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Review of: Forces of Production: A Social History of Industrial Automation by David F. Noble

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leadership to improve its ties with black organizations and to increase its influence within the Harlem black community in general.

Part 3 examines the erosion of the Party influence in Harlem between the signing of the Nazi-Soviet Pact and the United States entry in World War II. The significant development in this section is the emergence of an indigenous protest leadership in Harlem capable of executing mass protest operations without assistance from the Communist party.

Perhaps the principal strength of the book is that it provides, for the first time, a scholarly, mature account and analysis of an important development in the twentieth-century history of urban racial/class mass protest movements. Naison has no difficulty in placing his research in a stream of previous scholarship that examines the influence of the Communist party in black protest movements in the United States, which indicates that his study has a fairly rich theoretical base. Naison's findings on the personal dimension of black membership in the Party and the evolution of the Party's racial policies are very clear: The Communist party, including some black communists, did play a major role in mass protest movements in Harlem between the late 1920s and early 1940s. Naison is equally as clear in his position that the attraction of the Communist party to Harlemites was always stronger among black artists and intellectuals rather than rank and file blacks. Even among those blacks attracted to the Party, the basis for their collaboration was not an embrace of the communist ideology, but rather a calculated recognition that the human and financial resources offered by the Party were important to their efforts to use protest strategies to extract political, social, and economic benefits from political and economic elite structures. Another important point that Naison makes is that although many blacks in Harlem appreciated the Party's support of black causes, even at the height of Communist influence in Harlem in 1938 the Harlem branch of the Communist party had less than 1,000 black members.

Other strengths of the book include the author's detailed description of relevant developments, meticulous analysis, careful documentation, and reasoned conclusions. Regarding the latter, Naison is careful to draw only those conclusions that are well within the limits of the data consulted.

The weaknesses of the book are relatively minor. For example, although Naison thoroughly accounts for the early difficulties the Communist party had in winning influence among black Harlemites in the early 1920s because of the relative prosperity of the decade—and the Party's subsequent success in attracting support among blacks in the 1930s because of the economic and social malaise of that decade—he does not provide an explanation as to why blacks were able to develop an independent mass protest capacity in the early 1940s as opposed to an earlier or later time.

A special feature of the book is a chapter in the Appendix that focuses on black-Jewish relationships within the Communist party in Harlem. This is a very enlightening chapter, which provides an important historical perspective to the transformation of the interrelationships between blacks and Jews which has occurred since their collaboration in the civil rights movement in the South in the 1950s and 1960s.

*Communists in Harlem during the Depression* is an excellent book. I believe that it will stimulate further research into the role of the Communist party in other twentieth-century mass protest movements in the United States.

**Huey L. Perry**

**Southern University**


One of the most intractable challenges facing us in the social sciences is to explain technological development. We all tend to objectify technology, to see it, in Noble's words, as "an irreducible brute fact, a given, a first cause" (p. xiii). Even those few who have argued that technology is determined by socioeconomic forces have been unable to support their assertions with detailed and convincing evidence, thereby reinforcing the hegemony of the technological determinists. Given the absence of significant alternative technological approaches among advanced industrial societies (including state socialist ones), antideterminists are left with but one recourse in making their case: to reconstruct the range of options available at the birth of various technologies and to identify the forces propelling the development of one option and the demise of others. It is this "travel down roads not taken" (p. 146) that makes Noble's book such a pathbreaking work.

To make his case against the technological determinists, Noble selects to examine the birth, development, and implementation of automatic control in the machine tool industry. At the end of World War II there were two principal options available for the design of automatic control: "record-playback" (R/P) and "numerical control" (N/C). Each was designed to produce a variety of parts under the instructions of various
programs stored on a permanent medium—in other words, to be “self-acting,” or automatic. Each, therefore, reduced the amount of skilled labor required in the production process. There was, however, an essential conceptual difference between them. Whereas R/P depended on, and thereby acknowledged, the skills of the machinist by recording and making a program of his movements as he put the machine through its paces, which could then be played back indefinitely, much in the manner of the player piano, N/C eliminated “altogether” (p. 84) the need for the machinist by having the program produced by computer programmers working directly from management blueprints.

Noble argues that N/C “won” not because it was necessarily the “best” design in terms of technical efficiency, cost-effectiveness, or commercial viability, but because it dovetailed neatly with the separate and complementary interests of key groups in the society. The military (in particular, the Air Force) and the scientific community (in particular, MIT) play a crucial role in this story. The Air Force, with their requirements for parts fabricated to extremely close dimensional tolerances (necessitated by the development of high-performance aircraft), pushed hard for N/C, which they hoped would produce machining free of human error. The scientists at MIT, already predisposed to prefer abstract, formal, and deterministic solutions to problems and seduced by the largess displayed by the Air Force, were willing accomplices in the promotion of N/C.

Nevertheless, according to Noble, R/P had several commercial advantages over N/C and could well have been attractive to the vast majority of machine tool firms that did not need the capabilities of N/C. Why, despite the relative simplicity and cost-effectiveness of R/P, did it languish? Noble’s answer is straightforward and expresses the central thesis of the book. R/P lost out because it threatened to undermine the existing power relations in the society by lending itself “to programming on the shop floor, and worker and/or union control of the process” (p. 151). N/C won because it “held out the promise of greater management control . . . [and] seemed a step closer to the automatic factory” (p. 167).

Noble has accumulated a great deal of documentation in support of his thesis, much of it of a primary nature. Clearly, there will be disagreements with his interpretations. I, for one, am not persuaded by his reading of the GE experiment in worker participation with N/C, which he claims was abandoned because it threatened management control even though it was profitable. The dichotomy Noble sets up between productivity and profit on the one hand and control and domination on the other seems forced, and his assertion that capitalism is not and never has been a “system of profit-motivated, efficient production” (p. 321), but is rather a system whose goal is “domination,” is unproductive. What differentiates capitalism from other modes of production is not the goal of class or group domination—all have had that in common—but precisely the means by which the domination is established and preserved.

Disagreements notwithstanding, this is a magnificent achievement in social history. Noble has now pointed the way for all students of technological development, and it would be criminal indeed if the current technological revolution should be accepted passively, mouth agape, without some examination of the multiplicity of roads before us.

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The role of mass participation in highly complex science and technology policy areas is a topic that interests both the democratic theorist and the public policy analyst. Fortunately, Citizen Participation in Science Policy is a collection of essays that might satisfy both audiences. James Peterson has carefully integrated works on democratic theory, participation, and policymaking, all with a science policy focus.

The volume begins with an overview by Peterson that is followed by Dorothy Nelkin’s discussion of science policy and the democratic process. She examines the role of the technical expert and argues cautiously for greater public scrutiny and citizen involvement in science policy. Her discussion precedes four chapters that fall under the heading, “Varieties of Citizen Participation.” They provide the reader with an instructive, straightforward “how-to” guide for potential activists in science policy.

The final section of the book is a series of three case studies of health policy and three case studies of nuclear policy. The health section includes a fascinating look at the “over selling and buying” of the U.S. war on cancer, a useful overview of the role of consumer groups in health planning, and an integrative evaluation of the impact of participation in biomedical policy. In the biomedical policy article, Diane Dutton effectively addresses some issues that characterize the appeal of the book. First, she questions whether participatory democracy is possible in the modern context of