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Review Of "Advocacy And Objectivity: A Crisis In The Professionalization Of American Social Science, 1865-1905" By M. O. Furner

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explanation. As a matter of fact, his fundamental work on statistical mechanics arose out of his early attempts to place the second law of thermodynamics on a purely mechanical footing. For Boltzmann to explain a phenomenon meant to reduce it to mechanics, and he felt that all natural phenomena were at least in principle susceptible to such a reduction. For example, he claimed that "only when one admits that spirit and will are not something over and above the body but rather the complicated actions of material parts whose ability so to act becomes increasingly perfected by development, . . . only then does everything become clear in psychology. We then understand that with every perception and decision of the will purely mechanical processes are connected."

These views naturally also colored his concept of the nature of physical theories. In his 1895 letter to *Nature* he cites Hertz with approval: "The rigour of science requires that we distinguish well the undraped figure of nature itself from the gay-coloured vesture with which we clothe it at our pleasure." But although he is not at all eager to identify a mechanical model with reality, he continues: "I think the predilection for nudity would be carried too far if we were to forego every hypothesis."

Boltzmann clearly felt that hypotheses were the stuff of science, and he complained of the extent to which some physicists had "become suspicious of all hypotheses and confined the task of theory to supplying a description of phenomena without anywhere going beyond what was given in experience." His intense polemics against the positivistic approach of the energeticists raises the question of the propriety of including Boltzmann's writings in a Vienna Circle Collection. The editor remarks that Boltzmann's concept of the nature of science as well as his own contributions to theoretical physics attracted the attention of the members of the Vienna Circle. This is undoubtedly true, and perhaps in this sense his inclusion can be regarded as a "posthumous guerdon," even though Boltzmann himself might have felt uncomfortable in such company.

It would be useful to have all of *Populäre Schriften* in translation, since some of the omitted essays also make delightful reading. Nevertheless, the inclusion of the introductory sections of the treatise on mechanics enhances the value of this selection because of the picture it affords of Boltzmann's insight into the methodology of theoretical physics. The foreword by S. R. de Groot provides a brief but helpful discussion of Boltzmann's life and work, and this volume should contribute greatly to making Boltzmann more accessible to the English-speaking world.

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Mary O. Furner. *Advocacy and Objectivity: A Crisis in the Professionalization of American Social Science, 1865–1905.* xv + 357 pp., bibl., index. Lexington: University of Kentucky Press, 1975. $17.50.

In the five decades following the Civil War, as the academic disciplines assumed their modern shape, social science became the "social sciences." The American Social Science Association, an uneasy alliance of reformers and proto-professionals, finally fell victim to rival organizations of social workers and academics. Among the latter, new associations marked successive stages of professionalization: the American Economics Association (1885), the American Political Science Association (1904), and the American Sociological Society (1905). Recounting this not unfamiliar story, Mary O. Furner rejects the assumption that the structure of knowledge demanded or determined this process. Rather she examines the evolving self-definition of the professionals' role—"how social scientists thought they ought to behave"—within the matrix of public controversy. The result is a challenging and provocative study of the politics of professionalization.

The professionalization process had several stages. When in the mid-1870s a group of academics rescued the flagging Social Science Association, earlier confidence in the mission of social science yielded to questions concerning its nature and goals, and hence to "a more orderly quest for knowledge" (p. 30). Battles between "old" and "new" economists in the 1880s, quickening this impulse, ended in compromise and yet more restrictive canons of professional behavior. These canons hardened under pressure of assaults on academic freedom in the late 1880s and the 1890s:

from the closet martrydom of Henry Carter Adams at Cornell to the case of Edward A. Ross at Stanford—a *cause celebre* that finally mobilized a defense committee of fellow professionals. Of the younger economists that emerged by 1900 Furner concludes: "The quality of their scholarship was higher, but its focus was narrower than a generation earlier" (p. 259).

Although disagreement persisted, dissenters adopted strategies consonant with scientific "objectivity": first forming regional associations that masked conflict and finally creating "political science" and "sociology" as further differentiations within social science. These specialists became the backbone of various progressive reform movements. But as agency experts, public administrators, or pressure groups, they narrowed their concerns to "practical problems of planning, financing, and delivering city, state, and national services" (p. 266).

Well documented, sweeping in its implications, *Advocacy and Objectivity* combines sprightly prose and refreshing skepticism concerning academic pretension. "In judging colleagues who acquired radical reputations academics were not very different from the rest of educated society," Furner writes. "They went by appearances" (p. 204). Without preaching, she demonstrates that the accepted domain of the social sciences is itself historically conditioned. Doubtless she downgrades, if only implicitly, other sources of professionalism, whether in models from the natural sciences or the internal dynamics of ideas. "Professionalization" in explaining so much seems at times a force apart from human interests and desires. Nonetheless, nagging doubts should not detract from the excellence of this study. A worthy recipient of the Frederick Jackson Turner award of the Organization of American Historians, it sets a new standard in the history of American social science.

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Stanley M. Guralnick. *Science and the Ante-Bellum American College.* (Memoirs of the American Philosophical Society, Vol. 109.) xiv + 227 pp., appendix, index. Philadelphia: The American Philosophical Society, 1975. $5 (paper).

How much science was taught in the Old Time College? That question motivated Stanley M. Guralnick's detailed study of fifteen leading northeastern colleges for men from about 1820 to 1860. His conclusion is that "students who attended these traditional colleges in the period prior to the elective system were, by the 1840s, obligated to devote more time to science than they ever had before or would again." In order to prove that science was a central part of collegiate education, Guralnick tabulated courses and faculty appointments, studied treasurer's reports and trustees' minutes, and analyzed textbooks. The resulting volume, a modified version of his dissertation, is a pioneering effort to trace the institutionalization of science in early nineteenth-century American higher education. Because so little attention has been given to this subject, the book is less a revisionist statement than an important foundation for further investigation.

After tracing the possibilities for scientific study in the colonial and early national periods, Guralnick concentrates on the crisis of enrollment and leadership in the 1820s which led to a "quiet revolution" in the traditional colleges in the following two decades. Even the conservative Yale Report of 1828, he notes, advocated the study of science. During subsequent curriculum expansion science assumed a core position, judged important by conservatives who felt mathematics exercised the "mental faculty" and by reformers who believed that science had practical implications.

In an effort to demonstrate the quantity and quality of science taught, four chapters are devoted to the subjects emphasized by the colleges under consideration: mathematics, physics, astronomy, and chemistry "with its college derivatives." It is curious to note that this curricular attention to the physical sciences (chemistry sometimes included some aspects of natural history) does not mesh with analyses of the general scientific community. Studies by Robert Bruce, Clark Elliott, George Daniels, and Sally Gregory Kohlstedt show a preponderance of people in natural history and geology well into the 1850s. Guralnick indicates that most of those going into science did so on the basis of their college experience but does not discuss this apparent discrepancy between subjects studied and the graduates' occupations. Was there an informal education that remained more