

Forces of Production: A Social History of Industrial Automation

By David F. Noble
Alfred A. Knopf, 409 pp., \$22.95

Work Transformed: Automation and Labor in the Computer Age

By Harley Shaiken
Holt, Rinehart and Winston, 306 pp., \$17.95

Beyond Mechanization

By Larry Hirschhorn
The MIT Press, 187 pp., \$17.50

By David Moberg

THE IDEA OF MACHINES automatically doing our work touches primordial dreams and nightmares.

For those who work, it extends to the limit all those ways of making work less burdensome, freeing them for doing whatever they most enjoy. For those who are their masters, it is the dream of the perfect slave—completely obedient and reliable. Yet this fantasy carries with it the specter of rendering human workers unneeded, of creating a soulless tyranny and of depriving people of the creativity and craft that is the other side of work's drudgery.

The changes now being wrought in work by computerization, especially microcomputers, by robots and by other steps in automation are dramatic. But as all these books recognize in varying ways, the evolution of technology is more than a technical question: existing social relations shape technology, which in turn influences relationships among people. Although the debate may be about machines—gig mills and shearing frames for early 19th century Luddites in England or computers and robots today—in most cases workers are really concerned about what happens to their livelihood, skills, identity and values. Machine-smashing Luddites—certainly not the know-nothing opponents of "progress" as they are usually portrayed—were less upset about the new machines than about the new factory system that disrupted their moral order and deprived them of work.

University of Pennsylvania researcher Larry Hirschhorn is the most optimistic of these three writers about what can be expected from work in the computer age. The age of mechanization—based on standardization, continuity in production, severe constraints to minimize deviation and the reduction of work to simple labor—was ushered in with the steam engine, as Hirschhorn summarizes industrial history. Workers became cogs in a vast supermachine.

But gradually inventions such as the electric motor and, most important, the vacuum tube relax some constraints in early steam-powered mechanization. As new process industries, such as oil refining, emerged, the mechanical model was changed further. Rather than attempt to eliminate all error, production engineers used delicate sensing and feedback devices to compensate for error. Absolute constraint became less important in pursuit of continuity, but the demands of work changed again.

If mechanization often stripped workers of skills and put them in straitjackets, the post-mechanization technology threatens to make them mere dial-watchers or less. Yet Hirschhorn is convinced that in these cybernetic systems work-

ers remain crucial. In order to compensate for error, which can grow in significance with complex, automated systems (witness Three Mile Island or the air controller network), workers must be constantly learning, thinking imaginatively and exercising judgment. Under the pressure of the new technology and a new market emphasizing variety and quality (rather than cheap mass production), the old industrial culture will give way to workplaces of salaried teams rotating among jobs, evaluating peers and working with minimal direct supervision, Hirschhorn believes.

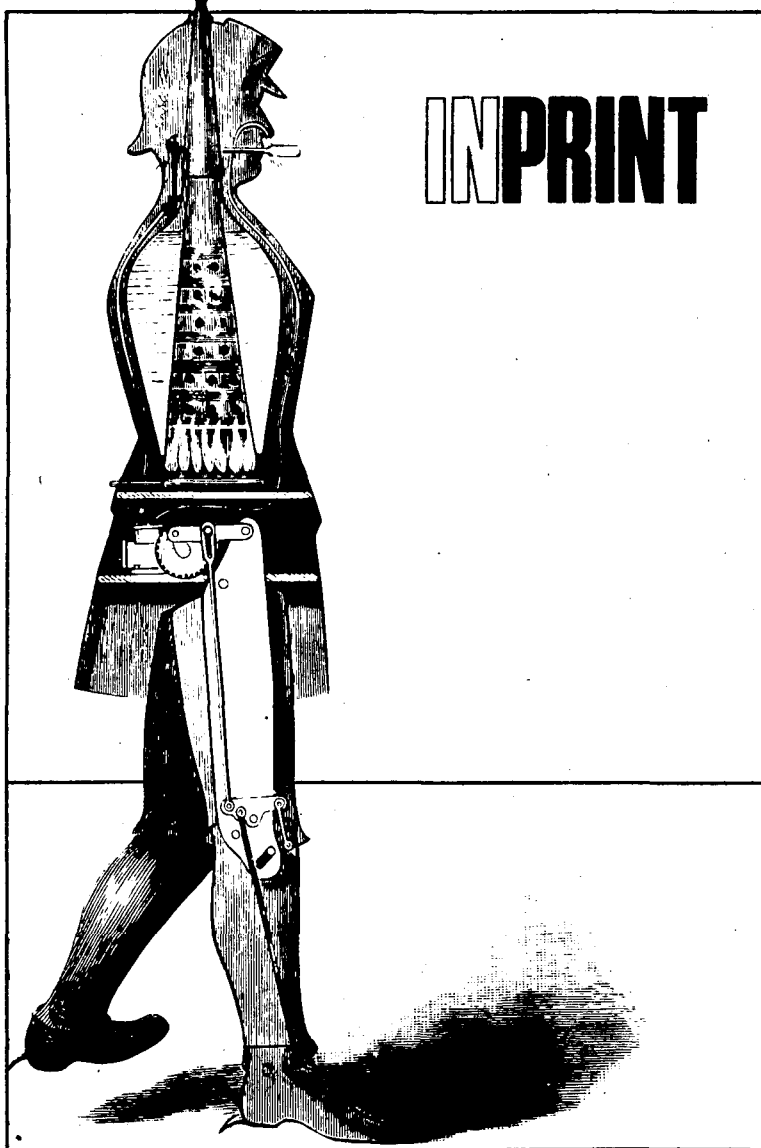
Historian David Noble, author of *American By Design*, has much less faith in some inexorable march of technical progress. Not only the use of tools but their very conception and design, he argues, is shaped by the interests of those in power. Quite frequently their overriding interest is reinforcing their control (and capitalists will even endanger profitability to do so), Noble writes. He argues that there is an abiding dilemma for the capitalist: dependent as workers may be on him for a job, the employer must still find a way of motivating those workers to do their tasks well. Even when employers do everything to strip workers of the skills that give them power, they find themselves dependent on human initiative, imagination and craft.

Noble focuses on the post-World War II transformation of machine tools, especially the emergence of numerical control (NC). Numerical control replaced the skilled machinist with a coded message giving instructions to a lathe or other metal-cutting machine. In great detail Noble shows how the partly independent but mutually reinforcing interests of the military, universities and management not only sped the development of NC tools but also determined their character.

The ideal for all three powerful institutions was to take as much of the control over machining off the shop floor and put it in the planning offices of management and its allies, the engineers and computer programmers. The favored systems did just that, despite questionable economic advantage and many technical difficulties.

With numerical control, engineers and computer programmers with no practical knowledge of cutting and grinding metal planned the work abstractly and formally. Yet there was another system, called record-playback, that used the skilled machinist to provide the record of movements for machining future parts. It was like using a player piano to record a master pianist's performance. As is true in much of the history of

The questions of technology can only be answered by being clear about our social goals.



AUTOMATION

Manual labor in a machine future

technology, the skills of an individual worker would be "captured" by a machine. But the worker would still be central to production.

Noble makes a strong case that record-playback had many advantages over numerical control and could have been more inexpensively and readily adopted by machine tool shops. (Indeed he suggests that Japanese reliance on "open-loop" systems that included rather than excluded the operator may have helped them originally gain their now overwhelming position in the U.S. machine tool market.) But the Air Force—which is now in the vanguard of promoting the fully automatic factory—was footing the bill for development, and it had technical requirements far beyond what was relevant in most shops. And MIT researchers had a stake—intellectual, institutional and pecuniary—in computer-based numerical control. Management, too, was lured, despite great problems with NC, by the prospect of eliminating skilled workers.

The impossible dream.

But that dream has not materialized. As Noble and Shaiken both point out, the successful operation of NC tools requires skilled operators, ready to adapt to problems that are often amplified by the new, complex systems. As NC was introduced, management often fought to use less-skilled workers at lower pay. But that led to worker discontent and inefficient use of the much more expensive machines.

Shaiken, a machinist turned MIT researcher, shares much of Noble's perspective on NC development but is more optimistic about its potential. Yet he argues

that technological potential is stymied by management insistence on control, which brings not only a moral cost but a loss of potential productivity. Noble seems even more convinced that NC did not and does not make economic sense. Military priorities, scientists' arrogance and managerial assertions of power propelled the technology's development, he insists.

Although much of the new technology undermines the power of workers and their unions—as it was intended to do, Shaiken hopes that unions can still mold the technology, possibly through insisting on a "technology bill of rights," such as one drawn up by the Machinists. But Noble's history is not encouraging. In most cases, unions have simply accepted management decisions about technology and negotiated for damage control and protection of some rights of existing union members. Even people sympathetic to affected workers are likely now to shrug their shoulders, mumble something about "you can't stop progress" and, at best, argue for a shorter work week (which is only part of the response).

Noble makes clear that technology can follow varied courses. There is no rational hand of the market, science or god inevitably guiding it toward efficiency, let alone fairness. In order to represent workers effectively, unions must learn about technological alternatives—just as they must understand investment strategies—and at least be a major pressure along with the military, universities and managers in deciding directions.

Hirschhorn is optimistic that managers will wake up to changes

IN THESE TIMES APRIL 17-23, 1985 13 in the market and technology and, as a consequence, promote the "sociotechnical" workplace. He concedes a small place for unions in making such factories work better, even though most are now non-union. But he tends to view most of the problems that have emerged in these efforts at non-authoritarian workplaces as technical glitches. In a fascinating, detailed history of one failed experiment at a General Electric factory, Noble shows how giving workers greater authority frightened management: the idea could spread and expand, raising the issue of "who's running the shop?"

Hirschhorn framed the issue in terms of an "industrial culture" of mechanization giving way to a new culture "beyond mechanization." Yet the arrangement of work is also framed by the social and economic system, capitalism in our case. As Noble noted, despite greater productivity with factory democracy, limits of the GE experiment "were determined by a consideration far more fundamental than that of profitable production, namely, the preservation of class power."

Ultimately, Hirschhorn and Noble converge on some points, with which Shaiken would undoubtedly agree. The future economy depends heavily on a more highly skilled, flexible, autonomous and continuously learning workforce. But Hirschhorn sees expanded automation as not only the wave of the future but largely as a blessing. (He does not discuss how janitors and fast food servers, who are proliferating far faster than nuclear plant operators, fit this image of future work.)

Noble questions not only the economics but the political desirability of much new technology. And Shaiken takes a middle ground: there is potential for improvement in workers' lives and economic performance that is now thwarted or perverted.

Ultimately, the questions about the technology can only be answered by first being clear about our goals as a society. Whether robots, computers, NC lathes or other tools represent progress or peril depends not only on how they are used, but also on what kind of society and individual citizens as well as products that we want to build with those tools. Our limited public discussion now tends to be inverted, and society is shaped by a technology that appears—yet is not—the autonomous embodiment of rational progress. ■

W. KERRAS PITY SAY
"NUCLEAR WAR—
KEEP OUT!"

Saturday, Feb. 23
Dear President Reagan—
Well, it's over 6 months now since I declared
our house & garden at 3 Cherry Drive,
Canterbury, a NUCLEAR FREE ZONE! Still
so much to do, what with shoring up
defence perimeter (garden hedge a weak
spot, I'm afraid)—acquiring defensive arms
(my letters about purchase of Harrier jet
apparently not taken altogether seriously)
... & writing for advice to Mrs. Thatcher.
Gen Haig, defence boffins, &cet.
In fact, I think my letters, and the actual
replies I've received, make rather a hilarious
read—so I've put them all together in a book!
It could make me a hero, a la *The Mouse*
That Roared! Or maybe it'll be more like
Monty Python...
At any event, look for it in your American
bookshops around Spring, probably with
some suitably silly title, such as...

THE DEFENSE DIARIES
OF W. KERRAS
Edited by David Moberg
PANTHERON

By Pat Aufderheide

A LAMO BAY, DIRECTED BY Louis Malle, is a film whose American theme, setting and style are developed with the awareness of a foreigner. A social drama with heroes, villains and conflicts over morality—the motor of its plot is racism—it is free of moralism. It maintains a unity between character, class and circumstance; it's a cowboy film about people who think they're living in cowboy films.

The story is drawn from real life. In the last few years, vicious violence has erupted in the Texas Gulf, triggered by white fishermen pinched by hard times and threatened by the growing community of Vietnamese, whose entrepreneurial will and immigrant industry have created competition and, some say, also threaten the entire industry by depleting the fish supply. The conflict has allowed Ku Klux Klan organizing to flourish there, as it has elsewhere recently.

The story begins with the arrival of open-faced immigrant Dinh (Ho Nguyen) to the small fishing village of Port Alamo, but the center of the story is Glory (Amy Madigan). Young but already weatherbeaten, she has come back home to help her ailing father run his imperilled seafood wholesaling business, which buys from Vietnamese. She's still got a passion for her high school heartthrob Shang (Ed Harris), now an unwilling husband and father and about to be dispossessed of his fishing boat. Angry with the "gooks" and "slops" who've moved into the neighborhood, he takes his rage out on Glory's father, his wife and the Vietnamese themselves.

When Shang loses his boat to the local banker ("I'm just doing my job, Shang"), his friends, helped by the local Klan organizer, gang up on the Vietnamese, riding shotgun in the bay, breaking up a Catholic Church service, and stomping Dinh's little dinghy (named, of course, "Glory"). Most of the Vietnamese evacuate the area, and Glory's dad goes to the hospital with a heart attack, but Dinh returns to defend Glory and fight it out, one-on-one, with Shang.

"You may be one of the last cowboys in Texas," Glory says to Dinh, and she's right. Dinh is the American hero that Shang tries to be. He's entrepreneurial, genial and tough in a crunch. The movie is, in fact, not about ethnic conflict so much as it is about the many sides of an American male stereotype. The same qualities that Dinh admires and emulates are those that, under stress, can breed Shang's bigotry and self-destructiveness.

Racism here is no social issue visited on innocents, or a blot on the American character (recall Ronald Reagan riding to Ginger Rogers' rescue in *Storm Warning*). It's the product of a world where political pluralism exists side by side with ideals of frontier individualism, where social tensions are rephrased as moral battles. Shang knows that somebody always has to wear the black hat—Indians, Mexicans, blacks. He isn't ready to turn in his white hat to a new frontier hero.

The film deliberately treats the Vietnamese as the "other," an impenetrable cultural block. The camera peers through a window at a family praying before dinner, and surveys a congregation from

a church doorway. Their boats are seen at sea from those of white fishermen, and when some Vietnamese fishermen sneak ashore after illegal night fishing, we're the guys waiting for them on the docks. Their distance becomes even more frustrating because they share the aspirations of the natives. "I don't think anyone anticipated that you would want to own the boats," smiles the local minister at a town meeting called after a vigilante outbreak.

The battle lines have a middle ground: Glory (echoing "Old Glory"), the decent, ordinary, garden-variety American. She's not imprisoned by macho expectations of herself, and so doesn't need to make the Vietnamese into an enemy. Neither, however, is she a candy-coated *Places in the Heart* heroine. She's never been able to get over her attraction to Shang; and her love affair with him is also a kind of death-wish.

Alamo Bay refers, not coyly but evocatively, to a stockpile of Western movie images—male bonding at the local bar, the town meeting where the hapless community expresses itself at a loss without a strong leader, the climactic shootout. And it deftly recasts them, putting heroics in

then become both spectacular and critical. It becomes clear that when the Klan stages its coarse dramas—hooded men on a boat bearing down on the viewer; cross burnings; ritual chants of "Death to gooks!"—its value to the damaged men who join it is its very theatricality, its ritual sanctifying of their pain. It turns complex conflicts into a crusade; it locates an enemy, makes action—vengeance—possible.

The horror of the Klan in *Alamo Bay* is that, grounded as we are in Port Alamo's petty daily harassments, its building economic pressures, and its embattled macho ideals, the Klan's ersatz ritual makes a certain kind of sense. Its theatrics burst on the screen with the dark thrill they do in the lives of Shang and his spiritually-impooverished friends.

This is not the first time Louis Malle has made the dark side of a national character the center of a film. His *Lacombe, Lucien* was the story of a French adolescent who becomes a collaborator during World War II, as a way of earning himself both self-respect and glory in hard times, and out of a stultifying lower-middle-class culture. There, as here, Malle could find tragedy in material others

ART«»ENTERTAINMENT

FILM

The Cowboy lives and he wears a black hat



context. Here, the bar is the scene of despairing drunks and Klan organizing; the hero of the town meeting is Dinh, the foreigner; and the shootout's improbable ending makes it a statement about false resolutions to social conflict.

The script, by Alice Arlen (*Silkwood*) is flamboyantly sentimental, but never false. Sentimentality is an authentic part of Port Alamo's little world, where tacky neon signs look exotic after a day on the docks, where even dreams take on a desperate quality and people cling to clichés for reassurance. The scenes with the Klan

exploited for moralism, or simply buried and then, perhaps unconsciously, built on. It is the second time he has explored the ironies of American character; his *Atlantic City* was a sympathetic, wistful view of our love affair with luck.

In *Alamo Bay*, he may have made the ultimate Western that *The Shootist* wasn't. There, John Wayne played a cowboy dying a non-hero's death by cancer, having lived past his time in history. What Malle knows is that the cowboy, far from being a relic of the past, is a living figure with a tragic dimension.

MEDIA B E A T

I Just Called to Say You're Censored

The annual Oscars ceremonies are not only Hollywood's tribute to itself, but a celebration of lowest-common-denominator sentiment, best expressed this year by Sally Field's pronouncement, "You like me!" But occasionally the real world peeks through the tinsel, and this year Stevie Wonder did the honors. When he accepted his Oscar for Best Song ("I Just Called to Say I Love You"), he did so in the name of South African leader Nelson Mandela, in his 22nd year of a life sentence for his leadership role in the African National Congress. Mandela led the formation of a guerrilla arm of the ANC after it was declared illegal in 1960. Revenge was swift from the apartheid government of South Africa; its state-owned broadcasting service promptly banned Wonder from its radio and TV shows. It isn't the first time the service has banned a performer. Exiled black South African singer Miriam Makeba was once declared off limits, and so were the Beatles, after John Lennon said the group was "more popular than Christ." A spokesman for the corporation explained that not everyone who opposes apartheid is banned; Wonder's sin was endorsing a leader of a violent movement to overthrow the government.

Big, Bigger, Biggest

When ABC and Capital Cities Communications announced a merger, it raised eyebrows among those concerned with the independence of communications companies. The same kind of alarm went up with announcement of Rupert Murdoch's buy-in to the 20th Century Fox. Alarm over the integrity of the corporate media seems a bit tardy, especially in the case of ABC. ABC was created out of a merger between the failing American Broadcasting Company and the theater chain Paramount had been forced to spin off by a government consent decree. Early on ABC branched out, buying into Disneyland (the Disney corporation then fed ABC kiddie programs). ABC volunteered for merger, with ITT, in 1965, though the proposal was squashed by the Justice Department. Then Howard Hughes almost took over ABC, reportedly abandoning the project for fear of publicity should the FCC complain. That was in the days when the FCC took regulation more seriously; recent liberalizing will allow this merger to maintain most of both original companies' outlets. This infuriates Hollywood producers concerned about the uniting of cable and network TV interests. It is hard to imagine any merger cutting into ABC's integrity; it is the pioneer of "T&A" (tits and ass), of soft-news and infotainment. And it is hard to share Hollywood's concern over cable-network united front, since all sides share the same perspective: simple greed. Rupert Murdoch's deal is old news in a Hollywood where Gulf and Western controls Paramount and Coca-Cola runs Columbia, and where execs hop from corporate office to office with nary a change in soft-drink preference. Just how remote the concept of independent communications media is these days was highlighted when the *New Yorker* was purchased without consultation with its editor. The news provoked a spate of nostalgia and alarm among commentators for conglomerate-owned media, as if one weekly publication were the repository of all America's journalistic integrity.

Daniel Schorr on the Firing Line

Daniel Schorr's commitment to airing the news has never been easy for the establishment. The veteran TV news reporter began his broadcasting career in Moscow, and the KGB kept him under tight surveillance. When he moved to Washington—eventually breaking the Watergate story on TV—American intelligence agencies watched him just as closely. Now he's fallen afoul of authority again and was fired, as of March 31, by Ted Turner's Cable News Network. On being hired in 1981, he insisted on a contract clause preserving his journalistic independence, and on that clause negotiations foundered. The incident recalled his departure from CBS in 1977, when he was pressured into resigning after passing a suppressed congressional intelligence report to the *Village Voice*, after CBS refused to make it public. The document recorded a sordid CIA history of skulduggery in Iran, among other places. In his autobiography *Clearing the Air*, he wrote, "To file and forget a document already in my possession would, as I saw it, have made me the ultimate suppressor." That attitude has made Schorr an example of the best in mainstream political reporting. "What I think America needs," he said on his regular CNN call-in show on a recent Saturday, "are people who can explain the news without any particular point of view." As his firing made clear, what America also needs are communications media that can keep people like that on staff.

"Brought to You By..."

Geraldine Ferraro may be the best paid political figure to endorse a commercial product, with her soft-focus pitch for Pepsi. But she's not the only one. In Atlanta, for instance, Mayor Andrew Young endorses a hair care product in advertisements that attract attention on public transport. As more politicians cash in on their media image, we can expect that they will become more discriminating, searching out the product that represents them best. Media Beat encourages readers to send in their suggestions for the best match between politician and product. Look for the results in this space.

—Pat Aufderheide