

ROUGH DRAFT -- NOT FOR CIRCULATION IN ANY FORM
January 25 1997

Stephen Toulmin
(Thomas Jefferson Lecture, March 24, 1997)

A Dissenter's Story

I

The story I have chosen to tell you today begins in this town nearly 200 years ago. Thomas Jefferson was inaugurated to his first term as President on March 4 1801: less than three weeks later, he wrote admiringly to a man who had come to the United States from England as a political refugee in 1794, and had built up his reputation here both as a natural scientist and as a distinguished figure in philosophy and religion.

Yours [Jefferson wrote] is one of the few lives precious to mankind, and for the continuance of which every thinking man is solicitous. Bigots may be an exception. What an effort, my dear sir, of bigotry in politics and religion have we gone through! The barbarians flattered themselves they should be able to bring back the times of the Vandals, when ignorance put everything into the hands of power and priestcraft. All advances in science were proscribed as innovations. They pretended to praise and encourage education, but it was to be the education of our ancestors. We were to look backwards, not forwards, for improvement. . . .

This [he continued] was the real ground of all the attacks on you. Those who live by mystery and charlatanerie, fearing you would render them useless by simplifying the Christian philosophy, -- the most sublime and benevolent, but most perverted, system that ever shone on man, -- endeavored to crush your well-earned and well-deserved fame.

Thomas Jefferson was writing to a man we recall today for books on electricity and other scientific topics, who is credited with discovering oxygen, but was known in his own time as the Unitarian Minister in Birmingham, England, who defended the French Revolution, and had his house burned down for his pains. Now in Northumberland, Pennsylvania, Joseph Priestley had three years to live. "Why [we may ask ourselves] was Priestley's fame a matter of concern to Jefferson?" But, first, let me ask, instead: "How was a scientist of Unitarian persuasion exposed to such resentment and violence? What made him the target of a politically contrived riot?" The conjunction of these two striking men throws light on attitudes - and changes of attitude - in Europe and America at the beginning of the 19th century: ones that still survive among us today.

- - - - -

Priestley was somewhat of a Freethinker and Nonconformist - a Dissenter, the term then was - a man who reached his own opinions about any topic he took up, whether in religion, philosophy or politics. As well as being a scientist, he wrote on a dozen other subjects: not just the nature of "factitious airs" - gases, we call them - but rhetoric, free will, and the origins of language - Jefferson and he had corresponded since the 1780s. Chiefly, he was known as the Minister of the Unitarian New Meeting in Birmingham, where he taught a common sense Christianity, avoiding doctrinal technicalities. Of the Trinity and Transubstantiation [he said] they were "ideas at which the common sense of mankind will ever revolt": the true teachings of Jesus were still intelligible to the kinds of men and women who were the first Disciples. That is what Jefferson referred to as "simplifying" Christianity and rescuing the laity from "power and priestcraft."

What, then, got Priestley into trouble - his theology, his science, or his politics? These days in the United States, Unitarian Universalism is hardly a matter for scandal. In 1794 it was more a cutting edge system: in Philadelphia, Priestley gave a series of lectures that married Unitarianism as a theology to a Universalist natural philosophy, and wrote about this up to his death. Yet we must not hastily assume that Unitarianism no longer has political overtones. The original religion of Bosnia was a product of 11th century theological debates in Constantinople. In much of the Balkans, the "Bogomils" saw Jesus as the best of human teachers, and so avoided the mystery of how he could be God and Man at the same time - in a word, they were Unitarians, not Trinitarians. Only later, under pressure from the Roman Church to the West and from the Orthodox Church to the East - both of them being Trinitarian - did the Bogomils of Bosnia join up with Islam; and they did so for theological as well as political reasons. If Jesus were a human "messenger" from God, his standing was no different from that of Muhammad. (At a time when some people are tempted to demonize Islam, it is as well to recall that Christianity and Islam share a theological history.)

It seems unlikely that people in Birmingham in the 1790s were roused to riot over theology; so what of Priestley's scientific and philosophical ideas? There too, he took a solitary road, which led to conclusions that sound more innocent in the 1990s than they did in the 1790s. Priestley was a respected scientist; but a scientist of a highly personal kind, who always walked a cusp between the respectable and the unorthodox.

From the mid 17th century on, most European discussions of Mind and Body had been - as we would now say - "dualistic": treating Mind and Matter as distinct and separate realms, so that the question became, "How do the two realms interact?" A minority of thinkers argued that mental activities rely on bodies and brains to manifest them, and do not need a separate mind, or soul; but these authors were denounced as materialists and Epicureans - wrong-headed, immoral, or worse. When news arrived that the liveliest of these writers, Julien de la Mettrie, had died of food poisoning at the Court in Berlin, the popular reaction was that he had met his just reward. Joseph Priestley was another of this minority, and put up a gallant defense of his own orthodoxy: the whole point of the Resurrection (he replied) was that, at the Last Day, God would give us back our Material Bodies, and we would resume our interrupted lives in the flesh.

Priestley could afford to take an eccentric position, because he did not belong to the English Establishment socially. He had always been a religious Nonconformist, which (looking back) proved something of an advantage. As a Nonconformist, he was barred not just from Parliament and the professions, but from the Universities of Oxford and Cambridge, where he could have studied only Ancient Literature and the mathematics of Newton. Instead, he went to a Dissenters' Academy at Daventry, in the Midlands, where the education was broader. With this background, he happily read La Mettrie's attacks on the narrow ideas of Matter in 17th century physics, and speculated about the spiritual potentialities of the material world.

- - - - -

Once again, the Mind-Body Problem is scarcely a matter for riot. What really got Priestley into hot water was his support for the French Revolution. Priestley was a colleague of the Richard Price who is pilloried by Edmund Burke in his Reflections on the Revolution in France, and he himself wrote a reply to Burke. Why was it shocking to applaud the French Revolution? At first, many people in England saw 1789 as being a continuation of their own Revolution of 1688, when William of Orange replaced the Catholic James II; and also of the Revolution in the 1580s by which Netherlanders met the religious persecution of Philip of Spain by abjuring their previous loyalty to him. After the Terror of the early 1790s, Anglican preachers attacked Dissenters for hoping to overturn the British monarchy: for 30 years events in France traumatized respectable opinion in England, as the Russian Revolution of 1917 did mid-20th century America.

To call Priestley a Dissenter, then, meant only a religious nonconformist who did not follow the doctrines of the Anglican Church. But the feelings against Dissenters cut deep, and the French Revolution led many people to think that religious conformity was needed to defend the State from sedition. (The word keeps cropping up in sermons and pamphlets in the 1790s.) After 1776, the British monarchy was frail, and the execution of Louis XVI was the last straw. From then on, anyone with a good word to say for the French was suspected of plotting against George III, and so damned as a "regicide" or King killer. Priestley might insist that Unitarians felt no enmity against the British Royal Family - indeed, had no political agenda at all; but by this time blood was up and a riot was easily provoked.

Denial is a wonderful thing. By executing King Charles I in 1649, the English set an example of regicide; but then tried their hardest to forget it. Thucydides tells how, filled with pride at their victory over Persia, the Athenians would not let the colony of Melos declare its neutrality between Sparta and Athens, but "put to death all the grown men they took, and sold the women and children for slaves." This barbarism was not acceptable in the city of Pericles and Phidias; and the name of Melos - like My Lai for us - was one the Athenians preferred to forget. (As a colleague reminds me, the armless statue we know as the Venus de Milo was, itself, a Venus from Melos.)

- - - - -

The bigotry that burned down Joseph Priestley's home and Unitarian Meeting was just the kind of pigheadedness the Founding Fathers had in mind when they refused to establish any religion. The history of Europe before Independence taught them that, for the sake of civil peace, no country could risk subjecting itself to a Religious War. Priestley's last public act before he left England was a Sermon "On the Present State of Europe" which forecast a general replacement of feudal monarchy by more egalitarian systems of government. He spoke in the gentle tones of Vaclav Havel but, given his own misfortunes, he was afraid that the changes might be as violent elsewhere as they had been in France, and he looked to the United States as a Laboratory of Toleration, in which the contrast between Dissenters and the Establishment lost its meaning. On good American principles, there was no "established" system of doctrines for Dissenters to "dissent" from.

Not that Priestley's arrival in Philadelphia saw the end of his troubles. Once here, he was still a target for verbal attacks. Jefferson had hoped to attract him to Monticello, where they could jointly pursue their shared interest in the natural sciences. As it was, Priestley was active in the American Philosophical Society, where Jefferson, who was the Society's President from 1797 to 1815, gave papers about paleontology - e.g., on the fossils found in Paraguay from a clawed animal known today as the Giant Sloth, Megalonyx Jeffersoni. But, despite all of Jefferson's promotion of the sciences and education, his intellectual interests counted against him politically, as when he put the fossil bones of ancient vertebrates on show in the East Room of the White House; and malicious tongues happily spread a rumor that he had run away from the British during the Revolutionary War.

Even in religion, Priestley found Jefferson an uncomfortable ally, since his views had made him plenty of enemies among the Churchmen:

The Christian priesthood [he said] finding the doctrines of Christ levelled to every understanding, and too plain to need explanation, saw in Plato materials with which they might build up an artificial system which might give employment for their order, and introduce it to profit, power and preëminence. The doctrines which flowed from the lips of Jesus himself are within the comprehension of a child; but thousands of volumes have not yet explained the Platonisms grafted on them; and for this obvious reason, that nonsense can never be explained.

But, in this, Jefferson was relying on the arguments Priestley himself had put forward in his book on the History of the Corruptions of Christianity: so that he could hardly have arrived in Pennsylvania expecting a life of pure peace.

II

I'll come back to Priestley. For the moment, let me change gear. I have told this story because it raises issues that are alive today. So let me start again at the opposite end of the spectrum, and work my way back to my story. Many of you will be familiar with claims that Modernity is, in some sense or other, at an end: that we are living in a new Age, whose intrinsic character is so unclear that we can only call it "post-modern". Now, I am not assuming that you find this claim transparent: as with Mark Twain, the Death of Modernity is frequently exaggerated. Still, the debate about "post-modernity" can draw our attention to serious issues, on which my story throws light.

The world of Modernity whose origins historians usually set around the year 1600 did not begin merely - as the received accounts suggest - with a conscious rejection of medieval dogmatism in favor of openminded, rational modes of thought. It began with two successive changes of mind, the first of which was under way a century before the second and made the second possible. The first revived the tradition of Humane Letters - Humanities as we know it: the second developed the methods of formal inference, exact reasoning and axiomatic theory building used by 17th century natural scientists, starting in physics, and also by social thinkers, starting in legal and political theory. From the outset, our modern methods of thought embodied both of the two "cultures" - the Sciences and the Humanities - and Priestley and Jefferson inherited them both.

The revival of the Humanities began as a communications revolution: the adoption of an economic means of distributing knowledge, by way of printed texts. The worlds of learning and public service ceased to be a monopoly of clerics trained to deal with manuscripts, and were opened to a lay public whose reading showed them issues from which they had hitherto been excluded. In particular - as "media" - the Humanities explored the complexity of life and the diversity of experience: readers encountered rich narratives about different ways of handling human situations. Aquinas had been all very well; but Gargantua and Don Quixote had a novel and irresistible attraction. Shakespeare's rich tapestry of individuals thus marks the end of a century that created hundreds of new characters - in this sense, the very idea of a "character" is a new one. The goal was not a theory of Human Vice or Virtue: readers were not asked to approve of, or condemn these characters: rather, they were mirrors in which to reflect on our own experience - an invitation to relish the kaleidoscope of life, like the movies today.

One thing the 16th century historians, poets, story tellers and dramatists did not contribute to, however, was the Exact Sciences, which many people see as the key to Modernity. In the 1580s, Montaigne could still question if a strictly theoretical account of Nature was even possible - let alone a mathematical system like Newton's physics: the very uncertainty, disagreement and ambiguity of our experience marked any such theoretical ambition off, for him, as presumptuous. No: the roots of Modern Science lay elsewhere. They grew up against a counterpoint of religious conflict, in which the Catholic Church, whose spiritual authority relied on oral teaching, resisted Protestants whose ideas attracted the new readers, while the Princes and Dukes of Central Europe picked sides. The older world-picture had lost credibility, and an intellectual vacuum ensued, with much of Europe caught up in the brutalities of the Thirty Years War.

From 1618 on, then, most people saw skepticism about the human intellect and a taste for human diversity as luxuries they could not afford. Instead, they worked out a new, more systematic approach to human problems. This was based on the concept of a discipline: the idea that the procedures put to use in a field of activity can be analyzed and taught as a drill, which students master step by step in the course of their training. Effective procedures can be standardized and are to be performed in one-and-only-one correct way: skill becomes technique, artistry artisanship. This concept of disciplines was advocated by the Flemish scholar, Justus Lipsius; but the person who put it to use - who was disciplined about discipline, and systematic about system - was Maurits of Nassau, the Dutch Prince whose Military Academy at Breda was a Mecca for students from all across Western Europe. (René Descartes went there in 1618 after dropping out of Law School, before he joined the staff of the Duke of Bavaria.)

Maurits was struck by the unanimity achieved in mathematics: if only theologians had formulated their arguments similarly, how far could Europe have been spared the miseries of Religious War! Even on his deathbed he refused to abandon his toleration, or let partisan dogmas cross his lips. As he lay dying, the story goes,

a Minister [at his bedside] asked Maurits to state his beliefs. "I believe [he replied] that 2 and 2 make 4, and 4 and 4 make 8. This gentleman here [he added, pointing to a mathematician at his side] will tell you the details of the rest of our beliefs."

In this situation, young intellectuals like Descartes looked for a rational alternative to the rival schools of theology, whose authority had been undermined - ideally, in the form of strict mathematical systems, free of uncertainty, ambiguity and disagreement, which Montaigne had seen as inescapable: these should guide us to a new consensus about the Order of Nature. So began both the philosophical enterprise that John Dewey called The Quest for Certainty, and the scientific enterprise that, in 1687, culminated in Isaac Newton's Mathematical Principles of Natural Philosophy, which still remained the foundation of physics little more than a hundred years ago.

If the 17th century Exact Sciences emphasized "rational" ways to get right answers to theoretical questions about Nature, 16th century Humanism called for a "reasonable" toleration of the varied opinions different people bring to particular human problems in actual, practical situations. The first tradition revived the Platonist belief that formal geometrical Theory is the highest form of intellectual knowledge: the second echoed Aristotle's own account of Practice, which emphasized the role of experience in (say) helmsmanship and clinical medicine, where timeliness is of the essence. On one side, we aim at a general agreement about right answers to theoretical questions - that is only rational. On the other, we recognize that individuals may quite properly read particular human situations differently, and we learn to live with those differences - that is only reasonable. So, throughout the Modern period, there has been a tension between the claims of the "rational" and the "reasonable" - between the desire for right answers to general questions in Theory, and a respect in Practice for honest differences of opinion conscientiously arrived at - and the conflicts in Joseph Priestley's life embodied that tension.

How are we to tell when we are entitled to uniquely right answers to our questions, and when humane disagreement is the order of the day? That question marks the Exact Sciences off from the Humanities. The crucial thing to notice is this - that the precision and certainty of the exact sciences must be purchased at the cost of a certain abstraction. The subjects of theoretical argument are preselected, and bracketed off from the details of everyday life. We learn at school to calculate the answers to questions of the form,

"A perfectly smooth sphere of mass m rolls down a frictionless plane, inclined at angle α : at what speed does it move after distance s ?"; and the discovery of how such issues could be made matters of mathematical calculation was a major historical achievement. But the moment such a question is stated in practical terms, the element of abstraction comes to the surface. "A well greased two-ton elephant rolls down a 45 degree slope": If an elephant is rolled down an inclined plane, there is no calculating what will happen - the details of everyday life can no longer be bracketed off as irrelevant!

In clinical medicine as in everyday life, by contrast, we cannot bracket off any facts about the people we deal with, in advance: in the end, they may turn out to have been irrelevant, but we have to find this out as we go along. In such practical situations, our arguments inevitably lack the unambiguous certainty of theoretical calculations, and are hedged around with qualifications like presumably and on the whole. In the last resort, even Newton's account of the orbits of the Planets round the Sun relied, in practice, on his assuming that the intervening Space between the Sun and the Planets was empty - for all practical purposes, as we say - and this assumption was one about which there was no independent evidence.

III

For the time being - especially in England - Newton's theoretical success was read as deciphering God's actual plan for the Creation. For educated people in 18th century Europe, indeed, much of the charm of mathematical physics lay in the belief that it gave rational answers to questions that had divided theologians ever since the Reformation. The new mechanical picture of Nature quickly took hold, and in some quarters became orthodoxy. For instance, Archbishop Ussher's computation of the Date of the Creation from the Scriptures - about 4,000 BC - was widely taken as authoritative; even though more than 1,000 years before, Augustine had discouraged literal minded numerology, and for three-quarters of the history of Christianity nobody had thought the question significant. So, by the 1780s, the theology of the Established Church in England was run together with an overenthusiastic interpretation of Newton's ideas, to form a heady mixture that people "dissented from" at their own risk.

In my childhood, there was a controversy about "the Conflict between Science and Religion" of which echoes are still heard today. What passed for religion in the debate comprised little that had been a core part of Christian belief before (say) the year 1550. Hitherto, the natural world was a backdrop to the human drama of Sin and Redemption: the naturalization of a simple-minded Newtonianism as authoritative Natural Theology had no basis in earlier times. So, when geologists and paleontologists at last raised those questions about the Age of the Earth that tormented 19th century intellectuals - implying that it was millions, not thousands of years old - they were mistakenly seen in England as attacking a central Christian doctrine. Yet as early as the 1750s, Kant had argued that the world of stars, planets and even nebulae could have come into existence mechanically, on the best Newtonian principles, though over a vastly longer time than Archbishop Ussher contemplated. (Perhaps it was as well that Kant's publisher went bankrupt shortly after his book's appearance.)

None of these questions were easy ones - as Science, quite apart from Theology: Jefferson found it hard to believe that any species could become extinct, though where on Earth we could find live instances of the Hairy Mammoths and Giant Sloths whose fossil bones fascinated him, he never said. When he died, in 1826, all these scientific questions were about to come to a head: meanwhile, refusing to mix good religious practice with irrelevant scientific theory, he and Priestley were attacked as infidels.

- - - - -

Something equally strange happened in 17th century Ethics. Before 1600, the intellectual analysis of moral issues in Europe focussed on Practice more than Theory. Aristotle showed long ago why Ethics could not have the kind of mathematical theories that Plato admired in geometry; and, for its first 1500 years, Christian Ethics had the same practical character as Rabbinic Judaism, Confucianism, Islam and other religious traditions, focussing on cases in the same way as is done in Anglo-American common law. Throughout the Middle Ages, indeed, the line dividing law from ethics remained as thin as it is in Judaism, while in matters of common morality Aristotle and Cicero were quoted as moral authorities alongside Christian authors. Since there were rarely less than four recognized patterns of argument for resolving moral issues, this left a lot of room for honest differences of opinion conscientiously arrived at.

If Platonist echoes lent the Cartesian tradition its rationalist edge, it was Augustine who inspired the 17th century turn toward the demand for "theoretically right answers" in Ethics, and this demand has continued to the present: underlying a moral dogmatism quite lacking in charity of the kind Jefferson so disliked - "What an effort, my dear sir, of bigotry in politics and religion have we gone through!" Is there any uniquely right tradition in Morality? As to that, the tide still ebbs and flows. As a poet and a Catholic, Alexander Pope was, in his own way, a "dissenter" from the Anglican Establishment: many of you know his couplet,

For forms of government let fools contest;
Whate'er is best administered is best; . . .

but I myself treasure, even more, the lines that follow:

For modes of faith let graceless zealots fight;
His can't be wrong whose life is in the right.

Nearer our own day: on a visit to Jerusalem in the 1930s, Evelyn Waugh, the novelist and premature neoconservative, wrote home to a friend in England, "For me of course Christianity begins with the Counter-Reformation." This attitude stands Cartesianism on its head. Moral and religious practice are now to be judged by theoretical standards; the demand for proofs overtakes any feeling for the moral necessities of decent human life; and the first 1500 years of the pastoral tradition of Christianity are dismissed as a mere prelude to the theoretical subtleties of Modernity.

So, the vice of Modern Rationalism is the same as that of Modern Nationalism: its exclusiveness. Visiting Chicago, Japanese friends sing Christmas carols at the Fourth Presbyterian Church on Michigan Avenue from memory: most Japanese, they tell us, build into their lives the ceremonies of all least three religions. (Shinto has thousands of Gods: two or three more are neither here nor there.) Yet here, in the West, we are supposed to be loyal to one-and-only-one Nation State, and to have one-and-only-one Religion; and we are surprised to find how eclectic non-Western peoples can be.

These days, public figures talk as though the phrase "the Judeo-Christian tradition" defined an authoritative system of moral views. Yet, as all historians of religion know, Judaism and Christianity have each included several traditions, and Evelyn Waugh's Counter-Reformation doctrines have little in common with Judaism of any kind. The only coherent constellation is, in fact, "the Judeo-Christian-Islamic tradition": all three communities are the "children of Abraham" (Avram, or Ibrahim) and all three religions are much closer to one another than any of them is to (say) Hinduism or Buddhism. Picking on Islam as Communism's successor in a duel of "the West against the Rest" (as some do) is, therefore, quite contrary. Western political power made a stick to beat its own back: Established Religions are the by-product of the unlimited Sovereignty of modern Nation States, which at first tried to maintain control of their peoples' Christian institutions, as China tries to do today. By contrast, Islam was always a cosmopolitan religion, which allowed Muslim traders or pilgrims to travel peaceably among their fellows all the way from the Atlantic to the East Indies.

So, if Muslim radicals now cross-breed Islam with Nationalism, we ourselves bear some responsibility for the fanaticism of the hybrid. Our opponent must, of course, be not Islam but fanaticism: and Oklahoma City showed us that fanatics come in many colors, from any community, and can use the highest sounding national and religious slogans to defend their activities. It is no wonder that Priestley and Jefferson saw the Establishment of Religion as a political instrument for the defense of gender, class and other oligarchic interests that would have been anathema to the men and women who became the first Disciples, and are certainly not - as Jefferson would have insisted - "within the comprehension of a child."

IV

Much of what I have said this evening reflects the world of my upbringing, in the 1930s and '40s: a period that seems to me, in retrospect, to have been the high point of classical Modernity. When I look instead at the last thirty years, I am aware of a turn of the tide: since the early '60s, there has been a striking change in public points of view, not just toward moral issues - personal or professional - but in other ways. Culturally, where we are now is very different from where we were between the Two World Wars; but whether we describe this change as the Death of Modernity, or rather its Fulfilment, may be a less weighty question than it at first appears.

I don't find it hard to see what people claim are the Sins of Modernity. Never were intellectual and practical disciplines more self-contained, never were professions more self-confident, than in the years between the Wars. From the 1920s to the 1950s, Max Weber seemed to be right: "rationality" and "rationalization" were the ruling ideas of the age. At this stage, rationality meant formal, theoretical rationality: professionals in all fields put their disciplinary calculations to work, and let themselves be guided by the results. "A Century of Progress" - the very motto of the Chicago World's Fair in 1933 encapsulates this confidence. So, the disciplines that entered 17th century Western thought, through Lipsius and Maurits van Nassau, reached their apogee.

Weber had argued that there was no escaping the growing rigidity of institutions: we were increasingly trapped in the Iron Cage of bureaucracy. In some ways matters have not changed: ask anyone caught in the toils of the medical insurance system. The "neoclassical equilibrium economics" that plays so large a part in policy making today is also a traditional discipline, in both its strengths and its weaknesses. Elsewhere, the theoretical emphasis in political discussions is being replaced by more practical, more humane preoccupations, with a return to the particularity of the Aristotelian tradition. So we have in our sights a possible way to escape from the conflict that lay at the heart of Modernity - the tension between the claims of formal rationality, and the claims of humane reasonableness.

Forty years ago, you could have read the Chicago Tribune or the Washington Post for a month without finding the moral problems of medical practice under discussion: now it would be surprising to go a week. It is not that the clinical practice of medicine has lost its conscience: rather, it is that people at large are now claiming a part in the moral decisions of medical practice. Nor do these decisions any longer turn on matters of principle alone. More and more, clinical medical ethics involves case analyses along pre-modern lines: as the diplomatic saying goes, "The devil is in the practical details."

Meanwhile, need I recall that Rachel Carson's book, Silent Spring, appeared only thirty-five years ago, in 1962? At that time, ecology had only a minimal influence on politics; yet now, for a decade and more, the environmental impact of technological projects has been a matter of public concern, and no self-respecting government can go without an agency devoted to such issues. So here, too, the disciplinary imperatives of Technology are having to be balanced against the broader imperatives of Humanity. It is a fine thing to figure out how we might construct a dam at this or that location: that is a piece of rational virtuosity. But the question whether we should build the actual dam - whether it is reasonable for people to accept its human side-effects - is not a matter of simple calculation. Once again, the devil is in the details: especially, how we weigh the interests of the different people on whom these side-effects will fall.

In our professions, we share with our colleagues obligations that spring from the fact that we are "fellow professionals": Hippocrates himself refers to these obligations - to defend, preserve and improve the Art we share. In this sense, we all have the same professional stake, the same interest: we discuss and decide things together, as doctors or diplomats, as civil engineers or members of Amnesty International. In this respect, both technological and other kinds of disciplines are being "humanized": when medical practice runs into moral quandaries, for instance, physicians no longer fix their eyes on the center of the disciplinary high road, but recognize that the other parties to a situation - a patient's parents, life companion, religious adviser - have a stake in resolving these clinical problems. It is not that formal rationality has failed us, and Modernity is Dead: it is that we failed to ask how far we can reasonably trust formal calculations to give us right answers; and how far the details of actual cases leave room for the honest pursuit, and reasonable balancing off, of legitimate interests.

In short, fulfilling the Promise of Modernity means finding reasonable ways to reconcile the rational claims of technical disciplines with the human claims of actual situations. So understood, we balance the technical virtuosity of the Exact Sciences, invented in the 17th century, with the human wisdom of the Humanities, developed in the 16th century. Rather than the Death of Modernity plunging us into a new age of post-Modern confusion, we can resolve the standing tension between Shakespeare and Newton, Cervantes and Galileo, Montaigne and Descartes. From this point of view, the way ahead is less post-Modern than neo-pre-Modern.

The same is true on a personal level. How rarely, in practice, are moral problems resolved by theoretical deductions with definitive right answers: how often we have to ask ourselves how a problem appears to the different parties, and what stake each has in a situation. In the conversations we hear every day among friends, we are familiar with such questions as, "Where is she coming from?", meaning not "What craziness is this?", but "Help me recognize her stake in this situation" - not "What's in it for her?", so much as "What does it mean to her?"

To put the point in this way is also to record the current state of my own intellectual journey. Sixty years ago, as a 15 year old, I hoped that the discipline of Physics might give us right answers to philosophical questions; but, having earned my living in radar research in World War II, I went back to Cambridge to listen to Ludwig Wittgenstein. Since then, it has been a matter of opening all the doors that lead sideways, out of the sciences into neighboring fields: the history of science, its sociology and ethnography, its cultural contexts and personal resonances.

Some 25 years ago Frank Manuel made us take seriously the fact that Isaac Newton suffered parental deprivation; so can one wholly divorce a scientist's thought style and his personal life? Recalling Walter Savage Landor's Imaginary Conversations between distinguished figures in our human past, I wrote a set of Imaginary Confessions for my friends in Stockholm, asking myself how, looking back in their last years, some of my own favorite figures might speak of their own lives.

To come finally clean, let me add a coda about my personal stake in this story, and (as to that) in America. After Joseph Priestley abandoned his Ministry in Birmingham, England, the person who came to reorganize the congregation was a fellow-Unitarian from Taunton, Somerset, called Joshua Toulmin who, without coming to America, had a sufficient reputation to be awarded an honorary Harvard D.D. Joshua's son, Harry, was a fervent believer in the United States: he accompanied Priestley to America, and helped him settle in Pennsylvania. This done, Harry went on to Lexington, Kentucky, and ended up at Mobile in the Alabama Territory, where he became a Federal judge, and played a part in Alabama's achieving Statehood. (Mobile still has a suburb called "Toulminville".) Later, the Toulmins and Priestleys settled in the other Birmingham, and the family has continued so that I have a remote collateral cousin, Priestley Toulmin III, of Alexandria, Va., whose work with the U.S. Geological Survey included a spell at the Jet Propulsion Laboratory, with the original Mars Landing project.

When I met Cousin Pete, it was fascinating to be talking with someone whose style I found so familiar, even though our ancestors could not have met since the 1790s, and probably well before. It made me speculate about the power of family sub-cultures to replicate themselves from one generation to the next, not just once or twice, but through a much longer sequence. The Bachs preserved their own musical sub-culture through several generations; and in Basel, Switzerland, there is a family of mathematicians - the Bernouillis - which has been going strong since the 17th century

But that (as they say) is another story