CHAPTER 11

The Science Wars in a Long View

Putting the Human in Its Place

Imagine you are taking a quiz in the history of modern critical theory. One of the questions asks you to identify the period in which "the science wars" took place. You know that in 1994 Gross and Levitt published *Higher Superstition: The Academic Left and Its Quarrels with Science*. You probably recall that Alan Sokal's celebrated hoax was published in a special issue of *Social Text* designed specifically to answer Gross and Levitt, and you might also remember that Sokal was himself first alerted to the ideas of postmodern science theory by reading Gross and Levitt. So, the middle of the 1990s seems a likely starting point. You are aware, of course, of the debate between C. P. Snow and F. R. Leavis nearly half a century before, but that took place in an entirely different theoretical and cultural context. Leavis was something of a cross between a modernist and an old-fashioned Victorian humanist, and the last feeble remnants of his generation, like the last veterans of World War Two, are now rapidly dying off. Snow's phrase "the two cultures" has entered into the common parlance, but poststructuralism has radically altered the theoretical character of the conflict between the sciences and the humanities. The poststructuralist revolution overwhelmed the old-fashioned humanists some thirty years ago, and the leaders of that revolution have long been firmly established—to use another of Snow's famous phrases—in the corridors of power. So, say we locate the onset of "the science wars" in the mid-nineties. Can we identify a point of conclusion? Some of the contributors on the *Social Text* side of the conflict have declared that there was no war

to lose. For instance, as Barbara Herrnstein Smith explains the situation, the cultural constructivists did not mean what Sokal and his cohorts thought they meant. The scientists were just too little versed in rhetoric to grasp the finer shades of ambiguity in postmodern accounts of science.[1] In any case, whether the science wars were worth fighting or not, are they now over? Could either side stand on a carrier and declare, "Mission accomplished"? Having explained that the Sokal brigades were using high explosives to blow up straw men, could the postmodern science theorists declare that they had already explained quite enough, that they find the whole affair tiresome, and that they have more important issues with which to occupy their attention? Or could Sokal and his cohorts affirm that the postmodern theorists, whether or not they used to say the things the scientists thought they were saying, have stopped saying them? Some of the participants in this conflict would no doubt like to declare victory and go home, but off in the distance one often still hears explosions and sees dark plumes of smoke, followed by the wailing of sirens.

For more than thirty years now, beginning with *Sociobiology: The New Synthesis*, E. O. Wilson has displayed a remarkable capacity to incite explosive responses to the claims of science. In *Consilience: The Unity of Knowledge* (1998),Wilson proposed terms for a peace treaty between the two cultures. The terms were simple—*Anschluss*. The humanities would be enfolded within the larger explanatory contexts of evolutionary social science and evolutionary biology. The two cultures would thus become one. And the response from the humanities? Jubilant crowds from the convention hotels at the MLA conference pouring out into the streets to celebrate the New World Order based on the hegemony of science? Hardly. The lessons of appeasement had not been lost on the members of the MLA. The humanities have their own distinct provinces, their sacred soil. This they must not give up. Quite the contrary. What they must do instead is "hunt down those disciplines whose subject matter they covet and bring them into their own realm."[2] *Lebensraum*. Eastward lies the course of empire. The vast plains of Russia lie open for the taking. One must only sweep the ground clear of its present unworthy inhabitants—illiterate peasants with names like Gross, Levitt, Sokal, and Wilson. And thus the cycle of violence continues.

As a battle over curricular turf, the science wars began in 1880, with the exchange between T. H. Huxley and Matthew Arnold. As

a battle over what science can tell us about the meaning of life, the conflict goes back further still, but Arnold and Huxley give classic formulations to basic terms in the debate, and they are the first prominent essayists to link issues of metaphysics and cultural history with propositions about the relative standing of science and humane letters within the university. Huxley gives powerful expression to a materialist metaphysic concordant, as he believes, with the revelations of modern science, and he assesses the main phases of Western cultural history from that metaphysical perspective. Huxley's formulations have had little positive influence on the humanities, but among scientists of broad general culture, Huxley remains a living voice. He is cited with respect by E. O. Wilson, and his central contentions have been taken up and reformulated by Steven Weinberg, a Nobel prize–winning physicist, essayist, and prominent participant in the science wars. In responding to Huxley, Arnold affirms an alternative metaphysic and an alternative conception of the human. For nearly a century, Arnold's humanist idealism provided a central guiding light for literary scholars. In some respects, the poststructuralist revolution produced a radical disjunction with the old Arnoldian episteme, but the deepest underlying impulses in Arnold's defense of "humane letters" are still active in postmodern accounts of science and culture. I admire Arnold enough to have written a book on him, but my own metaphysical and epistemological views are more closely aligned with those of Huxley, Weinberg, and Wilson than with those of Arnold and his descendants in the humanities. For the past fifteen years or so, I have been working to establish linkages between literary study and the evolutionary social sciences. In assessing the possibilities for integrating science and the humanities within a single culture, I am thus of the devil's party.

The occasion for Huxley's essay "Science and Culture" was a celebratory address on the founding of a technical college. Huxley approved the provision for a specifically scientific education for a given set of students, and he defended it as an alternative to the emphasis on Greek and Roman literature that prevailed in most higher education at the time. In support of the pedagogical mission of scientific training, Huxley makes three main points about the cultural significance of modern science: (a) science has fundamentally changed our worldview—our vision of nature and the place of humankind in nature; (b) nature forms a unitary causal order

that can be most adequately accessed using scientific methods; and (c), adopting the ethos of science is an ethical imperative for reasons of both intellectual and social responsibility. In supporting these contentions, Huxley gives a synoptic historical account of four phases of Western civilization, the ancient, the medieval, the Renaissance, and the modern. He attributes to the Renaissance the historical mission of recuperating the culture of ancient Greece and Rome, but he segregates the modern world from all preceding epochs. He argues that modern science enforces a worldview that separates the modern period from the Renaissance more widely than the Renaissance was separated from the Middle Ages.[3] As he explains more fully in his essay "On the Advisableness of Improving Natural Knowledge" (1866), before the advent of modern science, humankind had always taken itself "as the standard of comparison, as the centre and measure of the world."[4] He speaks of the animistic fantasies of all primitive peoples and of the ancient Greeks and Romans, and of course he speaks of the spiritualist notions of Christianity and other religions. For Huxley, science in general enforces a materialistic vision of the natural order. Astronomy, first of all, "has filled men's minds with general ideas of a character most foreign to their daily experience." It tells them "that this so vast and seemingly solid earth is but an atom among atoms, whirling no man knows whither, through illimitable space." It "opens up infinite regions where nothing is known . . . but matter and force, operating according to rigid rules." Extending this vision into the range of biology, he affirms that "as the astronomers discover in the earth no centre of the universe, but an eccentric speck, so the naturalists find man to be no centre of the living world, but one amidst endless modifications of life."[5]

In delineating an epochal shift in metaphysical vision, Huxley also identifies a primary source of conflict in the struggle between the humanities and the sciences. In one way or another over the past century, proponents of the humanities have continued to seek to envision humans as the center and measure of the world. Over against that humanistic impulse, the sciences have posed a vision of the world as a vast network of material or physical forces in which the human is but one further link in an unbroken chain of physical causes.

In the terms and concepts Huxley uses for describing cosmology and physiology, he was of course limited to the science available in

his own day. The conceptual transformations in these disciplines since Huxley's time have been immense, but Huxley himself would have assimilated these developments with enthusiasm, and they would not have undermined his larger metaphysical vision. We can assess the enduring power of Huxley's vision by comparing it with that of Steven Weinberg, who has been at the forefront of advances in modern particle physics. In *Dreams of a Final Theory* and *Facing Up*, Weinberg outlines the developments in physical knowledge up to the present time, but he also reaffirms the basic principles enunciated by Huxley. He uses one of Huxley's own essays, "On a Piece of Chalk," as the starting point for tracing a sequence of physical causes that leads from common visual perception to the limits of current knowledge in physics. While taking full account of the way in which "principles of symmetry" have replaced older conceptions of "matter," he follows Huxley in affirming that science "gives us access to the logical order built into nature itself."[6] Like Huxley, too, he generalizes from specific discoveries to a larger historical shift in metaphysical vision. He speaks of "the profound cultural effect of the discovery, going back to the work of Newton, that nature is strictly governed by impersonal, mathematical laws."[7] Most importantly, like Huxley, he insists on a certain metaphysical bleakness—a universe of insentient force in which the human occupies a trivial and marginal position:

> Nothing in the last five hundred years has had so great an effect on the human spirit as the discoveries of modern science. . . . We find that the earth on which we live is a speck of matter revolving around a commonplace star, one of billions in a galaxy of stars, which itself is only one of trillions of galaxies. Even more chilling, we ourselves are the end result of a vast sequence of breedings and eatings, the same process that has also produced the clam and the cactus. . . . Some of the old magic has gone out of our view of the role of humanity in the universe, its place being taken by what Matthew Arnold called the "note of sadness." . . .
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> The human race has had to grow up a good deal in the last five hundred years to confront the fact that we just don't count for much in the grand scheme of things, and the teaching of science as a liberal art helps each of us to grow up as an individual.[8]

Weinberg's quotation on the "note of sadness" is from Arnold's poem "Dover Beach," in which he describes "The Sea of Faith" as a "melancholy, long, withdrawing roar."[9] In his poems, Arnold spoke for a whole phase of Western culture. He gave touchstone expression to an epochal sense of dismay at the dissolution of a religious vision of the cosmos.

Most of Arnold's poems were written in his younger days. In the last thirty years of his career, he chiefly wrote essays in which he offered remedies for the metaphysical sadness articulated in his poems. It is in this later, consolatory phase of Arnold's thinking that we can locate his essay "Literature and Science." Responding directly to Huxley, Arnold poses the question as to whether the predominance of letters in education ought now to pass to science. To answer this question in favor of literary education, he appeals to Plato's argument that an intelligent man "'will prize those studies that result in his soul getting soberness, righteousness, and wisdom, and will less value the others.'"[10] Again invoking Plato, he maintains that the "'fundamental desire'" in "human nature" is the desire for "'good'" ("LS," 63). In Arnold's thinking, the "good" consists ultimately in the harmonious integration of all the human faculties. He develops a teleological scheme of cultural history, quasi-Hegelian, in which a transcendent force works through history toward a culminating realization of a perfected human condition. In Arnold's cultural theory, literature is the most important medium through which we can achieve this "full humanity."[11]

Superficially, Arnold seems to assimilate Darwinian naturalism. He says that in looking through the findings of modern science, "at last we come to propositions so interesting as Mr. Darwin's famous proposition that 'our ancestor was a hairy quadruped furnished with a tail and pointed ears, probably arboreal in his habits'" ("LS," 64). With the deft and good-humored wit so characteristic of his essays, Arnold turns this proposition to the advantage of literary studies. On the grounds that mankind has an innate need for the "good," he concludes that our primate ancestor "carried hidden in his nature, apparently, something destined to develop into a necessity for humane letters" ("LS," 72). By identifying ancient Greek literature as a model for a grand and noble unity of aesthetic perception, he enables himself to draw the still more dramatic inference "that our hairy ancestor carried in his nature, also, a necessity for Greek."

Arnold's manner is charming, and his logic is beguiling, but his facile blending of Plato and Darwin is deceptive. In Darwin's theory of natural selection, there is no transcendent teleological force driving toward some culminating historical realization of psychological and cultural harmony. The driving force in human evolution is the mechanical process of natural selection. The regulative principle that has shaped human nature, as it has shaped the nature of every other species, is inclusive fitness—the transmission of genes. Inclusive fitness has designed human nature in such a way that conflicts of interest are integral and ineradicable. Relations between men and women, parents and children, siblings and other kin, and individuals within a social group—all these relations involve tensions between reciprocal benefits and competing interests. Humans have evolved distinctive capacities for cooperation within groups, but the larger context for the evolution of cooperation within groups is the conflict between competing groups. Within the Darwinian conception of human evolution, there is no transcendent teleological process guiding human cultural history, and there is no transcendent aesthetic and ethical order to which the human mind, through culture, can gain access.

Huxley and Arnold were friends, and the tone of their references to one another is genial. They nonetheless differ profoundly in metaphysical and historical vision, and that difference plays itself out in the subsequent history of the debate over the sciences and the humanities. Huxley announces a radical break in the modern worldview. Arnold, in contrast, gives a strong emphasis to continuity in the cultural imagination of European civilization. Huxley had spoken with scathing contempt of medieval superstition. In reply, Arnold grants that the medieval cosmology is obsolete, but he defends the quality of medieval education on ethical and aesthetic grounds. He concedes that we can no longer uphold traditional Christian beliefs, but he argues that we have no need of those beliefs. We can, he says, look instead to poetry and the other arts to satisfy the emotional and imaginative needs that religion once satisfied. This is a radical proposition. Arnold argues that the real and effective part of religion has always been its unconscious poetry. In the future, he thinks, poetry itself, detached from religious belief, will fulfill all the psychological and moral needs once fulfilled by religion. "The strongest part of our religion to-day is its unconscious poetry. The future of poetry is immense, because in

conscious poetry, where it is worthy of its high destiny, our race, as time goes on, will find an ever surer and surer stay."[12]

From our current vantage point, Arnold's proclamation on the future of poetry seems quaint. Almost no one at the present time would invest poetry with this weighty mission. For nearly a century, though, Arnold's belief in the mission of literature had an immense influence in academic literary study and in the wider culture. Until about 1970, the majority of literary scholars could reasonably have been described as "humanists" who shared some important part of Arnold's literary idealism. A humanist in this sense is a scholar who invests literary subjects with an almost sacred value. Such scholars believe that literary works give human beings access to a spiritual realm in which some ultimate harmony or resolution can be glimpsed. Arnold's own humanism mingles Platonic transcendence and Wordsworthian piety with a frank admiration for creative literary genius. He describes great writers as "gifted men, alive and active with extraordinary power at an unusual number of points," and he says that their works "have a fortifying, and elevating, and quickening, and suggestive power" ("LS," 68). The commonly accepted views on such matters have now changed so dramatically that younger scholars might find it hard to credit the fervor with which they were once held. In the mid-century period, Arnoldian idealism informed the New Critics' belief in the poem as a verbal icon and Northrop Frye's Romantic and mystical belief in an ultimate order of literary words equivalent to the mind of God—"the anagogic phase." Arnoldian idealism entered in an attenuated form into Lionel Trilling's concept of literary culture as an apex of "the liberal imagination," and it worked its way also into F. R. Leavis' defense of literary culture over against the claims of science.[13]

The exchange between C. P. Snow and F. R. Leavis is in some ways more important for its symptomatic value than for its substantive intellectual content. Snow speaks of physical science as "the most beautiful and wonderful collective work of the mind of man," but he says nothing of its metaphysical character and very little of its epistemological character.[14] He feels that humanists should know more about physical science and that scientists should read more novels, but he does not seem to register that there are any ultimate questions of meaning at stake. Snow's vision is essentially utilitarian. He advocates more science education chiefly on the grounds that it will produce greater physical comforts for the mass of society. He

is sympathetic to the Soviet model of education, and he seems to feel that shared norms of material comfort will eventually heal the ideological wounds of the modern world. In his essay responding to Snow, Leavis gave expression to an aesthetic and moral revulsion that shocked a good many people. Arnold wished to embody in his own prose the genial urbanity of "culture." Leavis aims instead at evoking and denouncing the spiritual emptiness he detects in Snow's techno-managerial perspective on society.

Leavis is no Platonist. His ideal of poetry filters itself through D. H. Lawrence's passionate individualism, but he nonetheless invests that ideal with the power to replace religion and provide spiritual meaning in the modern world. In opposition to Snow's vision of a social collective managed by a bureaucratic elite, Leavis appeals to the Laurentian maxim that "'nothing matters but life.'"[15] He concurs with Lawrence's belief that "only in living individuals is life there, and individual lives cannot be aggregated or equated or dealt with quantitatively in any way" ("Significance," 53–54). Leavis' formulation is typical of a view very wide spread in humanistic thinking—a kind of dualism that separates the world into two parts: a physical natural order that can be known by science and a purely qualitative, subjective human realm that can be accessed only through discursive modes. Leavis presents this subjective realm as an answer to questions about ultimate meaning. "In coming to terms with great literature we discover what at bottom we really believe. What for—what ultimately for? What do men live by?—the questions work and tell at what I can only call a religious depth of thought and feeling" ("Significance," 56). Leavis regards the challenges of rapid technological change chiefly as a threat, and he argues that literary education is a necessary means for meeting that threat. Echoing one of Arnold's phrases, he speaks of having recourse to "our full humanity" ("Significance," 60).

I've said that the essays by both Snow and Leavis seem more important for their symptomatic value than for their actual intellectual content. With respect to Leavis, what I have in mind is the vacuity of the rhetoric through which he seeks to evoke the "full humanity" supposedly to be found in literary training:

> [Mankind will need] a basic living deference towards that to which, opening as it does into the unknown and itself unmeasurable, we know we belong. . . . What we need, and shall

> continue to need not less, is something with the livingness of the deepest vital instinct; as intelligence, a power—rooted, strong in experience, and supremely human—of creative response to the new challenges of time. ("Significance," 60–61)

This is a desperate sort of rhetoric—straining for intensity of effect, hyperbolic, disjointed, and vacant of substantive propositions. At the distance of half a century, we can reasonably suggest that Leavis' proclamations represent something like a spasmodic last gasp for old-fashioned literary humanism. The strained and vacant intensity of the rhetoric by which he claims a central place for a literary education goes a long way toward explaining the ultimate collapse of the Arnoldian rationale that sustained the humanities through the first half of the twentieth century. It simply would not wash.

Over the past thirty years or so, two major revolutions have taken place across the disciplines—deconstruction, with its radiations into Foucauldian discourse theory, and sociobiology, with its radiations into evolutionary psychology and behavioral ecology.[16] The deconstructive revolution jettisoned Arnoldian humanism and took on a completely new set of authorities, mostly French. In some ways, the introduction of poststructuralist or postmodernist thinking in the humanities represents a simple reversal in attitudes and concepts that had previously characterized literary training. In place of Platonic idealism and the appeal to some ultimate harmony in culture, deconstruction and Foucauldian discourse theory tend toward metaphysical nihilism and subversive ideology. In place of the appeal to the creative power of gifted individuals, postmodernism transforms the individual into a passive vessel for the circulation of cultural energies. Nonetheless, in two crucial respects, the deconstructive revolution retains continuity with Arnoldian humanism—in its emphasis on verbal culture, and in placing the claims of ethical values over the claims of objective knowledge. Huxley affirms that science bids us "seek for truth not among words, but among things."[17] Postmodern thinking, in contrast, locates ultimate epistemic authority in words—in discourse, in language or semiosis. It systematically deprecates the possibility of objective, empirical knowledge of a real, physical world that exists independently of any human discourse, and it is, in this respect, still qualitative and verbal in orientation. The appeal to values in the deconstructive dispensation is an appeal

against established structures of social power. In its programmatic repudiation of existing power structures, postmodern thinking in the humanities seems virtually to invert the conservative tendencies in Arnoldian cultural idealism, but it is continuous with Arnoldian cultural idealism in basing its claim to cultural authority on its claim for wisdom and justice—for representing an enlightened ideological consciousness.

Since the time of Huxley and Arnold, seemingly disparate ideological values in the humanities have converged in a common desire to maintain human experience as "the centre and measure of the world." From the perspective shared by Huxley, Weinberg, and Wilson, that desire entails a false notion of where humans stand in the general scheme of things—a false cosmology, and a false understanding of human evolution. The idealizing sentiments of Arnoldian humanism have now largely faded from sight, and they are not likely to return. The more recent strategy in the humanities has been not to exalt the human but rather to delegitimize the idea of objective scientific knowledge while simultaneously elevating "discourse" to an ultimate ontological category. The cultural study of science from a postmodern perspective deprecates the idea of human nature, but discourse is itself a specifically and distinctively human function. No other species has developed a language sufficiently complex to articulate propositions about the ontological primacy of language. By subsuming the knowledge of nature within the philosophy of "discourse," postmodern science theory indirectly, from the back door, reaffirms the centrality of the human as the measure of all things.

From a consilient perspective, arts and letters—the subjects of the humanities—are encompassed within more elementary domains of knowledge, within psychology, anthropology, and evolutionary biology. The human sciences and life sciences are themselves encompassed within the still more elementary causal domains of chemistry and physics. Literary scholars who accept this consilient conception of their field would not claim that the theory of discourse has an ultimate epistemic authority. They could, however, identify the concepts and concerns that are particular to literature and other humanistic subjects; they could integrate those concepts with broader, deeper causal principles from other domains; and they could in this way gain for their field an empirical validity and a power of progressive development greater than it

has ever had before. Scholars who adopt these strategies would be joining a collective scientific effort to put the human in its place. That effort need involve no repudiation of their own humanity, but it would probably suggest new ways to envision that humanity. Humans are imaginative animals. New ways of seeing are new ways of being. In adapting to the changing environment of knowledge, we shall probably discover new forms for what we regard as our "full" humanity.