

Technology and Capitalism

“America by Design”

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a review of

David F. Noble, *America by Design: Science, Technology, and the Rise of Corporate Capitalism* (N.Y.: Knopf, 1977). 384 pages, \$12.95.

David Noble has written a genuinely path-breaking book, one which addresses critical issues in an analytically creative and historically concrete fashion. *America by Design* is distinguished not only by its scope, by the picture it offers of capitalist development in the first three decades of this century, but above all by the questions it poses. In this sense, the book itself represents a leap in historical perspectives, and it is to be hoped that future studies will begin with the concrete approach offered here, not those which it has surpassed.

Noble has asked in a new way many of the questions posed by radical historians and economists since the early 1960s, questions which were posed in such a way (static, “either/or” dichotomies) as to hinder the formulation of a view of historical development as a whole, questions like: do “managers” or “owners” control the corporations? is the primary capitalist concern profits or control over workers? is technology an independent force in history or a simple adjunct to production? does the state or private industry control the pace and pattern of economic development? was scientific management or corporate liberalism the primary response to labor unrest? do universities produce the “new working class” or the new corporate elite? does technological development in the twentieth century point the way to a future of increased freedom or increased social control?

Noble offers us a fresh perspective by making an end run around these dichotomies and posing the question of the whole from the outset: “How has a relatively static, possibly outmoded capitalist social structure managed to endure—indeed, to be reinforced by—a revolution in social production that otherwise has swept away all vestiges of the past, all memories.” (p. xvii)

Unique Angle

This question, too, has been asked before, but it has been answered at such a level of abstraction as to be of little use to our concrete concerns. Noble, on the other hand, has found a unique angle of entrance, one which grounds his answers in the rich detail of historical development, social relations, and social visions, which then generates a new picture of the whole, while both highlighting particular questions and demonstrating their relationship to each other and their insertion into the whole. “In search of clues, this study traces the interwoven history of the twin forces which together gave shape to modern America—scientific technology and corporate capitalism—by focusing upon their common medium, modern engineering.” (p. xvii)

Engineers lie at the heart of this study not because they were the personnel of a new technocratic ruling class, not because they were able to shape history as they saw fit, but because their own development and activities were

both a personification of the changes in production and economic organization, a product of fundamental technological and economic development, and a critical agency in the particular course this development took. “Technical and capitalist imperatives were blended in the person of the engineer and converged in his work, engineering. The engineer designed his machines with profit and reduced labor cost as well as the quality and quantity of product in mind, and with the aim of transmitting management authority into the work process.” (p. 260)

Thus the question is not whether technicians (engineers, managers) imposed their visions on corporations or simply served the corporate elite, but how and why both groups came to see their aspirations as linked, as dependent on corporate growth, as did scientists, university officials, foundations, and government agencies which promoted scientific research.

Noble’s assertion that “from the start, modern technology was nothing more nor less than the transformation of science into a means of capital accumulation, through the application of discoveries in physics and chemistry to the processes of commodity production,” (p. 4) should not be startling news to the readers of the *Fifth Estate*. But his ability to demonstrate this by discussing concrete industries, corporations, and the human beings who served them gives us the opportunity to see what such statements meant in reality, and what this may mean for our future.

“In all of these industries the systematic introduction of science as a means of production presupposed, and in turn reinforced, industrial monopoly. This monopoly meant control not simply of markets and productive plant and equipment but of science itself as well. Initially the monopoly over science took the form of patent control—that is, control over the products of scientific technology. It then became control over the process of scientific production itself, by means of organized and regulated industrial research. Finally it came to include command over the social prerequisites of this process: the development of the institutions necessary for the production of both scientific knowledge and knowledgeable people, and the integration of these institutions within the corporate system of science-based industry.” (p. 6)

Noble really pulls off this ambitious undertaking, and in a manner so rich in detail no reviewer can adequately summarize it without falling into many of the pitfalls his approach is meant to avoid. So I won’t try to go any further into the details of his discoveries and documentation, content to urge readers to find out all this for themselves.

The “New” Immigrants

However, remaining at the level of his perspective as a whole, there are two areas I would like to probe a bit, in the hopes of pushing both research and debate, recognizing the need for as concrete an examination as Noble offers. The first area is one the author himself recognizes, that “this book describes only one aspect of American history in the twentieth century; other people shaped that history too.” (p. 324)

Increasingly, we are being offered studies of these “other people”—the “new” immigrants of southern and eastern European origins, who shook American society with a wave of mass strikes in the first two decades of this century; skilled workers who fought the introduction of scientific management and evolved increasingly explicit versions of “workers’ control”; the hard-rock miners, lumberjacks, and itinerant workers of the west who pioneered in the development of new tactics of struggle—sabotage, working to rule, free speech fights, etc.; black migrants to the industrial north, who generated a new culture of struggle through armed self-defense and the Garveyite movement of the 1920s; and on and on.

Recent studies in labor history have presented us with ever richer pictures of the lives, struggles, and visions of these “other people.” However, the synthetic level Noble so masterfully operates at is still lacking here. We still need to know how the developments described in *America By Design* influenced these “other people,” how their struggles altered the “best laid plans” of the corporate reformers and contributed to the particular evolution of the social whole, and how the disparate but simultaneous struggles of all these different social groups influenced each other. In short, to be relevant to our concerns rather than simply “interesting,” labor history itself can learn a great deal from Noble’s approach.

The second area is more problematic, and touches even more directly concerns which have often been expressed in the *Fifth Estate*. This area could broadly be depicted by the question Noble surprisingly fails to pose: to what extent

does the development he describes indicate that the technology and science created in twentieth century America is an inappropriate base from which to organize a genuinely new and liberated society?

In other words, does this technology offer us “productive forces” which we can simply “appropriate” and use in a different (or the same) way, or is it so marked by its conception, birth, development, and elaboration as to be virtually useless, so capitalist to its very core that it must be thrown aside rather than taken up?

A review such as this is not the place to try to address this question. However, the question of how Noble’s methodology facilitates—or limits—our ability to answer it must be asked. Posing this question returns us to another common concern: the usefulness of a Marxist approach to historical development, and its connection to future possibilities.

Many people, myself included, have in recent years sought to maintain the position that Marxism, on the one hand, offers us the best available set of insights into historical development and the dynamics of contemporary society, while, on the other hand, it is increasingly inadequate as an approach to concerns with a future organization of society.

Use of Marxist Framework

Several writers—Jean Baudrillard (*The Mirror of Production*), Paul Cardan (*History and Revolution*) among others—have questioned the attempt to operate in such a fashion. This is not the place to try to resolve this question in a definitive way. But we can ask if Noble’s use of a Marxist framework to examine historical development generates a similarly creative framework for our present and future-oriented concerns.

Noble indicates in his introduction a Marxist framework allowed him to make the creative breakthroughs that he accomplished. Rejecting other available approaches to the course of historical development, he argues:

“The classical Marxian view of the role of technology in capitalist society is more subtle and compelling. Here the fundamental relationship between society (social relations) and technology (forces of production) is a dialectical one, and thus, in essence, an identity, with the two being but different aspects of the single process of social production...The historical process of social production embraces this reciprocal interrelationship between productive forces and social relations; in producing for itself, society is also producing and reproducing itself, its work habits, institutions, relations between people, and dominant perceptions of reality.” (p. xix)

There is no question in my mind but that Noble’s use of this framework greatly facilitated the breakthroughs he was able to make. It led him to look at development as a whole, and the mutual interaction of different spheres of social activity—engineering, production, corporate structures, educational institutions, and the State.

On the other hand, it seems to me that Noble’s adoption of the Marxist framework as a whole has led him to overlook the thorny questions which continue to vex us. For example, in the same passage quoted above the following statements are found:

“...Insofar as the emerging capitalist social relations between classes make possible the creation of a social surplus, they make possible as well the development of more sophisticated productive forces which both reflect and reinforce these social relations. The internal evolution of these same productive forces, however, entails a transformation of the actual social activity of production material changes which steadily lay the foundation for a more humane social order, and thus pose a challenge to these social relations...The crucial factor in Marx’s theory of technological-social change is the twofold significance of the development of the productive forces: they both reinforce the existing social order and undermine it.” (p. xix)

To his credit, nowhere does Noble try to demonstrate concretely how the developments he describes in his book—the deskilling and dehumanization of work, the subordination of education and science to corporate growth, the emergence of the social “sciences” and human “engineering,” to name but a few—have any connection whatsoever with the “foundation of a more humane social order.”

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Rather, it appears to me that he has provided a great deal of evidence to argue the precise opposite. Yet he fails to return to these initial formulations and recast them in the light of his presentation of the concrete social changes wrought by the wedding of scientific technology to corporate capitalism.

I would argue that Noble's acceptance of the "classical Marxian view" in toto has blinded him to this particular question, one of the crucial questions of our time. If this is so, we must return to the question posed by Baudrillard, Cardan, Letters of Insurgents, and various writers of the Fifth Estate, among others—is a Marxist approach a hindrance or a help?

In this particular case, could Noble have achieved as much as he did by adopting—or developing—a different framework? Can he—and we use some insights from Marx and still forge new approaches? These questions do not lend themselves to easy answers, but they must be asked. David Noble deserves credit for having written a book which makes the asking of these questions so apparent, even if he doesn't raise them himself.

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