless people build unity through common bonds of humanity but also respect cultural difference. In this age of globalization the demands for cultural recognition can no longer be ignored by any state or by the international community. And confrontations over culture and identity are likely to grow: the ease of communications and travel have shrunk the world and changed the landscape of cultural diversity, as the spread of democracy, human rights, and new global networks have given people greater means to mobilize around a cause, insist on a response, and get it.

Recognition of cultural diversity inevitably raises a concern that is a challenge to individual rights, since rights that are extended to language, religion, or other forms of culture inevitably have a collective dimension. Recent writings by Charles Taylor, Will Kymlicka, Seyla Benhabib, Amy Gutmann, and other scholars have revived a very heated debate pitting communitarianism against liberalism.⁴ In the course of

4 Seyla Benhabib, ed., *Democracy and Difference: Contesting the Boundaries of the Political* (Princeton, N.J.: Princeton University Press, 1996); and Benhabib, *The Claims of Culture: Equality and Diversity in the Global Era* (Princeton, N.J.: Princeton University Press, 2002);

this debate, partisans of collective rights have shown that much of liberal philosophy, with its relentless focus on individuals, has failed to address the obstacles that minorities and oppressed majorities face. At the same time, scholars like Benhabib, Gutmann, and Kymlicka agree that liberalism, if suitably revised, can indeed be reconciled with multiculturalism.

For such theorists, a legitimate concern is with cultural liberty – the freedom to make choices about one’s cultural affiliations. While individual, civil, and political rights and equitable access to economic and social opportunities are essential to cultural freedom, they are not sufficient to address cultural exclusion. Equity for individuals who choose to identify with minority groups or oppressed majorities requires policies that acknowledge difference. And, of course, basic civil and political rights are indispensable for ensuring that individuals participate in shaping the norms and values of the cultural group with which they identify – an essential element of cultural freedom. Cultural norms have shifted in virtually every society, as people engage in debates that have changed their ways of living. A clear example is the changing role of women away from traditional norms.

While multicultural policies have been endorsed by a growing number of liberal thinkers, they have been less warmly received by most political leaders. Although few today would support the brutal repression of minority cultures, the conventional wisdom among political leaders has long been that allowing

diversity to flourish weakens the state, leads to conflict, and retards development. In this view, the best approach to diversity is assimilation around a single national identity, and suppression of other cultural identities.

In the last half century, state building and development have been dominant concerns, especially for the newly independent states of Africa and Asia. The governments of most countries (except, notably, of nations such as India, Malaysia, Mauritius, and Switzerland) have suppressed or ignored separate identities. And many countries that have prided themselves on their democratic principles have ignored demands for cultural recognition. In the United States, bilingual schooling has been discouraged, and the celebration of African American heritage was only introduced in response to the civil rights movements of the 1960s. Meanwhile, Western European countries have hesitated to promote the rights of minorities.

Even some human rights activists have hesitated to embrace minority rights and cultural rights. Cultural rights are the least well defined of the five areas of human rights (the other four are political, civil, social, and economic). The UN Commission on Human Rights has only adopted one resolution on cultural rights, and that was in 2002. In the drafting of the Universal Declaration of Human Rights, much heated debate arose over whether to recognize minority cultural rights, or simply to affirm an individual’s right “to participate in the cultural life of the community.”⁵ The latter prevailed.⁶

Amy Gutmann, ed., *Multiculturalism* (Princeton, N.J.: Princeton University Press, 1994); and Will Kymlicka, *Multicultural Citizenship: A Liberal Theory of Minority Rights* (Oxford: Clarendon Press, 1996).

5 Universal Declaration of Human Rights, article 27.

6 Elsa Stamatopoulou, “Cultural Policies or Cultural Rights: UN Human Rights Responses,” unpublished manuscript, 2002.

In order to persuade political leaders that cultural rights are worth acknowledging, it will help to dispel four widely held myths about the incompatibility of cultural freedoms and democratic development:

- *Myth 1: People's ethnic identities compete with their attachment to the state, so there is a trade-off between recognizing diversity and unifying the state.*

Individuals can and do have multiple identities that are complementary – ethnicity, language, religion, and race as well as citizenship. Identity is not a zero-sum game; each individual can identify with many different groups simultaneously. In Belgium, for example, citizens overwhelmingly said both when asked whether they felt Flemish or Walloon. In Spain, citizens tended to give the same reply when they were asked if they felt Catalan or Basque. These two countries, along with others, have worked hard to accommodate diverse cultures. They have also worked hard to build unity by fostering respect for identities and trust in state institutions.

Analogously, immigrants need not deny their commitment to the cultures of their countries of origin when developing loyalties to new countries. Fears that immigrants who do not assimilate will fragment countries into irreconcilable cultural groups are unfounded. Involuntary assimilation is no longer a viable model of integration.

There is no trade-off between diversity and state unity. Indeed, multicultural policies are one way to build unified states.

- *Myth 2: Ethnic groups are prone to violent conflict with each other in clashes of values, so there is a trade-off between respecting diversity and sustaining peace.*

There is little empirical evidence that cultural differences and clashes over values are themselves the cause of violent conflict. But there is widespread agreement in recent research that cultural differences by themselves are not the relevant factor causing ethnic wars. Some even argue that cultural diversity reduces the risk of such conflict by making group mobilization more difficult. Meanwhile, studies offer several alternative explanations for these wars: economic inequalities between the groups as well as struggles over political power, land, and other economic assets. In Fiji, indigenous groups initiated a coup against the Indian-dominated government because they feared their land might be confiscated. In Sri Lanka, decades of conflict were triggered by the Sinhalese majority that was economically deprived relative to the Tamil minority.

Cultural identity does have a role in these conflicts – not as a cause, but as a catalyst for political mobilization; leaders invoke a shared identity, its symbols and its history of grievances, to rally the troops. Meanwhile, cultural suppression can set off violent mobilization. Underlying inequalities in South Africa were at the root of the 1976 Soweto riots, which were triggered by attempts to require the teaching of Afrikaans in black schools.

While the coexistence of culturally distinct groups is not in itself a cause of violent conflict, it is dangerous to suppress cultural differences or to allow economic and political inequalities to deepen between these groups, because they can be easily mobilized to contest these inequities.

There is no trade-off between peace and respect for diversity, but identity politics need to be managed so they do not turn violent.

- *Myth 3: Cultural liberty requires defending traditional practices, so there could be a trade-off between recognizing cultural diversity and progress in development, democracy, and human rights.*

Some argue that multiculturalism is a policy of conserving cultures, even of conserving practices that violate human rights, and that movements for cultural recognition are not governed democratically. But neither cultural freedom nor respect for diversity should be confused with the defense of tradition. Cultural liberty is about expanding individual choices, not about preserving values and practices with blind allegiance to tradition.

Culture, tradition, and authenticity are not the same as cultural liberty. They are not acceptable reasons for allowing practices that violate human rights and deny equality of opportunity (such as equal access to education).

It is not rare for interest groups to be dominated by self-appointed leaders who have an interest in maintaining the status quo and who thus act as gatekeepers of traditionalism. Those making demands for cultural accommodation should abide by democratic principles and the objectives of human freedom and human rights. One good model is the Sami people in Finland, who enjoy autonomy in a parliament that follows democratic procedures and is part of the Finnish state.

There does not need to be any trade-off between respect for cultural diversity and human development. But the process of development involves the active participation of people fighting for human rights and shifts in values.

- *Myth 4: Ethnically diverse countries are less able to develop, so there is a trade-off between respecting diversity and promoting socioeconomic development.*

There is no evidence of a clear relationship, good or bad, between cultural diversity and socioeconomic development.

While it is undeniably true that many diverse societies have low levels of income and human development, there is no evidence that this is related to cultural diversity. Some argue, nevertheless, that diversity has been an obstacle to such development. One recent study, for instance, claims that diversity has been a source of poor economic performance in Africa⁷ – but this is actually the result of political decision making that follows ethnic rather than national interests, not of diversity itself. Just as there are multi-ethnic countries that have stagnated, there are others that have been spectacularly successful. Malaysia – with a population that is 62 percent Malays and other indigenous groups, 30 percent Chinese, and 8 percent Indian – was the world's tenth fastest growing economy during 1970 – 1990, the same period when it implemented affirmative action policies. Mauritius – with its diverse population (of African, Indian, Chinese, and European origin) that is 50 percent Hindu, 30 percent Christian, and 17 percent Muslim – ranks sixty-fourth in the Human Development Index, the highest in sub-Saharan Africa.

There is no trade-off between respecting diversity and promoting socioeconomic development.

In short, policies recognizing cultural identities and encouraging diversity to flourish do not result in fragmentation, conflict, weak development, or authoritarian rule. Such policies are both viable and necessary, for it is often the suppression of culturally identified groups that

7 William Easterly and Ross Levine, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *The Quarterly Journal of Economics* 112 (4) (1997): 1203 – 1250.

leads to tensions. If the history of the twentieth century showed anything, it is that the attempt either to exterminate cultural groups or to wish them away elicits a stubborn resilience. By contrast, recognizing cultural identities has resolved what seemed like never-ending tensions. For both practical and moral reasons, then, it is far better to accommodate cultural groups than to try to eliminate them or to pretend that they do not exist.

The advance of cultural liberty must be a central aspect of human development. This requires going beyond expanding social, political, and economic opportunities, since doing so will not guarantee cultural freedoms for all people. At the same time, cultural liberties must not be promoted at the expense of social, political, and economic rights. In other words, multicultural policies that are designed to address cultural exclusions must also be consistent with social, political, economic, and civil rights.

Much work on human development policies has been concerned with three broad areas. The first relates to economic growth with equity, such as pro-poor growth or international trade rules that give fair opportunities to poor countries and debt reduction to countries with unsustainable debt burdens. The second area concerns equitable expansion of social opportunities, such as greater equity and efficiency in social spending, protecting the environments that sustain the livelihoods of poor people, and developing and opening access to technology to meet health needs. The third area includes deepening democracy with measures that empower people to participate in decisions that affect their lives.

These areas focus on expanding people's capabilities and freedoms in social, political, and economic areas. Fostering

cultural freedom requires additional policy solutions – multicultural policies – that address living-mode and participation exclusion. New approaches are needed to integrate multicultural policies into a strategy for promoting human development.

Some argue that such policies are not necessary, that providing individuals with civil and political rights is sufficient to allow them to freely pursue their cultural beliefs and practices. Others argue that cultural exclusion is a product of inequitable social and economic policies, so that when these are corrected, cultural exclusion will disappear. But as the persistence of cultural exclusion in countries like Norway attests, such exclusions do not simply disappear in the presence of democracy and social equity alone. As long as the language of instruction is not one's mother tongue, or the state does not recognize a day of religious celebration as a holiday, or children are taught history that belittles the achievements of their heritage, exclusion will continue. Cultural exclusion is rooted in institutionalized obstacles to equal participation and to a sense of dignity.

This is why fair multicultural policies involve the institutionalized recognition of ethnic, religious, and linguistic identities. In multiethnic democracies, this means some form of recognition in the constitution and in the design of institutional arrangements that ensures political representation, such as through asymmetric federacy arrangements or electoral systems with proportional rather than winner-takes-all representation. Attention also needs to be given to legal pluralism so that people can have access to justice according to the norms and values of their culture. Language pluralism is particularly important, requiring not only state recognition of a

multitude of mother tongues, but also the teaching of the official language to all citizens.

Yet multicultural policies often raise questions, especially when they seem to conflict with policies that promote democracy and equitable socioeconomic development. Multiculturalism involves the recognition of difference, which jars with the idea of equal treatment to achieve equity. Much, of course, depends on how equity is defined. Affirmative action policies that give reserved seats to scheduled casts in India and access to jobs for the Bumiputra in Malaysia would not be acceptable in the United States, where promotion of equal opportunity for African Americans relies on other approaches.

Yet some proponents of cultural recognition do in fact advocate policies that would undermine economic and social progress as well as political freedom. Examples abound: legal pluralism that observes customary law that denies inheritance rights to women; schooling for indigenous children conducted exclusively in their native language, denying them the opportunity to learn the official languages of the state; the banning of imports of foreign books, films, and music in order to preserve the local culture under the pressure of globalization.

In my view, a form of multiculturalism intended to promote the full range of human rights must be centrally focused on promoting cultural freedom, not on the defense of tradition, and must be combined with equitable policies in the three other critical areas of human development. Taken out of this broader context, multicultural policies run the risk of becoming oppressive.

Designing such policies in the larger context of human development is a challenge. Multicultural democracies such as

India and Switzerland have been grappling with such policy dilemmas for decades. Norway developed policies for cultural recognition of the Sami indigenous people, but is now struggling with accommodation of immigrants. European countries are struggling to develop immigrant integration policies that recognize multiple cultural identities, multiple loyalties, and multiple citizenships.

Successes in these countries show that multicultural policies embedded in a human development approach are possible and do work. There are no solutions that fit all situations, but apparent tensions between cultural recognition and deepening democracy, between economic growth and social equity, can be worked out. For example, indigenous people may protest mining investment in their territories and want to opt out of the global economy; multinational investors and indigenous communities can devise projects that involve benefit-sharing and avoid disrupting cultural tradition. Territorially based ethnic minorities may want greater autonomy and self-rule; asymmetric federacy can accommodate such demands without the state falling apart. Immigrant communities may want to hold fast to their traditions and not assimilate into the wider society; the state can still grant expanded access to economic, political, and social opportunities to these individuals to facilitate group interactions. These multicultural policy approaches combine with principles of participation, equity, and the promotion of development.

Human development requires advances in several dimensions. These different dimensions – economic, social, political, and cultural – are important in their own right and need to be pursued. They are mutually compatible objectives, and often mutually reinforcing,

though the links need not always be strong. But cultural freedom is strongly related to all three of the other human development dimensions.

In a world where nine hundred million people belong to groups that experience cultural exclusion, developing multicultural policies is an enormous challenge. But it is a challenge worth meeting, if states are to continue to promote development as a process of progressively expanding human capabilities.

*Cultural
freedom
& human
development
today*

Charles Larmore

History & truth

History, according to Schopenhauer, teaches but a single lesson: *eadem, sed aliter* – the same things happen again and again, only differently. “Once one has read Herodotus, one has studied enough history, philosophically speaking.”¹

If, like Schopenhauer, we survey human affairs from afar, assuming the stance of a neutral spectator, suspending all our own interests and commitments, we will have to agree. At so great a remove, what else will we see but, as he said, countless variations on the same old theme of people pursuing dreams they never achieve, or find disappointing when they do?

Consider the cardinal cases where history is held to do more than repeat itself, where it supposedly shows direction and progress. Theories that scientists in one age endorse meet nonetheless with refutation in the next. Technological innovations aimed at easing man’s estate go on

to create new needs and burdens. Modern democracies, despite their promise, do not end the domination of the many by the few. Progress is bound to seem an illusion if we look at life from the outside, abstracting from our own convictions about nature and the human good. For then we cannot make out the extent to which our predecessors, despite their defeats, were still on the right track. All that we will perceive is their inevitable failure to accomplish the ends that they set themselves. History will serve only to remind us that man’s reach always exceeds his grasp.

Yet ordinarily we think quite differently than Schopenhauer did about the past, and about modern times in particular. In reflecting on the course of the last five hundred years we usually conclude that great strides have been made in understanding nature and in creating a more just society. Patterns of scientific and moral progress come into view, once we lean on established conceptions of nature and scientific method, of individual rights and human needs. Classical mechanics constituted an advance over Aristotelian physics, we then say, because it came nearer to the truth about matter, force, and motion, and perceived

Charles Larmore, Chester D. Tripp Professor in the Humanities at the University of Chicago, is the author of five books: “Patterns of Moral Complexity” (1987), “Modernité et morale” (1993), “The Morals of Modernity” (1996), “The Romantic Legacy” (1996), and “Les pratiques du moi” (2004).

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1 Arthur Schopenhauer, *The World As Will and Representation* (New York: Dover, 1969), supplements, chap. 38.

more clearly the importance of results expressible in the form of mathematical laws. So too in the moral realm: for all its imperfections, the rise of liberal democracy represented a turn for the better when measured against the conviction that political life, particularly where coercive force is involved, ought to respect the equal dignity of each of its members.

When we abandon the view from nowhere and turn to appraising the past by our present lights, new doubts arise, however. Relying as they must on our current ideas of what is true, important, and right, our judgments about progress can begin to appear irredeemably parochial. We may wonder whether they amount to anything more than applauding others in proportion to their having happened to think like us. Is not the notion of progress basically an instrument of self-congratulation? What can we say to someone who objects that our present standpoint is merely ours, with no more right than any other to issue verdicts upon earlier times?

One way of handling this worry has long proved immensely influential; indeed, it taps into the dominant strand of Western philosophy. Philosophers since Plato have generally believed that there exists a body of timeless, universally valid principles governing how we ought to think and act, principles that, they have also supposed, we can only discern by striving to become timeless ourselves. Standing back from all that the contingencies of history have made of us, viewing the world *sub specie aeternitatis*, we can then take our bearings from reason itself.

Theories of scientific and moral progress are very much a modern phenomenon, of course. But the Enlightenment, which pioneered them, still found congenial the ideal of reason as transcen-

dence when articulating its vision of the progressive dynamic of modern thought. A prime example of this tendency is Condorcet's famous essay on progress (*Esquisse d'un tableau historique des progrès de l'esprit humain*, 1793). Once people in the West, he argued, threw off the yoke of tradition and recognized at last that knowledge arises only through careful generalizations from the givens of sense experience, scientific growth and moral improvement were bound to accelerate as they had since the seventeenth century.

In a similar spirit, we may believe that our present point of view amounts to more than just the current state of opinion, because we have carefully worked over existing views in the light of reason. We may regard ourselves as having achieved a critical distance toward our own age, even as we avoid the detachment of Schopenhauer's neutral spectator. For reason is not a view from nowhere. It lines up the world from a specific perspective, defined by the principles of thought and action it embodies. It allows us to determine which of our present convictions may rightly serve as standards for the evaluation of the past. Consequently, the judgments we then make about scientific and moral progress will not simply express our own habits of mind.

Or so it seems. The rub is that our conception of the demands of reason always bears the mark of our own time and place. To be sure, some rules of reasoning, such as those instructing us to avoid contradictions and to pursue the good, are timelessly available. But they can do little by themselves to orient our thinking and conduct; they have to work in tandem with more substantive principles if we are to receive much guidance. The reason to which we appeal when critically examining our existing opinions must therefore combine both these

factors. And yet the more concrete aspects of what we understand by reason involve principles we have come to embrace because of their apparent success in the past, or because of our general picture of the mind's place in nature. As these beliefs change so does our conception of reason, and earlier conceptions sometimes turn out to look quite mistaken.

Once again, Condorcet's essay offers a perfect illustration. His confidence in the existence of elementary sensations uncolored by prior assumptions and conceptual schemes belongs to a brand of empiricism, triumphant in his day, that we can no longer accept. Our own notions of reason, however self-evident they seem to us, may well encounter a similar fate. But even if they do not meet with rejection, they will certainly appear dated, shaped as they are by the particular historical path that our experience and reflection have taken.

Doubts of this sort about progress have intensified over the past century, as reason has shown itself to be less a tribunal standing outside history than a code expressing our changing convictions about how we ought to think and act. Hegel already undertook to 'historicize' reason, though he managed at the same time to hold on to the idea of progress. His strategy was to claim that the "Bacchanalian revel" in which one conception of reason has succeeded another exhibits in hindsight a pattern with an inner necessity: each conception of reason proved unsatisfactory in its own terms and could only be remedied by its successor – until there emerged our own conception (that is, Hegel's), which alone lives up to its own expectations.

Today our sense of contingency is far too acute for any such story to appear credible. We may believe that our present conception of reason has improved upon preceding ones, which themselves

rightly corrected the errors of those before them. Still, we have to admit that different improvements might also have been possible, and that our present view too may have to be revised. Even though the standards we invoke for judging ourselves and the past may be the best we have, they can seem therefore too much a hostage of chance and circumstance to justify any conclusions about progress.

In order to grasp the exact import of these doubts, we need to keep in mind the difference between *growth* and *progress*. Take the case of modern natural science. No one can plausibly see it as a mere succession of different theories, each one a fresh speculation about the world. In antiquity and the Middle Ages, the study of nature did often look like that – and parts of the social sciences still do. Beginning in the seventeenth century, however, physics and then chemistry and biology turned themselves into cumulative enterprises. They set their sights on securing conclusions solid enough to be passed on as guiding premises for future inquiry. In large part it was the combination of mathematics and experiment that made this possible; experimental laws in mathematical form lend themselves to precise testing and, once confirmed, are unlikely to be discredited later, even if they have to be fine-tuned in the face of new data. At the same time, their precision helps to orient further research, setting limits on the hypotheses that henceforth are to be taken seriously. Not by accident, the history of modern science displays a clear line of development leading to our present conception of nature. Each stage along the way has extended and corrected the achievements of its predecessors. Growth in this sense is unmistakable.

To be sure, growth has not always proceeded by simple accretion. Sometimes new theories have appropriated previous

results by recasting them within very different conceptual vocabularies. Sometimes well-corroborated theories have had to be rejected because they failed to square with newly available evidence. And sometimes these two kinds of theory change have gone together – as in the scientific revolutions dear to Thomas Kuhn, in which one “paradigm” replaces another by means of a “gestalt-switch.” It is nonetheless true that the revolutions occurring within the modern sciences of nature, as opposed to those that preceded or inaugurated them, have typically carried over an accumulated stock of experimental laws. Maxwell’s equations, for example, survived the advent of relativity theory, even though they had to be reconceived as making no reference to a luminiferous ether.

Kuhn complained that science textbooks write the history of their discipline backward from the present, disguising its dramatic twists and turns as step-by-step contributions to the present-day edifice of knowledge.² No doubt they do distort the past. Yet only in modern times have such textbooks played much of a role at all. Only recently has it become both possible and essential to expound past results as a body of systematic doctrine, complemented by problem sets and answer keys. The very prominence of these texts testifies to the cumulative character of modern science.

Growth is not the same as progress, however. Progress means movement toward a goal, whereas growth is essentially a retrospective concept, referring to a process in which new formations emerge by building upon earlier ones. Progress generally entails growth, but it posits, in addition, a terminus toward

which that growth is thought to be advancing. Now common opinion holds that science aims at the truth and that therefore its astounding growth in the modern era represents progress in the direction of that goal. So simplistic a statement certainly calls for some immediate qualifications. The modern sciences of nature do not seek truth in general, as though scientific knowledge were the only sort worth having. They focus on the natural world and they devote their energy not to merely piling up truths (the more the better), but to assembling truths that can help explain the workings of nature. Moreover, the truth at which science aims need not be a single, rock-bottom order of things, as defined, for example, by microphysics. Nature may embrace an irreducible plurality of levels of reality.

Yet these amendments do not address the fundamental objection that the common idea of modern science has come to provoke: that the concept of scientific progress begins to appear suspect once we recognize the historical contingency of the standards we use to judge the present and the past. If our current view of nature counts as well founded only by reference to a conception of reason that itself arises from the vicissitudes of experience, how can we maintain that its improvement on previous views represents progress toward the truth? The question does not challenge the existence of scientific growth: plainly, since the sixteenth and seventeenth centuries there has been a steady accumulation of experimental laws, and where earlier theories met with difficulty they were corrected in ways that produced the body of knowledge now expounded in the textbooks of the various disciplines. But with what right can we regard this process as leading to anything other than simply the prevailing opinions of the day? Why should we suppose that it has

2 Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 2nd ed. (Chicago: University of Chicago Press, 1970; original edition, 1960), 136ff.

at the same time brought us closer to the goal of discovering the truth about nature?

Kuhn gave eloquent expression to this widespread skepticism. Though he continued to refer to ‘progress,’ the term as he used it meant solely growth in puzzle-solving ability. Progress toward the truth seemed to him an idle notion, irrelevant to the analysis of modern science: “Does it really help to imagine that there is some one full, objective, true account of nature and that the proper measure of scientific achievement is the extent to which it brings us closer to that ultimate goal?” His answer was no, since “no Archimedean platform is available for the pursuit of science other than the historically situated one already in place.”³ Scientists do not decide among rival theories by invoking truth as a standard. Or if they do, it is but shorthand for the principles on which they actually rely, namely, the methods and scientific values sanctioned by the present state of inquiry. Truth – that is, nature as it is in itself – makes sense as a goal only so long as reason is thought to offer the means for pulling ever closer to it. Once the ideal of reason as transcendence loses its plausibility, giving way to the recognition that science always takes its bearings from a historically determined body of beliefs, our understanding of the aim of science must be similarly downscaled. Its goal, Kuhn claimed, consists in solving the puzzles that current doctrine happens to pose.

This mode of argument has become a familiar refrain in many areas of contemporary thought. It fuels, for example, the vast company of postmodern theorists who regard the idea of science pro-

³ Kuhn, *The Structure of Scientific Revolutions*, 171; and Kuhn, *The Road Since Structure* (Chicago: University of Chicago Press, 2000), 95.

gressing toward the truth as the paradigm of those illusory stories, or meta-narratives, by which modernity has sought to give its achievements a universal legitimacy.⁴ Historicist attacks on scientific realism, as we may call them, stem from an important insight. Contrary to one of the deepest aspirations of the Enlightenment, if not of philosophy in general, reason does not pry us free from the contingencies of time and place. Substantive principles of rationality are always framed in the light of beliefs and ways of life bequeathed by a past that could have turned out otherwise.

All the same, the contemporary skepticism about progress also trades upon a false assumption, which it shares with the ideal of transcendent reason it rejects. The givens of history are not obstacles, but means. Reasoning from where we find ourselves is the very way by which we match our claims against the world. Creatures of chance though we are, the world itself remains the object of our thinking, and the reasons we find to prefer one belief to another must be understood as the reasons we have to think we are drawing closer to the truth.

There is no better way to develop these points than to look in some detail at the most famous skeptic writing today. Richard Rorty, a self-styled “left-wing Kuhnian,” provides the clearest expression of all that is right- and also wrong-headed in the antirealist philosophies so common in our culture. Unlike many other friends of truth and progress, I shall not be engaging in a round of Rorty-bashing in order to declare victorious, as though by default, the orthodox views he seeks to overthrow. Enough has already been said, I trust, to evidence my sympathy

⁴ See Jean-François Lyotard, *La condition post-moderne* (Paris: Éditions de Minuit, 1979).

with the historicized concept of reason that serves as the springboard of his thinking. I intend instead to lay bare the single line of argument that, amidst his changing formulations and proliferating references to other figures, ties together his work as a whole. My object is to locate the spot where insight turns into error.

Common sense says that there is a world ‘out there’ that exists independently of the mind, and Rorty wisely denies that it is his wish to doubt so plain a fact. Even where we do shape the world to suit our purposes, we proceed by exploiting the laws of nature at work in the things around us. But truth, Rorty insists, is not similarly out there. Truth is a property of the sentences we utter, a property we judge by standards we ourselves invoke. Although sometimes the relevant standard may demand that we simply look and let the physical world determine the truth or falsity of a given statement (e.g., “the cat is on the mat”; “the proton has crossed the cloud chamber”), our very idea of when perception can settle an issue, as well as the interpretation we then place on what we see, depends on a whole web of other beliefs and ways of dealing with the world. To call a statement true amounts therefore to saying that those who share with us a certain framework of beliefs have reason to endorse it.

Being true is not, of course, the same as being justified. Yet for Rorty the fact that a statement justified by our lights might still turn out false signifies only that a better view of things may come along in which the statement would no longer pass muster. The distinction between ‘true’ and ‘justified’ serves, he argues, simply a cautionary function, warning us that we may always find reason to change our minds. ‘True’ does not refer to some final point of view that we

are laboring to attain and that, once achieved, will show us the world as it really is. Or, more exactly, Rorty’s position is that we do not need to think in these terms. The idea of such a viewpoint plays no part in our actual decisions about what to believe. Truth, not being ‘out there,’ does not therefore constitute a goal of inquiry, and scientific progress cannot mean getting closer to the truth. What progress does signify for him, as for Kuhn, is not strictly progress at all, but rather growth: an increased ability to make successful predictions.⁵

“The world does not speak,” Rorty likes to quip, “only we do.” We have no other vocabularies than the language games we have invented ourselves. Since truth is always judged by their means, he has occasionally gone on to announce, in an evident desire to disconcert, that truth is something *made* rather than *found* in a reality lying outside our forms of speech.⁶

It is tempting to snap back that while our sentences are manifestly our own creation, what renders them true or false – namely, the world – is not. True statements are made, but their truth is not made; it is discovered.⁷ This easy rejoinder misses the point, however. It fails to do justice to the historicist insight inspiring Rorty’s and many others’ rejection of traditional ideas of truth and progress. What sense can there be in holding that truth is found, if the very standards by which we determine truth and falsity – in other words, the roles we

5 Richard Rorty, *Truth and Progress* (Cambridge: Cambridge University Press, 1998), 5, 39.

6 Richard Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989), 6–7.

7 See John Searle, “Rationality and Realism,” *Dædalus* 122 (4) (Fall 1993): 55–83.

have the world play in shaping our thinking – are as much a product of human history as the beliefs they serve to evaluate? Reason, it then seems, does not teach us how to let the world make our statements true or false; it shows us how the world as presently conceived bears on the statements we happen to utter. If truth is not found, why not then conclude that it must be made?

Nonetheless, precisely because he considers truth to be of little consequence in our actual decisions about what to believe, Rorty eschews in his more careful moments the contrast between making and finding. If truth is indeed an uninteresting notion, it scarcely deserves to be the object of a striking theory. We are indeed to discard as useless the mantra that science and morality aim at the truth about nature and the human good. But Rorty's more considered proposal is that we learn to regard their goal as seeking to expand the horizons of intersubjective agreement, accommodating new experience and hitherto neglected interests. His favored contrast becomes one between objectivity and solidarity. If objectivity means taking our bearings from reality itself, it needs to give way to the more coherent ideal of striving for solidarity, the unforced agreement with others. We do better to make hope rather than knowledge – reasoning together rather than answerability to the world – our highest aspiration.⁸ For science itself does not undertake to discover more and more of the truth about how nature works. Its purpose is instead, Rorty avers, to devise by reasoned argument ever more satisfactory syntheses of theory and experiment. So too, our moral

8 Richard Rorty, *Philosophy and Social Hope* (London: Penguin, 1999); and Rorty, "Solidarity or Objectivity?" in Rorty, *Objectivity, Relativism, and Truth* (Cambridge: Cambridge University Press, 1991), 21 – 34.

thinking is most profitably understood not as trying to determine what we truly owe to one another, but as constructing increasingly inclusive communities in which free and open discussion replaces force. Agreement, not truth, is Rorty's preferred idiom for formulating his "pragmatism."

The classical pragmatists (Peirce, James, and Dewey) always looked with suspicion at philosophy's habit of setting up dualisms, particularly those that oppose the absolute and permanent to the relative and changeable. Theory and practice, reason and experience, duty and desire do not exclude one another, they insisted, but work together from different angles to help us make sense of the world. Rorty also prides himself on being an antidualist. Yet he seems unable to state his position without resorting to one or another philosophical dualism of just this sort – if not finding versus making truth, then objectivity versus solidarity. His dualist rhetoric is not accidental. *Le style c'est l'homme même*. Rorty has staked his all on playing off a historicized concept of reason against the idea that inquiry aims at the truth; the conventional antithesis between timeless truth and human mutability structures his thought from the outset, and he cannot escape its hold simply by trying, as he does, to downplay the former's importance by arguing that only the latter matters.

Herein lies Rorty's fatal mistake. For consider how far from obvious it is that solidarity stands opposed to objectivity. Agreement with others can take a variety of forms, depending on the motives that move us to pursue it. Sometimes, for instance, going along with whatever our fellows say affords a cozy kind of companionship. But what makes *reasoned* agreement a good worth achieving, if not that it enhances our prospects of

grasping the way things truly are? The opposition between solidarity and objectivity proves evanescent. The best way to see this is to look again, but now more closely, at reason and justification.

Deliberating about whether to accept a problematic statement consists, as Rorty says, in determining how well it fits with our existing beliefs. Reason may guide the appraisal, but the requirements that we see reason imposing reflect the changing self-understanding of the community of inquiry to which we belong. All this is correct.

Yet it offers no basis for denying that truth forms the object of our endeavors – and truth conceived as fitting the way the world really is, as correspondence with reality. Indeed, the practice makes no sense without that idea. For what serves to justify or disqualify the statement under scrutiny is not the psychological fact that we hold the beliefs to which we appeal. Our own state of mind, in and of itself, has no bearing on the issue. The probative consideration is rather, so we presume, that the beliefs are true – in other words, that the world is as they describe it to be. Justifying a hypothesis means, in turn, showing that it deserves to stand alongside our established beliefs, to join them in their role as premises for the resolution of future doubts. It follows that when we examine the credentials of a problematic proposition, our intention is to settle whether it matches the way the world really is. Background beliefs may themselves be mistaken, and we can always err in what we say about reality. Fallibility, however, does not make truth any less our goal. Rorty is right that justification proceeds by appeal to what we already believe, by seeking conclusions that others equipped with similar beliefs can equally see reason to embrace. Yet this very activity is indissociable from making our

thought answerable to the world. Solidarity and objectivity go hand in hand.

A similar verdict applies to the allied dualism he often deploys between coping and copying. Different descriptions of the same thing can prove appropriate, depending on which of our various purposes we are pursuing and which audience we are therefore addressing. Sometimes we speak of water as a collection of H₂O molecules, sometimes as an essential nutrient for all of life. Does this mean, as Rorty argues, that our talk aims merely at being useful, not at representing the way the world is in itself? Once again, we are given a false alternative – utility and truth are inseparable. We cannot cope with the things around us unless we consider how the world looks from the particular angle we have chosen. Agreed, no single description is the one and only true description. But the existence of many equally true ones mirrors the fact, as I suggested before, that the world itself comprises multiple levels of reality.⁹ Water is both those things, and a lot more besides.

These remarks about Rorty imply that scientific growth must also count as progress toward the truth, when the series of later theories building upon earlier ones results in some element of our present understanding of the natural world. I am not suggesting that the two concepts are synonymous after all. But the only way in which growth may fall short of being progress is by failing to produce beliefs of the sort we ourselves endorse. (Thus in Ptolemy's hands the geocentric theory grew in sophistication, without moving any closer to the truth about the planetary motions.) For to believe that something is the case

9 Cf. John Dupré, *The Disorder of Things* (Cambridge, Mass.: Harvard University Press, 1993).

means holding it to be true, and if our current beliefs about nature are the outcome of a self-correcting process, which the history of modern science has undeniably involved, then this process merits the title of progress. Where past views do not fit our present convictions they must be deemed false, and where they were corrected so as to yield what we presently believe, we must suppose that we have drawn closer to grasping the world as it really is.

To be sure, truth is then being judged by existing standards. Yet, one might ask, what other standards should we use instead? Rorty and many others today share a defining assumption of the notion of progress they seek to overturn. They assume that we would be entitled to consider ourselves nearer the truth than our predecessors, only if we could rise above our historical situation and vindicate our present views from a vantage point outside the vicissitudes of experience. That is why, arguing rightly that our idea of reason is part and parcel of our changing web of belief, they go on to reject truth as the goal of inquiry.

Precisely this assumption is the dogma we need to dispel. The real revolution in philosophy would be to regard the contingencies of history as the means by which we lay hold of reality. We cannot look back (as Hegel supposed) and see in the developments leading to our current body of beliefs a path that mankind was destined to travel. What we can do is show how our present views represent an improvement over earlier ones, and, to the extent that we can do so, we ought to conclude that the reasons for preferring the new to the old are reasons for thinking we have now a better comprehension of the way the world is.

The principles by which we make these judgments may themselves change as our conception of nature changes. But reason, though historicized, does not

lose its authority to regulate our thought and to determine the progress we have achieved. To have good grounds to alter our beliefs is to have learned from our mistakes, and such are the terms in which we should also view the changes that the notion of reason has undergone. As the history of science demonstrates, we have learned how to learn in the very process of learning about nature.¹⁰ In other words, the principles of rationality we have come to accept are themselves truths, about how we ought to think and conduct our inquiries into nature, that we now hold to be timelessly, universally, valid. But as essentially the result of a learning process, they cannot count as timelessly accessible.

The idea of moral progress lends itself to a similar reconstruction, though I do not have the room to tackle this complex subject here. For it would first be necessary to explain how such a thing as moral knowledge is possible.¹¹ And then I would have to point out how the parallel between moral and scientific progress nonetheless ceases at a crucial point. Moral progress consists not only in a deeper understanding of the right and the good, but also in the achievement of a better life – and one of the important truths we have learned is that every way of life secures some things of value at the expense of others. Gains come with losses. Because science aims simply at knowledge, scientific progress does not involve an analogous balancing of pluses and minuses.

In both domains, however, the way forward is to break the grip that the old dualisms continue to have on the philosophical mind, even among those who

10 Cf. Dudley Shapere, *Reason and the Search for Knowledge* (Dordrecht, The Netherlands: Reidel, 1984), 233.

11 See my book, *The Morals of Modernity* (Cambridge: Cambridge University Press, 1996).

claim to fight against them. Truth itself is timeless; if Newtonian mechanics now appears importantly mistaken, then it was always false, even in its heyday. Our thinking takes place necessarily in time, and has no other resources than those that the past and our own imagination happen to provide us. Yet the finitude that marks every step we take tracks the world that lies beyond. Reasoning from where we find ourselves means reasoning about the way things really are. As T. S. Eliot wrote in *Burnt Norton*, “only through time time is conquered.”

Keith Michael Baker

On Condorcet's "Sketch"

Marie-Jean-Antoine Nicolas Caritat de Condorcet's *Sketch for a Historical Picture of the Progress of the Human Mind* – perhaps the most influential formulation of the idea of progress ever written – was first published in 1795, a year after its author's death. Conceived as an introduction to a much more comprehensive work, Condorcet's essay, hastily written while he was in hiding from his Jacobin enemies, was in part an ironic by-product of the author's political defeat. In the *Sketch* Condorcet consoled himself with the conviction that expanding knowledge in the natural and social sciences would lead to an ever more just world of individual freedom, material affluence, and moral compassion.

A year later Louis de Bonald published one of the earliest responses, a vehement critique that denounced the "apocalypse of this new gospel." For this mighty theorist of the Counter-Revolution, Con-

dorcet's work epitomized everything that was wrong about the faith of godless men in secular progress. By Bonald's account:

The fanatical picture that this philosopher gives of his hypothetical society can explain to us the inconceivable phenomenon exhibited by revolutionary France. Men were seen coldly giving their destructive hordes the order for the desolation and death of their fellow citizens, their relatives, their friends, out of pure love of their country; announcing the goal and even the necessity of reducing its population by half . . . and justifying perhaps in their own eyes horrors unheard of in the annals of human wickedness, for the benefit of . . . future generations.¹

For Bonald, the philosophy of progress was a perversion of the Christian apocalypse – a dangerous rival that substituted the promise of science for the hope of salvation while forgetting the brutal realities of human passions. It inflicted unprecedented death and destruction even as it declared the advent of univer-

Keith Michael Baker has been a Fellow of the American Academy since 1991. The J. E. Wallace Sterling Professor of Humanities at Stanford University, he is the author of "Condorcet: From Natural Philosophy to Social Mathematics" (1975), among other books and essays.

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¹ Louis-Gabriel-Ambroise, vicomte de Bonald, "Observations sur un ouvrage posthume de Condorcet, intitulé 'Esquisse d'un tableau historique des progrès de l'esprit humain,'" *Oeuvres complètes de M. de Bonald*, 3 vols. (Petit-Montrouge: Migne, 1859), vol. 1, 721 – 722. Translations from the French are my own.

sal human happiness. It promised universal freedom at the cost of destroying colonized peoples. It proclaimed a reign of reason that could only turn out to be domination in the name of science.

In his reflections on the idea of progress in this issue of *Dædalus*, John Gray makes a similar sort of argument. In his view a more or less straight line leads from Christian notions of eschatology to the modern idea of progress, and from there to the misguided revolutionary movements of the eighteenth, nineteenth, and twentieth centuries.

But it does not tell us much about the idea of progress to assert that it is a secular version of Christian eschatology. The idea of an indefinite human advance toward a better future is quite different from the eschatological notion of an ultimate moment in which history will come to an end. Nor can we rely on Norman Cohn for proof of the connection between apocalyptic myths and modern revolutionary movements; his book establishes no such connection and scarcely goes beyond asserting a resemblance between late-medieval chiliasm and twentieth-century totalitarian movements that might somehow be seen as illuminating. Moreover, Christianity is such a massive presence in the intellectual history of the West that it would be difficult to find any European philosophy untouched by it in some way, either as a source of inspiration or a target of repudiation.

There are undeniable traces of Christian providentialism or millenarianism in the ideas of progress proposed in the eighteenth century by such writers as Turgot in France and Price and Priestley in England, to whom Condorcet paid tribute in his *Sketch*. But my own instinct in thinking about the genealogy of the idea of progress as it is found in Condor-

cet is to look more closely at the encounter with late Augustinianism that crucially shaped the French Enlightenment. And if I could choose a single text to illustrate this encounter, it would be Voltaire's *Lettres philosophiques*, and particularly the reflections on Pascal's *Pensées* appended to that work in the edition that appeared in 1734.

The *Pensées* invoked the Augustinian nightmare of a humanity trapped in the torments of a radical separation from God, the dilemma of a species so profoundly wounded by the Fall that no effort could bring it grace, no human means could bring it into contact with a spiritual reality informing the universe. Pascal's was the misery of a sinner cut off from the Divinity; the fear of an individual thus cast alone into the vast, infinite spaces of the universe; the despair of a being that finds its reason inadequate and its moral apparatus depraved; the terror of one thereby deprived, by its very nature, of true communion with its fellows. Pascal's philosophy was pure metaphysical panic.

Pascal had also written the *Pensées* as a scientific apostate. Finding unrealizable the ambition to know everything, he had concluded that human beings could know nothing. Acknowledging that there were limits to human knowledge, he had declared it unattainable. He saw radical skepticism as a necessary consequence of the misery of the human condition. This is where Voltaire found Pascal particularly dangerous to humanity. "It is not necessary to divert humanity from searching for what is useful to it because of the consideration that it cannot know everything," Voltaire insisted. "We know many truths; we have made many useful inventions. Let us console ourselves for not knowing the possible relationship between a spi-

der's web and the rings of Saturn, and continue to examine what is within our reach."²

Confronting the weaknesses and limitations of the human condition as he saw them, Pascal gambled on the Absolute. Voltaire refused the wager, accepting the lot of one earthworm among others, lost in an infinite space it can never truly comprehend, born to action in a world it must henceforth make its own. Recognizing the miseries of the human condition, Voltaire nonetheless hoped to temper them by a philosophy of epistemological modesty, a refusal of religious extravagance and intolerance, and an active engagement in the social world.

It is easy in hindsight to underestimate the immensity of the epistemological re-orientation thus advocated by Voltaire under the banner of Bacon, Newton, and Locke. It consisted in the definitive abandonment of metaphysical aspirations that were centuries old (and as recent as the seventeenth century) in assuming the humiliating and uncertain position of an infinitely small being fundamentally ignorant in the face of an infinitely large universe.

Compensation of some kind was necessary to make this intellectual reorientation acceptable. Voltaire found this compensation, as did other Enlightenment thinkers, in notions of society, utility, and happiness – and in the possibility of progress. Human interdependence (the Enlightenment thinkers called it society) replaced dependence on the Divine as the ontological frame of human existence.³ Knowledge relative to human beings – because derived from

their sensations and experiences – could be made relevant to them in the practice of their everyday lives, useful to them in their pursuit of their needs, conducive to their happiness. Limited in the present, knowledge could be enlarged in the future; indeed, it could be enlarged only to the extent that its limits were accepted in the present. Progress became a possibility, and a promise, provided claims to philosophical and religious certainty were abandoned.

“It is fortunate for the progress of the sciences, as for our happiness, to forget in work, as in the conduct of life, the terrifying uncertainty to which we are condemned,” Condorcet acknowledged before the Academy of Sciences in 1780.⁴ It is not too much to say that Pascal's blend of metaphysical despair, anguished skepticism, exaggerated Christian self-hate, and radical delegitimation of human action in the world haunted Condorcet, as it did other Enlightenment thinkers. It did so to such a degree that he was compelled to take his own stance against Pascal's philosophy in 1776, publishing an edition of the *Pensées* in which he took a hatchet to the text and hammered what was left with responses drawn

Melching and W. R. E. Velema, eds., *Main Trends in Cultural History* (Amsterdam and Atlanta: Rodopi, 1994), 95–120. For a far broader view of this transition, see Marcel Gauchet, *Le désenchantement du monde: une histoire politique de la religion* (Paris: Gallimard, 1985), translated into English by Oscar Burge, with a foreword by Charles Taylor, as *The Disenchantment of the World: A Political History of Religion* (Princeton, N.J.: Princeton University Press, 1991).

2 Voltaire, *Lettres philosophiques*, ed. Raymond Naves (Paris: Garnier frères, 1939), 173.

3 I have sketched this argument more fully in my “Enlightenment and the Institution of Society: Notes for a Conceptual History,” in W.F.B.

4 M. J. A. N. Caritat de Condorcet, “Éloge de M. Lieutaud,” in *Oeuvres de Condorcet*, ed. A. Condorcet O'Connor and M. F. Arago, 12 vols. (Paris: Firmin Didot frères, 1847–1849), vol. 2, 404.

from the *Lettres philosophiques*, new remarks from Voltaire, and rejoinders of his own.

"Why affect so great a disdain for the physical sciences, when they have given humankind such resources to oppose the rigors of nature?" Condorcet demanded of Pascal.⁵ All those who had denied the certainty of human knowledge were correct in maintaining that the moral and physical sciences could never yield the certainty of mathematics, he acknowledged. But they were wrong to assert that there could be no reliable basis for opinion in these matters, "for there are sure means of arriving at a very great probability in some cases and of evaluating the degree of that probability in a great number."⁶

To a mathematician skilled in the calculus of probabilities, Condorcet now began to argue, skepticism need no longer be a paralyzing affliction: it could open the way to a philosophy of probable belief subject (at least in theory) to precise expression in mathematical terms. This was the claim underlying Condorcet's principal mathematical work, a lengthy study of the application of the calculus of probabilities to the theory of decision making published in 1782. It began with the proposition that all our knowledge is probable because it is based solely on experience – even the truths of mathematics, which depend for their apparent certainty only on the expectation that the human mind will find demonstrable in the future what it has found demonstrable in the past.

It may seem odd to emphasize the uncertainty to which Condorcet's ideas about the progress of the human mind

5 *Pensées de Pascal. Nouvelle édition corrigée et augmentée* (London: 1776); notes as reprinted in Condorcet O'Connor and Arago, eds., *Oeuvres de Condorcet*, vol. 3, 622.

6 *Ibid.*, 641.

offered a response. Uncertainty is not a characteristic frequently ascribed to the Enlightenment. As a polemicist in the reforming cause, Condorcet could be as dogmatic about what he knew (or knew to be false) as he could be insistent, when speaking philosophically, that all that he knew was provisional, that present truths were destined to become past errors. Nor can we forget that he also presided over the most powerful scientific academy in eighteenth-century Europe at the time of its greatest prestige and productivity, or that it was from this position that he set out to bring to the understanding of human interaction (the task of "the moral and political sciences") the kind of precision being attained in the natural sciences. But relinquishment of claims to epistemological certainty was a crucial aspect of the scientific achievements of the Academy of Sciences during this period. Arguably the greatest of these, Laplace's applications of the calculus of probabilities to outstanding problems of understanding the Newtonian world system, rested explicitly on the postulate of human ignorance regarding the principles of order underlying that system.

In what they called the moral and political sciences, Enlightenment thinkers also started from a position of uncertainty. In a recent book on the economic ideas of Turgot, Adam Smith, and Condorcet, Emma Rothschild has done much to remind us that the world in which the Enlightenment took form was an insecure and unpredictable one.⁷ It was a world (like our own) still haunted by collective memories of fanatical violence and wholesale slaughter, a world (like our own) undergoing rapid change fed by processes of globalization, a

7 Emma Rothschild, *Economic Sentiments: Adam Smith, Condorcet, and the Enlightenment* (Cambridge, Mass.: Harvard University Press, 2001).

world in which proposals for reform regularly met dire predictions of social convulsion. In such a world, wagering that a peaceable social order might derive from the exercise of individual freedom guided by reasoned choice, both individual and collective, was (and is) still a daring bet.

Condorcet wrote in the *Sketch* of the “terrifying complexity of interests linking the subsistence and well-being of an isolated individual to the general system of societies, rendering him dependent on all the accidents of nature, on every political event, virtually extending to the entire world his capacity to experience enjoyment or suffer privation.” How, he asked, “in this apparent chaos, does one nevertheless see, by a general law of the moral world, the efforts of each individual for himself serving the well-being of all, and, despite the external shock of opposed interests, the common interest demanding that each understand his own interest, and be able to obey it without obstacle?”⁸ The Enlightenment hope for a peaceful and autonomous order of society was here, as was the gamble that this order might derive solely from the interaction of informed individual choices; but neither was far from the recognition of a “terrifying complexity” still to be understood.

We know from the evidence of his manuscripts that Condorcet had been projecting a work on “the progress of the human mind” since the early 1770s.⁹

8 Condorcet, *Esquisse d'un tableau historique des progrès de l'esprit humain*, ed. O. H. Prior (Paris: Boivin et cie, 1933; republished with an introduction by Yvon Belavel, Paris: J. Vrin, 1970), 152; see Rothschild, *Economic Sentiments*, 237.

9 For a fuller account, see my book, *Condorcet: From Natural Philosophy to Social Mathematics* (Chicago: University of Chicago Press, 1975), 344–352.

Favored by Fontenelle in the *éloges* of eminent scientists he delivered as permanent secretary of the Paris Academy of Sciences, the phrase was becoming a common one in scientific circles.¹⁰ It was therefore appropriate that the young academician should imagine writing a history of this progress to demonstrate his suitability to enter into the line of Fontenelle's succession. Condorcet did not write the history, finding other ways to secure the position of permanent secretary. But he continued to argue the benefits of scientific progress and, more significantly, to make the case that the moral and political sciences could follow the methods of the natural sciences in securing more precise and reliable knowledge, advancing the cause of reason, and promoting human freedom and happiness.

At some point during the 1780s, following this line of thought, he drafted an introduction for a work that “would make known to humankind its resources and true destiny.” That text outlined three general propositions to be demonstrated: that the past revealed an order that could be understood in terms of the progressive development of human capabilities, showing that humanity's “present state, and those through which it has passed, are a necessary constitution of the moral composition of humankind”; that the progress of the natural sciences must be followed by progress in the moral and political sciences “no less certain, no less secure from political revolutions”; that social evils are the result of ignorance and error rather than an inevitable consequence of human nature. Each of these propositions was to become an underlying theme of the *Sketch*. It is clear, moreover,

10 Jean Dagen, *L'histoire de l'esprit humain dans la pensée française de Fontenelle à Condorcet* (Paris: Klincksieck, 1977), 18–23.

that Condorcet had in mind a kind of historical demonstration of the increasing power and freedom of humanity, a demonstration that would support the expectation that the power of humankind would transcend the limits apparently imposed upon it by nature, as by its own history. In these plans, Condorcet divided the historical record into nine epochs spanning the progress of the human mind from the dawn of civilization to his own time. But it is striking that they contain no reference at all to a Tenth Epoch that would portray his vision of the future.

The Tenth Epoch did not finally appear in Condorcet's drafts for a work on progress until the period after July of 1793, when he was driven into hiding by political defeat. He was to devote the remaining nine months of his life to the actual composition of the *Sketch* and to other substantial fragments of the larger work on the progress of the human mind to which it was intended as an introduction. And even though the basic conception of the *Sketch* had been formulated some years earlier, it is nevertheless true that the work bears the imprint of the French Revolution, most notably in the appearance of the Tenth Epoch itself. In a sense, the earlier nine parts of the story Condorcet had envisioned now became a preparation for the Tenth Epoch, which seems simultaneously to condense the exaltation of the Revolution and to project it far into the future. The urgency of the moment is reflected in the style of the work itself, as Condorcet piles phrase after phrase, hope after hope, into sentences that extend into paragraphs almost as indefinite as the progress they attempt to picture.

The *Sketch* also reflects a profound sense of defeat. Driven into hiding by the Jacobins, Condorcet saw the Revolution as betrayed by men he regarded as

charlatans; politicians who had misrepresented its principles and misdirected its energies; terrorists who had sacrificed reasoned debate to fanatical manipulation, freedom to tyranny, the promise of the moderns to a false nostalgia for the ancients. The heightened vision of progress represented by the Tenth Epoch now became the consolation of the defeated philosopher, the warrant that despite the frustrations of the political moment the transformation of human existence promised by the Revolution could nevertheless occur in the long run.

It would be a massive understatement to say that Condorcet's forecast of advances in science, technology, and medicine has held up better than his anticipations of progress in ethics and politics. It is easy, two centuries later, to be appalled at the naïveté (or should we rather be ashamed at the unrealized generosity?) of his hopes for the end of colonization; to be embarrassed at the failure of his prediction that European peoples would be led, by principles of benevolence or through rational calculation of their interests, to end exploitation and foster universal emancipation; to sense the arrogance of his expectation that non-European peoples would readily embrace new truths and accept their blending into the fraternity of a cosmopolitan civilization. Bonald, only the first to recognize a polemical opportunity here, was not above doctoring Condorcet's text to foist upon it the worst possible interpretation of his remark that the progress of civilization might result in the dispersion or disappearance of some primitive peoples. This was his chance for payback against Enlightenment critiques of colonization undertaken in the name of Christ. Did philosophy have any more right than Christianity, Bonald demanded, to "cause the dis-

appearance of [*faire disparaître*] the peaceful inhabitants of these distant regions?"¹¹

It is also easy, in retrospect, to smile at the assurance that freedom of trade, elimination of monopolies, destruction of obstacles to individual participation in economic affairs, and equality of public instruction would necessarily come together to prevent the vastly disproportionate distribution of wealth within nations and among them. But *laissez-faire* was still new in the eighteenth century, as Emma Rothschild has reminded us, and Condorcet did not claim that economic principles had been established once and for all. Nor did he deny that their application might be refined in the light of practice and tuned by government action. His view of the progress of the human mind was that it was always subject to correction: never more than provisional, truths of one moment could be expected to become the errors of another. Holding that human rights could be logically derived from the nature of individuals as sensual beings, he was nevertheless quick to emphasize how abstract these principles remained, how far they were from being fully understood, how complex a matter it would be to institute them in particular situations.

Nor was Condorcet offering a blueprint for scientific rule, as Bonald

11 Bonald, "Observations," 757. Bonald omitted Condorcet's qualification that the process of civilization would be accomplished "even without conquest," and combined and supplemented parts of two passages from the *Sketch* (see below, pages 67–68) to produce a more damning version: "It is possible, says Condorcet, that some savage nation in the vast regions of north America that knows no law but brigandage will reject the delights of this perfected civilization; but reduced to a small number, pushed back themselves by the civilized nations, these peoples will finish by disappearing entirely, or being lost in the midst of these nations."

charged. His goal was not social engineering carried out under the aegis of a technocratic state. To the extent that his social art was the art of legislation, he thought it would ultimately do best in doing little. Its purpose was to open up as wide a field as possible for the exercise of individual freedom, the play of free and informed individual choice, and the expression of sentiments of benevolence. Doubtless, there were tensions in his thinking, particularly in its early stages, between the claims of scientism and the principles of democracy. His work on decision theory had sought to resolve these tensions by exploring voting conditions under which majority rule might be regarded as rational. At times under the Old Regime, when it seemed that the monarchy could be a vehicle for enlightened political reform, he was willing to argue that the right to participate in political decision making was secondary to the need for rational decisions.

But his views changed. By the time he wrote the *Sketch* he was ready to insist that individual rights could only be secured by majority rule. "Doubtless there are matters on which the majority might perhaps decide more often in favor of error and against the common interest of all. But it is still up to the majority to define which matters must not be subject immediately to its own decision, to identify those whose reason it believes should be substituted for its own, and to determine the procedure they must follow to arrive more assuredly at the truth; and it cannot abdicate the authority to decide whether or not their decisions have violated the common rights of all."¹²

It was therefore a crucial feature of Condorcet's thinking that scientific

12 Condorcet, *Esquisse*, 150.

truths, always subject to correction, must never be propagated as dogmas. His educational proposals during the Revolution insisted on the distinction between *education* and *instruction* he saw as crucial in differentiating modern liberty from that of the ancients. *Education* meant the inculcation of truths as dogmas, the institutionalization of habits of obedience, the subjection of the individual to the community. *Instruction* meant the teaching of the critical reasoning that was the necessary basis for individual judgment and the exercise of independence; it meant the exposition of current truths—whether in the natural, political, or moral sciences—as no more than provisional. In Condorcet's view modern society and individual liberty could be served only by public instruction understood in this sense. But even then, such instruction could be neither mandatory nor exclusive of the teaching of other views, nor could a political authority be allowed to decide the curriculum. Even the constitution, he argued, could be taught only as a provisional formulation, subject to advances in the understanding of the principles underlying it.

We are still a long way here from the religion of social progress offered by Saint-Simon and Comte, from the historical determinism proposed by Marx and Engels, and from the twentieth-century subjections of humanity in the name of laws of society or history. Notions of society and history had to thicken, as they rapidly did in the nineteenth century, for these conceptions to appear. Bonald himself announced the sociological turn in defining "the great question that divides men and societies in Europe: whether man makes himself and makes society, or society makes itself and makes men."¹³ Saint-Simon and

13 Bonald, "Observations," 742.

Comte were to follow his lead. In comparison with theirs, Condorcet's conception of society and history was still relatively thin: his story began with a model of the individual mind, not with a premise about necessary social relations; its division into epochs did not correspond (much to Comte's frustration) to any succession of systemic social orders. Condorcet did not reveal the work of history on human beings; he pointed to the work of human beings in history. Nor did he invoke historical laws or sociological determinism as the basis for a theory of social organization. His conception of the social art was resolutely antihistorical, open to the possibilities of the future rather than subject to the determinisms of the past. It was also resolutely individualistic, aimed at widening the human capacity to choose intelligently for oneself, in individual matters as in collective. The only historical law he saw might be called the law of the open future: the tendency of humankind to secure increasing freedom from constraints of physical nature and those of its own making. He thought this tendency would hold, only because freedom would beget freedom through informed choice and reasoned action.

Richard Rorty has suggested the importance of holding to the goal of universal emancipation proclaimed by the Enlightenment while abandoning the epistemological blend of rationalism and positivism upon which its hopes for emancipation were based.¹⁴ The language of science has been useful for many purposes, but it has not served us well in our thinking about ethics and

14 Richard Rorty, "The Continuity Between the Enlightenment and 'Postmodernism,'" in Keith Michael Baker and Peter Hanss Reill, eds., *What's Left of Enlightenment? : A Postmodern Question* (Stanford, Calif.: Stanford University Press, 2001), 19–36.

politics. It is irrefutable that the growth of scientific and technical knowledge has magnified human capacities to inflict harm as much as those to achieve well-being. Knowledge in itself does not make human beings good; it seems far from eradicating evil. But neither is it clear that the balance of malevolence and benevolence within and among human beings is fixed and constant. Some conditions seem more conducive to benevolence than others.

Condorcet allowed for an uncertainty at the very heart of his philosophy of history. He did not know whether to argue that progress must be indefinite because it is unlimited, or indefinite because one cannot know what its limits might be. We sense those limits more clearly in our age of global warming, randomized terror, and virtually universal insecurity. If Condorcet moved from promise to assurance, and at least some of his successors moved from there to historical inevitability, it may be time for us to move back toward Voltaire's offer of hope and possibility – not forgetting the latter's sense of responsibility.¹⁵

Time will tell if we have left it too late. Condorcet's expectations for a more decent world – for universal human rights, individual autonomy, and a measure of equality between individuals and nations – may now seem far from assured. But we can still look for opportunities to move toward these goals. Does anyone have a better idea?

15 On this theme, see Pierre-André Taguieff, *Du progrès : biographie d'une utopie moderne* (Paris: Éditions J'ai Lu, 2001), esp. 183 – 184.

Condorcet

Sketch for a Historical Picture of the Progress of the Human Mind: Tenth Epoch

Translated by Keith Michael Baker

Translator's Note: There is still no definitive or critical edition of Condorcet's "Esquisse d'un tableau historique des progrès de l'esprit humain," or of the other parts of the work for which it was intended as an introduction. The text published posthumously in 1795 contains additions to the extant manuscript that were presumably made by the author before his death. The standard edition of Condorcet's collected works, "Oeuvres de Condorcet" (edited by A. Condorcet O'Connor and M. F. Arago, 12 vols. [Paris: Firmin Didot frères, 1847–1849]), reprints the text of 1795 with many minor changes; it also includes substantial fragments from the larger work. I have followed the edition of the "Esquisse" by O. H. Prior (Paris: Boivin, 1933; republished with an introduction by Yvon Belavel [Paris: J. Vrin, 1970]), which uses the text as published by Arago and O'Connor, placing in square brackets passages from the 1795 edition that do not appear in the extant manuscript.

Several of the choices I have made as translator should be mentioned. In current English, the term 'perfectibility' and its close cognates seem to carry a stronger implication of absolute perfection than they do in eighteenth-century French. In most cases, I have found terms like 'ameliorability,' 'amelioration,' and 'betterment' closer to Condorcet's intended meaning. The French term 'facultés' also presents a question: it can refer, as in English, to capacities with which an individual is physically endowed (e.g., sight or operations of the

mind) or to powers arising from their exercise. I have used 'faculties' for the former, 'capacities' for the latter. Finally, like most eighteenth-century writers, Condorcet generally uses the singular and plural forms of 'homme' to refer generically to human beings. Where possible without contortion, I have used gender-free language in translating these terms. Please also note that the section breaks that appear in this translation are my own.

I wish to express thanks to Emma Rothschild for helpful comments on a draft of this translation.

If we can predict phenomena with almost complete confidence when we know their laws, and if, even when we are ignorant of these laws, past experience allows us to anticipate future events with a great degree of probability, why should it seem an impossible undertaking to project the future destiny of the human species with some plausibility from the results of its history? The only basis for belief in the natural sciences is the idea that, whether we know them or not, the general laws governing the phenomena of the universe are necessary and constant. Why should this same principle be less true for the development of the intellectual and moral capacities of humankind than for other natural processes? In short, since judg-

ments grounded on past experience of like events are the sole rule of conduct for the wisest individuals, why shouldn't a philosopher be permitted to base his conjectures on this same foundation, provided he attributes to them a certainty no greater than can be sustained by the number, consistency, and precision of his observations?

Our hopes for the future condition of the human species can be reduced to three important points: the destruction of inequality among nations; the progress of equality within each people; and the real betterment of humankind. Will all nations necessarily approach one day the state of civilization achieved by those peoples who are most enlightened, freest, and most emancipated from prejudice, such as the French and the Anglo-Americans? Will we necessarily see the gradual disappearance of that vast distance now separating these peoples from the servitude of nations subjected to kings, the barbarism of African tribes, the ignorance of savages?

Are there regions of the globe where the inhabitants have been condemned by their environment never to enjoy liberty, never to exercise their reason?

Do the differences in enlightenment, resources, or wealth so far observed between the different classes within civilized peoples – the inequality that the initial advances of society augmented and may even have produced – derive from the very nature of civilization or from the current imperfections of the social art? Must these differences continually diminish, giving way to the real equality that is the ultimate goal of the social art, that of reducing the very effects of natural differences in individual capacities while allowing for the continuation only of an inequality useful to the common interest because it will foster the progress of civilization, education,

and industry without entailing dependence, humiliation, or impoverishment? In other words, will human beings advance toward a situation in which all will have the knowledge necessary to act according to their own reason in the common affairs of life, to remain free of prejudices, and to comprehend their rights and exercise them according to their judgment and their conscience? Will they approach that state in which all will be able to secure the means of providing for their needs, and in which stupidity and misery will at last be only accidental rather than the habitual condition of part of society?

Might it also be the case that the human species will necessarily better itself through new discoveries in the sciences and the arts and, as an inevitable consequence, in the means of individual well-being and common prosperity; through progress in the principles of conduct and the practice of morality; or through optimization of the intellectual, moral, and physical capacities that may result from improving the instruments that intensify these capacities and guide their use, or even the natural constitution of humankind?

In answering these three questions, we will find that past experience, observation of the progress made so far by the sciences and by civilization, and analysis of the advance of the human mind and the development of its capacities yield the strongest grounds for believing that nature has set no limit to our hopes.

A glance at the present state of the globe reveals, in the first place, that the principles of the French Constitution are accepted already by every enlightened person. We see these principles now too widespread and too firmly professed for the efforts of tyrants and priests to prevent their gradually penetrating the huts

of the enslaved, where they will soon reawaken the vestiges of good sense and the silent indignation that constant humiliation and terror fail to stifle in the soul of the oppressed.

In considering different nations, we shall see in each one the particular obstacles opposing this revolution or the conditions favoring it. We shall identify those nations in which it will be brought about peacefully by the perhaps belated wisdom of their governments, and those in which it will be rendered more violent by the resistance of governments that will inevitably be swept up in its terrible and rapid upheavals.

Can there be any doubt that good sense or the absurd divisions among the European nations will further the slow but inevitable effects of the progress of their colonies, resulting soon in the independence of the New World? Or that the European population, rapidly increasing over this immense territory, will civilize or cause the disappearance, even without conquest, of the savage nations that still occupy vast regions of it?

Review the history of our enterprises and settlements in Africa and Asia and you will see our commercial monopolies, our betrayals, our bloodthirsty contempt for people of another color or creed, the insolence of our usurpations, and the extravagant proselytizing or the intrigues of our priests destroying the sentiment of respect and goodwill initially inspired by the superiority of our knowledge and the benefits of our commerce.

But the moment is surely approaching when we shall stop appearing to them only as corruptors and tyrants and become their useful instruments or generous liberators.

Sugar cultivation, as it is established in the immense African continent, will de-

stroy the shameful exploitation that has corrupted and depopulated that continent for two centuries.

Already, in Great Britain, friends of humanity have set an example; and if the Machiavellian government of this country, forced to respect public reason, has not dared oppose it, what can we not expect from this same spirit once a servile and corrupt constitution has been reformed and rendered worthy of a humane and generous nation? Will France not hasten to imitate these undertakings dictated in equal measure by philanthropy and European interests properly understood? Spice production has been introduced in the French islands, in Guiana, and in some English possessions, and one will soon see the collapse of the monopoly in this trade the Dutch have maintained by so many betrayals, aggressions, and crimes. These European nations will finally learn that exclusive trading companies are only a form of tax imposed on them to give their governments a new instrument of tyranny.

Then the European peoples, limiting themselves to free commerce, and too enlightened regarding their own rights to disregard those of other peoples, will respect the independence they have hitherto violated so arrogantly. Their settlements will no longer be filled with government favorites profiting from a place or a privilege as they rush to accumulate a treasure through brigandage or treachery in order to get back to Europe to buy titles and honors. Instead, they will be populated by industrious persons traveling to these beneficent climates in search of the prosperity that has eluded them in their own country. Liberty will hold these individuals there and ambition will no longer draw them home. As a result, these outposts for bandits will become colonies of citizens spreading to Africa and Asia the principles and prac-

*Sketch for
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tices of European liberty, knowledge, and reason. In place of the monks who brought these peoples nothing but shameful superstition, filling them with revulsion against the threat of a new domination, we shall see individuals disseminating among these nations the truths useful to their happiness and enlightening them as to their interests and their rights. Zeal for truth is also a passion, and it will extend its efforts to distant regions when it no longer sees itself surrounded at shorter range by gross prejudices to combat and shameful errors to dissipate.

In these vast regions there are numerous peoples who seem to be waiting only to receive from us the means to become civilized, only to find brothers among Europeans and to become their friends and disciples. There are nations under the yoke of sacred despots or benighted conquerors who have been crying out for liberators for so many centuries. There are still almost savage tribes held back from the enjoyments of civilization by the harshness of their climate, which in turn deters those who would like to acquaint them with these benefits. There are conquering hordes that know no law but force, nor occupation but brigandage. The progress of the latter two groups will be slower and stormier; it is even possible that their numbers will diminish as they find themselves pushed back by the civilized nations, and that they will end up gradually disappearing, or being lost in the midst of these nations.

We shall show how these developments will be an ineluctable result, not only of European progress but also of the liberty that the French and North American republics have both the real interest and the power to bring to African and Asian commerce, and how they must necessarily spring either from

the newly acquired good sense of the European nations or from their obstinate attachment to their commercial prejudices.

We shall demonstrate that a new Tartar invasion from Asia is the only circumstance that could prevent this revolution, and that such an event is no longer possible. In the meantime, everything is leading to the prompt collapse of the great religions of the East. Abandoned almost everywhere to the people, infected by the degradation of their ministers, and already viewed by powerful men in some countries as mere political inventions, these religions no longer threaten to keep human reason hopelessly enslaved and in eternal infancy.

The advance of these peoples should be more rapid and assured than ours because they should receive from us what we have had to discover, and because they should only need to be able to follow the explanations and proofs we offer orally and in books to grasp the simple truths and certain methods we have attained only after long error. If the progress accomplished by the Greeks was lost to other nations, we must blame a lack of communication among peoples and the tyrannical domination of the Romans. But once mutual needs have brought all humanity together; once the most powerful nations have included among their political principles a commitment to equality among societies as among individuals, respect for the independence of weaker states, and a humane concern for ignorance and misery; and once maxims fostering the action and energies of human faculties replace those tending to inhibit them, will it then still be possible to fear that parts of the globe remain inaccessible to enlightenment, or that the pride of despotism can oppose to the truth barriers that will remain insurmountable for very long?

The time will therefore come when the sun shines only on free human beings who recognize no other master but their reason; when tyrants and slaves, priests and their benighted or hypocritical minions exist only in the history books and the theater, and our only concern with them is to pity their victims and their dupes, maintain a useful vigilance motivated by horror at their excesses, and know how to recognize and stifle, by the weight of reason, the first seeds of superstition and tyranny that ever dare to re-appear.

In reviewing the history of societies, we will have occasion to show that there is often a great gap between the rights the law recognizes as belonging to citizens and the rights they actually enjoy, between the equality established by political institutions and that existing among individuals. We shall point out that this was one of the principal causes of the destruction of liberty in the ancient republics, the upheavals that disrupted them, and the weakness that delivered them over to foreign tyrants.

These disparities have three principal causes: inequality of wealth; inequality of condition between the individual who has assured means of subsistence transmissible to his family and the individual for whom these means depend on his lifespan or, rather, on the length of time during which he is able to work; and finally, inequality of instruction.

It will therefore be necessary to show that these three kinds of real inequality must diminish continuously – without, however, being completely eliminated. For they have natural and necessary causes which it would be absurd and dangerous to try to destroy; and one could not even attempt to eliminate their effects without opening up more potent sources of inequality and com-

mitting more direct and disastrous violations of human rights.

It is easy to prove that there is a natural tendency toward equality of wealth, and that an excessive disproportion among fortunes cannot exist, or must quickly come to an end, unless civil laws establish artificial means of perpetuating and combining them. Inequality will diminish if liberty of commerce and industry destroys the advantage that any restrictive law or fiscal privilege confers on accumulated wealth; if taxes on contracts and agreements, restrictions on their freedom, their subjection to cumbersome formalities, and, finally, the uncertainty and obligatory cost of securing their execution do not impede the activity of the poor and swallow up their skimpy capital. It will diminish provided public administration does not open to some citizens abundant sources of opulence that are closed to others; provided prejudices and the spirit of avarice we associate with old age do not govern marriage arrangements. And it will diminish if simplicity of manners and wise institutions make wealth no longer the means of satisfying vanity or ambition – without, however, issuing in a misguided austerity that prevents its use in the search for life's enjoyments and as a resource for preserving them once they have been obtained.

Turn to the enlightened European nations and compare the current size of their populations with the extent of their territories. Note the distribution of work and of the means of subsistence obtaining in their agriculture and industry. We shall see that it would be impossible to keep subsistence at this same level – and hence, necessarily, impossible to maintain the same population size – if a great number of individuals ceased to rely almost entirely for their needs, and those of their family, on their industry and the

yield from any capital invested in acquiring it or making it more productive. Yet preservation of either of these resources depends on the life and even the health of the head of each family; it becomes an income subject to his life chances, or even more contingent than that. It follows that there is a very real difference between the class of people in this situation and the class of those whose resources are not subject to the same risks because their needs are supplied either by revenue from land or by interest on capital almost independent of their industry.

There is therefore a necessary cause of inequality, dependence, even misery, which ceaselessly threatens the most numerous and most active class in our societies.

We shall show that this cause can be destroyed in large part by opposing chance to chance itself: by guaranteeing to someone who reaches old age assistance that is produced by his own savings, augmented by those of individuals who contributed in the same way but died before needing to harvest the benefits; by using the same principle of compensation to provide women and children who lose a husband or father with a similar income acquired at the same cost, whether it be for families afflicted by a premature death or for those whose head survives longer; or even by building up for children who attain the age to work for themselves, and to start a new family, the benefit of a capital necessary to the development of their industry, a sum that will have increased at the expense of those prevented by premature death from reaching this point. We owe the idea of these methods to the application of mathematical calculation to the probabilities of life and to financial investment, and they have already been employed successfully, though not

yet to the extent and in the variety of forms that would make them really useful, not simply to a few individuals but to the entire mass of the society they would free from that periodic ruin of a great number of families which is an ever-recurring source of corruption and misery.

We shall explain that institutional arrangements of this kind can be formed by the social power and become one of its greatest benefits, but can also be created by private associations which will be formed safely once the principles governing the organization of such institutions have become more widely known and the errors that have destroyed a great number of them are no longer to be feared.

[We shall set forth other means of securing equality, whether by ensuring that credit ceases to be a privilege so exclusively reserved for great wealth but retains a no less solid foundation, or by making industrial progress and commercial activity less dependent on the existence of great capitalists. We will owe these means, too, to the application of mathematical methods.]

The equality of instruction one can hope to attain, and which should be sufficient, would exclude all dependence, whether forced or voluntary. We shall demonstrate that the present state of human knowledge allows easy means of arriving at this goal, even for those individuals able to study only for a small number of their early years, and for a few leisure hours during the rest of their life. We shall show that a good choice of the knowledge to be taught, and of the methods for teaching it, will make possible the instruction of an entire people in everything one needs to know to manage a household, administer one's affairs, and freely develop one's industry and one's capacities; to know, defend, and

exercise one's rights; to learn one's duties, in order to fulfill them well; to judge one's actions and those of others according to one's own lights and be denied none of the higher and more refined sentiments that honor human nature; to avoid blind dependence on those to whom one is obliged to entrust one's affairs or the exercise of one's rights, and to have the capacity to choose them and supervise them; to be no longer the dupe of those popular errors that torment one's life with superstitious fears and chimerical hopes; to defend oneself from prejudices by the force of reason alone; and finally, to escape the seductions of charlatanism that would ensnare one's wealth, health, and freedom of opinion and conscience, under the pretext of promising enrichment, healing, or salvation.

From that point on, the inhabitants of a single country will no longer be differentiated by their use of cruder or more refined language. They will be able to govern themselves according to their own lights. They will no longer be limited to unthinking acquaintance with the procedures of an art or the routine of a profession. They will no longer depend, for the simplest matters or the most elementary instruction, on skillful men who dominate them by virtue of their necessary superiority. Real equality must be the result, since differences in knowledge and talents will no longer raise a barrier between individuals whose sentiments, ideas, and language will permit them to understand one another, who may wish to be instructed by others but will not need to be directed by them, and who will be able to entrust responsibility for government to the more enlightened among them without being forced to abandon it to them in blind confidence.

In this way, superiority becomes advantageous even to those who do not

share it, existing for them and not against them. The natural difference in capacities among individuals whose understanding has not been developed produces charlatans and dupes, the clever and the gullible, even among the savages. This same difference doubtless exists in societies where instruction has become truly general, but in this case it entails no more than the differentiation between enlightened individuals and those right-minded ones who recognize the value of knowledge without being dazzled by it, between talent or genius and the good sense that knows how to appreciate and benefit from them. And even if this difference were to become greater in terms of the relative strength and extent of individual capacities, it would not have a more marked effect on the relations among individuals and on factors affecting their independence and their happiness.

These various causes of equality do not operate in isolation. They combine, interact, and reinforce one another, jointly producing a stronger, surer, and more constant action. More equal instruction fosters greater equality in industry and hence in wealth; economic equality necessarily promotes equality of instruction; and there is a mutual relationship between equality among peoples and that among individuals.

In short, well-organized instruction corrects the natural inequality in human capacities rather than strengthening it, just as good laws remedy natural inequality in the means of subsistence, and just as liberty will be more extensive and more entire in societies where institutions have led to such equality than it was in the state of independence enjoyed by the savages, even though it will be subject to a regular constitution. The social art will thus have fulfilled its purpose, that of assuring and extending for

all the enjoyment of the common rights to which nature calls them.

The real advantages to result from the progress we may hope for with virtual certainty, as we have now seen, can have no other limit than the very perfecting of the human species. This must be so because, as the various causes of equality extend their effect to vaster means of providing for our needs, to a broader range of instruction, and to a more complete liberty, the resulting equality will be more substantial and closer to embracing everything truly affecting human happiness.

It follows that we can only know the extent or limit of our hopes in examining the advance and laws of this amelioration.

No one has ever thought that the mind could exhaust all the facts of nature or reach the ultimate means of precision in measuring and analyzing these facts, the relationships of objects one to another, and all the possible combinations of ideas. The relations of magnitude alone – quantity and extension, the permutations of this single idea – form a system that is already too immense for the human mind ever to be able to grasp in its entirety, or for the part of this system our intelligence will have penetrated ever to be greater than that remaining unknown to it. The conclusion has therefore been drawn that, since humankind will only ever be able to know a fraction of the objects its intelligence is capable of grasping, it is bound to reach a point at which the number and complication of the facts already known will have absorbed all its forces and any further progress will become really impossible.

But as facts multiply, the human mind learns to classify them and reduce them to more general facts, and the instru-

ments and methods used to observe and measure them acquire a new precision. As more relations become known among a greater number of objects, it becomes possible to subsume them under more general relationships and express them in simpler terms, presenting them in ways that make it possible to grasp a greater number with the same brain-power and no greater force of attention. As the mind reaches more complicated combinations, simpler formulae make them easier to grasp. In consequence, truths first discovered by the greatest effort, and initially understood only by individuals capable of profound reflection, are soon developed and proved by methods that are no longer beyond persons of average intelligence. If the methods that lead to new combinations are exhausted, or if their application to questions still unresolved demands effort exceeding the time or powers of researchers, soon more general methods and more simple means appear to open a new field to genius. The power and range of human minds will have remained the same, but the instruments they can employ will have been multiplied and improved, and the language that fixes and determines their ideas will have been able to acquire more precision and generality. And in contrast to mechanics, where force may be increased only by diminishing velocity, the methods directing genius in the discovery of new truths will have added both to its force and to the rapidity of its operations.

Since these changes are the necessary consequence of progress in the knowledge of detailed truths, and since the need for new resources simultaneously produces the means of obtaining them, it follows that the real accumulation of truths forming the system of the empirical, experimental, and mathematical sci-

ences can grow constantly, and all the parts of this same system will be enhanced even assuming only the same strength, activity, and extent of human faculties.

In applying these general considerations to the different sciences, we shall find examples of successive advances in each that leave no doubt regarding the certainty of those we must expect. In the case of those sciences regarded by prejudice as closest to being exhausted, we shall make a particular point of identifying the advances that promise to be most probable and most imminent. We shall elucidate everything that a more general and philosophical application of the mathematical sciences to all human knowledge will necessarily add to the extent, precision, and unity of the entire system of this knowledge. We shall explain how more universal instruction in each country must expand our hopes by giving a greater number of individuals the elementary knowledge that can inspire their taste for a particular subject of study and foster their ability to make progress in it. In the most enlightened countries, scarcely a fiftieth of those to whom nature has given talents receive the instruction necessary to develop them. We shall show that our hopes of progress will increase even further as more widespread prosperity allows more individuals to devote themselves to these occupations, and as the number of individuals destined to push back the limits of the sciences by their discoveries necessarily grows in the same proportion.

It will be seen how much this equality of instruction, and the equality that must be established among the various nations, would accelerate the progress of those sciences in which advances depend on observations repeated in greater number and extended over a larger area;

how much mineralogy, botany, zoology, and meteorology would benefit as a result; and what a great disparity there is in these sciences between the weakness of the methods that have nevertheless led us to so many useful and important truths, and the power of those that could then be employed.

We shall explain how the advantage of being cultivated by a large number of individuals extends even to those sciences in which discoveries are achieved by meditation alone, since progress in these sciences can be made through those improvements in detail that do not require an inventor's brainpower and become evident upon simple reflection.

Turning to the useful arts, we shall see that their progress is bound to follow that of the sciences upon which they depend for their theory, and to have no other limits; that their techniques are susceptible of the same improvements and simplifications as scientific methods; that instruments, machines, and specializations steadily increase human strength and skill, augmenting both the perfection and precision of products while diminishing the time and labor needed to achieve them. The obstacles still opposing the progress of these arts will disappear, along with the accidents one will learn to anticipate and prevent, and the dangers to health arising from the work itself, from habitual practices, or from climate.

Then an ever-smaller tract of land will yield a quantity of more useful and valuable commodities; greater enjoyments will be obtained with less consumption of resources; the same industrial products will require less destruction of raw materials, or become more durable. It will be possible to select, for each kind of soil, the crop satisfying the greatest needs, and to choose, among crops serv-

ing similar needs, those satisfying a greater number of people with less work and less real consumption. Thus, without any sacrifice, the means of conservation and of economy in consumption will follow the progress of the art of reproducing various substances, processing them, and producing goods from them.

Not only will the same plot of land thus be able to feed more individuals, but they will each be engaged in less arduous but more productive occupations, and better able to satisfy their needs.

As the progress of industry and welfare leads to a more advantageous ratio between human capacities and needs, each generation will be brought to greater enjoyments, as a result either of this progress or of the conservation of goods produced earlier. Given the constitution of the human species, however, it follows that there will be an increase in the number of individuals. Will there not inevitably come a point, therefore, at which these two equally necessary laws will clash and the growth in the number of people will exceed the increase in their resources? Is this not bound to lead to a kind of oscillation between good and evil, if not to the constant diminution of well-being and population that would constitute a real retrogression? Will this oscillation not become an enduring cause of periodic misery in societies that have reached this point? Will it not indicate the end point beyond which further improvement would become impossible, the limit to its betterment the human species would finally reach after an immensity of centuries and never be able to go beyond?

There is no one, surely, who fails to see how distant this time is from us, but are we not bound to reach it one day? It is equally impossible to pronounce for or against the future reality of an event that would occur only in an age when the hu-

man species would necessarily have acquired knowledge we can scarcely imagine. And who would dare guess what the art of converting the elements into substances fit for our use must one day bring?

But supposing this limit must one day be reached, there is nothing we need fear as a result, either for the happiness of the human species, or for its indefinite improvement. If we assume that up to this point the progress of reason will have matched that of the sciences and the arts, that the ridiculous prejudices of superstition will have ceased to infuse morality with a severity that corrupts and degrades it rather than purifying and elevating it, then humanity will know that the obligations it has toward those not yet born consist in giving them not life but happiness. These obligations pertain to the general welfare of the human species, of the society in which one lives, of the family to which one is attached, not to the childish idea of filling the earth with useless and miserable beings. Thus there could be a limit to the possible quantity of foodstuffs, and hence to the maximum population, without this resulting in a premature destruction of some of those beings already living, which would be contrary to nature and to social prosperity.

Discovery of the first principles of metaphysics, ethics, and politics, or rather their exact analysis, is still recent. Because knowledge of these principles was preceded by a great number of particular truths, the prejudice that it has reached its ultimate limit easily took root. Because there were no more gross errors to destroy or fundamental truths to establish, it was assumed that there was nothing left to do.

But it is easy to see how imperfect the analysis of the intellectual and moral faculties of humankind remains. Since

knowledge of one's individual duties depends on understanding the effects of one's actions on the well-being of one's fellows and on the society to which one belongs, it can therefore still be extended by more consistent, more probing, and more precise observation of these effects. Many questions remain to be answered, many social relations to be examined, before we will know precisely the extent of the individual's rights, and of the rights the social state gives to all in relation to each. Have we yet established with any precision the limits on rights, either those of different societies in wartime, those of societies over their members in times of division and disorder, or those of individuals or spontaneous associations at the point of their free and original formation or when their dissolution becomes necessary?

Turning to the theory that must direct the application of these principles and serve as the basis for the social art, is it not still clearly necessary to reach a precision to which these first truths cannot be susceptible when stated in absolutely general form? Have we reached the point at which we can base all the provisions of our laws on justice or a proven and recognized utility, and not on vague, uncertain, and arbitrary opinions or alleged political advantages? Have we determined the precise rules for choosing with assurance, among the almost infinite number of possible arrangements under which the general principles of equality and natural rights would be respected, those which would more fully guarantee the preservation of these rights, allow great leeway for their exercise and enjoyment, and ensure most effectively the peace and well-being of individuals and the strength, tranquility, and prosperity of nations?

The application of combinatorial theory and the calculus of probabilities to these sciences promises even more sub-

stantial progress because it offers the sole means of giving their results an almost mathematical precision and of evaluating their degree of certainty or likelihood. In the absence of calculation, admittedly, the facts upon which these results rest may sometimes lead us to general truths on the basis of observation alone, and they may on occasion teach us whether the effect produced by a given cause has been positive or not. But unless it has been possible to count or weigh the facts, or to subject the effects to precise measurement, one will not be able to gauge the extent of the good or evil arising from this cause. The good and evil might almost balance out, or the difference between them might not be very great, in which case one would be unable even to determine with any certainty which way the scale might tip. Without the application of mathematical calculation, it would often be impossible to choose with any confidence between two arrangements for attaining the same goal, because their relative advantages might not be obviously disproportionate. Lacking such a resource, these sciences would remain crude and limited for want of methods sophisticated enough to grasp the elusive truth, or of techniques reliable enough to mine the depths at which part of their wealth lies hidden.

These applications of mathematics remain still elementary, one might say, despite the happy efforts of some mathematicians. They will open up to succeeding generations a source of knowledge as inexhaustible as the science of calculation itself, as vast as the number of combinations, relationships, and facts that can be made subject to it.

There is another advance to be made in these sciences that is no less important: perfecting their language, which is still so vague and obscure. This can give them the advantage of becoming truly

popular, even in their elementary form. Genius can overcome the imprecision of scientific languages along with other obstacles; it recognizes the truth despite the strange mask that conceals or disguises it. But will the individual who can only devote a few moments to his instruction be able to acquire and retain the simplest notions if they are disguised by an imprecise language? The less able he is to assemble and combine ideas, the more he needs them to be exact and precise; his own intelligence cannot supply him with a system of truths that will protect him against error; and his mind, lacking the strength and refinement that comes from long exercise, is unable to seize the feeble rays that slip through the obscurities and ambiguities of an imperfect and perverted language.

Human beings cannot enlighten themselves regarding the nature and development of their moral sentiments, the principles of ethics and the natural motivations that bring their actions into accordance with them, their interests as individuals or as members of a society, without also making progress in the practice of morality as real as that in the science itself. Is not interest badly understood the most frequent cause of actions contrary to the common good? Is the violence of the passions not frequently the effect of habits embraced only as the result of miscalculation, or of ignorance of the means of resisting their first impulses, calming them, and redirecting and controlling their action?

Consider the habit of reflecting upon one's own conduct and listening to one's reason and one's conscience as one does so, the experience of those gentle sentiments that blend our happiness with that of others: are these not the neces-

sary result of a well-conceived study of morality, a greater equality in the conditions of the social pact? The sense of one's dignity that belongs to the free person, an upbringing based on a developed knowledge of the constitution of our moral being: must these not render common among almost all of us those principles of a strict and pure justice, those habitual movements of an active and enlightened benevolence, of a delicate and generous sensibility? Their seeds have been placed by nature in all our hearts, and they await only the sweet influence of enlightenment and liberty to develop within us. Just as the mathematical and physical sciences serve to improve the arts employed to provide for our simplest needs, is it not equally within the necessary order of nature that the progress of the moral and political sciences exercise a similar effect on the motives that direct our sentiments and our actions?

Is it not the case that improvement in the laws and public institutions resulting from the progress of the moral and political sciences will have the effect of harmonizing and identifying the common interest of each individual with the common interest of all? Is it not the goal of the social art to destroy this apparent opposition? Will not the society whose constitution and laws conform most exactly to the voice of reason and nature be the place where virtue will be easiest, the temptations to stray from it weakest and most rare?

What vicious habit is there, what practice contrary to good faith, what crime even, that cannot be shown to derive its origin and first cause from the legislation, institutions, and prejudices according to which it is observed?

In short, will the well-being that follows from the advances of the useful arts when they are based on sound theory, or

from the progress of a just legislation based on the truths of the moral and political sciences, not dispose individuals toward a sense of humanity, benevolence, and justice?

These observations will be developed more fully in the work to follow. Do they not prove that moral goodness – the necessary result of the human constitution – is susceptible like all the faculties to indefinite improvement, and that nature has linked truth, happiness, and virtue together by an indissoluble chain?

The advances of the human mind most important for the general happiness must include the complete elimination of the prejudices that have established an inequality of rights between the two sexes that is fatal even to the one it is presumed to favor. We would look in vain for grounds to justify this inequality in terms of differences in the physical organization of the sexes, or of a putative disparity in powers of intelligence or in moral sensibility. Its only origin is abuse of force; subsequent attempts to excuse it have been empty sophistries.

We shall show how much the destruction of the practices authorized by this prejudice, and of the laws it has dictated, can contribute to the enhancement of family happiness, and to making common and habitual the domestic virtues that are the first foundation of all the others; how much this change can foster the progress of instruction, and especially render it truly general, either because it will be extended to the two sexes more equally, or by virtue of the fact that it cannot become general, even for men, without the support of mothers of families. Would this belated tribute to equity and good sense not stifle a fertile source of injustices, cruelties, and crimes by eliminating so dangerous an opposition between the liveliest and most irrepressible natural inclination and our duties

as humans, or the interests of society? Would it not realize what has so far been only a fantasy: national manners that are sweet and pure, formed not by privations arising from pride, by hypocritical appearances, by restrictions imposed by the fear of shame or religious terrors, but by habits that are freely acquired, inspired by nature, and declared by reason?

The most enlightened peoples, reclaiming the right to expend their blood and their wealth, will gradually learn to see war as the deadliest scourge and the greatest of crimes. The first conflicts to disappear will be those into which peoples are dragged by the usurpers of national sovereignty in support of alleged hereditary rights.

Peoples will know that they cannot become conquerors without losing their own liberty; that permanent confederations are the sole means of maintaining their independence; that they must seek security, not power. Commercial prejudices will gradually dissipate; false mercantile interests will lose their dreadful power to cover the earth with blood, ruining nations under the pretext of enriching them. As peoples finally come to closer agreement on the principles of politics and ethics, as each finds that its own advantage consists in offering foreigners a more equal share of the goods it owes to nature and its industry, all the causes producing, envenoming, and perpetuating national hatreds will gradually vanish, no longer to serve as fuel or pretext for the fury of war.

Institutions better devised than the projects for perpetual peace that have occupied the leisure and consoled the spirit of some philosophers will accelerate the progress of this brotherhood among nations. Wars between peoples, like assassinations, will be numbered among those monstrous atrocities that

humiliate and revolt nature, and bring enduring disgrace to the country and the century whose annals they have stained.

We have already observed, when we discussed the fine arts in Greece, Italy, and France, that it is necessary to distinguish what in an artistic work really belongs to the progress of the art and what is owing to the talent of the particular artist. We shall point out here the progress still to be expected in the arts, whether as a result of progress in philosophy and the sciences, of more numerous and thorough observations of the object, effects, and techniques of the arts, or of the destruction of the prejudices that have restricted their sphere and kept them still under the yoke of authority, which the sciences and philosophy have already cast off. We shall consider whether the arts must reach the point of exhaustion, as some have believed, once the most sublime and moving beauty has been caught, the most felicitous subjects have been treated, the simplest and most striking arrangements employed, the most vivid and most generous characters portrayed, the strongest passions and their truest and most natural expressions represented, along with the most imposing truths and the most brilliant images. Are the arts condemned, in short, whatever fertility one attributes to their techniques, to the eternal monotony of imitating the first models?

We shall make clear that this view is no more than a prejudice born of the tendency of writers and artists to judge individuals instead of appreciating works. If there must be a loss of the reflective pleasure produced by comparing works of art from different centuries or different countries, or by admiring the efforts or the successes of genius, the enjoyment to be derived from these works

considered in themselves must nevertheless be as intense even when the artist can claim less merit to bringing them to perfection. As artistic works truly worthy of preservation multiply and become more perfect, each generation will exercise its curiosity and capacity for admiration on those deserving preference; others will gradually be forgotten; and the enjoyment to be derived from the simplest and most striking manifestations of beauty, those that were caught the first, will not exist less for the new generations who must find them among more modern creations.

The progress of the sciences guarantees that of the art of instruction, which in turn accelerates scientific advance. The constant action of this reciprocal influence must be counted among the most dynamic and powerful causes of the amelioration of the human species. A young man leaving school today knows more mathematics than Newton acquired by profound study or discovered through his genius; he is able to utilize the instrument of the calculus with a facility then unknown. The same observation is applicable to all the sciences, though in unequal measure. As each develops, so do the means of expressing more concisely the proofs of a greater number of its truths, and of making them easier to understand. In consequence, new advances in the sciences notwithstanding, not only do individuals of equal genius still reach the level of the current state of knowledge at a similar age, but what each generation can learn in the same length of time, with the same brainpower and the same attention, necessarily increases. Similarly, the elementary part of each science, that which all can master, becomes more and more extensive, thus comprising more fully the knowledge each individual

must have to conduct his everyday life, or exercise his reason with complete independence.

In the political sciences there is an order of truths that can only be useful, especially among free peoples (which, within a few generations, will mean all peoples), when they are generally known and acknowledged. The influence of the progress of these sciences on the liberty and prosperity of nations must therefore be measured, to some degree, by the number of these truths that become common to all minds as a result of elementary instruction. Thus the constant expansion of elementary instruction in these sciences, linked as it is to their necessary progress, offers us an improvement in the destinies of the human species that can be regarded as indefinite, since its only limits are those of this same progress.

We still have to discuss two general means that must influence the improvement of the art of instruction as well as the advance of the sciences. One is the more extensive and less imperfect use of what might be called technical methods; the other, the establishment of a universal language.

By technical methods, I understand the art of bringing together a large quantity of data in a systematic arrangement making it possible to see their relationships immediately, grasp combinations among them rapidly, and form new permutations easily.

We shall set forth the principles and show the utility of this art still in its infancy. As it is developed, it will offer the advantage of bringing together within a small table what would often be difficult to show as readily, or as well, in a very lengthy book. Alternatively, it will provide the even more precious means of presenting isolated facts in the order most suitable to derive general results

from them. We shall explain how, with the aid of a small number of these tables, whose use will be easily learned, individuals who have not been able to go far enough beyond the most elementary instruction to master detailed knowledge useful in common life will find it possible to locate this knowledge at will whenever the need arises. We shall also show how use of these same methods can facilitate elementary instruction in any field where it is based on a systematic order of truths or on a sequence of observations or facts.

A universal language is one that uses signs to represent either real objects, or those well-defined aggregates of simple and general ideas that are found to be the same (or can take form equally) in the understanding of all individuals, or the general relations between these ideas, the operations of the human mind, the procedures particular to each science, or the techniques of the arts. People who knew these signs, the methods of combining them, and the principles underlying them would understand what is written in this language and be able to express it with equal facility in the language of their own country.

Clearly, this language could be used to set out the theory of a science or the rules of an art, to report an experiment or new observation, the invention of a procedure, or the discovery of a truth or method. As in algebra, signs already known would supply the means of explaining the precise meaning of new ones when they are needed.

A language of this kind would not share the disadvantages of a scientific idiom different from common usage. We have already observed that use of such an idiom would necessarily have the effect of dividing society into two unequal classes of people: those who know the scientific language and thus

possess the key to all the sciences, and those who have been unable to learn it and consequently find themselves utterly unable to acquire knowledge. The universal language, in contrast, would be learned with a science itself, as in algebra; the sign would be understood at the same time as the object, the idea, or the procedure it represents. An individual who had acquired the elements of a science and wanted to study it further would find in books not only truths he could understand with the help of the signs whose precise meaning he already knew, but also the explanation of new signs necessary to reach other truths.

We shall demonstrate that there is nothing chimerical about the idea of forming such a language, provided it is limited to the expression of simple and precise propositions of the kind that form the system of a science or the practice of an art. Its creation would already be easy for a large number of objects, and the strongest obstacle against extending it to others would be the somewhat humiliating necessity of accepting how few precise ideas and well-defined notions we have yet to agree on.

We shall show how this language, constantly improving and daily extending its range, would bring to bear on all the objects embraced by human intelligence a rigor and precision that would make knowledge of the truth easy and error almost impossible. Then each science would advance as surely as mathematics, and the propositions forming its system would acquire all the geometric certainty permitted by the nature of its subject and method.

All these causes of the amelioration of the human species, all these means assuring it, must by their very nature exercise a continuous action and constantly extend their range.

We have outlined the proofs of this here, and they will be developed more fully and forcefully in the work to come. We could therefore already conclude that humankind is indefinitely ameliorable. But so far we have assumed that it will have the same faculties and the same physical constitution. What then would be the extent and certainty of our hopes if we could believe that these natural faculties and this physical constitution themselves could also be improved? This is the last question remaining for us to consider.

Organic amelioration or deterioration of vegetable and animal species may be regarded as one of the general laws of nature. This law extends to the human species and surely no one will doubt that progress in medical care, healthier nutrition and accommodation, a mode of life developing strength through exercise without destroying it through excess, and, finally, destruction of the two most potent causes of degradation – misery and excessive wealth – will inevitably extend the average lifespan and assure human beings more consistent health and a more robust constitution. It seems clear that advances in preventive medicine, rendered more efficacious by the progress of reason and of the social order, will in the long run extinguish transmissible and contagious illnesses, as well as the common illnesses caused by climate, foodstuffs, and working conditions. Nor will it be difficult to prove that this same expectation must apply to almost all other illnesses, whose distant causes will one day probably be discovered. Would it be absurd at this point to imagine that this amelioration of the human species must be regarded as susceptible of indefinite progress, that a time will come when death will be only a result of unusual accidents or the slower and slower deterioration of vital forces,

and even that the average interval between birth and this deterioration will have no assignable limit? Human beings will certainly not become immortal, but can there not be an indefinite increase in the interval between the beginning of life and the average point at which existence becomes difficult for them naturally, without illness or accident? Since we are speaking here of a progress that can be represented with precision numerically or diagrammatically, this is the appropriate point at which to explicate the two possible meanings of the term *indefinite*.

It might be that this average lifespan, constantly increasing the further we advance in time, expands by virtue of a law according to which it continually approaches a point of unlimited duration without ever reaching it. Or it might be that it expands by virtue of a law according to which, over the immensity of centuries, it reaches a duration greater than any determinate limit we might have assigned to it. In this latter case, the increase is truly indefinite in the most absolute sense, because there exists no endpoint before which it must stop. In the former case, the increase is also indefinite in relationship to us if we cannot fix the point it must always approach and can never reach, and especially if, knowing only that it can never stop, we do not even know which of the two senses of the term 'indefinite' should be applied to it. This is precisely the limit of our present knowledge as to the potential ameliorability of the human species, and hence the sense in which we can call it indefinite.

Thus, in the example considered here, we have to believe that the average human lifespan must increase constantly unless this is prevented by physical revolutions, but we do not know the limit beyond which it cannot extend, or even

whether the laws of nature have fixed such a point.

As for physical faculties, the force, adaptability, and delicacy of the senses, are these not among the qualities whose improvement in the individual can be transmitted? Observation of the different species of domestic animals leads us to believe so, and we will be able to confirm this by direct study of human beings.

Finally, can these same hopes be extended to intellectual and moral faculties? Our parents pass on to us the advantages and defects of their physical constitution, from which we derive distinctive bodily characteristics and dispositions to particular physical states. Can they not also pass on to us that part of physical organization governing intelligence, strength of mind, emotional energy, and moral sensibility? Is it not plausible that in improving these qualities education could affect this same physical organization, modifying and improving it? Analogy, analysis of the development of human faculties, and even some observed facts seem to prove the reality of these conjectures, which would extend even further the limits of our hopes.

These are the questions to be examined in concluding the discussion of this Tenth Epoch. And how welcome to the philosopher is this picture of the human race freed from all its chains, released from the domination of chance and of the enemies of its progress, advancing with a firm and sure step in the path of truth, virtue, and happiness! How this spectacle consoles him for the errors, crimes, and injustices that still defile the earth, of which he is often the victim! In contemplation of this picture, he finds the reward for his efforts on behalf of the progress of reason and the defense

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of liberty. He dares thus to link these efforts to the eternal chain of human destinies, finding there the true reward of virtue, the pleasure of having done some lasting good which fate will no longer destroy, bringing back prejudices and slavery in a deadly swing of the pendulum. This contemplation affords him an asylum where the memory of his persecutors cannot pursue him, where he forgets humanity tormented and corrupted by greed, fear, or envy, to live in the mind with humanity restored to the rights and dignity of its nature. There he truly lives in communion with his fellows, in a paradise that his reason has been able to create and his love of humankind enhances with the purest of pleasures.

John Steinbruner & Nancy Gallagher

Constructive transformation: an alternative vision of global security

Throughout history, assuring the security of citizens has been an overriding priority of most governments, and large-scale forms of deliberate aggression have been their dominant concern.¹ In response to that concern, modern states have made large investments in military force, and the resulting balance of national capability has generally been con-

sidered the principal determinant of international order.

Over the past decade, however, this traditional conception of security has been continuously eroded by circumstances that do not readily fit the assumptions. Policymakers still worry about belligerent enemies, but their number has diminished in recent years, and virtually none of them seems capable of the classic forms of massive aggression. The extensive violence that does persist is episodic, small in scale, and widely dispersed. In the United States in the aftermath of the September 11 events, the phenomenon of terrorism has been declared a global enemy, but the damage directly caused by terrorist actions has so far been only a small fraction of that resulting from civil conflicts and ordinary crime. The capacities and characteristics of the largely anonymous perpetrators seem to be less relevant than the underlying causes. At the lead-

John Steinbruner is professor of public policy and director of the Center for International and Security Studies at the University of Maryland. A Fellow of the American Academy since 1992, he is currently cochair (with Carl Kaysen) of the Academy's Committee on International Security Studies. He is the author of numerous books and essays, including "Principles of Global Security" (2000).

Nancy Gallagher is associate director for research at the Center for International and Security Studies at the University of Maryland. She codirects the Advanced Methods of Cooperative Security Program, an interdisciplinary effort to address the security implications of globalization by developing more refined rules of behavior and more comprehensive transparency arrangements. She is the author of, among other works, "The Politics of Verification" (1999).

¹ This essay was prepared as part of the Advanced Methods of Cooperative Security Program at the Center for International and Security Studies at the University of Maryland, with generous support from the John D. and Catherine T. MacArthur Foundation. A longer version of this essay, "Prospects for Security Transformation" (March 2004), is available at <<http://www.cissm.umd.edu/documents/securitytransform.pdf>>.

ing edge of practice, security officials are being driven to contend as much or more with dangerous processes as with aggressive opponents, although the distinction has yet to crystallize in the formulation of policy.

It is, of course, notoriously difficult to appreciate a fundamental shift in historical circumstance if you are caught in the middle of it. But there are some very strong indications that a major redirection is occurring in the aggregate pattern of human development. With economic growth in recent decades concentrated among the wealthier segments of all societies, and population growth concentrated in the poorer segments, the global distribution of resources appears to be too inequitable to be indefinitely sustained without generating potentially unmanageable amounts of civil violence. Although the connection between violence and economic performance is neither simple nor well understood, it is prudent, even mandatory, to assume that accumulating grievances combined with increasing access to information and destructive technology pose a major threat to the preservation of consensual order necessary to operate the global economy and to provide lasting security at an acceptable cost. Not even the most advanced military establishments could expect to cope with a general breakdown of legal order. They could not protect any major society from being infiltrated by people determined to wreak havoc, and they certainly could not identify and preemptively destroy all those who might wish to do harm.

Assuring at least minimally equitable global standards of living – and achieving the political accommodation necessary to support that objective – is a necessary foundation for security. No amount of traditional military capability will compensate for the failure

to establish those determining conditions.

The apparent requirements for this new situation are demanding: raising the standard of living for the poor to an acceptably equitable level would require an expansion of the global economy by a factor of five over the next fifty years, a doubling of food production, and something like a tripling of energy production even if efficiency gains are dramatic. In order to do all that within the limits of atmospheric tolerance, human-induced carbon gas emissions will have to be sharply restricted, and the technical basis for energy supply and consumption will have to be dramatically altered – from approximately 20 percent non-fossil fuel at the moment to better than 80 percent by 2050. In order to accomplish that transformation on the schedule required against at least the initial resistance of current energy markets, extensive public investments would have to be made globally, and extensive transfers of technology would have to occur to China and India especially. With nearly 40 percent of the total human population between them and extensive internal economic development beginning to occur, these two countries will inevitably be on the front line of the global warming problem. But they cannot reasonably be expected to meet the investment requirements with their own resources alone. Current security relationships are incompatible with the required investment process – but if this process does not occur, the destructive effects of altered climate patterns could rival or even surpass any damage that human warfare might do.

These epochal developments have not commanded much official attention. In fact, the security policies of the Bush administration emphatically defy the im-

plications. In a commencement speech at West Point in June of 2002 and in two formal documents issued subsequently, the president radically revised long-standing U.S. policy – not to address the fundamental circumstances of globalization, but to change the rules for dealing with traditional threats.

Most notably, he asserted the right and declared the intention to initiate the use of force, including nuclear weapons if necessary, to prevent the acquisition of mass-destruction technology by “rogue” states judged to be inherently belligerent.² His pronouncements were presented as a deliberate revision of established security doctrine and were received as an apparent repudiation of prominent international commitments.³ The general understanding had long been that the legitimate use of military force, and of nuclear weapons in particular, would be restricted to the prevention of imminent attack – a formulation that allows for deterrent retaliation and defensive reaction, but which does not extend to denying a potential adversary the right to possess weapons.

2 “President Bush Delivers Graduation Speech at West Point: Remarks by the President at the 2002 Graduation Exercise of the United States Military Academy, West Point, New York” (1 June 2002), available at <<http://www.whitehouse.gov/news/releases/2002/06/20020601-3.html>>; “The National Security Strategy of the United States of America” (September 2002), available at <<http://www.whitehouse.gov/nsc/nss.html>>; and “National Strategy to Combat Weapons of Mass Destruction” (December 2002), available at <<http://www.whitehouse.gov/news/releases/2002/12/WMDStrategy.pdf>>.

3 “New Agenda Coalition Working Paper: Submitted by New Zealand on behalf of Brazil, Egypt, Ireland, Mexico, South Africa, and Sweden as members of the New Agenda Coalition (NAC), NPT/CONF.2005/PC.II/15” (29 April 2003), available at <<http://www.acronym.org.uk/npt/o3doc16.htm>>.

With the invasion of Iraq in March of 2003, the Bush doctrine acquired a degree of significance that could not have been achieved by declaration alone. In retrospect it is now apparent that Iraq may have harbored an aspiration to acquire weapons of mass destruction but did not actually possess them, did not have active efforts to acquire them, and did not pose an immediate threat of use. Initiating an attack in this situation poses obvious questions as to how broadly that principle of preventive coercion might be applied and what the extended consequences of its application might be.

There are peculiar features of the Iraq situation that serve to limit the precedent. As a result of UN Security Council Resolution 687, generated after its assault on Kuwait in 1990, Iraq became the only country in the world formally denied the right to possess nuclear, chemical, and biological weapons and associated delivery vehicles.⁴ Its embargoed economy and its general defiance of international standards under the rule of Saddam Hussein rendered it perhaps the least capable and most isolated of the alleged rogue states. If Iraq were to be its only application, the Bush doctrine could be considered a qualification rather than a fundamental revision of the established international security regime.

It is evident, however, that the United States is entertaining expansive aspirations that could in principle give Bush’s doctrinal revision revolutionary implications. The level of military investment it is sustaining and the capability it is acquiring go well beyond what traditional planning standards would require: the ability to defend the United States and

4 UN Security Council Resolution 687 (3 April 1991) is available at <<http://ods-dds-ny.un.org/doc/RESOLUTION/GEN/NRO/596/23/IMG/NRO59623.pdf>>.

its formal allies against contingencies of potential aggression by designated opponents at specified locations.⁵ While conceding that no other country is undertaking military preparations that present a major immediate threat to this core objective, the United States is developing advanced military capabilities using inherent feasibility rather than estimated threat as the planning standard. The stated aspirations are to be able to conduct continuous surveillance and perform high-resolution observation in any part of the world, to initiate precise attack in rapid reaction to any threat or opportunity thereby identified, and to deny these same capabilities to all other military establishments. Were those aspirations to be achieved, the United States would have decisive superiority across the entire array of potential missions: it would be capable not only of disabling any military force, but also of conducting highly coercive operations against any society. This combination of evolving capability and declared intent represents a policy of military domination that has already provoked strong reactions from the rest of the world.

International concerns about the Bush administration's military ambitions have been compounded by its accompanying assault on the pillars of international legal regulation and on the political sensitivities of traditional allies.

In June of 2002, the United States formally withdrew from the 1972 Antiballistic Missile Treaty, thereby dismantling

5 Since the type of capability the United States is developing is designed for large-scale operations, in the assessment of most other countries it cannot be explained as a rational response to an emerging threat of terrorism. As demonstrated most recently in Iraq, the decisive defeat of a military establishment does not confer the ability to stop terrorism emanating from a society that supports it.

the centerpiece of bilateral restrictions on strategic nuclear force deployments that it had negotiated with the Soviet Union and reaffirmed with the Russian Federation. The replacement arrangement – the 2002 Moscow Treaty – preserves the formal principle of legal restraint on offensive deployments, but does not prevent the United States from progressively improving its potential for disabling the Russian deterrent force. Russian military planners can still plausibly expect to fend off a decisively disarming strike, but in physical and operational terms the main source of bilateral reassurance is now more rhetorical than real, and the basis for internal confidence is relentlessly diminishing. China, as an indirect beneficiary of the bilateral arrangements, has a yet more acute version of the same problem.

In less dramatic but nonetheless significant actions, the United States has virtually repudiated the Comprehensive Test Ban Treaty (CTBT) and assertively terminated negotiations for a verification and enforcement protocol for the Biological Weapons and Toxins Convention (BWC). Since the CTBT has long been the single most prominent condition for general adherence to the Nonproliferation Treaty (NPT), its repudiation signals an unmistakable disregard for the NPT regime. The Bush administration's nonproliferation plan would replace the basic bargain between NPT nuclear- and nonnuclear-weapon states with more forceful efforts to prevent the spread of enrichment and reprocessing technology to any additional countries even for peaceful programs.⁶

6 "President Announces New Measures to Counter the Threat of WMD: Remarks by the President on Weapons of Mass Destruction Proliferation, National Defense University, Washington, D.C." (11 February 2004), available at <<http://www.whitehouse.gov/news/releases/2004/02/20040211-4.html>>.

In the context of these developments, the invasion of Iraq was undertaken in defiance of especially strong objections from France and Germany, and despite the failure to pass an authorizing resolution in the UN Security Council. To an extent that is not well appreciated in the United States, the rest of the world is drawing the conclusion that the Bush administration now rejects the provisions of legal restraint and political accommodation that the United States once actively sponsored, and does not intend either to rely on them or to be bound by them.

All this poses a serious planning problem for security bureaucracies throughout the world. The apparent contempt for international legal restraint is a radical departure from American tradition, which has long proclaimed the rule of law, both at home and abroad, to be the foundation of democracy and security. Foreign planners can reasonably doubt that the American political system will actually abandon its tradition to the extent currently being implied, but they will also have to recognize that for some indefinite period of time the U.S. government is not likely to be the architect and champion of international legal restraint that it has been for the past half century. They may be skeptical that the projected U.S. military program will actually reach the level required to establish the decisive superiority being imagined; current levels of investment and technical accomplishment do not yet match the flamboyant aspirations advanced in military planning documents. They can also question how long domestic political support for current U.S. security policies can be sustained. American public opinion has so far tolerated the doctrine of preventive coercion and its specific application in Iraq, albeit

with growing unease. But American public opinion does not appear inclined to endorse the idea of imperial domination, let alone the expansive investment of resources required to support it. It is evident, however, that the American political system is still operating under the acute sense of threat generated by the September 11 terrorist attacks, and that U.S. security policy is now under the control of a radical minority intensely dedicated to the asserted doctrine and its supportive military program.

As a result of these complex circumstances, no prudent planner can assume that economic, technical, or political constraints will prevent the United States from amassing coercive capabilities that might be used to impose its national political will. All groups affected – traditional friends as well as potential enemies – have strong reason to contemplate how they will react if the Bush administration's proposed security policy is relentlessly pursued.

There seem to be three basic options. First, in principle other countries could attempt to match the American military program. That will be a prominent instinct within those military establishments that aspire to achieve the highest performance standards, but the effort required does not appear either feasible or sensible for any other society. The scope and momentum of investment that the United States has established over several decades is simply too extensive and too multifaceted to be duplicated rapidly. Moreover, any dedicated effort to do so would further stimulate the American effort and might enable it to command the additional resources required to pursue more seriously the vision of dominance. Such an effort would also divert investment from more compelling priorities of economic performance.

Second, a threatened competitor might seek to negate the instruments of dominance rather than to replicate them. That is technically and economically more feasible and might ultimately be considered necessary. In particular, a competitor could prevent the United States from using the space-based assets required to engage in advanced forms of military coercion. But overt development of this strategy would create a pattern of confrontation that would stimulate the American program, and it is difficult to be confident the techniques of negotiation would reliably prevail at an acceptable cost in an extended competition.

Third, a constructive strategy might attempt to develop common interest to the point that it could contain and eventually replace the impulse for dominance. That strategy is imaginable in principle, highly desirable, and not without precedent – witness the transformation of European security relationships over the fifty years following World War II. It requires great wisdom and courage, however, for any society to pit higher forms of statesmanship against raw physical power.

None of the basic choices – replication, negation, or transformation – can easily emerge as the dominant international reaction.

The situation presents a significant problem for the American political system as well. The doctrine of preventive coercion, with its implication of imperial dominance, is largely the project of an intense political minority. Although the policy of domination resonates with some official military planning documents, its hard-edged assertion of willingness to initiate military attack has not emerged from professional military channels – and certainly not from majority political opinion. The shock of the

September 11 terrorist attacks and the exigencies of the Bush administration's open-ended war on terrorism have been used to silence criticism of the announced doctrine, of its application to Iraq, of the denigration of allies, and of the repudiation of international legal instruments. For the United States to remain a democracy worthy of the name, fundamental questions must be asked about whether coercive prevention and imperial dominance will bring greater security or growing violence and disastrous political isolation. The single-minded pursuit of national advantage would generate new threats the United States could not absolutely defeat. It would assuredly undermine the legitimacy of U.S. military operations throughout the world – a vital if insufficiently acknowledged ingredient of practical capability.

Ironically, however, the provocation and apparent misdirection of American policy also create a constructive opportunity. If the circumstances of globalization are indeed as relentless as they appear to be, leadership will predictably gravitate to those who come to understand the implications. Correspondingly, it is very likely that principles of equity and methods of accommodation will prove to be of much greater significance than traditional forms of military confrontation. All this implies that a constructive response to the provocation emanating from the U.S. military program is feasible in principle – one that would subordinate the divisive practice of confrontation to inherently more efficient methods of direct collaboration.

Collaboration is possible when fundamental interests are aligned, and becomes imperative when those interests cannot be reliably protected by coercive means alone. There are compelling circumstances of that sort in the emerging

situation – most notably, in the control of biotechnology and nuclear explosive material and in the management of space activities. These possibilities are worth exploration – especially if we hope to make progress in achieving the political accommodation that appears to be the foundation for viable security within our increasingly globalized world.

The burden of strategic reaction to the Bush administration's security policy primarily falls on Russia and China, but with different timing and different global implications in each case. For an indefinite period of time, Russia will be the only country capable of counterbalancing the U.S. nuclear force, thereby assuring the basic condition of mutual deterrence. Although advocates of the new American doctrine like to claim that mutual deterrence is now an irrelevant relic of cold war history, the enduring fact is that it protects against a dangerous concentration of power – the international equivalent of the checks and balances fundamental to the U.S. Constitution. Since the corrupting effects of excessive power must prudently be assumed to be generic – not peculiar to any individual, government, culture, or historical era – the protective balancing of mass-destruction capability is as relevant and vital as it ever was, and will remain so, as long as that capability is preserved in any form. So it is in the interest of all nations, even of the United States, that Russia's burden be safely and successfully carried.

For China the immediate burden involves a more narrowly defined national security interest stemming principally from the Taiwan situation, but the manner in which China develops its security policy has very important global implications. Of all the nuclear weapon

states, China has maintained by far the most restrained pattern of military deployment. Its deterrent force is the smallest and has never been put on alert status. Its conventional forces do not have power-projection capability. Its security policy has been explicitly based on principles of equitable accommodation rather than active confrontation. If China preserves this historical pattern of restraint and develops the practice of accommodation, it might be able to give strong constructive impulse to general international security arrangements. If, however, China adopts a strategy of immediate negation or ultimate emulation in reaction to projected U.S. military development, another lengthy episode of global confrontation might well ensue.

The extent to which the general features of globalization will shape these strategic choices must be considered an open question at the moment, but it seems apparent that the specific fear of terrorism will have substantial influence on relevant aspects of policy. In particular, the possibility that terrorist organizations might attempt to inflict massive social damage gives all societies a strong incentive to establish much higher standards of control over the two principal technologies that would enable a small clandestine operation to have truly catastrophic effects – namely, nuclear explosives and lethally contagious biological pathogens. Since large issues of policy are usually worked out first in some specific context, it is reasonable to anticipate that new security relationships of global significance will be forged in the process of managing those two technologies.

Although they share catastrophic potential and therefore present a common managerial problem, nuclear explosives and biological pathogens have starkly

different characteristics and historical legacies. So far it has required large industrial facilities to extract or create the radioactive isotopes that can generate nuclear explosions. Access to those facilities and their products has been actively controlled from the outset, and fabricated nuclear weapons have long been the most elaborately protected of all human commodities. The prevailing arrangements are not impenetrable, especially not within the extensive network of facilities that Russia inherited from the Soviet Union. Higher standards of protection are currently being pursued, and significantly higher ones are feasible. Nonetheless, the physical and procedural barriers to any unauthorized use of nuclear explosives currently define the most advanced standard of active control.

In contrast, the process of extracting and producing biological pathogens, which are spontaneously generated in nature, is not nearly as demanding. The facilities required are not large or distinctive, and access to them is not as carefully restricted. Until very recently, biological pathogens were freely exchanged for purposes of scientific exploration, epidemiological investigation, and medical diagnosis even between otherwise antagonistic societies. Scientific understanding of these pathogens emerges from a globally dispersed biomedical research community whose activities are conducted for compellingly legitimate reasons. In that context it has been neither practical nor appropriate to sequester information or materials to the extent that nuclear explosives have been isolated. Indeed, the barriers to hostile use of biotechnology have been primarily attitudinal in character – a form of passive control more significant than is commonly appreciated.

In general the destructive application of nuclear technology has been legiti-

mized by the practice of mutual deterrence but elaborately restricted. Offensive application of biotechnology, on the other hand, is the least legitimate and least developed of the mass-destruction technologies – yet access has not been as restricted. Somehow out of these nearly antipodal situations a coherent policy of managerial control will have to be fashioned.

The thought naturally arises that the methods of control devised for nuclear explosives might simply be extended to dangerous areas of biotechnology. Not surprisingly that has been the prevailing inclination in the United States following the anthrax letters that were mailed to politicians and media figures shortly after the September 11 terrorist attacks. Under legislation passed in response to those mailings, all stocks of live pathogens and toxins deemed to be dangerous must be registered with the federal government, and access to the listed agents must be restricted to persons who have cleared background checks. National identity is henceforth to be used as a criterion for access. In addition, several billion dollars have been allocated to initiate protective research efforts, a significant portion of which is to be directed to so-called threat assessment. The term refers to the exploration of potentially destructive applications of biotechnology in order to anticipate and prepare a response to possible future threats. Work of that sort is to be subject to security classification that will prevent potential terrorists from learning about it.

Natural and perhaps inevitable as those measures may be, however, the attempt to impose traditional national security controls on biotechnology is virtually certain to be ineffective and is very likely to have overwhelmingly perverse consequences.

The results of research in critical areas of molecular biology are shared globally

for unquestionably compelling reasons. The investigation of basic life processes that has been gathering momentum for several decades is now delivering results of enormous consequence for public health and medical therapy. With the improved understanding of the dynamics of life at the molecular level, the eradication or mitigation of many historical diseases will be possible. The enhancement of basic cognitive, emotional, and reproductive functions will probably also become possible. Great scientific achievements are in prospect, and vast fortunes are to be made. No national security bureaucracy citing the uncertain threat of catastrophic terrorism will be able to justify the imposition of secretive authority over this momentous, inherently open process. The attempt to do so would predictably incite resentment, suspicion, evasion, and emulation.

All societies caught up in this momentum of discovery – in effect, the entire human species – will have to contend in some manner with the dangers associated with it. These dangers can arise as easily from inadvertence as from deliberate manipulation, so any system to prevent the misuse of biotechnology must not focus solely on potential terrorists, but should also include legitimate researchers whose work could have unintended social consequences. Exactly the same basic research that identifies opportunity for constructive intervention in basic life processes also identifies destructive opportunity. And unfortunately it is easier to produce a single destructive effect than to defend against all destructive possibilities. Infectious diseases significantly more lethal than those that have naturally evolved could in principal be created – a supposition widely thought to be impossible as little as a decade ago. Nefarious manipulations of thoughts, feelings, and repro-

ductive capability are much more speculative at this point but appear to be a serious possibility. The scope of application of biotechnology is so broad, and the potential consequence so large, that innovative methods of protective management responsive to its distinctive characteristics will almost certainly have to be devised. Over the longer term, one can reasonably surmise, the speculative problem of catastrophic terrorism will likely be assimilated to the much larger and more immediately pressing problem of managing biotechnology generally.

Although many of the anticipated consequences of biotechnology have yet to be realized, at least three determining features of the situation can be discerned. First, since the relevant research process is highly developed and globally distributed, managerial oversight will have to be global in scope, that is, universally accepted as reasonable and equitable. Second, since no categorical distinctions can be made at the level of fundamental research between potentially protective and potentially threatening lines of inquiry, prudential judgments will have to be made in detailed context by intimately informed scientists, not by government bureaucrats or distant regulators of any sort. But, third, since the potential consequences of molecular biology extend far beyond what even the leading research scientists can be expected to comprehend, and since inadvertently destructive consequences are at least as worrisome as deliberately destructive ones, protective oversight must involve representative social judgment as well as scientific review and must be appropriately comprehensive. If there is no categorical distinction in biotechnology between beneficial and destructive knowledge, there is no categorical distinction between wise and foolish or good and evil people either.

Taken together, these circumstances imply a managerial process that is based on universally accepted principles of independent peer review. But such a process would have to be broader in scope and jurisdiction, more actively organized, and more refined in legal terms than any of the precedents that might be cited. And, arguably, it would have to operate at an overall level of fidelity well beyond any that has yet been demonstrated by existing regulatory processes.

Obviously, the development of a global oversight arrangement that meets these conditions will face a multitude of practical difficulties, many of which will be cited by skeptics as grounds for summary rejection of the entire idea. At the moment, there does not appear to be any official consideration of such an arrangement, and the United States' recent rejection of the effort to negotiate a verification and enforcement protocol for the BWC has demoralized the diplomatic community that supports active consideration. Notably, however, a special committee of the National Academy of Sciences recently concluded that the potential for catastrophic misuse of biotechnology research was grave enough to warrant an expanded, strengthened, and more integrated national oversight system. The committee's report also conceded that any regulatory system would have to be adopted internationally to be effective.⁷ It is reasonable to expect that governments will ultimately be driven to examine global protective oversight procedures for biotechnology, and in the course of doing so will be induced to contend with the implications for security practices generally.

Some important implications arise from inherent tensions between individ-

ually important strategic objectives. The problem presented by emerging biotechnology is that of promoting vital benefits while simultaneously preventing applications that could put the entire human species at risk. Because the principal source of threat is either inadvertent or clandestine, the entire apparatus of confrontational deterrence is essentially inapplicable. Defensive reaction – all that is involved in diagnosing, treating, and containing a disease outbreak – is not reliable enough to be the primary basis for protection against the more extreme forms of imaginable danger. Preventing the creation of catastrophically destructive pathogens must become the predominant concern. Significant tension arises because the scientific inquiry necessary to support defensive measures against known infectious diseases will also provide the basis for generating yet more lethal variations. The challenge is to pursue inherently more difficult defensive applications while restricting offensive applications of biotechnology – a reversal of the strategic principle long associated with the prevailing practice of mutual deterrence. That reversal would have to be accomplished, moreover, not only in interaction among separately organized societies, but also in increasingly consequential interaction with the natural process of evolution, a process which presumably neither guarantees nor precludes the survival of the human species.

Those who are more familiar with the history of war than with the history of public health are likely to conclude that the offensive application will eventually come to predominate for biotechnology as it did for the technology of nuclear

Biotechnology, *Biotechnology Research in the Age of Terrorism: Confronting the Dual Use Dilemma* (Washington, D.C.: National Academies Press, 2004).

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explosives. That cannot be considered an inevitable outcome, however. Not only are the incentives and the circumstances substantially different, but so are the available methods.

There is an important advantage in the fact that the remarkable momentum of molecular biology has been established on the basis of a predominantly open process. Systematic transparency has allowed a collective process of scientific discovery to develop that is far more powerful than one segmented and sequestered by security classification, and the same process offers far more powerful regulation as well. Human societies spontaneously generate standards of behavior that are both equitable and protective, and can enforce them very effectively if relevant information is readily available. Criminals must hide in order to succeed, as must anyone violating strongly established social norms. The norms against destructive application of biotechnology that exist in the global biomedical community are among the most powerful of all social standards. They prevail across national and cultural differences, essentially without exception. A regulatory system that reinforced the deeply ingrained abhorrence of infectious disease with disclosure rules and active oversight would be powerfully consequential, so much so that the practical impediments to such a system have more to do with fears of misuse than fears of ineffectiveness. In principle the actively organized practice of transparency and independent scrutiny (the same basic practice that enables financial systems to function despite the eternal temptation to steal) could provide much more advanced protection against the offensive use of biotechnology. Presumably that would forever fall short of absolute assurance, but the degree of protection that could be accomplished is

potentially meaningful enough to shape the evolution of international security generally.

It is not difficult to visualize how a protective oversight arrangement would work.⁸ The central objective would be preventing the deliberate or inadvertent creation of pathogens more lethal than those that have naturally evolved. The basic method of ensuring this would be a set of procedural rules designed to bring independent, informed scrutiny to bear on all fundamental research activities that could create catastrophically destructive pathogens. Those activities would be distinguished in terms of the intrinsic transmissibility, infectivity, and lethality of the pathogens in question, with greater levels of risk associated with higher level oversight and more intense scrutiny. People and facilities engaged in such activities would be licensed according to internationally determined standards. Proposed research would require informed peer review and approval at the local, national, or international level, depending on the degree of risk involved. The conduct of approved projects would be monitored and the dissemination of results would be managed according to internationally determined rules. Access to especially sensitive information would be restricted to those participating in the oversight arrangements, and the fact of access would be documented. Any violation of the licensing and approval requirements or of the associated disclosure and information handling rules

⁸ For a fuller description, see John Steinbruner, Elisa D. Harris, Nancy Gallagher, and Stacy Gunther, "Controlling Dangerous Pathogens: A Prototype Protective Oversight System," Center for International and Security Studies at Maryland Working Paper (September 2003), <<http://www.cissm.umd.edu/documents/pathogensmonograph.pdf>>.

would be subject to criminal prosecution in any jurisdiction.

If the legitimate scientific community were to engage comprehensively in an oversight arrangement of this sort, there would be direct protection against individual misjudgment and indirect protection against deliberate malfeasance. Any attempt to evade systematic scrutiny would run a substantial risk of detection, and any detected violation would be subject to extremely assertive enforcement. However the practicalities of such an arrangement are judged, the fundamental point is that the degree of protection against the destructive application of biotechnology depends primarily on the degree of global transparency that is achieved. The only way for defenses against infectious disease to outrun offensive misapplication is for the legitimate researchers to combine their efforts through the free flow of information and ideas.

The same principle of systematic disclosure of information for mutual protection applies as well to the management of nuclear explosive material, drug trafficking, political corruption, tax evasion, and many other familiar maladies, but in most of those instances it encounters more resistance from the relevant historical legacy. Standards of behavior are generally not as well established in most of these areas as they are with regard to infectious disease, and the right to official secrecy and personal privacy is better established. But it is reasonable to expect that some significant revision of historical practice might be considered for nuclear explosive materials as the possibility of catastrophic terrorism is taken more seriously. In fact, it seems doubtful that an overriding commitment to defensive application could be established for emerging biotechnology while preparation for offensive attack remains the primary basis for nuclear security.

In principle, significantly higher standards for the accounting and physical protection of nuclear explosive material could be organized on a global scale while sensitive details about the design and location of individual weapons were restricted to the states that possess them. Techniques of information management could create a common accounting system that achieves greater aggregate accuracy while controlling access to individual entries with complete assurance. Monitoring techniques could continuously determine the status of control over fabricated nuclear weapons and material containers while obscuring which weapons were stored at which locations in the system, if that latter provision were considered to be a vital national interest. Deterrent capability would hardly be affected, and overall managerial control would be substantially improved. As in the case of biotechnology, albeit to a lesser extent, the degree of protection here depends substantially on the degree of transparency that is achieved. Any physical barrier to a nuclear weapon or a cache of nuclear material can be breached if there is sufficient time to do so, but as a practical matter that could not be done if monitoring were active and continuous.

To the extent that the threat of catastrophic terrorism is taken seriously, and meaningful protection against it is accepted as a priority, the major security establishments will be driven to develop protective monitoring techniques to assure managerial control over nuclear explosive material and prudential oversight over critical areas of biological research. Developing such protective regulation would require dramatic revision of the operational principles associated with the prevailing practice of mutual deterrence. Procedures for the organized sharing of detailed information docu-

menting continuous compliance with agreed standards of behavior would necessarily subordinate traditional practices of secrecy to an overriding interest in systematic transparency. Preventive efforts to ensure that the potential threats are never realized would necessarily dominate traditional preparations for contingency reaction. Security relationships would necessarily elevate interest in protective collaboration over the legacy of confrontation.

It remains to be seen, of course, whether the major governments – the United States in particular – are capable of undertaking such adjustments, which could fairly be considered revolutionary in character. It is evident, however, that they are being subjected to potentially compelling incentives to do so.

As the possibility of catastrophic terrorism is pondered and the implications assessed, international security arrangements will simultaneously be shaped by an emerging problem of a very different character. Sensing and information management technologies are providing the basis for military operations that are increasingly precise, rapid, and stealthy. These technologies allow large-scale traditional missions to be performed more efficiently and with greater confidence, thereby reducing the self-deterring effect that has served to restrain the use of military force. At the same time, precision technology is enabling extremely intrusive small-scale missions to be undertaken.

Since the capability for small-scale coercive intrusion is still not fully developed, there is relatively little precedent to demonstrate how it might be used and what its implications might be, but technical projections are sufficiently robust to energize the imaginations of the military planners and security bureaucrats who do threat assessment. Preci-

sion technology, for instance, could be directed against critical social assets that normal terrorists could not easily reach – cars or planes transporting heads of state, or critical power system transformers. The ability to undertake coercive action at long range without warning, and possibly even without indisputable attribution, would confer an ability to impose political demands in a high-tech form of blackmail. The U.S. military has by far the most advanced military information technology systems; that emerging capability connected to the proclaimed doctrine of preventive coercion is, to put it mildly, an alarming prospect to any country with reason to believe it is a potential target. American security planners are already concerned that hostile states might use their nascent information warfare capabilities in asymmetrical attacks, and these planners would be especially alarmed should any other country acquire the level of precision-strike capability that the United States already possesses. When the implications are better appreciated, precision-strike capability is likely, indeed virtually certain, to be considered an urgent topic for protective regulation – a central strategic consideration intimately related to all the others.

The capability in question is being generated by such a broad array of specific technologies and practical applications that the focus of effective regulation is a significant question. Since various support functions performed from space are essential elements of precision-strike capability, however, it is reasonable to expect that space activities will play a major role. If the capacity for direct attack within, from, and through space were developed as the United States proposes, space would clearly become the primary venue for coercive intrusion and military dominance. Because of the inherent physical and legal

vulnerability of space assets, however, it is also the natural venue for countervailing reaction. For these reasons, the evolution of space policy is likely to shape the evolution of security relationships generally.

Up to this point, space activities have been regulated by a mixture of formal legal provisions and customary operational practices, most of which were developed primarily to support the mutual deterrence arrangement. Nuclear force operations provided the original impetus for sensing, tracking, optical observation, electronic intercept, navigation, communications relay, and weather assessment. Those central purposes dominated the evolution of rules. Scientific exploration and manned space programs introduced competing considerations from the outset, and those have been reinforced in recent decades by commercial utilization. Support for conventional force operations, including precision-strike capability, has also been an increasingly important and somewhat competitive military concern in recent decades. In general, however, the rules have not been adjusted to reflect the changing security context and pattern of space utilization.

The need to make these adjustments has been widely recognized – by the UN’s Committee on the Peaceful Uses of Outer Space (COPUS), the UN General Assembly, and the Conference on Disarmament (CD), the UN’s independent multilateral arms control negotiation body. In 1994, the CD convened its most recent ad hoc committee on Prevention of an Arms Race in Outer Space (PAROS). Since then, China has been the most active champion of the effort to secure a negotiating mandate for PAROS, the United States its principal antagonist. Despite nearly universal interna-

tional support for active negotiations, the United States has utilized CD procedural rules to prevent the issuing of an enabling mandate.⁹

The core issue in contention has to do with weapons in space as distinct from military support activities. The 1967 Outer Space Treaty (OST) unambiguously prohibits stationing weapons of mass destruction in space and using the Moon and other celestial bodies for non-peaceful purposes, including military installations and weapons testing. The treaty, however, does not mention the transiting through space of such weapons as warheads on a non-orbiting ballistic missile trajectory, nor does it make any determination about the utilization of conventional explosives or other technologies not traditionally placed in the mass-destruction category. Under China’s interpretation, the treaty extends legal protection to all other space activities, including those providing support for military operations under the provision stated in Article III that such activities are peaceful in character – that is, confined to the right of self-defense conferred by the UN Charter. With that understanding, sovereign jurisdiction exercised over land, sea approaches, and in the atmosphere cannot be extended into space. Article II declares that outer space is not subject to national appropriation, which means that satellites can orbit over national territory without permission and, by extension, without any legitimate grounds for interference. Un-

9 In 2002, the annual UN General Assembly resolution urging steps to reinforce and expand the legal regime for outer space (including the establishment of an ad hoc committee on PAROS in the CD) was supported by 159 countries, with no opposition, and abstentions only by the United States, Israel, and Micronesia. The 2002 New Agenda Coalition Resolution also expressed for the first time concern about space weaponization.

der official U.S. interpretation, a general prohibition on interference with satellites is now firmly established in customary law, and thus neither rests solely on the legal foundation of the OST nor is subject to its peaceful-use qualification.¹⁰ China maintains that the provisions of the OST must be explicitly extended to prohibit the utilization of all weapons in space, and suggests, without detailed elaboration, that some constraint on military support activity is necessary as well. China further suggests that the systematic development of space weapons being projected by the United States would violate the terms of the OST and thereby remove the legal protection it provides. The implication, reasonably inferred but so far not explicitly stated, is that China or any other country would then be free to interfere with satellite transit over national territory in exercise of its own right of self-defense.

This impasse over PAROS in the Conference on Disarmament can reasonably be seen as an inchoate and slowly developing policy confrontation with ominous implications – analogous, perhaps, to a malignant tumor in its earliest stages. Any country that believes itself compelled to defend against coercive threat with a strategy of negation would almost certainly focus on space assets as the most promising target.

The idea that satellites can be defended with superior technical virtuosity or in Wild West gunslinger style might be appealing in Hollywood, but not to any-

¹⁰ “Speech on Outer Space by Eric M. Javits, US Ambassador to the Conference on Disarmament (CD), to the ‘Conference on Future Security in Space,’ organized by the Monterey Institute of International Studies and the Mountbatten Centre of International Studies, Southampton, England” (28 May 2002), available at <<http://www.acronym.org.uk/docs/0205/doc17.htm>>.

one in the business of operating satellites. The unavoidable fact, largely determined by the laws of physics, is that all space services can be disrupted at a small fraction of the cost required to perform them. With some effort, satellites can be observed and their movements can be predicted. The velocity required to maintain their orbits and the energy required to achieve that velocity make satellites structurally vulnerable to collision with any object of any appreciable size. In addition, their internal functions are vulnerable to many forms of hostile electromagnetic radiation. It is vastly easier to arrange for direct collisions than to avoid them or to protect against their consequences. Electromagnetic interference is somewhat more demanding but still confers an advantage to the attacker. Standard methods of protection (hardening, camouflage, evasive maneuver, and active defense) can be attempted, but all of these are substantially less effective and more expensive than they are in other environments.

Space is an environment so dependent on protective rules that a threat to those rules becomes a threat to the viability of all space activity well before any subtle acts of interference, let alone blatant acts of destruction, actually occur. As the most immediately apparent symptom of an incipient strategic confrontation between the United States and China, the impasse in Geneva is evidence of the ill health of the existing system of rules for space. Any doctor who ignored a comparably ominous symptom in a patient would be subject to a ruinous lawsuit.

If China or any other country were actually to undertake a strategy of negation in space, and were to do so skillfully, presumably it would begin with low-level acts of interference intended to

warn rather than provoke. Precisely because of the importance and fragility of the regulatory rules, this strategy of negation would be dangerous to the initiator as well as the target, even in its earliest detectable stages, and would become much more mutually dangerous if it were played out to some decisive conclusion. An adroit negation strategy would be designed to achieve early accommodation and would absolutely have to establish broadly accepted justification. Otherwise the actions designed to exert countervailing pressure could result in political disaster. The problem, of course, is that subtle warnings are often discounted or not recognized at all, whereas acts of provocation stark enough to command attention tend to induce belligerent reaction. Getting the balance right is something like walking a tightrope in a variable wind. Since there are few indications in the public record that acts of interference against satellites have yet been specifically threatened or actually undertaken, it is reasonable to conclude that the strategy of negation is perhaps an option but not yet a commitment for any major country.¹¹ Thus, there is time to consider a more constructive approach.

If the incipient collision of policy is to be gracefully avoided, existing space regulations would have to be elaborated and formalized to accomplish two related purposes: 1) categorical prohibition of the destruction of space assets or di-

rect interference with their legitimate functions; and 2) more refined specification of the limits of permissible activity. That latter provision would be especially controversial in the United States, but basic common sense suggests that tolerance of space activities will ultimately depend on credible assurance that they are not unacceptably intrusive. Presumably, current levels of capability can be accommodated indefinitely, and in some areas, such as communication relay, there is no reason to anticipate imposed limitations. With regard to multi-spectrum observation and perhaps electronic intercept, however, one can project the evolution of capability to levels that would require some regulatory limitation. If navigation services are to be protected, moreover, some understanding will have to be reached about their utilization in precision-attack operations. Over the longer term, assets that are as consequential and as vulnerable as those in space will have to be broadly legitimized to be sustained – and national dominance will not constitute a viable basis for international legitimacy. In the end, a more inclusive formulation of purpose and a more equitable distribution of the benefits of space services will have to be devised.

The term ‘transformation,’ as it is used in U.S. military planning documents, generally refers to all that is involved in making military operations more effective – the application of advanced technology certainly, but also the evolution of doctrine, training, and mission conception to produce more decisive capability. The implicit assumption is that more decisive capability, as measured against the capacities of potential adversaries, will assure greater security for the United States and for those to whom we choose to extend protection. In that ap-

11 Much has been made recently of Iraqi efforts to jam GPS receivers during the war and of allegations that Cuba has been jamming expatriate satellite television broadcasts into Iran, but these are isolated, relatively low-tech acts of interference. See David A. Fulgham, “War Shapes New Products,” *Aviation Week and Space Technology* 158 (24) (16 June 2003): 152; and Henry Hamman, “Jamming of Satellite Broadcasts puts Spotlight on Cuban-Iranian Ties,” *Financial Times*, 21 July 2003, 6.

plication, 'transformation' is not a comprehensively inclusive term, and it poses the question how the security of the United States and its allies relates to international security generally. Since those formally included in the U.S. alliance system are a declining fraction of the world population (no more than 30 percent at the moment), that is a serious question for everyone involved. The current military planning presumption is that the United States can and must preserve a competitive edge indefinitely, and that the security of anyone outside the U.S. alliance system is not a vital national concern. That is said to be a realistic perspective. The possibility that transformation so conceived might stimulate major threats that might otherwise be avoided is not currently being considered. The possibility that the security of the United States ultimately depends on the security of everyone else is essentially ignored. Such a thought is said to be unrealistic.

The currently proclaimed standards of realism will eventually have to be adjusted. Over time, technology developed in the United States will assuredly diffuse to the rest of the world. If the context for that diffusion is competition in intimidation, the inherent vulnerability of the United States will be a rising danger, potentially an unmanageable one. Transformation as currently practiced carries an appreciable risk of ultimate doom. If the U.S. political system does not ultimately recognize that risk and confront the implications, its viability will be threatened. All of which is to say that the exploration of alternatives can fairly be considered a vital obligation, and that exploration might usefully begin with a broader notion of transformation.

If it is to be globally constructive, transformation would have to be applied in the first instance not to the instru-

ments of coercion, but rather to the central purpose of security and to the fundamental principles on which the conduct of security is based. The spontaneously integrating character of the global economy, the issues of equity and social coherence generated by the pattern of economic activity, the environmental implications of aggregate human activity, and the momentum of technology and of biotechnology in particular all suggest that global security will have to become the dominant objective and that security policy will necessarily have to be comprehensively inclusive. That further implies that policy will have to be based on principles that can inspire something approaching global consensus, and can manage the emerging threats of smaller-scale violence as well as the traditional ones of larger-scale aggression.

For some indefinite period, the U.S. military will be able to prevent large-scale forms of aggression on a global basis. If that capability is to be accepted as legitimate and preserved at a reasonable cost, however, the scope of application and the basis for justification will have to be altered. Protection against hostile invasion would have to be generally extended. Such protection could not be exclusively provided for the current alliance system. Principles of active confrontation, designed to assure that a strong deterrent is preserved and that effective preparations are made for predictable conventional force contingencies, would have to be subordinated to principles of reassurance whereby inherently superior U.S. forces conveyed confidence that they would not initiate attack as long as international standards of behavior were upheld. In order to convey that assurance convincingly, the United States would have to engage with all significant military establishments in the cooperative manner that it currently

does only with formal allies. If that is to happen, the U.S. political system would have to alter its traditional practice of justifying its military effort in terms of designated threats, and would have to accept the burden of providing general protection. In doing so it would have to acknowledge that the United States is the dominant source of potential threat for everyone else, and that reassurance is as important as deterrence. Those are difficult but ultimately necessary conceptual and political adjustments to sustain the traditional commitment to preventing major war.

The problem of dealing with civil violence and clandestine terrorism is yet more demanding, since deterrence and defensive reaction are more difficult, making prevention all the more important. Effective prevention in these areas requires not merely conveying reassurance, but also direct collaboration in the control of what is broadly determined to be intolerably criminal activity. The first step in this is to define fundamental and universal standards of behavior widely enough accepted that powerful methods of mandatory transparency and enforced compliance could be globally applied without exception. The necessary accompanying step is to devise appropriate limitations and other forms of legal protection sufficient to ensure that those methods of prevention do not themselves become a menace.

The standard of behavior most likely to achieve universal adherence would be the prohibition of preparation for acts of truly massive destruction. That rule might be primarily directed against the speculative possibility of catastrophic terrorism, but it presumably would also have to be applied to the legacy practice of deterrence. It is also prudent to assume that the capability of precise coercion, which might be necessary to en-

force a preventive regime, would have to be globally regulated.

The situation in North Korea presents the most critical immediate test of those broad principles and of the process of transformation generally. The currently declared intention of the Democratic People's Republic of Korea to proceed with the production of plutonium is the first explicit challenge to the American policy of preventive coercion, and the eventual outcome will determine whether that is an operational policy or a lesser political exercise largely confined to Iraq. Since the declared North Korean intention has also been accompanied by a stated willingness to contemplate the negotiated dismantlement of the country's nuclear materials production complex, however, there also appears to be a constructive opportunity. Whatever happens on the Korean peninsula – a preventive attack, successful defiance of that threat, negotiated dismantlement, or some change in the political regime – the conditions of global security will be generally affected. An image of constructive transformation reasonably, and perhaps necessarily, will begin with an outcome in North Korea that demonstrates the underlying principles.

Such an outcome would involve a comprehensive settlement under which North Korea would dismantle its nuclear materials production facilities; terminate its ballistic missile development and export programs; redeploy its conventional forces (its artillery in particular) away from the DMZ and out of immediate range of Seoul; and submit to verification procedures to document compliance with these provisions. In exchange, the North Korean government would gain full political normalization, an end to all economic sanctions, substantial assistance for economic regener-

ation, and security guarantees credibly issued and actively practiced by the United States. That arrangement would be endorsed and implemented not only by the six states currently involved in diplomatic discussions – China, Japan, Russia, and South Korea in addition to the United States and North Korea – but also by all parties to the Nonproliferation Treaty and by the international financial institutions. In the event that the nuclear reactors promised under the 1994 Agreed Framework are ever completed, the fuel would be under direct international control at all times, and that requirement would become the new standard for all new nuclear reactors worldwide.¹²

Such a comprehensive settlement would go well beyond what has been considered in any documented official discussion – and would be considered unrealistic by most of those who have participated in those discussions. The grounds for objection have much more to do with prevailing political attitudes, however, than with real interest. It seems evident that security for all parties would be substantially improved under such an arrangement. The provisions are less fanciful than the United States's imagining it could conduct a preventive war against North Korea at

12 It is reasonable to speculate that as part of a comprehensive settlement of this sort, North Korea would be provided, as a form of economic assistance, a modernized power grid that could be built much more rapidly than a reactor. Even if such a settlement were made, however, the North Korean government might in principle insist on the right to the reactors, in which case the provisions for international control of the fuel cycle would be relevant. Internationalizing control of the nuclear fuel cycle would be a much higher standard than current NPT rules, and that fact would be at least part of the answer to those who contend that any compensation for North Korea is unacceptable acquiescence to blackmail.

an acceptable cost, or North Korea's imagining it could safely prosper by exporting nuclear materials and ballistic missiles while fending off the United States with nuclear threats, or anyone's imagining North Korean society will undergo a felicitous internal transformation unassisted. Nonetheless, with current policy dominated more by political attitude than by real interest, a comprehensive arrangement is not likely to emerge from either the United States or North Korea.

Exploration of a general settlement would have to be initiated by a third party, most plausibly China. With the breakdown of the Agreed Framework, China has already become procedurally more active in promoting and organizing official dialogue among what is coming to be called the group of six. It is admittedly a stretch, but not an inconceivable one, that China, concerned about the implications of an unraveling situation, might become substantively more venturesome as well.

Whatever the outcome in North Korea, its global implications will be affected by the handling of Iran's nuclear material production activities. A strategy for constructive transformation would reasonably aspire to make that situation a reinforcing precedent. In a report issued in November of 2003, the director general of the International Atomic Energy Agency (IAEA) detailed Iran's violations of its disclosure obligations under the NPT.¹³ The report determined that dating back to 1985, and in some instances back to 1981, Iran had conducted technical explorations of "practically

13 "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran: Report by the Director General," IAEA (GOV/2003/71), (10 November 2003), <<http://www.iaea.org/Publications/Documents/Board/2004/gov2004-21.pdf>>.

a complete front end of a nuclear fuel cycle, including uranium mining and milling, conversion, enrichment, fuel fabrication, heavy water production, a light water reactor, a heavy water research reactor and associated research and development activities” – all of which should have been reported but was not.¹⁴ Small amounts of enriched uranium had been produced in prototype gas centrifuges and laser enrichment facilities. Small amounts of separated plutonium had been produced in experimental facilities as well. A prototype uranium enrichment plant and a much larger production facility were revealed to be under construction at Natanz. Although the effort had not yet produced enough material for a single nuclear weapon, completion and operation of the observed facilities would in principle provide the capacity for producing enough material for many weapons.

Caught in the subterfuge, Iran officially committed itself to full disclosure, announcing acceptance of the additional IAEA inspection protocol (INFCIRC 540) it had resisted up to that point. Under pressure from Russia, France, Germany, and Britain, Iran also temporarily suspended its uranium enrichment and plutonium separation activities by implication until the details of the IAEA inspection could be worked out. While admitting its violation of disclosure rules, the Iranian government nonetheless insisted that its activities were designed for nuclear power generation only and did not constitute a nuclear weapons program. The United States forcefully alleged the contrary, however, and attempted, unsuccessfully, to have the IAEA Governing Board refer the matter to the UN Security Council for the imposition of sanc-

14 Ibid., 9.

tions. Eventually, the United States compromised with the Europeans and Iran on an IAEA resolution that “strongly deplores Iran’s past failures and breaches,” welcomes its new policy of disclosure, and warns that the IAEA Governing Board will respond quickly and strongly if any further violations are discovered. None of the parties involved, however, yet seems fully satisfied.

The Iranian admission of disclosure violations and apparent acceptance of more intrusive inspections clearly indicate a change of policy, but do not resolve the question of underlying intention. Under current NPT provisions it would be legally permissible for Iran to accumulate separated plutonium under full IAEA safeguards, as Japan has done, thereby producing a material stockpile that in principle could be rapidly converted into a nuclear weapons arsenal. If that possibility is to be prevented, Iran would have to forgo the independent production of enriched uranium and plutonium and to accept international control of the fuel for any of the nuclear reactors it constructs and operates – the higher standard of control envisaged for North Korea. In accepting that higher standard, Iran might reasonably demand specific security guarantees from the United States. Because Iran’s inherent economic prospects are much better than North Korea’s, a general settlement package might rely more exclusively on security provisions, but the underlying principle of accommodation would be similar. Were fundamental accommodation to be achieved in both instances, the troublesome concept of ‘rogue state’ might be retired – and that would be a significant practical accomplishment. Such accommodation is even less likely to emerge from any bilateral interaction than it is from the North Korean case, but the potential mediators are at least

as readily identified and already more active. It is evident that the EU and Russia together could play that role, and the substantive terms of accommodation would be a natural evolution of their current policies.

The other opportunities for constructive transformation are less immediately urgent but more directly global in character. The impasse over a negotiating mandate for PAROS and the failed effort to devise a verification and enforcement protocol for the BWC have already engaged the general diplomatic community in a struggle with the United States over basic security principles. In both instances the United States, acting essentially alone, has blocked widely supported efforts to devise protective regulation, and those actions are now interpreted to be a diplomatic extension of its preventive coercion doctrine. Recognizing that unusually powerful common interests are engaged in both instances, strategists for constructive transformation could plausibly seek to mobilize frustrated international sentiment and could eventually expect to induce resonance within the United States as well. In more mature phases of such an effort, there would have to be active official champions urging protective oversight provisions for biotechnology and offering candidate schemes for space regulation. However, such efforts usually originate with less formal, more spontaneous discussions of the sort that are occurring among like-minded countries and in track-two meetings of professional societies. One can reasonably imagine a constructive program with general conceptual coherence emerging from the quiet exploratory efforts currently being undertaken on both topics.

It is certainly true, nonetheless, that very prominent and presumably very extensive public discussion would be

required if constructive transformation were actually to be accomplished or even seriously attempted. The idea would have to be put into circulation in engaging detail if security policy is to be meaningfully affected, and that would require official advocates who are forceful, consequential, and adroit enough to command global attention. By virtue both of incentive and apparent inclination, China would be the most plausible source of such an initiative, but it is not reasonable to impose the burden of global leadership entirely on China. It is more reasonable to imagine a productive collaboration between China and the members of the EU and the OSCE. The basic principles of constructive collaboration for mutual protection have been most significantly developed in Europe over the course of the cold war and thereafter. It is that legacy, adapted by China and extended to Asia, that offers the most promising prospect for improving security through a process of constructive transformation.

Poem by Richard Wilbur

Green

Tree-leaves which, till the growing-season's done,
Change into wood the powers of the sun,

Take from that radiance only reds and blues.
Green is a color that they cannot use,

And so their rustling myriads are seen
To wear all summer an extraneous green,

A green with no apparent role, unless
To be the symbol of a great largesse

Which has no end, though autumn may revoke
That shade from yellowed ash and rusted oak.

Richard Wilbur, a Fellow of the American Academy since 1959, was the second poet to be named U.S. poet laureate. His volumes of verse include "The Beautiful Changes" (1947), "Things of This World" (1956; Pulitzer Prize), "New and Collected Poems" (1988; Pulitzer Prize), and "Mayflies" (2000). He has also published numerous translations of French plays, several books for children, and two collections of prose pieces. He is Emeritus Professor of English at Smith College.

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Fiction by Roxana Robinson

Blind Man

It had been raining earlier, but was now stopping. The windshield wipers began to creak. They were now leaving streaks, instead of cleaning the glass. He turned them off and they quit, sliding weightlessly down into their hidden pocket.

He'd been on this highway for an hour, maybe, though it was hard to tell, they all blended into each other so smoothly: the exit sign announcing the shift onto the ramp's stately decelerating curve; at its end a slow diagonal merge, then acceleration into the new current. It was hard to remember just how long he'd been on this one, exactly when he'd left the last.

He was, anyway, somewhere in Connecticut, on a high bridge over a valley. Below him lay the dense grid of a nineteenth-century mill town. Above the industrial jumble stood a handsome Venetian campanile of dark-red brick, a white

clock face on each side. Its slate roof narrowed upward to a needle's point.

The bridge stretched from one hillside to the other. The traffic, weaving a complicated pattern, prepared for left-hand exits ahead. The signs for this place, whatever it was, were now behind him. He might never learn its name, or the source of its lost potency, or who had thought to erect a Renaissance tower above the grimy brick labyrinth. All these dismal industrial towns were ghostly now, their energy dissipated, industry gone. All that outrage over intolerable working conditions: now there were no working conditions. Ahead, on the crest of a wooded hillside, stood a large white cross.

He'd been told not to think about it, not to go over and over it, but what else was there to think about? It was what occupied his mind. Trying to think about anything else was a torturing distraction. He was never not thinking about it.

At night he lay in bed beside his wife – also wakeful, also silent, her back to him in the dark – and went over it in his mind. It played there forever, an endless loop.

The soft blossom of smoke, like a sweet cloud of scent, drawn swiftly up through the narrowing shafts into the

Roxana Robinson, a Guggenheim Fellow, is the author of the biography "Georgia O'Keeffe: A Life" (1989); the short story collections "A Glimpse of Scarlet" (1991) and "Asking for Love" (1996); and the novels "Summer Light" (1987), "This Is My Daughter" (1998), and "Sweetwater" (2003). This story will be included in the forthcoming collection "A Perfect Stranger" (Random House, 2005).

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skull. Sucked down the long hard ribbed windpipe, then released into the spacious crimson chambers of the lungs. Drawn deeper, into the branching, diminishing pathways of the bronchia. Further still, into the depths of the soft honeycomb, the bronchioles, their membranous walls porous and thin. There the barrier between air and fluid was only one slight, slight cell thick. There the mysterious shift occurred: the smoke passed magically through the tissue, into the bloodstream. There it dissolved. Then it was part of the smooth surge, pumping rhythmically through the interlacing curves of the vascular complex, flowing through steadily widening channels, headed swiftly and unstoppably for the brain.

He imagined its arrival there as an explosion: the sudden pulsing release of a million stars, in the deep black sky of the mind.

He could not hold the two notions together in his mind: the physiological and the individual. The chemical reactions and Juliet.

In the dark, in the close silence of the bedroom, the sheets and blankets became heavy and tumbled. They seemed to pool, carried by some hidden current. They collected in eddies around his legs, tangling his arms in dank swirls.

Each time he remembered, he was shocked by the silence of the fact, its perpetual inertness. There was never any change.

In the morning, he sat on the edge of the bed, the weight of another day upon him, light sifting dully in from under the window shade. He rubbed his face hard, palms rasping against his unshaven cheeks, trying to rid himself of the clinging wisps of the black nighttime world.

The thing was not to think about it. The thing was to be disciplined, to take control.

Though what if he did let go, let himself think about it? What if he just locked himself in the room of his mind and thought about nothing else? Because that was what he did anyway, he hadn't a choice. He was already locked in there, and that was all there was in with him.

Approaching the hillside, the highway passed a grim Catholic church. High on the stone facade was a rose window, too small, and of course dark from the outside.

What he ought to do was review his notes, though, just at this exact moment, he could not remember the topic of his lecture. The road ahead was gray, still grizzly with rain. Passing cars made a sissing sound. He was in the middle lane, driving fast, like the cars around him. Being in the midst of this speeding stream gave him comfort. He liked the notion of community, he liked the steady, infinite supply of power beneath his foot. He felt he was getting somewhere.

Being alone was a luxury. The small rented car, for which the university would reimburse him, was anonymous, a haven. The woolly dark-red seats, the spotless gray carpeting, the bland mechanical eyes of the dashboard: it was like a motel room. He could do whatever he wanted, speeding across Connecticut among the other cars. He was invisible here, though around him he carried a kind of darkness, a cloud.

A huge truck passed on his left, the size of a small country. The roar was deafening. The silhouette towered alongside him, darkening his sky, steaming on and on. The gigantic wheels spun hypnotically by his face. His small car swayed, buffeted. It would be better not to think about it. Her hair had been in her mouth, there had been strands of it, dark and silky, lying across her open

mouth. What else was there to think about?

His lecture, it now came to him, was on the cathedral of Haighia Sophia, the ecclesiastical nexus of Byzantium, symbol of its enormous power, its astonishing beauty, its history of invasion and transformation. He shook his head and thought deliberately of the high empty space, the vast dome filled with silence. The shafts of still sunlight, falling on the ruined mosaics. The wide bare brick floor, worn smooth by centuries of slippered footsteps.

The lecture began with a slide of the exterior. "The dome of Haighia Sophia is only one brick thick. It is a perfect curve, mathematically without flaw. No one knows how this engineering feat was achieved. It is one of the great mysteries of ecclesiastical architecture, just as Haighia Sophia is one of the great symbolic mysteries in the history of Byzantium."

He had given this talk many times, at universities, scholarly institutions, colloquia, and seminars. The first time long before she was born.

He moved sideways, into the fast lane. The little red car rocketed along, the tires sizzling against the damp pavement. Its slight frame seemed sturdy and flexible, like an airplane's, designed to withstand powerful external forces. Speed seemed to be what held the car onto the road. The roar was loud and steady.

At a flash in the rearview mirror he looked up. Behind him was a big SUV, threateningly close, its headlights blinking an imperative staccato. It was only a few feet from his bumper, he could feel its heavy breath. At this speed it would take only an instant, a tiny split-second shift, for things to go badly wrong. The pace held them all spellbound: his tiny red car, the SUV behind him, the gigantic rumbling trucks.

He put on his blinker and waited for the car on his right to pass. The lights behind him flashed again, impatient, looming closer. He felt a tightening on his scalp. The SUV bore down, closing the brief distance between them. The mirror was filled with the flashing lights. Too soon for safety, he slid sideways, nearly hitting the bumper of the car ahead. As he was still moving, the SUV roared past, barely clearing his car. Spray rose from its tires, coating his windshield with dirty hissing mist. Signal still blinking, he waited for another car to pass, then moved again, into the slowest lane. Abruptly, dangerously, too fast, he slid sideways again, moving off the highway altogether, onto the narrow shoulder. He felt the loose gravel suddenly rough beneath his wheels, the car juddering as it slowed. For a sickening moment it skidded. Then the tires caught, the car slowed and bumped unsteadily to a stop.

He was on a narrow shoulder, barely off the pavement. The car was cramped between a heavy metal guardrail and the road. The sound of the speeding cars was deafening. A giant trailer truck thundered past, wheels sizzling viciously past his window. Within seconds there was another. As each roared by, his small car – frail, he now understood, not sturdy – rocked and shuddered. The grime-covered trucks steamed past. He felt the shock from each one. He set his hands on the steering wheel. Something was flooding through him, like blood clouding into water. He leaned back against the headrest, looking into the traffic vanishing ahead.

The last week: he went over and over it. Juliet in the kitchen, one morning, unloading the dishwasher. Bending over, her long dark hair falling weightlessly forward. He'd been at the table, reading.

Juliet, a stack of plates against her chest, pushing against the swinging door into the pantry. A wrinkled yellow jersey, cut-off blue-jean shorts. Her limbs were soft, still childish – not plump, but cushiony. Her legs were tanned to a dark honey-brown in front, lightening to a paler cream in back, on her calves.

His wife had called from outside.

“Yeah?” Juliet was vanishing into the pantry.

Ann again: something about the hose.

Juliet called loudly back. “What?”

She was in the pantry then, stacking the plates in the cupboard. The crockery rattled. It was clear from Juliet’s voice – loud, indifferent – that she couldn’t hear her mother, didn’t care.

Ann’s irritation. “Juliet, would you please not walk away from me, when I ask you something?” Ann was in the kitchen doorway.

“Sorry, Mom,” Juliet said, reappearing, unruffled. Her round face, her short upper lip, and bright narrow blue eyes echoed Ann’s, though the dark straight eyebrows were no one’s but Juliet’s. She smiled at her mother, at once placating, but also, mysteriously, pitying, as though Juliet were in a continual communication with some superior self, far beyond the reach of mortals. “Want some help?” she asked kindly.

They’d gone outside; he’d gone back to his book.

What did it mean, that moment? Anything? He examined everything, now, for clues.

Juliet had been in a kind of disgrace that summer; she was under a certain obligation to be placatory. She had screwed up. She had broken rules; laws, in fact. She had been sent home. She had not finished the college year, she had ended up instead in a group of institutional buildings in another state. Her academic reinstatement depended on good behavior. Her domestic reinstatement

depended on good behavior. She was in disgrace.

Though in a way it was he and Ann who were in disgrace, for aren’t the parents absolutely implicated in the transgressions of the child? To be honest, aren’t the parents, perhaps, more responsible than the child? Didn’t they create the world in which the child found these transgressions possible, necessary?

And if you, the parent, have ever allowed yourself small helpings of private pride and satisfaction at your child’s accomplishments, if you have ever stood beaming at a graduation in the June sunlight, swelling inwardly over the award for Religious Studies and feeling that in some unexplained but important way that your daughter reflects your presence, that she represents you and your codes, both cultural and genetic; if you have ever felt that your beautiful daughter was somehow flowering forth from you, so then, when another area of her endeavors is revealed – addiction, say, to crack cocaine – then you feel the heavy cowl of complicity settle over your head.

At the beginning of the summer, when they’d brought her up here, they’d watched Juliet’s every move with anxiety. In those first weeks she’d acted stunned, silenced. Not sullen, exactly, simply mute: silenced. She did everything she was asked, but without response. It was as though her thoughts were in a different language. She had withdrawn. She was elsewhere. She didn’t laugh. She spent hours silent in her room, the door closed. He and Ann, pausing unhappily outside in the hall, tiptoeing on the threadbare rug, could hear nothing from inside. Was she reading? Was she lying on the bed, curled on her side, eyes fixed steadily on the plaster wall?

At meals Juliet ate without speaking, looking down at her plate. They could hear the sounds of her chewing, the faint muscular convulsion as she swallowed.

Once, at dinner, Roger lost his temper. "Jules, could you pass me those beans?" he asked mildly.

Juliet stopped chewing, the bite of food still evident in her cheek. Without looking up she handed her father the pink china bowl. She began to chew again, looking back down at her plate.

"Juliet," Roger said irritably, "could we please have some manners here? Could you please look at someone when he speaks to you? It is considered courteous to acknowledge the presence of other people. All the rules of life are not suspended forever, you know, just because you've been in rehab."

Juliet raised her head and looked levelly at him. "Just because I've been in rehab?" she repeated.

"Yes," he said forcefully, deeply sorry he'd begun this. "Manners are the muscular supports of society. They are the embodiment of its moral core. They are the basis for a civil society. You're in a family community, here. We all owe each other something. Respect. Courtesy."

"Sorry, Dad," Juliet said, her voice pointedly neutral. "Here are the beans."

Roger was already holding the bowl. "Thank you," he answered foolishly. He set it down and served himself to seconds. Somehow he had lost his moral authority. He was afraid of what she might say to him. What was it? What might she say? What had he done? He thought nothing; he could not bear to learn.

But as the summer went on, the tension seemed to subside. They were up in New Hampshire, in the old shingle house that had belonged to Ann's par-

ents. They had always spent the summers here; Roger's academic schedule allowed for a three-month vacation. Juliet and her older sister Vanessa had come here every year of their lives, though, starting in adolescence, they'd gone elsewhere as well. Now Juliet was back in the house with her parents, as though she were a child again.

Slowly, during the summer, she had begun to thaw.

One night Ann told them about a zoning meeting she'd attended. Developers had begun greedily to eye the big open mountainsides, and a town meeting was held to discuss planning. Ann thought the Zoning Board's position was meek and conciliatory.

"Jackson Perkins might as well have invited the developers to come and stand on his stomach," Ann said. "I couldn't believe what he was saying. I wanted to raise my hand and say, 'Jackson, when we want advice from a hamster, we'll call on you.'"

Juliet was drinking milk, glass at her mouth, when her mother spoke: she erupted, coughing and gasping, milk flying up her nose. She'd briefly, hilariously choked, her napkin plastered against her face, white drops spattering the table. Roger stood and patted her back, happy to be able to help her with something so urgent, so mild: milk up her nose.

Things improved, Juliet began to relax. By August it seemed she'd reverted to the easy, sunny child she'd once been. She'd seemed to like her parents again. She liked the ramshackle house. She'd spent that summer as she'd spent earlier ones: hiking, swimming in the pond, helping with the garden and the dishes, walking dreamily through the fields. Late at night, she talked on the telephone. He and Ann heard the low murmur through the thin old walls of the farmhouse, felt the vibration of the in-

visible connection, stretching from their docile meadow to the crackle of distant cities. None of your old friends, the therapist at rehab had said. No one from that life. But Juliet was alone there in the house, with them. She saw no one else. There were no drugs there, in the sun-bleached field, the wooded hills.

Though it seemed drugs were everywhere now, seeping into kids' lives like groundwater. They were so available, so common, you couldn't ask your older, most obedient child not to take them, let alone your younger, wilder, more rebellious and more difficult daughter.

Vanessa, three years older, had been relatively saintly, they'd learned. Now through college, she was living in Somerville and working for a landscape designer in Cambridge. This summer, Vanessa had been their lifeline at times, coming up often for weekends, acting as intermediary between her parents and her sister. She told them her own story. Smoking pot: it would have horrified them at the time. Now it seemed innocent, adolescent.

What was it they'd missed? That exchange in the kitchen, between Juliet and Ann – the plates, the hose – that was completely normal, wasn't it? Or not? What was it that he should have foreseen? He felt again the sliding terror of what approached.

The last week, they'd gone swimming, the four of them, in the pond at the foot of their hill. At the near end of the pond was a splintery wooden dock. At the far end was a stand of willows, overhanging the water, trailing their long green strands into its depths. Beneath the willows the water was dark and murky. No one swam there, for fear of monsters: snapping turtles, eels, leeches. Logic suggested that all those things might be anywhere in the pond, but instinct warned

that the dark shadows, the overhanging branches, were a haven for sinister forces.

That afternoon, Vanessa and Juliet stood side by side at the edge of the dock, wrangling languidly. Feet braced, they shoved hips at each other.

"Go in, then. Why don't you go in? You're such a *wuss*," Vanessa told Juliet, pushing her shoulder.

"As if," Juliet said, shoving back. "I'm so much braver than you."

"Okay, then, swim the pond. Go under the willows," Vanessa challenged.

Instantly, without a second's pause, Juliet threw herself full-length onto the cool green skin of the water in a long racing dive, hitting the top of the water flat, then sliding under it to disappear. There was a lengthy, expectant pause. The pond was silent. The surface was now smooth and unbroken, though somewhere beneath it was a living body, moving swiftly, its heart pumping, oxygen coursing through its blood. Waiting in the sunlight for Juliet to reappear, the others became mindful of held breath, aching lungs, throbbing heart, the weight of the silver-green water. The pond was silent. Dragonflies glinted and shimmered above it.

Juliet suddenly exploded upward, surfacing in a swirling rush of air and bubbles, unexpectedly far away. Without glancing back she began to swim, turning her head to breathe with each stroke. Her hair, now black and glistening, clung flatly along her back and arms. They stood on the dock, watching her move along the edge of the water, toward the cave of willows. Juliet never stopped, never looked to see where she was. The long movement of her arms, the thrashing kick, disturbed the whole pond. Ripples rocked across its wide stretch.

At the far end Juliet disappeared behind the curtain of overhanging

branches. The water there was shadowed and opaque. They could hear her steady strokes, but her progress was hidden. For a moment her disappearance seemed perilous, the silence fraught, as though they were waiting for a scream. Roger found himself holding his breath.

When Juliet reappeared, her arms beating long arcs through the still air, dark hair plastered over her polished shoulders, her flashing progress seemed now triumphant. Risk now seemed absurd. There had been no danger after all, no monsters. Though all those things existed in the pond: leeches, snapping turtles, snakes.

Juliet swam steadily back. Reaching the shallows she stood, walking slowly in against the weight of the water. Her face and body were streaming, brilliant.

Juliet looked at Vanessa. "So," she said. "Wuss."

What was it they should have noticed, foreseen?

The traffic hurtled past; the red car trembled. He should move, he was too close to the thundering stream. Though now he realized it would be hard to get out of here: the shoulder ahead narrowed to a point, then vanished. It would be hard to get up enough speed, in the space remaining, to reenter the current. The red car, though willing, did not have much acceleration.

At the end of that week, Juliet had announced her plan to go back to Boston with Vanessa. It was late afternoon, and they were all out on the lawn. The girls were lounging on the grass; Ann sat in a decrepit aluminum chair, its woven webbing frayed. She was shelling peas, and dropping the empty pods onto a newspaper spread on the grass. Roger had just come up, carrying a hammer and a jar of nails. His summers here were spent in continual battle with loosening shingles, hidden leaks, rotting wood, and creeping

damp; as the house struggled purposefully to return to the earth, he struggled tinily to prevent it.

Ann frowned. "Where will you stay?" she asked Juliet. "You can't stay at home." Their house in Cambridge was empty, it was just the sort of thing that could get Juliet in trouble.

"She'll stay with me," Vanessa said.

"I just want to see Alicia before she leaves for college," Juliet explained.

None of your old friends. No one from that life.

Roger and Ann looked at her, worried.

"Juliet," Ann began. She was sitting very straight, her feet crossed at the ankle, dropping the peas into the colander in her lap.

But Juliet smiled at them. "Don't worry," she said. "Alicia's not in that crowd. I'm not going to run off and do drugs."

She'd said the words out loud.

Should they not have trusted her? Do you never trust your child again? When do you start to trust her? She'd been there with them for months. Her eyes were candid, her gaze open. They couldn't keep her alone with them in the mountains forever. It was the end of the summer; they were all about to return to the world.

On Sunday afternoon, the two girls left in Vanessa's small dusty car, trundling slowly down the rutted driveway through the field. At the bottom of the hill Vanessa gave a honk; both girls stuck bare arms from the windows and waved. Roger and Ann stood on the lawn in front of the house, waving back. Then the car turned out onto the road, and was lost among the trees.

He would have to make an effort to get out of here, to get back out onto the road. He would be late for his lecture.

He looked in the rearview mirror. The traffic streamed at him seamlessly. Maybe he should back up, to give himself more room. He set the car in reverse and turned to watch over his shoulder. He pressed cautiously on the accelerator. The car began to creep backward, zig-zagging disconcertingly toward the cars following dizzily toward him.

When Vanessa called, the next night, they'd been asleep. At the first ring they were both awake, sitting up, hearts racing. Ann picked up the phone, Roger fumbled with the lamp.

"What is it?" Ann asked into the phone.

He looked at the clock: one forty.

"Where is she? Where are you?"

"What is it?" Roger asked.

Ann shook her head, frowning.

"Are you with her right now?"

There was silence while Vanessa talked.

"What is it?" Roger asked again.

"Hold on." Ann turned to him. "It's Juliet. She came home late and Vanessa's worried about her. She thinks she did some drugs."

Roger took the phone.

"Vanessa," he said. "What happened?"

"We met some friends for dinner, and then we went on to hear some music, and then I wanted to go home. Jules said she just wanted to see Alicia, by herself, and she'd be home really soon." Vanessa sounded frightened. "I know I told you I'd stay with her. I know I did. But she got really mad at me and told me to stop following her around, and she promised she'd be right back. She came back a while ago, and now she's asleep, only I can't tell if she's asleep or out cold. Unconscious," she added, touchingly careful, as though verbal precision might help.

"How did she act?"

"Okay, I guess."

There was a silence. Roger closed his eyes to listen, trying to hear what was going on.

"Really okay?"

"I guess so. She said she had a headache." Vanessa sounded miserable.

He spoke to Ann. "She had a headache." Ann frowned and shook her head. What did it mean? What did a headache mean? Anything? "That's all?" he asked Vanessa.

"Yeah. She said she was going to bed."

It was quarter of two in the morning. Whom could they call? Was it an emergency? Juliet was already asleep, and they were two hours away.

Ann took the phone back. "Nessa, did she seem okay?"

Their bedroom was in shadow, except for the glow from the lamp. The darkened ceiling slanted down toward the eaves; on it, above the lamp was a pale blurry oval. Around them the house was still.

They decided finally to let Juliet sleep. Whatever she'd done was already done. They'd get up early and drive to Somerville. They'd call the therapist at rehab. They'd find a local program, they'd call their own doctor, marshal their forces, find out what to do. Right then, seventy miles away, in the middle of the dark mountain pasture, the middle of the night, they could do little. They'd do everything the next day. They'd start in the morning.

Of course, for Juliet there was no morning.

She'd taken no more than her old dosage, but during those innocent country months her body had lost its resistance. The cocaine vapor thundered into her system, accelerating her heart, contracting the vessels in her brain. Within the hard bone cup of her skull, a narrowed artery gave way. The tissue rup-

tured, and blood spilled deep into the smooth inner surfaces of the brain. These were places sacrosanct, inviolate. The intrusion was intolerable; an irreversible distress signal was transmitted. The violated brain closed down the central nervous system.

Closed down the central nervous system.

He had an image of offices darkening for the night, covers placed over machines, doors shutting, lights going off. *Closing down. Closing down.* He could not hold the two thoughts in his mind at once, the physiological and the personal. The rupturing artery and Juliet.

He was backing now directly toward the oncoming cars. The afternoon was waning, and some headlights were on. The approaching lights were hypnotically attractive. He had to resist veering slowly into their path. He backed carefully, swerving slightly back and forth, correcting himself with small swings, until he'd created enough room to make a run. Then he waited for a gap in the oncoming stream. All you could do was go on. Was there anything else you could do? Back directly out into the stream?

When he saw the gap, he tried to measure it mentally, looking backward through the growing dusk. How big was it? Big enough? But he could feel something gather within him, some kind of excitement, and he understood that this was the moment, he was going. He had already gunned the little car; at once it lost traction on the gravel. But he was committed, the tiny motor roaring, the accelerator flat against the floor. He felt the engine laboring, gathering speed slowly, the breakdown lane narrowing rapidly ahead. He was racing it. At the very end of the lane, his turn signal sounding its repetitive bell, hoping the driver behind him would understand his need, see his danger, Roger pulled out into the traffic, his heart racing, ris-

ing to meet the moment. It was like a plane roaring down the runway toward liftoff.

The moment the wheels hit the pavement he knew his pace was too slow. He could feel the speed all around him: he was too slow. He felt the thunder of trucks alongside, felt himself borne down upon from behind. All around him was the assault of sound, the hurtling crush of speed; he waited for the impact.

It did not come. The car behind him must have seen him and understood; he felt its dangerous looming presence diminish, fall away. The little red car droned loudly, its engine straining upward. Finally it reached its capacity, and then miraculously, within moments he was again a part of the flow. He was in it. *All you could do was go on.* But still, he stayed now in the slow lane. The far lane, the fast one, seemed now unimaginably distant, suicidally fast.

Somewhere soon, he thought – though he had now lost all sense of this trip – he was meant to get off the highway, onto a secondary road. This would lead him to the quiet streets of the university, and somewhere there he would find Allen Douglas Hall. The small band of waiting historians, the silent students – respectful? bored? derisive? – lounging in their seats. This community of dazing speed would be behind him.

At the exit sign he slowed gratefully and turned off. Curving sedately down the ramp he felt himself returning once again to the actual world. This new road was two-lane, winding through wooded countryside, but the traffic still seemed fast. It was late afternoon now, not dark, but nearly dusk. You could still see without headlights, though their presence reminded you that light was fading, vision provisional.

After the stoplight at the Dairy Queen, the road curved down a small hill to-

ward the town. On the left was a string of bright seedy places: muffler repair, Mexican fast food, a gas station. On the right was nothing: a strip of trees, some kind of construction. A metal fence, one grooved and massive band, hugged the roadside.

When he saw the man, Roger thought he must be seeing it wrong – the man must actually be on the outside of the metal fence, not inside it. There was no sidewalk, and the verge was narrow. There was barely room for the man's body between the fence and the speeding traffic.

The man wore a trench coat, and beside him was a dog on a leash. Or not on a leash – a harness? Was it possible? Roger felt his scalp tighten. That this was a blind man, making his way along this shallow gully, inches from the lethal stream of traffic?

Roger couldn't stop as he drove past; the traffic pressed him too hard, too fast. He watched the harnessed dog trying to lead the man away from the road, toward the fence. He saw the man stumble against the fence, then jerk the dog, heading it back toward the traffic. Roger passed by, inches from the man's trench-coated shoulder. The man held his head high, his chin raised, as though his face, pointed toward the sky, would help his body see. Ahead, unknown to him, the narrow walkway was about to end, slanting diagonally toward the road, funneling the man's steps toward the pavement, the hurtling cars.

There was nowhere on the right to stop. Roger put on his blinker and turned abruptly left, cutting across the traffic, into the muffler repair parking lot. Jumping from the car he ran back up the hill. Across the road, he could see the blind man yank his dog from the fence again. At the top of the hill a truck rounded the curve. Roger ran heavily

across the road in front of it, his heart answering the thundering approach of the truck. He ran clumsily up the culvert, pebbles loose beneath his feet, toward the blind man.

"Hello," Roger said loudly. "Can I help you?" Roger was breathing hard. The truck was nearly on top of them.

The blind man swiveled to face him. "I'm fine, thanks," he declared.

"You're in a dangerous place," Roger said. "Let me give you a lift." The truck pounded past, rocking them both, blasting them with its hot smoky stink.

"Where are you going?"

"Middletown," the blind man said, smiling at the air. He was in his forties, his hair graying. He looked not prosperous, but respectable. He acted as though there were no traffic, drowning out his voice and buffeting his body.

"That's where I'm going," Roger said, "I'll take you."

"No, thanks, I'm all right," the man said. "My dog is pretty well trained. She knows what she's doing. We're fine." The dog, a small golden retriever, stood unhappily, her head low. The cars rushed past them, loud and rhythmic.

What were the rules of courtesy, with the blind? You were meant to act as though they were perfectly competent: which they were, weren't they? Leading their own lives. It was rude, condescending, to act as though they could not cope with things, as though you knew better.

Roger stood facing the traffic. Because of the curve at the top of the hill, drivers could not see them until they were on top of them. The cars hurtled past, the wind from each one rocking the two men. The murderous roar mocked their fragile armor of skin, flesh, bones.

He thought of the blurred oval of light on the slanting bedroom ceiling, the si-

lence of the dark house. *What if you did know better?*

Roger took the man's elbow, gently – he didn't want him now to pull away, stumbling into the road.

"You're not safe here," Roger told him.

He was ready for the man to resist, to pull back from his grip, but the man did not. Instead he stood with his arm in Roger's grasp, saying nothing, his head slightly cocked, as though he were listening for something. The lack of resistance came as a shock, somehow painful: maybe this was what people wanted.

"I'm going to hold up my hand to stop the traffic," Roger told him, "and we'll walk across the road together. Then I'll drive you wherever you want."

The blind man did not move, and Roger watched the approaching cars for another gap. He was calm, as he'd been earlier, waiting on the highway. He was waiting for another hiatus in the lethal flow, the moment in which he would save their lives. When it came he would seize it, step out boldly, his hand held high to stop the deadly current.

He would save the three of them: the blind stranger, gazing aimlessly at the sky; himself, playing the endless loop inside his brain; the dog too, silky, dark-eyed, plummy-tailed, waiting sweetly to see what would be done with her life.

Alan P. Boss

*on the search for
extrasolar planets*

Astrobiology, the search for life's origins and its existence elsewhere in the universe, used to seem like a visionary dream. But in recent years, it has become a true science, thanks in part to new developments in the search for Earth-like planets outside our own solar system.

A new era in scientific discovery was initiated in 1995 with the announcement, by the Swiss astronomers Michel Mayor and Didier Queloz, of the first Jupiter-mass companion to a Sun-like star. Progress on the detection of planets outside our solar system has occurred at a breathtaking pace ever since; scarcely a

Alan P. Boss, a Fellow of the American Academy since 2003, has been a research staff member at the Carnegie Institution of Washington since 1981. Internationally known for his theoretical work on the formation of stellar and planetary systems, he advises NASA on the search for extrasolar planets. He is the author of "Looking for Earths: The Race to Find New Solar Systems" (1998).

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month goes by without a new revelation of some sort or another. Already well over a hundred extrasolar planet candidates have been announced, and the pace of discovery promises to quicken as additional ground-based search programs swing into action. Meanwhile a number of powerful space-based observatories specifically designed to search for and characterize planets as small in mass as Earth are being planned for the next two decades.

These advances have fueled, in turn, furious theoretical work on the formation and migration mechanisms of planets inside and outside our solar system. All the extrasolar planets discovered to date appear to be gas giant planets, similar to Jupiter and Saturn, and the theory of gas giant planet formation is in flux as a result.

The amazingly short period of the first extrasolar, Jupiter-mass planet discovered brought the possibility of planet migration to the attention of theorists. The extrasolar planet orbits its host star, 51 Pegasi, in a mere 4.23 days, compared to Jupiter's leisurely 11.9-year orbit around the Sun – and, according to Kepler's third law, it orbits 51 Pegasi about a hundred times closer than Jupiter orbits the Sun. The formation of a Jupiter-mass planet so close to its parent star appears to be difficult, if not impossible, so theorists such as myself have hypothesized that some giant planets must form at larger distances and then migrate inward to their final orbital distances.

There are two very different ideas for how gas giant planets might form. Most astronomers favor the conventional theory of core accretion, where a solid core forms first and then accretes a gaseous envelope. In 1997 I proposed a very different mechanism, based on the hypothesis that a protoplanetary disk was likely to pass through a phase of marginal

gravitational instability, where random density perturbations could lead rapidly to the growth of self-gravitating clumps of gas and dust in the disk that might survive to form giant planets. The two competing theories have very different implications for the formation environment of the solar system, and hence for the frequency of planetary systems similar to our own, for the number of habitable planets that may orbit nearby stars, and for our chances of finding another Earth-like planet outside our own solar system.

The theory of core accretion supposes the collisional accumulation of solid bodies, the process that is universally accepted as the formation mechanism of the terrestrial planets. Collisional accumulation simply means that when a swarm of particles is in orbit around a star, random collisions between these particles may lead to their sticking together to form a larger body, if they hit each other gently enough. This accumulation is thought to proceed through successively larger bodies – starting with submicron-sized dust grains, inherited from previous generations of stars, that stick together by intermolecular forces when they collide; to meter-sized boulders; on up to kilometer-sized planetesimals (comets), where self-gravity begins to become important; to lunar-sized planetary embryos; and finally to Earth-sized planets. The core accretion theory envisions this process as occurring in both the inner and outer regions of a star's planet-forming, rotationally flattened disk of gas and dust.

In the innermost region of the disk out of which our sun and solar system formed, collisional accumulation leads over the course of several tens of millions of years to the formation of Earth-sized rocky planets. In the outer region of the disk, beyond the asteroid belt, the

same process is thought to lead to the formation of solid cores, equal in mass to roughly ten Earths, which may then acquire massive gaseous envelopes from the disk gas. These cores are said to form through runaway accretion, where the largest bodies grow the fastest because their self-gravity increases their collisional cross-sections; two bodies that would otherwise miss each other will hit because their mutual gravitational attraction deflects their orbits toward each other.

At an early phase, the accretion of disk gas falling onto the protoplanet causes an atmosphere to form on its growing core. As the protoplanet continues to grow by accreting disk gas and solid planetesimals, its atmosphere eventually can no longer be supported in hydrostatic equilibrium, and so it contracts. This contraction culminates in a brief period of atmospheric collapse, during which the protoplanet gains the bulk of its final mass.

At Jupiter's distance from the Sun, the timescale for the entire core accretion process is estimated to be on the order of several million years or more. Estimates of the lifetimes of planet-forming disks range from a few million years in quiescent regions of star formation, like the Taurus molecular cloud, to well under a million years in regions where the most massive stars form, such as the Orion Nebula cluster.

If there were only one solar system to explain, core accretion might be an attractive theory, because there are probably some disks that last long enough for this process to form gas giant planets. But unless the timescale for core accretion is significantly shorter than the prevailing estimates suggest, the theory seems unable to account for the observed abundance of gas giants elsewhere.

Eliminating this timescale problem is one of the main attractions of my alternative to the theory of core accretion – the theory of disk instability. The disk instability theory envisions a rapid process somewhat the opposite of core accretion. In disk instability, a clump of disk gas and dust forms first, and then the dust grains settle to the center of that clump to form a solid core. This mechanism requires a marginally gravitationally unstable disk, a disk cool enough to be on the verge of breaking up into self-gravitating spiral arms and clumps. (The inner regions of the disk gas rotate faster than the outer regions, shearing the growing clumps of gas into spiral arms.) While early theoretical models of marginally gravitationally unstable disks suggested that such disks would only form spiral arms, more recent computer models have indicated that self-gravitating clumps may form within the spiral arms and survive their subsequent orbital evolution to form gaseous protoplanets. A planet-forming disk with a mass about one tenth of the Sun's (which is the sort of disk mass that core accretion models typically assume) will be marginally gravitationally unstable, provided that the disk temperatures in the giant planet region are on the order of 50° K or less. Observations of planet-forming disks and of delicate molecular species in long-period comets seem to support such temperatures.

As a clump forms within the spiral arms, the dust grains within it begin to sediment down toward this center of the burgeoning protoplanet. This process is hastened by the coagulation of the dust grains as they migrate to the center. As a result, disk instability may be capable of forming a self-gravitating protoplanet within a time period as short as about a thousand years. For a Jupiter-mass (318 Earth masses) protoplanet containing

the solar abundance (2 percent by mass) of elements heavier than hydrogen or helium, this central core could be as massive as 6 Earth masses.

The disk instability mechanism requires the presence of a strong flux of ultraviolet (UV) light to explain the formation of ice giant planets like Uranus and Neptune. (Strong fluxes of UV light occur in regions of high-mass star formation, such as the Orion and Carina Nebulas.) Intense UV light can heat up and photoevaporate the disk gas outside a critical radius from the parent star; for a solar-mass star, the critical radius, which depends on the mass of the parent star, is roughly equivalent to Saturn's. Giant gaseous protoplanets that form from clumps outside this critical orbital radius – stripped by the UV light of the bulk of their gaseous envelopes, reduced down to their solid rock and ice cores, with only thin veneers of remaining gas – will be turned into ice giants. Protoplanets inside this critical radius, meanwhile, will be largely unaffected by the UV light. This scenario explains the bulk compositions of Jupiter, Uranus, and Neptune, as well as Saturn's retention of most of its once much larger gaseous envelope. The formation of habitable planets in the inner region of the planet-forming disk would proceed more or less unfazed by this searing experience in the disk's outer region.

Earth-like planets are thought to be able to form with just about equal probability whether the gas giant planets form quickly (as in disk instability) or slowly (as in core accretion). In either case, the collisional growth of Earth-sized planets on orbits similar to Earth's requires tens of millions of years to run to completion, so the events in the first few thousand or million years are not necessarily critical to the formation of such planets. Furthermore, in either case, habitable

planets should be able to form along with the gas giants. Gas giant planets are important to have around, because they shield the habitable planets from constant bombardment by residual icy planetesimals that might otherwise frustrate the origin and evolution of life.

This helps explain the importance of recent theoretical developments in the emerging field of astrobiology. Estimates of the number of technological civilizations in our galaxy are commonly based on the equation first presented by Frank Drake in 1961. Two of the many factors in the Drake equation are fp and ne – the fraction of stars with planetary systems (presumably similar to the solar system, the only known example in 1961) and the number of habitable planets per planetary system, respectively.

If my heretical theory of disk instability is correct, then fp can be considerably larger than conventional wisdom holds. Conventional wisdom would seem to limit the formation of solar-like planetary systems to stars formed in regions of low-mass star formation like Taurus. Core accretion presumably could not form gas giant planets in a region like Orion, because the lifetimes of the Orion disks are even shorter than those in Taurus. But if the heretical approach is correct, then solar-like planetary systems can form essentially everywhere Sun-like stars form – even in Orion. Roughly 90 percent of stars are thought to form in regions of high-mass star formation like Orion. This implies a difference in fp as large as about a factor of ten between the orthodoxy and the heresy.

Knowing the prevalence of habitable planets in our region of the galaxy is important for our search for other Earths. If Earths are rare, telescopes built to detect them will need to be designed differently. NASA is now in the process of designing several such telescopes, called the

Terrestrial Planet Finders, intended for launch around 2015 and 2020. If all goes well with this extremely ambitious, difficult project, in a little over a decade we will know if we have any neighboring planets that are capable of supporting life – or, indeed, are actually supporting life right now. I, for one, hope that we heretics are right – that the prevalence of life elsewhere in the universe could be much greater than the conventional theory predicts.

Michael Kremer

*on how
to improve
world health*

Malaria, tuberculosis, and the strains of HIV common in Africa kill 5 million people each year, almost all of them in low-income countries. Effective vaccines against these diseases are desperately needed.

Yet there is a striking dearth of research and development (R&D) on vaccines and treatments for diseases primarily affecting poor countries. Of the 1,233 drugs licensed worldwide between 1975

Michael Kremer, a Fellow of the American Academy since 2003, is Gates Professor of Developing Societies in the economics department at Harvard University, a Senior Fellow at the Brookings Institution, and the cofounder and cochair of BREAD, the Bureau for Research and Economic Analysis of Development. He is cochair of the Center for Global Development's Policy Research Network working group on pull incentives for vaccines. He is also the author, with Rachel Glennerster, of "Strong Medicine: Designing Pharmaceutical Markets to Treat Neglected Diseases," which will appear later this year.

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and 1997, only 13 were for tropical diseases, and only 4 of these were specifically developed by commercial pharmaceutical firms to treat tropical diseases in humans. Half of all global health R&D in 1992 was undertaken by private industry, but of that, less than 5 percent was spent on diseases specific to poor countries.

The scientific challenges of developing vaccines for diseases such as malaria are formidable, but biotech and pharmaceutical firms often take on difficult scientific challenges. So what explains this underinvestment in R&D?

A key factor is that expected markets for these products are small, with most vaccines sold in poor countries currently priced at pennies per dose. The small expected market size is partly due to the poverty of these countries – but it also reflects severe distortions in markets for such vaccines. Typically, once pharmaceutical companies have invested in the R&D necessary to develop products, governments have often used their powers as regulators, dominant purchasers, and arbiters of intellectual property rights to keep prices low. In addition, because R&D on vaccines is an international public good, with the benefits of R&D advances spilling over to other countries, no country has the incentive to unilaterally offer to pay higher prices. Because firms anticipate low prices for products aimed at developing countries, they have limited incentives to invest in R&D.

In a forthcoming book, *Strong Medicine: Designing Pharmaceutical Markets to Treat Neglected Diseases*, Rachel Glennerster and I argue that foreign-aid donors should issue advance contracts committing to finance purchases of needed products such as malaria vaccines. This would provide vaccine developers with an incentive to invest in R&D and would help ensure that once vaccines were

developed they would reach those who need them.

Programs to encourage the provision of R&D can take two broad forms. 'Push' programs subsidize research inputs, for example, through grants to researchers or R&D tax credits. 'Pull' programs reward research outputs, for example, by committing in advance to purchase a desired product at a specified price.

For pharmaceutical products needed in developed countries, R&D is spurred by a combination of both approaches: funding from institutions such as the U.S. National Institutes of Health covers the cost of most basic research, and the prospect of a market provides incentives for firms to turn their discoveries into marketable products. For products needed in developing countries, a number of push programs have been put in place, including the International AIDS Vaccine Initiative and the Malaria Vaccine Initiative – but policies have not yet been implemented that would guarantee a market to developers of new vaccines.

Push programs have led to some tremendous successes and are an essential part of any overall R&D strategy. However, these programs are also subject to several weaknesses. First, since funders cannot perfectly monitor the actions of grant recipients, researchers may be tempted to divert their effort away from developing the desired product toward other goals, such as researching problems of theoretical interest or working on their next grant application. In contrast, under pull programs money changes hands only when a usable product is delivered, so researchers' and funders' incentives are aligned.

A second problem is that researchers writing grant applications have incentives to make the case for funding appear as strong as possible. Decisionmakers must rely on the researchers for much of

their information and they may therefore end up financing projects that have only a slight chance of success, or, worse, may be overcautious and fail to fund promising research. In contrast, under a pull program in which developers are rewarded once they produce the desired product there is a strong incentive for firms considering R&D investments to use all the information available to them in assessing their prospects for success.

A third concern with push programs is that when funds are allocated in advance of results, decisions may be based on political rather than scientific considerations. Domestically there may be pressure to allocate funds to specific states or congressional districts; internationally there may be pressure to allocate funds to specific countries. In contrast, under pull programs sponsors promise to pay for a viable vaccine no matter who develops it.

A dramatic illustration of the risks of push programs can be seen in the failure of U.S. Agency for International Development (USAID) efforts to develop a malaria vaccine in the 1980s. In 1984, the agency claimed that there had been a "major breakthrough in the development of a vaccine against the most deadly form of malaria in human beings," and that "the vaccine should be ready for use around the world, especially in developing countries, within five years." USAID spent \$60 million on this program, only to discover that some of its grant money had been diverted and that the project director had received kickbacks. In the end, the research program yielded few results. Although there are of course many examples of successful push programs, the USAID example illustrates the vulnerability of such programs to general overoptimism and monitoring problems.

Under pull programs the public pays only once a viable product is developed. How might a viable pull program be designed? The most attractive way to design a pull program is through an advance contract, in which sponsors commit to fully or partially cover the cost of purchasing products meeting certain prespecified technical requirements. For example, a sponsor could commit to guarantee a price of \$15 (adjusted for inflation) for each of the first 200 million people immunized with a malaria vaccine, subject to a 10 percent co-payment from developing countries or other donors.

The credibility and design of the purchase commitment will obviously be a critical determinant of its effectiveness. Potential developers of a vaccine or drug must believe that once they have sunk funds into developing a product the sponsors will not renege on their commitments by paying a price that covers only the cost of manufacturing and not risk-adjusted R&D costs. Courts have held that similar public commitments to reward contest winners or to purchase specified goods constitute legally binding contracts, and that the decisions of independent parties appointed in advance to adjudicate such programs are binding. The credibility of a purchase commitment will therefore depend on clearly specifying product eligibility and pricing rules and on establishing a credible process for adjudicating any disputes.

A program could require that vaccines not only satisfy technical eligibility requirements, but also be subject to a market test. Nations wishing to purchase products or donors acting on their behalf might be required to provide a modest co-payment. This would help ensure that only useful products were rewarded and would give countries incentives to

avoid wasting vaccines. Finally, force-majeure provisions should also be incorporated into the purchase agreement so that obligations would end if the disease environment changed radically and the product was no longer needed.

Given the enormous burden of diseases like malaria, commitments to purchase vaccines would be extremely cost effective. A price of \$15 for the first 200 million people immunized, plus revenues from modest sales outside the program, would give a potential vaccine developer a net present value of revenues that would be comparable to the revenues from products developed for commercial purposes. A commitment at this level to purchase vaccines for malaria would be extremely cost effective, costing nothing if a usable product were not developed, and less than \$20 per year of life saved if a vaccine were developed.

A wide range of policy leaders and organizations has endorsed the concept of purchase commitments. The Clinton administration proposed a pull program for HIV, tuberculosis, and malaria vaccines, and the Bush administration's Project Bioshield includes a pull-like mechanism for certain drugs and vaccines protecting against bioterrorism. Reports from the World Health Organization's Commission on Macroeconomics and Health and from the U.K. Cabinet Office have endorsed creating pull programs for vaccines. The president of the World Bank and leading members of the U.S. Congress, including Senators Frist and Kerry, have proposed pull programs. The Bill & Melinda Gates Foundation recently asked the Center for Global Development to establish a working group to examine the feasibility of a purchase commitment.

A number of organizations – including the World Bank, national governments, and private foundations like the Gates

Foundation – have the resources to enter into advance contracts to purchase needed vaccines. Such commitments may require changes in standard operating procedures, but they are certainly in the realm of feasibility. If purchase commitments fail to induce the development of new products, no money will have been spent. But if they succeed, millions of lives will be saved each year.

*How to
improve
world
health*

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Inside back cover: “The Rhodes Colossus, striding from Cape Town to Cairo,” cartoon by Linley Sambourne, from *Punch*, 10 December 1892. As prime minister of the Cape Colony and head of the British South Africa Company, Cecil Rhodes extended the Company’s control to the north (where the colony of Rhodesia, named after him, took shape). Like George W. Bush today, Rhodes “felt entitled to civilize and uplift non-Western peoples,” on the assumption “that Western views were ‘right and true and unchanging for all people everywhere’ – so universally right and true that people everywhere would soon enough acknowledge these views as their own.” See Richard A. Shweder on *George W. Bush & the missionary position*, pages 26 – 36. Cartoon reproduced with permission of Punch Ltd.



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