
GLOBAL ELECTRONICS

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IBM'S GLOBAL P.C.

Not too long ago Ford Motor pitched its Escort as a "world car." Though IBM's PC is perhaps a better candidate for a world product, the computer giant has refrained from making such a claim. Most buyers assume that the PC is American-made.

However, *Business Week* (March 11, 1985, citing Future Computing, Businessland Inc.) contends that \$625 of the typical PC's \$860 manufacturing cost is spent abroad, including \$230 at U.S.-owned plants. The keyboard, power supply, and graphics printer are made in Japan. Of the floppy disk drives' \$190 cost, \$165 is done in Singapore. The monochrome monitor is built in Korea. The semiconductors, valued at \$210, are listed as half from the U.S. and half from Japan, but a more realistic assessment of chip production would allocate 40% or more of the "U.S." semiconductors to Far Eastern assembly plants.

SUBCONTRACTORS

The companies that market high-tech products such as computers do not always build them in-house. Spurred by IBM's outsourcing of its personal computers, the contract manufacturing industry in the U.S. now does annual business of nearly \$10 billion, at some 2,000 plant sites. In the San Francisco Bay Area alone, there are an estimated 350 subcontractors, making and testing printed circuit boards, mainframe disk drives, and many other products. Perhaps the biggest there is Solectron, of San Jose, with 2,000 employees.

In the Southeast US, contract manufacturers pull in more than \$3 billion a year. The biggest are SCI Systems (4,400 employees) and Avco (1,000 workers) in Huntsville, Alabama and Teledyne (2,100 employees) in Lewisburg, Tennessee. All three are heavily dependent upon IBM. Teledyne, for example, built the PC Jr. until IBM halted production.

Computer companies such as IBM rely on subcontractors for two key reasons. First, the subcontractors have lower production costs. And second, they act as a buffer. IBM for example, doesn't lay people off; it just terminates contracts, and its subcontractors have to cut back instead. (*Electronic News*, September 10, 1984 and February 25, 1985)

MOSTEK LAYS OFF

In the U.S., newspapers and trade magazines have been punctuated for the past few months with lay-off announcements. Computer and peripheral firms cut back as capacity finally exceeded demand, while semi-

conductor makers, coming off a dramatic boom in 1984, are caught in a cyclical bust.

Mostek, the United Technologies subsidiary based in Carrollton, Texas, let go 500 of 5,400 production employees in Texas and another 120 of 550 in Colorado Springs. Meanwhile, at its Malaysian assembly facilities it announced cutbacks of 600 of 2,600 workers in Penang and 400 of 700 in Kota Bharu.

Rather than lay off Malaysian workers outright, Mostek forced "voluntary" retrenchment by promising severance pay to volunteers and threatening demotions and lay-offs without benefits if not enough would volunteer. Employees were given less than four days to respond, and under such pressure more than enough "volunteered."

U.S.-JAPAN COOPERATION

Though American electronics executives find "Japan, Inc." to be a convenient scapegoat in their campaign to win subsidies, trans-Pacific cooperation is on the rise. In April, RCA, one of the first companies to manufacture transistors, and Sharp, a Japanese producer of consumer electronics, announced a joint venture, to be 51%-owned by RCA. The two firms are pouring \$200 million into the new company, which will fabricate integrated circuits at one of four U.S. sites: Austin, Texas; North Carolina's Research Triangle; Colorado Springs; or San Diego, California. (*San Jose Mercury News*, April 17, 1985)

Meanwhile Japanese-owned Oki Semiconductor says it plans to build a wafer-fabrication plant in the U.S., but presently it beams (via satellite) custom designs from its Silicon Valley facility to its Japanese factories. (*Electronics Week*, March 18, 1985)

P.S.C. NEEDS MONEY

Though *Global Electronics* is essentially self-sufficient, it relies upon the ongoing research and filekeeping of the PSC staff. To support that work, PSC seeks grants from foundations and churches, and it channels income from writing and speaking into research as well. We expect additional revenues later this year, when *The High Cost of High Tech* is published, but presently the center is desperately short of cash. To function normally until fall, PSC needs contributions from individual friends and supporters. Checks should be made payable to the Pacific Studies Center, 222B View Street, Mountain View, California, 94041. Donations to PSC are tax-deductible under state and Federal law.

BRITISH HOMEWORKING

The Low Pay Unit in London (9 Upper Berkeley Street, London W1H 8BY) has just published a report on cottage industry and other home work in Britain, titled **Sweated Labour**. The authors, Liz Bisset and Ursula Huws, estimate that there are at least 300,000 homeworkers in Britain today. Most of those who work at home, as opposed to "from home as a base," are women.

Bisset and Huws conducted a survey of 130 homeworkers, including 52 doing traditional home labor, such as apparel production, and 78 "new homeworkers," primarily women employed as computer professionals. Both groups worked at home largely because they had young children.

The authors reported that they found relatively few workers doing data entry at home, due to the high cost of telecommunications. In other countries, such as the United States, low-skill "new" homework is more prevalent, since communications costs are lower.

Not surprisingly, Huws and Bisset found new homeworkers to be better educated, better paid, and treated more in accordance with labor laws than traditional homeworkers. But they concluded, "when we compare the wages of the new homeworkers with going rates for similar sorts of work in an office, the relative disadvantage of homeworking is disturbingly reminiscent of traditional homeworking."

The women surveyed chose homework as an economic necessity, not as a social ideal, and many complained of their isolation. The authors warned, "most of these workers, particularly working mothers, would prefer to work outside the home, but perhaps within easier reach of it than the major city centres. One can imagine a spread of office work to small towns or local centres, adjacent to schools, shops and other services, and well served by public transport, with facilities provided for the care of dependents."

RESUME THEFT

In Silicon Valley, where brainpower more than any other factor is the key to corporate success, police have confiscated a new type of "hot" merchandise. Sunnyvale public safety officers have charged William Van Pelt, manager of professional personnel at chipmaker Advanced Micro Devices, with embezzlement, conspiracy, and grand theft. Van Pelt allegedly copied more than 100 resumes of prospective AMD employees - engineers, marketing specialists, etc. - and sold them to a "headhunter" recruiting consultant. Professional recruiting is big business in high technology, with some firms, such as AMD, setting up their own headhunting staff to avoid the large fees charged by independent consultants. (San Jose Mercury News, March 15, 1985)

BARBADOS

The Caribbean country of Barbados, seeking additional North American investment, placed a seven-page ad in a recent issue of **Business Week** (April 15, 1985). The ad, authored by Caribbean Business Development's Mary Ramond, reports that the island hosts ten electronics companies, including Intel and TRW, employing 2,700 workers.

There are also five data processing companies there, also employing 2,700 people, primarily in data entry. International Demographics, with more than one hundred employees, does most of the data processing for its parent, Denver-based consumer-research outfit National Demographics.

Caribbean Data Services, American Airlines' Barbados subsidiary, says it has cut the parent company's data entry bill in half. Productivity exceeds CDS's original expectation, which was 90% of its Tulsa, Oklahoma productivity. In 1979, when CDS started, it only did work for the airline, but now it subcontracts for outside clients as well. (See also **Global Electronics** issue no. 41)

Ramond says that electronics and data processing managers credit the follow factors in Barbados for their success: "Low labor costs, high productivity and accuracy, strong work ethic and company loyalty, low job turnover rates, and well-educated, English-speaking workers."

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PRIVACY

One of the greatest risks of the computerization of American society is that high-tech methods of surveillance are outpacing the ability or willingness of society to limit them. The automation of bank records has placed an enormous volume of personal financial information at the finger-chips of would-be snoopers.

In 1976 the Supreme Court ruled that "depositors have no constitutional right of privacy under the Fourth Amendment to records relating to them possessed by banks." Congress, still responding to the public wave of indignation over the Watergate break-in and associated scandals, enacted the Right to Financial Privacy Act (RFPA) in 1978. The act requires that bank customers be notified, in advance, of the government attempt's to gain access to their bank records. It also gives the target of such an investigation the opportunity to contest the search in court.

The Act exempted FBI counterintelligence investigations from its key provisions, but Congressman Bob Stump (R-Arizona) maintains that the FBI has had trouble taking advantage of its exception. He says, "The problem is particularly acute in States such as California which have enacted strict State banking privacy statutes." He says that banks frequently refuse to cooperate in the belief that the legislation merely authorizes the FBI to request access to bank record, but does not require bank cooperation. In addition, banks are concerned that they might be held liable for violating customer privacy.

Stump proposes, therefore, that the RFPA be amended to make FBI requests mandatory, to preempt state legislation, and to protect banks from civil suits and criminal prosecution for releasing information to the FBI.

SURVEILLANCE

Vought Missiles and Advanced Programs, a division of LTV Corp., may have come up with another application for a laser radar it is developing for the Air Force, which wants to use the technology to aim tactical missiles. *Aviation Week* (February 25, 1985) reports, "Once, when the laser radar was inadvertently left pointed towards a Grand Prairie, Texas apartment building, engineers were startled to detect movement of people inside the apartment."

Meanwhile, *Electronics Week* (March 4, 1985) says that Control Data and a Florida-based non-profit agency called Pride are marketing computerized bands to be attached to the legs of parolees who have been convicted of non-violent crimes. The rubberized bands, which hold small radio transmitters, are not designed to prevent escape directly, but they report almost immediately the movement of parolees away from their homes. The devices also detect the removal of the bands by stretching. The bands can of course be cut, but parole officers can easily spot such deception.

GALLIUM

The increasing use of gallium arsenide (GaAs), a metallic compound, in semiconductor production has sparked concern among industrial safety specialists and activists, primarily because arsenic is deadly even in small doses. The *Raw Materials Report* (Vol. 3, No. 2, 1985) warns, however, that there has been insufficient study of gallium. It says that high doses of gallium can cause kidney and respiratory problems, but it concludes, "Expected exposure levels in the microelectronic industry are not likely to cause any kidney damage."

I.B.M. LEAKS

In Silicon Valley, IBM is one of two firms whose industrial chemical leaks have already polluted public water supplies, and it has spent more than any other firm thus far on clean-up. But the computer giant has environmental problems across the country, too. This January, authorities near Manassas, Virginia closed a drinking water well due to contamination by tetrachlorethylene, an organic solvent used by IBM's plant there in the early 1970's. Though IBM has reported leaks, it has not accepted responsibility for the poisoning of the well. It has, however, promised to pay to filter water from the closed well. (*Washington Post*, October 11 & 15, 1984; February 20, 1985)

TOXICS LIABILITY

The easy come, easy go nature of Silicon Valley's electronics industry at times makes the clean-up of contaminated groundwater and improper hazardous waste disposal particularly difficult. The *Peninsula Times Tribune* (March 24, 1985) describes the case of an industrial property owner, Walter Ricci, whose last tenant, Precision Media, filed for bankruptcy more than a year ago. Authorities do not know which of the four high-tech firms that have operated on the site are responsible for the contamination of the property, which is laced with methyl ethyl ketone and cyclohexanone. Ricci is being held responsible, and he estimates that his clean-up bill will total as much as \$400,000, the value of the property.

NETHERLANDS

The National Investment Bank of the Netherlands reports ("Future of Applied Technology," cited in UNIDO's *Microelectronics Monitor*, April-September, 1984) that the Dutch microelectronics industry is growing rapidly. In 1983 that industry, counting hardware but not software or service firms, included 350 companies employing 15,200 workers. 250 small firms (employing fewer than 200 people each) added a total of 1,243 new jobs to their combined 6,000-person payroll over a two-year period. Twenty-four percent of those new jobs were created by new companies.

INSTRUMENT TRADE

In 1983, American producers of measuring, controlling, and similar instruments produced over \$10 billion worth of products. Such instruments include equipment which is not necessarily electronic - sensitive balances, calipers, thermometers, barometers, etc. - as well as high-tech instruments. That year U.S. companies manufactured \$4 billion worth of surveying, hydrographic, navigational, meteorological, hydrological, and geophysical instruments, and another \$5.25 billion in apparatus for measuring, checking, or controlling liquids or gases, or controlling temperature.

U.S. exports of all such instruments exceeded \$2 billion, while imports remained under \$1 billion, leaving the U.S. with apparent consumption of less than \$9 billion in 1983. Employment at 300 firms in this category is approximately 53,000. Canada is by far the largest source of surveying instruments and similar imports, supplying primarily navigational equipment, and Canada and the United Kingdom were the major recipients of U.S. exports in that classification. Canada was also the largest source and market for equipment controlling and measuring gases, liquids, etc.

"Measuring, Controlling, and Similar Instruments," **Summary of Trade and Tariff Information**, U.S. International Trade Commission Publication 841, Control No. 7-2-23 (Supp.), January, 1985, provides detailed statistics on the various types of instruments. It actually breaks down instruments serving each function into electrical and non-electrical. It is important to remember, however, that optical equipment and instruments measuring electronic phenomena, radiation, etc., are not covered by this report.

MACHINES ARE DIRTY, TOO

Those who foresee fully automated integrated circuit factories often point to the unwanted impurities intro-

duced into wafers during fabrication, caused by the presence of human operators in "clean rooms." People may be a major source of contamination, but machines at this point also introduce undesirable particles and gases.

Bruce Hokanson of the Semiconductor Equipment and Materials Institute (**SEMI Outlook**, First Quarter, 1985) writes that moving parts generate metallic impurities, and even stationary parts, such as pigmented plastics, can oxidize and release traces of titanium and aluminum. Engineers are not only working to develop cleaner machines, but some predict the design of super-clean compartments within automated wafer fabrication equipment. Compartments would be connected by tunnels.

Since the creation of cleaner machines poses numerous technical problems, it is not likely that workers will be eliminated from the typical clean room for some time.

TEXAS

The state of Texas, which won a nationwide recruiting race to draw the Microelectronics and Computer Technology Corporation (MCC) to Austin two years ago, may be renegeing on its promises. The **Dallas Morning News** (reprinted in the **San Jose Mercury News**, February 19, 1985) reports that Texas is having problems balancing its budget due to declining oil revenues. To save money, the state legislature is considering cuts in university funding, including funds for high-tech researchers. Bobby Ray Inman, head of MCC, said that the University of Texas lost a chance to hire an unnamed "superstar" high-tech academician from California because of its financial uncertainty.

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