

a tendency to feel more at home in the library than on the playing field. Many recall physical incompetence as a childhood condition, though one or two deviated from this norm by succeeding at sports and gaining confidence in their bodies that seems to have carried over into their research style and substantive interests. Most were more poor than rich as youths, though several enjoyed privileged upbringings and turned their backs on their birthright, as it were, by pursuing a discipline that has little good to say about the upper classes. Nearly all fell into a situation of intense readership, most at the instigation of parents or teachers, others during enforced idleness, some very early and others almost too late, toward the end of adolescence. But the overriding appeal of these stories is that all of them occurred prior to the video-cretinization that has swept away American literacy like a typhoon hitting a dinghy. In every chapter are passages fondly relating the intense importance of a given text at a special moment—James Coleman discovering Smith's *Theory of Moral Sentiments* during graduate school when already 27, Reinhard Bendix reading Mannheim's *Ideology and Utopia* aloud to his myopic father at 15—tales that, read now, seem as unlikely as "Ninja Turtles Learn Greek." For each of these young readers (often during the '30s), there was a sensual pleasure in book culture, which brought relief from tedious existences, passports to the unfamiliar, and a chance to accumulate the sort of "cultural capital" that public school teachers have always rewarded. Reading and writing became tickets out of poverty or simply to other, more congenial environments where strength of mind could triumph over the animal powers of the street.

Naturally, there is more to these life histories than reading lists, though dedicated literacy did form the basis not only of professional success but of the inclination to reflect on lives that, in most instances, have had more to do with words and "data" than with social or political action. And it is in these special uniquenesses, somewhere between texts and motion, that sociology has little to offer by way of analysis. There is the stark image of Guenther Roth racing from the countryside into Darmstadt on 12 September 1944 after a fire-bombing had wrecked 80 percent of the city, a 13-year-old, quickly aged, looking for his mother among the corpses—now noting, "To this day I do not like to look at crowds of dozing sunbathers around swimming pools or on the greens of college campuses because they remind me of the bodies I saw that morning." David Riesman's account, by contrast, is written with patrician restraint and grace, his problems having revolved around

whether to work at Harvard, Yale, or Chicago, whether or not to summer in Europe, whether to compare notes about his analysis, under Erich Fromm, with his mother, Karen Horney's analysis. A list of the famous intellectuals and politicians with whom Riesman was somehow or other affiliated would fill a page, from Irving Babbitt to Alfred North Whitehead, Carl Friedrich to Roscoe Pound, Louis Brandeis, Fritz Machlup, Harold Lasswell, and McGeorge Bundy, to select at random. His writing reveals a man at peace with his work, his place in the world: a modern Jamesian character of high station and rectitude. He was given much and he gave much in return. Not so for John Gagnon, who descended from normal poverty to "raggedy-ass poor" during the pits of the Depression, when still a little boy. This adolescent thought that higher education meant Long Beach City College until a recruiting scout from the University of Chicago—are there still such persons?—visited his high school and redirected, presumably for the better, the life of a fellow who had "never known anyone who had gone to college" until he got there himself.

Other strange and ungeneralizable bits fix in memory. Bennett Berger, a strapping athlete with "almost no books in our home," becomes a Marine camp librarian on Guam by sheer accident, reads to fill up the days, and discovers that his mind works almost as well as his crooner's voice and muscular body. The late Donald Cressey, noted criminologist, recalls that "I felt like a beggar" in 1933 when living off the dole following the break-up of his nuclear family, then seven times writes "I made it" in recounting events that slowly paved his way toward fame and security. He strikes one theme that crops up repeatedly in the pre-SAT world: "In a short V-mail letter to Sutherland I said little except that I would like to do graduate work with him at Indiana. . . . I enclosed no transcript of grades, no letters of recommendation, no GRE scores. Sutherland fired a note back to Tinian [the Pacific island]. He said that he would be delighted to have me. . . . It was that simple." This theme, that pure chance, the thinnest line of good luck, plus at times the unexpected good will of a stranger, set up a chain of events that formed everything significant thereafter, sounds throughout the book.

Not all the other writers wear Depression scars or were otherwise underprivileged. Gary T. Marx, for instance, writes as a surfer turned intellectual, whose "Making it, forsaking it, reshaping it" is kin to Norman Podhoretz's *Making It* of an earlier day. He explains that by being the right age and studying suitable topics, he rose to early celebrity in the late '60s but within a few

years was a relic whose intellectual agenda had become politically unpalatable and who had to face the prospect of losing status in his discipline before reaching middle age. He writes wisely of how impersonal forces created his rise and fall and recovery called for a more autonomous approach to academic work.

Every chapter in this book is worthwhile, and most would merit expansion. There are lessons in them about intergenerational relations, intellectual discovery, academic politics, "the world we have lost," and, most important, the wide gulf separating today's apprentice teachers and researchers from the conditions that inspired, corrupted, demoralized, or sharpened their famous predecessors. It is not simply that then was great and now is awful. It is more that these people seldom dreamed of possessing knowledge, fame, authority, or honor. That these came their way reflected extraordinary effort, luck, the right external conditions, all put together in some unformulaic combination that defies sociological analysis. This is the magic of the private life in the midst of one's community, and it pervades this fine book from beginning to end.

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## Other Landscapes

**Australian Ecosystems.** 200 Years of Utilization, Degradation and Reconstruction. D. A. SAUNDERS, A. J. M. HOPKINS, and R. A. HOW, Eds. Surrey Beatty, Chipping Norton, NSW, Australia, 1990. viii, 602 pp., illus. Paper, \$130. Proceedings of the Ecological Society of Australia, vol. 16. From a symposium, Geraldton, West Australia, Aug. 1988.

Just as Crocodile Dundee and Paul Hogan made Australia "the flavor of the month" for American tourists, several biological issues—namely eucalypt dieback, coral reef management, and tropical rain forest destruction—have heightened awareness of its ecosystems and scientific research. *Australian Ecosystems: 200 Years of Utilization, Degradation and Reconstruction* is a comprehensive synthesis of many scientific projects under way or recently completed relating specifically to human alteration of the country's natural resources. The volume represents the proceedings of the Australian Ecological Society's conference in honor of the Australian bicentennial. Consequently, some papers are reviews of aspects of ecology, rather than new work. The book is an excellent summary of some (but not all) aspects of Australian ecological research,

and certainly attempts to illustrate how different the country's problems are from those of other continents. This is of particular interest to American ecologists who want to understand different ecosystems and management techniques utilized on another continent.

The book has an optimistic objective, "not . . . to be simply a catalog of environmental degradation and disaster, but a positive attempt to learn from the mistakes and successes of the past." This is also a tall order. Australia is very different from northern temperate ecosystems: its soils are old and shallow, its climate is harsh and unpredictable, humans have introduced grazing animals in vast numbers, and it has suffered a disproportionate number of invading species in a short duration of European settlement. A relatively small number of people (15 million) have wrought extensive landscape degradation to a vast portion of the country, and restoration seems slow or nonexistent.

Many Australian ecosystems contrast greatly with their European and American counterparts, so the policies of conservation and land management that have been imported from outside Australia do not necessarily apply, and have had disastrous consequences in some cases. Different ecological principles and related management strategies have been worked out for Australian conditions, which the authors are careful to illustrate. For example, stocking rates and clearing regimes are required that take into account the greater erosion and drought suffered by arid grazing lands when grass and tree cover are removed.

The contributions in the book are extensive, but most pertain to three types of research: (i) basic biology of Australian ecosystems and organisms (for example, coastal marine ecology, Sydney's vegetation, rural trees and the dieback syndrome, biology of ants); (ii) management techniques as applied to Australian ecosystems (for example, revegetation in grazing lands, honey bee management, fire in relation to *Banksia* populations, utilization of satellite photographs, management of numbat populations); and (iii) development of conservation values (for example, genetic resources, concepts of land preservation in arid zones, "naturalness" in relation to disturbed land, and criteria for conserving land).

Most authors emphasize that many aspects of Australian ecology are unstudied and many questions are unanswered. Until the basic ecology is studied comprehensively (and normal fluctuations in ecosystems measured), scientists cannot hope to predict the effects of large-scale trends (such as global warming). This creates a pressure for Aus-

tralian science to ask the right questions and answer them quickly.

The book is extremely useful for anyone who wants to understand the ecological issues of this island continent, or simply to gain insights into different systems. Unfortunately, it is priced fairly high and is too technical to reach the shelves of Australian landowners, who desperately need to know the problems facing Australian science with regard to land management decisions. In general, most authors cite the need for changes in aspects of Australian scientific research, including: more research on major ecosystems (for example, sandy beaches and mudflats); more use of the experimental ecological approach; increased research in restoration ecology of disturbed landscapes (such as grazing lands, reefs, or upland streams); and a stronger commitment on the part of ecologists to communicating their results to the general public. Regarding the last issue, the editors summarize the volume on this note:

Ecologists can no longer remain in the background, researching issues in isolation from the community. We must venture into the arena where policies are fought out and see that our knowledge and understanding of the environment is properly used in making the decisions about the world in which we live.

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## Sleeping and Dreaming

**Thalamic Oscillations and Signaling.** MIRCEA STERIADE, EDWARD G. JONES, AND RODOLFO R. LLINAS. Wiley, New York, 1990. xvi, 431 pp., illus. \$115. A Neurosciences Institute Publication.

**Brainstem Control of Wakefulness and Sleep.** MIRCEA STERIADE AND ROBERT W. MCCARLEY. Plenum, New York, 1990. xvi, 499 pp., illus. \$85.

Lying late at night in bed reading a highly technical monograph, one occasionally finds oneself becoming drowsy and falling asleep. If the previous nights were spent over grant proposals, letters of recommendation, and chapters long overdue, one may even after some time start to dream, imagining oneself in some mystical past where scientists were expected to search for the truth rather than to generate an endless number of documents.

These two monographs will go a long way toward explaining how such late-night behavior is controlled by the brain and how wakefulness, sleep, and dreaming are ex-

pressed at the level of single cells and neural networks. The two major actors represented in both books are the thalamus and parts of the brainstem. The thalamus is the principal gateway to the cerebral cortex: the visual, auditory, somatosensory, and gustatory pathways all pass through specific thalamic nuclei on their way to the cortex. Furthermore, cortical areas that receive input from specific thalamic nuclei also provide a massive projection back to the same nuclei. For example, about half of all synapses in the best-studied thalamic nuclei, the lateral geniculate nucleus (LGN), which is located halfway between the retina and the primary visual cortex, originate in the cortex, the remainder being derived from retina, local GABAergic interneurons, and the brainstem. Physiologists have long been puzzled about why afferent input does not project directly onto the cortex but passes through a relay station, particularly since the functional properties of thalamic cells appear to differ little from those of their input fibers.

One major clue to this mystery was discovered in the early '80s by Llinas, one of the authors of *Thalamic Oscillations and Signaling*. He and his coworkers showed that all thalamic neurons can be in one of two quite distinct electrophysiological states, depending on their membrane potential. At resting potentials more positive than minus 60 millivolts, cells respond to a current injection by a steady stream of fast action potentials. If the membrane potential shifts to minus 65 millivolts or less, a calcium conductance comes into play, resulting in a burst of two to four fast action potentials followed by a profound hyperpolarization lasting between 70 and 150 milliseconds. The cell repeats this basic pattern throughout the current injection. Thus, thalamic cells can be either in a "relay" or in an "oscillatory" mode.

Steriad, the first author of both monographs, has shown that these modes can be controlled by a diffuse projection to the thalamus from cholinergic neurons in the reticular formation in the brainstem as well as from noradrenergic neurons in the locus coeruleus. Furthermore, these modes relate to the gross behavioral states of wakefulness, rapid-eye-movement (REM) or paradoxical sleep, and non-REM or slow-wave sleep. Cholinergic brainstem neurons excite thalamic neurons during both wakefulness and REM sleep, both of them states in which the brain is highly active. On the basis of heroic intracellular recordings, it has been shown that activation of cholinergic brainstem neurons tonically shifts the membrane potential of thalamic relay cells toward more positive values and increases their spontaneous discharge frequency, switching these cells into the relay mode and leading to a desynchro-