Revelations Reassessed

Manufacturing Knowledge. A History of the Hawthorne Experiments. RICHARD GILLESPIE. Cambridge University Press, New York, 1991. x, 282 pp., illus. $39.50. Studies in Economic History and Policy: The United States in the Twentieth Century.

Between November 1924 and August 1932 a series of industrial experiments conducted at the Hawthorne Works of Western Electric changed forever the practice of both personnel management and social-scientific research. The official story is that a team of researchers, led by Elton Mayo, discovered, much to their surprise, that industrial workers were social animals whose productivity was a consequence of their attitudes toward work and their informal relationships. But as Richard Gillespie makes clear in this remarkable history of the Hawthorne experiments, the official version hides the organizational politics and ideological divisions that characterized the conduct and interpretation of the experiments from the outset. He goes back to not only the original experimental records but also the personal papers of Mayo and his associates Fritz Roethlisberger and William Dickson to show how a single, dominant version of the experiments was produced from the conflicting interpretations of the participants themselves.

The Hawthorne experiments have appealed to social scientists for two major reasons. First, the early experiments, which were conducted in the relay assembly test room, are now firmly associated with dogged and disinterested scientific pursuit of the truth. They have been taken as an example of a modern-day Columbus-style journey of scientific discovery. In the relay assembly test, we have been taught, the researchers systematically improved working conditions in the test room and monitored the effects on the production of five female assemblers. As conditions improved, production rose; when, however, in the 12th test period, working conditions were returned to those of period 3, production continued to increase. According to the Hawthorne legend, the scientists, when confronted with this improbable result, reconsidered all their old assumptions and hypotheses and concluded that the continued increase in production was due to the workers' having a positive attitude toward their work and being willing to cooperate with the researchers precisely because they had been selected as participants in the experiment. This outcome has been enshrined in social-scientific lore as the "Hawthorne effect"—the unexpected impact of nonexperimental variables on experimental outcomes.

Second, the later experiments, which were conducted in the bank wiring test room, are now associated with the notion that the workplace is a social setting whose occupants are more responsive to group norms than they are to economic incentives. The results from the bank wiring test room, in particular the discovery that workers continued to restrict their output despite personnel practices that were believed to have put an end to this behavior, meant that analysis of the workplace was more than an exercise in industrial engineering; a fresh legitimacy was now conferred on social-scientific accounts.

Gillespie's argument is not so much that these interpretations are incorrect—although he faults Elton Mayo for using the data selectively—as that they convey a false impression of consensus among the researchers. In truth there was little agreement among them on what to make of the results from the relay assembly test room or from the bank wiring test room; the scientific revelations that the researchers later claimed to have experienced, like that in the crucial 12th period of the relay assembly test, were not perceived as revelations at the time. The emergence of the dominant interpretation was due almost entirely to the extraordinary influence of Elton Mayo.

Gillespie shows that Mayo, a onetime professor of philosophy at an obscure Australian university, was in many respects a singularly unlikely leader of a scientific revolution. Dissatisfied with his academic environment in Australia, he arrived in the United States in 1922, aged 42, with few prospects and even less money. He gained a toehold in the American academic world thanks to the largesse of John D. Rockefeller initially and subsequently of the Laura Spelman Rockefeller Memorial. Although he eventually settled at the Harvard Business School, his position there was always marginal—his salary came from Rockefeller grants and he therefore did not teach any classes. When the Rockefeller Foundation finally discontinued its support in 1943—between 1923 and 1943 Mayo and his collaborators had received grants totaling more than $1.5 million—the business school grudgingly paid Mayo's salary until his retirement four years later. This marginal man of academia was neither an exceptional researcher nor a great scientist: his own, somewhat tendentious account of the Hawthorne experiments, in the best-selling *The Human Problems of an Industrial Civilization*, displayed a determination to make the data

Workers in the Hawthorne Works relay assembly test room, 1927. "In the foreground are the chutes through which the completed relays pass into the boxes below. The measuring equipment is on the bench in the rear. The workers are, from the left, Anna Haug, Wanda Blazejak, Theresa Layman, Irene Rybacki, and Adeline Bogatowicz." [From *Manufacturing Knowledge*; courtesy of AT&T Archives]

fit a "psychopathological" model in which all worker discontent was viewed as a manifestation of personal and social maladjustment.

Mayo's success owed more to his personality than to his intellect, notwithstanding his wide-ranging intellectual interests. He was the dominant figure in a network of scientists, executives, managers, personnel experts, and foundation officials that was held together by his personal charm and through which he acquired the influence to effect a single, authoritative interpretation of these experiments. Herein lies the key to how the Hawthorne experiments were produced and consumed as scientific knowledge.

The experiments were turned into scientific knowledge at Mayo's Industrial Research Department at the Harvard Business School. Harold Wright and William Dickson, two of the company researchers most involved in the bank wiring room experiment, temporarily left Western Electric and moved to Harvard, with their salaries coming out of Mayo's Rockefeller Foundation grant. It was at Harvard that the mass of inconclusive data and conflicting interpretations were reconciled, in books such as *The Human Problems of an Industrial Civilization* and Roethlisberger and Dickson's *Management and the Worker*, into a homogeneous account stressing scientific method in the experiments and human relations in the workplace.

Much of the subsequent debate over the Hawthorne experiments has concerned whether the five assemblers in the relay assembly room were indeed cooperating with the experimenters, as the official accounts have stated, or were coerced by economic circumstances and managerial discipline into increasing their production. What this debate has missed, as Gillespie emphasizes, are the organizational contexts in which the experiments occurred and in which the experimental data were subsequently turned into knowledge. The Hawthorne experiments, after all, were conducted by company managers upon company workers and were thus embedded in relations of hierarchy and authority. Each side not only had its own interpretations of the experimental outcomes but also used the experiments to protect or advance its interests. For example, the women in the relay assembly test room argued, in their discussions with company researchers, that their increased output was due to improved working conditions in the test room—the rest breaks, the morning refreshments, and the reduction in the variety of relay types, which made their work easier and faster. When, in period 12, these privileges were withdrawn, the women simply took unsanctioned rest breaks and brought their own refreshments, until the researchers forced them to comply with the experiment. They continued to talk and laugh during working hours, despite the disapproval of the researchers. In addition there was evidence that the workers were taking advantage of their special group piece rate to increase their earnings by increasing their production.

Some of the company researchers similarly believed that the rest breaks, the limited number of relay types, and the pay incentive were primarily responsible for increased production, whereas others, influenced by Mayo's psychopathological approach, rejected this argument and stressed instead the improved mental attitude of the relay workers resulting from the looser supervision in the test room. Although there was no way of deciding which of these arguments was correct, when the experiments were written up at Harvard credit for increased production was given to the experimenters' adopting a supervisory style that paid attention to the human needs of the workers; the workers' own views were ignored.

The interpretation of the bank wiring room experiments displayed a similar evolution: a variety of interpretations of output restriction during the time the researchers were at Hawthorne, followed by a single, dominant interpretation when they were at Harvard under the influence of Mayo's theories of worker behavior. Clarity and certainty of argument were achieved by denying that workers' restriction of output had any political or economic motive—even though Dickson had in fact argued in one of his early reports that this practice was a form of both resistance to managerial control and economic self-defense—and attributing it instead to personal maladjustment.

Richard Gillespie has written a masterly account of how scientific knowledge is produced. It will surely become the definitive history of the Hawthorne experiments. My only complaint is that he concludes by defending the Hawthorne experiments of the charge that they were "bad science" by asserting that all science is an inherently social activity and that all knowledge will bear the imprint of the social context in which it has been produced. I find this an excessively and unnecessarily relativistic position. As Gillespie himself has demonstrated, the authoritative interpreters of the experiments, that is, Mayo and his colleagues, used the data selectively in order to promote the validity of their methods and theories. They lacked the receptivity to alternative explanations that one expects in scientific analyses. It is interesting to speculate what the result might have been had, say, W. Lloyd Warner, who was a better social scientist and whose anthropological approach was central to the research design of the bank wiring room study, been directly involved in writing the final accounts. My hunch is that we would have seen a better interpretation of the Hawthorne data.

WILLIAM FINLAY
Department of Sociology, University of Georgia, Athens, GA 30602

Men at Play

Southern Hunting in Black and White. Nature, History, and Ritual in a Carolina Community. STUART A. MARKS. Princeton University Press, Princeton, NJ, 1991. xviii, 327 pp., illus. $24.95.

Hunting is the "quintessentially masculine activity." A substantial body of recent social science has explored the world of women, but this book takes us to a less studied domain, the private and public realms of men at play. Stuart A. Marks charts North Carolina hunters—blacks, whites, and Lumbee Indians—over the last 200 years. The book presents a synthesis of recent interpretative approaches in anthropology with traditional concerns with symbol, social conflict, and ecological change. At times the exposition is overburdened by this effort, but overall the interweaving of narrative, fiction, interviews, observations, and social history is highly productive.

Hunting traditions reveal central values, symbols, and tensions in American life. Some hunting traditions have elite origins, which Marks contrasts with the democratic ethos of the American frontier. In the antebellum period, wealthy planters affirmed aristocratic ideals through the hunt. The planter ventured forth in leisure, on horseback, with trained dogs and a retinue of trusted slaves and friends. The hunt was a coordinated "vortex of action, surrounded by the roaring swirls of peers and subordinates, of horses and hounds, all focused on a common objective." A commander, the gentleman hunter reaffirmed by his hunting expertise that the basis for his superior place in society was achievement and skill, not chance. Patrician generosity was expressed through largesse with the meat obtained.

In contrast, poor whites and slaves relied on hunting for an important part of their diet. Small landowners resisted the dominance of upper classes over the landscape and articulated democratic hunting rights. "What right does the planter have to reserve the deer for his own purposes merely because he owns the land?" protested an overseer.