

“EVERYWHERE THE ELECTRIC:”  
SCIENCE AND LITERATURE  
IN THE AGE OF THE CYBER

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Ludmilla Jordanova (Ed.), *Languages of Nature: Critical Essays on Science and Literature*. New Brunswick, N.J.: Rutgers University Press, 1986. 351 pp.

Hugh Kenner, *The Mechanic Muse*. New York: Oxford University Press, New York, 1987. 136 pp.

George Levine (Ed.), *One Culture: Essays in Science and Literature*. Madison: University of Wisconsin Press, 1987. 359 pp.

Leo Marx, *The Pilot and the Passenger: Essays on Literature, Technology and Culture in the United States*. New York: Oxford University Press, 1988. 357 pp.

Lisa M. Steinman, *Made in America: Science, Technology and American Modernist Poets*. New Haven: Yale University Press, 1987. 219 pp.

Cecelia Tichi, *Shifting Gears: Technology, Literature and Culture in Modernist America*. University of North Carolina Press, 1987. 310 pp.

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1

Alienation and authentic experience are the chief incongruent categories through which we must sift to organize what we mean when we say “modernism”: that condition in which the shock of the new is perpetually mitigated by science (changing our conceptions of ourselves) and technology (changing our relationships with nature). Despite the ensuing interpretive confusion, however, a surprisingly common and uncannily enduring assumption about the modern element in literature has persisted for more than half a century. Well before Hugh Kenner, Harry Levin, or Irving Howe<sup>1</sup> were inclined to artificially seal off the period for the purposes of study, the work of critics as different as Leavis and Lukacs was already structured by a shared presupposition that modern literature acts

out of the loss of something primary that it wishes to regain. Implicitly but constantly amongst critics of the earlier century, the growing authority of science and technology has fueled this sense of loss.

Lionel Trilling's crisp designation of the literary "will to modernity" as the redemptive search for a realm "beyond the reach of culture" remains as clear a definition as available on what is axiomatic in our literary assumptions about the modern<sup>2</sup>. Despite subsequent vicissitudes of the aims and procedures of literary criticism, this presupposition has remained tenaciously paradigmatic, even determining the otherwise antithetical projects of such revisionist historiographers of literature as Fredric Jameson who simultaneously maintains both our normative understanding of modernism and our desire to change it.

The ironies of Trilling's prose, however, suggest that literary modernism is far different from our inherited sense of it. Precise to a fault, Trilling's diction calls attention to some unlikely contingencies that his otherwise classical arguments detonate. For Trilling, an exemplary High Modernist such as James Joyce stands as such because he fully represents "this intense conviction of the existence of the self apart from culture."<sup>3</sup> Yet, unavoidably, the sly protestations of Trilling's rhetoric brings another factor into play. If, indeed, it is culture that "knows" then how can it know any realm other than, or "beyond," itself? The intuitive response lies torn between a happy denial of Milan Kundera's hypothesis that "life is elsewhere" and the tired collapse into the Enlightenment's tarnished promise of progress. What does this paradox of liberation suggest for literature? What aesthetic or discursive horizon does it close off or otherwise demarcate? For Trilling, and for many of literary critics, the answer is plain: the exemplary "will to modernity" — the need, in Trilling's words, "to believe that there is some point at which it is possible to stand beyond the reach of culture"<sup>4</sup> — is an expression of the need to reject "how entirely implicated in culture we all are."<sup>5</sup>

2

What kind of culture do we have? Within a fully modernist (i.e., trans-literary) context, what are the sources of authority and rupture which dictate or otherwise influence the forms of cultural response open to us? To some degree, the books under review here derive a measure of unity from the contextual mode of interpretation in so far as their authors insist on recognizing (and responding to) the all-embracing technological character of the social life-world. A tacit assumption of the literary-historical approach used in these books is the idea that culture is cognitive and meaning-generating. This conception is very much like that held by Clifford Geertz and other symbolic anthropologists — and equally difficult to operationalize. As Geertz defines it, a culture "consists of socially established structures of meaning"; these structures are conceptual frameworks or tem-

## REVIEWS

plates that enable members of the culture to interpret the signs and symbols, practices and events that constitute their direct experience, and thereby to participate in the unending argument about meanings, values, and purposes that help set up a society's course of change.<sup>6</sup>

In practice, however, anthropologists, cultural theorists, and literary critics need to deploy the concept of culture in significantly different ways. Anthropologists, perhaps because of their longstanding preoccupation with relatively small, homogenous, pre-industrial societies, have tended to emphasize the unifying aspects of culture, whereas cultural theorists and literary critics (including the authors represented here) need to emphasize the dissonant and self-contradictory aspects. The books reviewed here try, with varying degrees of success, to mask this conflict, to pretend that it isn't there and that the literary process is a "knowing and intimate" partner of science (i.e., sharing in its authority). Clearly, this runs counter to Trilling's insightful observation that the very form of modern culture's existence "is struggle, or at least debate — it is nothing if not dialectic."<sup>7</sup>

### 3

Of course, for readers of this journal, such an observation is familiar as modernity is understood to open a series of paradoxes which are important — at the level of subject, style, and logic — to observers of the literary and "post-literary" scenes. After all, the literature of modernity is essentially a literature about transformations in the public world and in its associated consciousness. The actual date of the advent of "the modern" varies in different accounts, as do the characteristics identified by various writers. Nearly all accounts, however, have in common their concern for the public worlds of work, rationalization, politics, and city life. As such the literature of modernity coincides, in effect, with that well-documented process of the separation between the public and private realms.

### 4

Within this context, if we take seriously Weber's notion of an expanding rationalization, of the advent of a totally administered world which spells the end of the individual, then we must consider technology and science, as they are now, as the deepest languages of politics, economy, advertising, and desire. They condition the histories that confront us on every corner of the Metropolis and that constitute our horizon. In so doing they contain both a moment of danger and opportunity, and, as a result, may not force us to be free, but encourage us to perpetually rethink the relationship between technic and society. They offer what amounts to a frenzied drive to liberty through a seductively disguised promise of reconciliation between the private and public via an ongoing historical amnesia. They constantly revise our images of ourselves as makers of a history

we pathologically cannot recall due, in part, to the looming presence of some questionable (but assured) future. Thus, they provide the perfect focus for a modernist literature as they establish the method, logic, and rationale for the fulfillment of contemporary literature's deepest wish — the eclipse of culture.<sup>8</sup>

## 5

As a result, the authority of science and technology, which expresses itself in all domains, is accepted by literature, and emulated. For example, in the age of transparent technology, modernist literature has evolved parallel technologies of its own, both difficult and obscure. "Et ignotas animum dimittit in artes," the epigraph to *A Portrait of the Artist as a Young Man*, claims the sponsorship of the fabulous technologist and warns us against expecting such books as we've been used to. Arcane skills, "ignotas artes", such as those that enabled the Wright Brothers to triumph at Kitty Hawk, have gone into its fashioning. Their machine had nothing to hide — you could see every moving part, like Joyce's prose — and yet it challenged comprehension. They first flew it in December 1903 and by January 7, 1904 James Joyce had effectively adopted the persona of Daedalus. Like the technology of its time, literary modernism sought, as evidenced by books like *Ulysses* and poems like *The Cantos* by Ezra Pound, to share in technology's authority and to become deeply technological.

This occurred at all levels. The internal combustion engine altered our perceptions of rhythm; X-rays made plausible transparent planes of matter; the wireless superimposed the voices of twenty countries (*Finnegan's Wake*); and newsreel quick-cutting promoted *The Waste Land*. Words moved on wires. Distant voices sounded in our ears. And under the most rigorous scrutiny, the text itself began to dissolve. Thus technology increasingly re-defined the role of words and ourselves in relation to the text and to nature. It simultaneously embodied and promoted an aesthetic and a world view. The "gear and girder" technologies of the early twentieth century totally displaced the still dominant Romantic view of a holistic, spiritual world. When the twentieth century poet, William Carlos Williams, called the poem "a machine made of words," he presumed a very different world from that of Henry David Thoreau who wrote in 1844 that "poetry... ..is a natural fruit."<sup>9</sup> This nineteenth century belief that nature, the human imagination, and art were unitary, maternal and cogenerative changed radically under the machine assumptions of the twentieth.

## 6

Although it was technology that was most visible to modernist literature, science, and particularly the early revolution in physics, was soon to be fully implicated in literature's attempt to coopt technology and move

## REVIEWS

beyond culture. By 1921, when Albert Einstein visited the United States, the physicist had become a folk hero and the new physics was front page news. The models of science presented by Werner Heisenberg, Max Planck, Albert Einstein, and popularizers like Aldred North Whitehead and Bertrand Russell, were dramatically different from nineteenth century models of science and appealed directly to the modernist aesthetic.

Einstein's original formulation of the special theory of relativity from 1905 stated that whereas an event viewed from two separate moving observers may appear different to each, neither observer would be wrong or encounter contradictions if he or she used the same basic laws of physics. For example, the speed of light is a constant. This might lead to contradictions, since one person observing a light beam might be moving faster than another person observing the same light beam. What happened, according to Einstein, was that the nature of time and space is altered by motion while the laws of physics remain unchanged. Einstein's later work on general relativity then extended his ideas to cover curved time and gravitation.

Max Planck's work also concerned light and motion, but he concentrated on sub-atomic phenomenon. In 1900, Planck discovered that electrons absorbed or emitted light in quantum units. He also found that there was a constant by which to measure the value of such energy exchanges. These findings required the abandonment of the notion of a continuum of energy; Einstein later showed that Planck's findings suggested that light was composed of particles and behaved, or could be treated, as a wave.

Werner Heisenberg's 1927 work on the uncertainty principle, building on the work of Planck and Einstein, proposed that the error in position measurement times the error in momentum measurement can never be less than one half of Planck's Constant — said another way, that the position and speed of an atomic particle cannot both be known.

The story goes on. The new physics broke down the framework of classical physics, suggesting that space and time were fluid, and that phenomena changed depending on how they were observed (light being sometimes a particle and sometimes a wave, for example). As the old edifice of certainty was eroded, most physicists agreed that the difficulty of defining light or measuring sub-atomic *wavicles* was not due to the failings of scientific instrumentation but to the actual, ambiguous nature of the physical universe, a universe of "fuzzy" statistical probabilities. This ambiguity appealed to, and under-scored, the ambiguities of the modern Metropolis.

If the new physics changed our ideas about the nature of the universe, popular and literary accounts often misrepresented the implications and meaning of the scientific findings. Consequently, in their zeal to be modern, science became related in literature to democracy, free will, Bergsonian philosophy, the uncertainty of life in the Metropolis, and to the literary experiments that toyed with perspective or emphasized motion.

Nevertheless, the original *angst* of literature — its need to move beyond culture, its desire to emulate and gain the authority of science and technology — remained. Pressured by a lagging readership for novels and poems, an unsympathetic press, and by such assertions as those made by Gertrude Stein's brother, Leo, that progress in the arts lagged behind "scientific" progress<sup>10</sup> and by Lionel Trilling, who shrewdly noted that "in an age of science prestige is to be gained by approximating the methods of science,"<sup>11</sup> literature insisted on carving out an identity that was expressly dependent on science and technology. Many writers, poets and critics tried to borrow the growing science-based prestige in order to declare a place of their own. Some also argued that, to be relevant, the arts had to address the issues of the practical and technological world which people lived in. At the same time, many also saw themselves as being defenders of literature and human values *against* the very scientific (machine) age from which they were trying to derive authority and popularity. Thus, there were contradictions in the positions taken by those who wanted to both use and resist the effects of science and technology.

Given such complicity and weight, then, what has become of the relationship between science and literature? It is clear that there are influences, just as there are scars of rupture and envies of authority. But what is, or should be, the relationship?

In asking this question it should come as no surprise that a growing concern within literary and cultural criticism focuses precisely on this question. Far more substantial than a simple reaction to the hegemonic frameworks of C. P. Snow's *Two Cultures* or Aldous Huxley's *Literature and Science*<sup>12</sup> in this area, this movement has become so widespread and formalized in recent years that the Modern Languages Association has sanctioned the establishment of a Society for Literature and Science. Nevertheless, there are problems.

Throwing around such comfortable but overwhelmingly complicated terms as "science", "literature", and "culture" might well indicate a failure to appreciate the multiplicity of meanings that they imply and the complexity of activity that they mask. To say that science and literature are products of the same culture is to say little until all three terms are understood specifically.

The formula "science and literature" which governs the books noted here announces, through the "and," a difference; the innocuous copula becomes more problematic than the difficult major terms. "And" implies relationship of course, but (para)tactically refuses to define it. The "and"

## REVIEWS

also intimates the oddity of the relationship: what can the two have to do with each other? While it insists on implying that the relationship matters.

Reading through the books noted above, a shared conviction becomes clear that the relationship matters because, despite the enormity the subject and the terms, the conjunction of the two sometimes radically separated worlds of discourse represented by science and literature can help to illuminate the other and to demystify each as they sit under cloaks of unmerited cultural authority. As such, it forces us to address issues which are of ultimate importance to the way our culture and our societies are currently being shaped. Surely this is a noble and scholarly pursuit, but how is it achieved?

In most of the books under review here (those by Hugh Kenner and Leo Marx excepted), the "method" is to seek common ground between science and literature in their "cultural and social histor[ies], paying close attention to original texts. Any divorce between text and context is undesirable,"<sup>13</sup> however with the transformation of science into a mere "discourse" it becomes increasingly difficult to define precisely what science is as opposed to, say, literature and culture. Science is reduced to a two dimensional text, devoid of social organization or epistemological energy. In so doing, it becomes irritatingly clear that the methods employed by Jordanova and Levine in particular are such that while embodying the anxious desire of modern literature to stand beyond culture and to share the authority of science and technology, what they do is hide within a strong but unenlightening context of "Culture". The result is not very satisfying or very helpful. If the first and primary lesson of these volumes is that science and literature are mutually embedded in culture, nourish and illuminate each other, then surely this does not get us very far. As noted sociologist of science, Steven Shapin, complains: "work is often thought to be completed when it can be concluded that 'science is not autonomous' or that science is an integral part of our culture,' or even that there are interesting parallels or homologies between scientific thought and social structures."<sup>14</sup> Clearly this is not enough, nor is it entirely honest. Yet this is the tenor of the books by Jordanova and Levine.

Far more satisfying are the works by Steinman and Tichi who make no excessive claims for the "congruities between science and literature." In *Made in America*, Lisa Steinman focuses on the developing poetry and poetics of William Carlos Williams, Wallace Stevens, and Marianne Moore, three poets who stayed in America at a time when exile was fashionable, and who concerned themselves with defining the place of poetry in the machine age. Her assessments of the influences on imagery and style in a period in which science and technology were unabashedly glorified and make open possibilities for further work and make for compelling reading. In the slightly less successful, but still worthwhile, *Shifting Gears*, Cecilia Tichi presents a richly illustrated exploration of the American era of gear-and-girder technology — from the automobile and harvesting

JOHN DE LA MOTHE

machine to bridges and skyscrapers — in which she argues that the technology re-defined the human role in relation to nature. It fostered a perception of the material world as a complex of component parts, such as meshing gears, rolling bearings, pushing pistons, in which prominent American writers (including Dos Passos and Williams) became “designer-engineers” of the word, using their prefabricated, manufactured components in poems and prose. As designers they enacted, in style and structure, the new technological values.

Finally, by far the most insightful and economic of the contributions under review here are those of Hugh Kenner and Leo Marx. In *The Mechanical Muse*, Kenner brings his usual wit and erudition to bear in a series of essays on the response of literary Modernists to their changing technological environments. In creative examinations of such familiar figures as Pound, Joyce, Eliot, and Beckett, Kenner looks at how inventions as various as the Lino-type, typewriter, subway, and computer have altered the way the world was viewed and depicted. In comparison, Marx’s contribution is less even, but this can be forgiven when some of the essays (collected from nearly forty years of criticism) are as full of cheek, argument, and (at times) brilliance as demonstrated in “The Neo-Romantic Critique of Science,” “The Machine in the Garden,” and “American Literary Culture and the Fatalistic View of Technology.”

9

Clearly, the vast range of problems that are of concern to literary and cultural critics in the areas of science and literature are of importance. In an age that has not only gone post-literate<sup>15</sup> and “post-modern”<sup>16</sup> but post-scientific as well — in the sense that the products, conceptions and activities of science are no longer heroic and visible, but pervasively embodied — critics can no longer casually prod the text of past experiments and hope to say something meaningful about the process of cultural change. The problem can no longer be solved, as Bertrand Russell once put it, “by a community which use[s] machines without being enthusiastic about them”.<sup>17</sup> In the age of the cyber, the relationship between science and literature can only be usefully discussed by recognizing the nature of the environment. As Walt Whitman said: “everywhere the electric!”<sup>18</sup>

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Notes

1. Harry Levin, “What Was Modernism?” in *Refractions*, New York: Oxford University Press, 1960; Irving Howe, “The Culture of Modernism,” in *Decline of the New*, New York:



## REVIEWS

Horizon, 1970; Hugh Kenner, *The Pound Era*, New York: University of California Press, 1971.

2. Originally published by Lionel Trilling as *Freud and the Crisis of Our Culture*, Boston: Beacon, 1955.
3. *Ibid.*, p.102.
4. *Ibid.*, p.93.
5. *Ibid.*, p.91.
6. Clifford Geertz, "Thick Description: Towards an Interpretive Theory of Culture," in his *The Interpretation of Cultures*, New York: Basic Books, 1973, p.12.
7. Lionel Trilling, "Reality in America," in his *The Liberal Imagination: Essays in Literature and Society*, New York: Anchor Books, 1950, p.7.
8. Arthur Kroker, *Technology and the Canadian Mind*, Montreal: New World Perspectives, 1984, p.125.
9. Cecilia Tichi, *Shifting Gears*, University of North Carolina Press, 1987, p.xiii.
10. Leo Stein, "American Optimism", in *The Seven Arts*, 1917.
11. Lionel Trilling, "The Sense of the Past," in Ronald Primeau (Ed.), *Influx: Essays on Literary Influence*, New York: Kennikat Press, 1977, p.23.
12. C.P. Snow, *The Two Cultures and the Scientific Revolution*, Cambridge University Press, 1960; Aldous Huxley, *Literature and Science*, London: Chatto and Windus, 1963.
13. Ludmilla Jordanova, "Introduction", in *Languages of Nature: Critical Essays on Science and Literature*, New Brunswick: Rutgers University Press, 1986, p.17. A typographical error on the cover casts doubt as to whether the book is subtitled "science and literature" or "science as literature."
14. Steven Shapin, "History of Science and Its Sociological Reconstruction," in *History of Science*, 20, 1982, p.176.
15. B.W. Powe, *A Climate Charged*, Toronto: Mosaic, 1984.
16. Arthur Kroker and Marilouise Kroker (eds.), *Body Invaders: Panic Sex in America*, Montreal: New World Perspectives, 1987.
17. Bertrand Russell, "Things That Have Moulded Me," in *Dial*, 83, September 1927, p.184.
18. Walt Whitman, *The Wanderers*.