

record the facts through firsthand observation. There is an irony here in that today field research is considered less "scientific" than survey methods in sociology and those who subscribe to field methods tend to be doubtful that sociology can be a science and to be oriented to ameliorative projects. For Park and Burgess, however, sociology could be a science by taking as its basis careful fieldwork. Though in their conception fieldwork was to be guided by a theoretical framework, the structure of the department encouraged research over theory. Sociology was increasingly viewed as a science only if it could produce large quantities of descriptive empirical data.

The atheoretical bias of Chicago sociology became even more evident as quantitative methods were increasingly emphasized in the late 1920's and early 1930's. Bulmer's and, to a lesser extent, Kurtz's analyses provide an important corrective to our retrospective view of Chicago sociology. Long before Paul F. Lazarsfeld and others at Columbia and elsewhere helped usher in the quantitative mania that still dominates sociology, Chicago social scientists were using the ideas of Karl Pearson and other English statisticians to perform quantitative work. For example, as Bulmer in particular documents, Burgess was the father of census tract analysis; and, along with Thurstone in psychology, Gosnell in political science, and Schultz in economics, William F. Ogburn, who was appointed to the department in 1927, carried out sophisticated statistical analyses. As their students radiated to other universities, these researchers were instrumental in the institutionalization of quantitative social science in America. Within sociology, Ogburn's students—Samuel Stouffer and Philip Hauser, to name just two—were to teach yet another generation of quantitative researchers and to perform multivariate statistical analysis before Columbia gained prominence in this area and furthered the "research over theory" paradigm in sociology. This shift in research orientation from field to quantitative and statistical analysis was hotly debated within the University of Chicago, and within the sociology department; in particular, Herbert Blumer often clashed with Ogburn. But in the end research took precedence over theory.

As Chicago came to the forefront of quantitative sociology in the 1930's, it became even less theoretical. Thomas, Burgess, and Park had all believed that, in principle, theory and research should be integrated, but Ogburn and his students were less interested in theory than

in the collection and correlation of "hard facts"—indeed, Ogburn was suspicious of abstract theory. And so as quantitative sociology was born in American sociology it had an antitheoretical bias—a bias that both Bulmer and Kurtz underemphasize.

This distrust of highly abstract and formal theory is, I feel, the main legacy of the Chicago school. Of the theory that does endure from Chicago's golden era, the greatest legacy, which Bulmer deliberately ignores because he feels it has received too much attention, is that of the philosopher George Herbert Mead. The human ecology perspective also survives, but it was near the Chicago school's decline in the 1930's that Louis Wirth ("Urbanism as a way of life," *Am. J. Sociol.* 44, 1–24 [1938]) reformulated Park's and Burgess's vague ideas, and it was not until after World War II, with the publication of Amos Hawley's *Human Ecology: A Theory of Community Structure* (1950), that human ecology became a systematic theory. Perhaps only in criminology did theory develop at Chicago, but in this instance it was subsequent generations working elsewhere who did the real theoretical work. Current theory of race and ethnic relations in sociology ignores, and for good reasons, Chicago school ideas. Contemporary theories of deviance owe their inspiration more to Mead than to anything the central figures in sociology produced. Moreover, the Chicago school tended to underemphasize two areas where theory is most developed in modern sociology—stratification and complex organizations. Both Bulmer and Kurtz make a noble effort in summarizing Chicago's theoretical contributions, but I find their arguments rather weak, because there simply is not much theory to summarize.

American sociology today is still a relatively atheoretical discipline. In getting scholars out of their armchairs and into the field I think Chicago arrested the development of abstract theory in sociology. In the name of being more scientific, it underemphasized the basic goal of all science: to develop abstract models and principles. As a consequence scientific sociology has great difficulty accumulating knowledge because it has so little systematic theory to guide research or to organize the vast quantities of data that have been collected.

What does endure from Chicago's golden era is an image of a discipline that must do research before it theorizes, that must induce theory rather than test it, that forces theorists to produce data and researchers to generate theory. Yet I suspect that could Auguste Comte see

what became of his positivistic dream for a science of society—a "social physics," as he preferred to call it—he would be disappointed. Along with others who have told the story of the Chicago school, Bulmer and Kurtz have only given us part of the tale and have emphasized only the positive portions of its legacy. For as long as sociology defines its scientific mission as quantitative analysis of large data sets it will remain an immature science. This is the negative legacy stemming from the fact that Chicago dictated the paradigm for scientific sociology.

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Visions of Social Order

Technological Utopianism in American Culture. HOWARD P. SEGAL. University of Chicago Press, Chicago, 1985. x, 301 pp., illus. \$30; paper, \$14.95.

One striking characteristic of American society is its utopianism. We have been a nation divided between those who claim a special mission for the United States and those who lament the failure to live up to the promise of the new world. A nation that creates itself out of nothing, perhaps, cannot avoid thinking such grandiose thoughts. But if there is a powerful strain of thinking of America as paradise found or paradise lost, there is also another powerful element of utopianism that is less pretentious, occupying a sort of "middle landscape." This, as Howard Segal defines it, is the world of technological utopias, a peculiarly American variety of literature that flourished from the early 1880's to about 1933.

The technological utopians Segal identifies were some 25 authors who held a common vision of America's future. Writing in a period characterized by the substitution of mechanical power for human labor and the reorganization of work and living space that created modern America, they believed that more technology, better applied through better organization, would solve the glaring social problems surrounding them. Thus they take their place among thoughtful men and women who lived in a period in which optimists could hope for technological solutions to almost any problem.

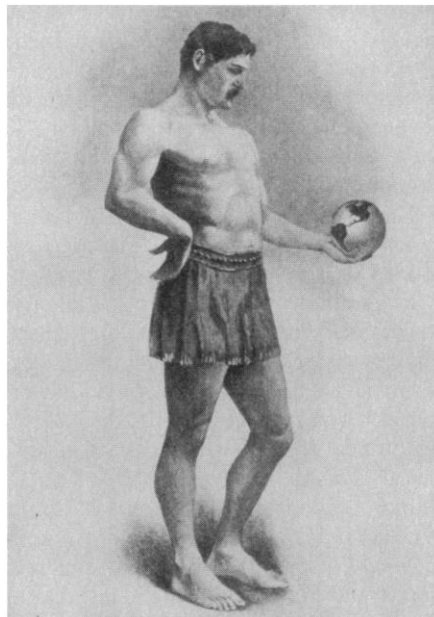
Modest social critics that they were, the technological utopians occupied a

central although now forgotten place in American culture. As Segal points out, they inherited a variety of traditions. Behind them lay the grandiose and sometimes cranky utopias of Fourier, Owen, and Saint-Simon. And growing up at the heart of industrial capitalism were the explosive political utopias of Marxian revolution. In America, however, which lacked the catastrophic visions of Europe or its rigidities of class and custom, utopians from Edward Bellamy to Harold Loeb could imagine a more perfect future in terms of reorganization, not revolution. Thus they shared a perspective with other reformers who advocated scientific management, city, regional, and national planning, and the use of expertise to solve large social problems. Like the Progressive reformers and like liberals in the 1930's, they believed that bureaucracy and not politics provided the best framework for ending social strife and poverty.

Where the technological utopians departed from the common reform agenda, however, was in the comprehensiveness of their vision and in their extreme faith in the capacity of technology and administration to achieve the good society. In short, they were utopians whose dreams of the future edged off into fantasy but whose writings nonetheless remained firmly grounded in the real world.

Segal obviously admires this group, although he is wary of some of their assumptions: for example, their exaltation of the work ethic and inattention to leisure and play. He recognizes that their social criticism is modest and that many of their predictions have been fulfilled in a technological sense without changing society for the better. On the whole, he concludes, their value lies in their sense of the tension between the real and the possible and in their belief in using the benefits of technology to transform human existence in a thoughtful and comprehensive fashion. With extensive notes and bibliography this work provides an important source for the thought of a fascinating group of practical utopians.

There is a passage that Segal quotes that also suggests a different perspective on this group. King Gillette, the eccentric inventor of the safety razor and a leading utopian writer, remarked of education that children should learn "the miracle of scientific production; the fairy tale of flour; the romance of rubber; the wonder of wood and silk." This endowing of material objects and technology with human, historical, or cultural attributes represents the oxymoron of technocratic thought. This same paradoxical



"Man Corporate," from K. C. Gillette's utopian treatise *World Corporation* (Boston, 1910). "He absorbs, enfolds, encompasses, and makes the world his own. He will do more; he will penetrate the confines of space, and make it deliver up its secrets and power, for Mind, the Child of the great Oversoul of Creation, is Infinite and Eternal." [Reproduced in *Technological Utopianism in American Culture*]

quality is reflected in the tendency of these writers to depopulate their utopias, to withdraw the variety and clamor of human life from the future in favor of smoothly running machines. It is as if

technology replaces people. Such a tendency is most apparent in the writings of Edward Bellamy, the most famous of the technological utopians. The society that Bellamy wants to flee teems with variety, social classes, races—people. But his utopia is an enclosed Victorian family circle. Society outside it is described in abstract categories. In abolishing the problems of disorder, Bellamy thus abolishes the disorderly.

Why is this peculiar attitude toward people such a strong strain in technological utopianism? One explanation lies in the social developments of the years from 1880 to 1933. This period of progress and turmoil that created vast technological progress also brought the formation of the industrial working class, the influx of new immigrants and religions, the first flow of black Americans from South to North, the rebellion of women, violence, unions, strikes, and disorder. The technological utopias solve these problems by abolishing the people who personify them. A peculiar sort of abstractness thus lies at the heart of the dreams of a new order. And it is the ultimate failing of these utopians not to have preserved the builders and the victims of the new technological world and not to have granted them citizenship in their imaginary societies.

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An Anniversary in Astronomy

The Early Years of Radio Astronomy. Reflections Fifty Years after Jansky's Discovery. W. T. SULLIVAN III, Ed. Cambridge University Press, New York, 1984. x, 421 pp., illus. \$39.50. From three conferences, San Francisco, Calif., Jan. 1980; Washington, D.C., Aug. 1981; and Patras, Greece, Aug. 1982.

Serendipitous Discoveries in Radio Astronomy. K. KELLERMAN and B. SHEETS, Eds. National Radio Astronomy Observatory, Green Bank, W. Va., 1984. viii, 321 pp., illus. Paper, \$7. From NRAO Workshop no. 7, Green Bank, May 1983.

In 1933, Karl Guthe Jansky presented and published his seminal work on extraterrestrial radio waves, or "star noise" as he was wont to say. These two volumes honor, in different formats, the golden anniversary of the discovery that founded the field of radio astronomy and

that we now know presaged a vast expansion in our ken of the external universe.

But the beginnings were not auspicious. In writing to his father after presenting his paper at a scientific meeting in Washington, D.C., Jansky refers to "an almost defunct organization . . . attended by a mere handful of old college professors and a few Bureau of Standards engineers." He complained that his supervisor at the Bell Telephone Laboratories insisted on a cautious title for his main publication, "Electrical disturbances apparently of extraterrestrial origin," although Jansky felt certain his work demonstrated the galactic origin. He received brief notoriety on the basis of several popular and news accounts of his work, including a front-page headline in the *New York Times* of 5 May 1933,