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SILICON VALLEY DECLINE IN CHIP PRODUCTION EMPLOYMENT

In March, 1989, the State of California's Employment Development Department published a report, "Silicon Valley's Displaced Semiconductor Workers: Recession in 1985" by Paul Ong and Don Mar. The following article is taken from a synopsis and analysis prepared by veteran electronics labor organizer Michael Eisenscher.

We devote this issue to this single piece because it gives an unusually detailed picture of changes in the high-tech workforce. Our next issue will return to our normal format covering many subjects and sources.

Please note that the report deals specifically with the semiconductor industry in Sant Clara County. Recent growth in Silicon Valley production employment has occurred in subsectors such as computers (including work stations) and subassembly, and a good portion of Valley production work is now carried out in plants in southern Alameda County, considered part of Silicon Valley but not included in the same standard metropolitan statistical area.

In 1985 a recession swept the electronics industry, with particular impact on Silicon Valley's semiconductor industry. During that recession over half of the work force experienced at least one lay-off. Of 27,000 jobs affected, 13,000 layoffs were permanent. Almost all were due to contraction, not closures or mergers.

Findings

- The industry as a whole lost 10,000 jobs.
- Assemblers and other production workers were disproportionately effected.
- The average age of displaced workers was 33; the average 1984 annual pay in was \$21,000. (compared to \$19,448 nationwide.)
- Younger and older workers, those with low seniority, and African-American workers were more likely to be laid off than others.
- For those displaced, layoffs were more frequent and longer than for those reemployed; subsequent employment tended to be unstable and of lower income. A majority either left the region, experienced at least one turnover, or did not have full-year work.

- The average annual earnings of displaced workers who worked were lower in 1985 and 1986 than in 1984. Adjusted for inflation, average 1987 earnings were also lower than in 1984.
- Between 1984 and 1987, reemployed workers' income growth was 27% greater than that of displaced workers.
- As a consequence of semiconductor industry restructuring, the Bay Area lost \$135 million to \$140 million in direct wages in 1987 due to lost jobs and lower earnings. With indirect effect included the loss increases to over \$400 million.
- Between 1984 and 1985, the Valley semiconductor industry cut 14% of its labor force (a drop from 49,700 to 42,800). By 1986, only 38,700 workers remained in the industry. By end of 1987, 43,200 workers were employed.

Permanent Restructuring

While industry sales recovered, jobs once performed in Silicon Valley did not return.

Some work was transferred to new facilities in other regions of the U.S. as the industry continued to implement its plan to reduce the focus of production in the Valley in favor of newer facilities located in less costly locations.

Some work was lost to overseas competition (for example, DRAM chips). Work was also assigned to overseas facilities of U.S. manufacturers. [Some of the overseas "competition" was from joint ventures with U.S. companies.—M.E.]

Work also became more automated, reducing
(continued on page 2)

LATE AGAIN

With this issue, we hope to return *Global Electronics* to its regular, monthly publication schedule. Lenny Siegel has completed the major writing portion of his work with the National Toxics Campaign Fund's Military Toxics Network. We're sorry for the delay. Our emergency fund-raising appeal appears to be successful, but we could still use tax-deductible donations, new subscriptions, and volunteers.

the amount of labor required.

As a rule all major firms implemented all three strategies: relocation in the U.S., relocation abroad, and automation. Historically these are not new phenomena. In the past, however, market growth produced an increasing Silicon Valley workforce even while local work as a share of global production declined.

What was new in 1985 was the restructuring of the Silicon Valley work force.

- Production-related workers comprised 46% of the work force in 1985, but made up 68% of the workers permanently displaced.
- Professionals, who were 28.2% of the labor force were 15.3% of the displaced.
- Managerial personal were 7.3% of the labor force, but 6.2% of the displaced.
- Clericals were 15% of all workers, and 6.7% of the displaced.
- Sales/Service workers were 3.5% of the labor force; 3.4% of the displaced.

Unequal Distribution

The restructuring did not affect all workers similarly. Black workers were almost twice as likely to be displaced as to be reemployed, while displacement rates of other ethnic and racial groups were comparable to their reemployment rates.

- Blacks, who composed 2% of the sample, had a displacement probability of 63%, compared to 45-48% for other groups.
- Women were more likely to be reemployed than displaced (56.7% of reemployed were women; 52.5% of displaced were women).
- The average age of displaced workers was 33.3 years while that of reemployed workers was 35.4 years. A third of the reemployed were under 30 as opposed to 44% of the displaced. 39% of the reemployed were over 40 while 22% of the displaced were over 40.
- Displacement struck those under 25 and over 59 most sharply (59% and 55% respectively).
- While 45% of those displaced had a year or less of service, 32% had three or more years; of those reemployed 26.5% had a year or less while 57.5% had three or more years of service.
- Workers in firms with 1,000 or more workers had a lower probability (45%) than those in smaller firms (less than 100 workers) (73%) of permanent displacement.

Work in Silicon Valley is increasingly focused on research and product development and specialized production, with a greater reliance on high-end technical/professional skills.

The EDD projects that by 1995, only 35% of the work force will be comprised of production and related workers, while professional and technical workers will make up 39%.

63% of laid off workers experienced multiple spells of unemployment during the recession, reflecting employment instability.

Predictably, more unemployment translated into lower overall earnings. Total earnings (current dollars) for the reemployed workers were 7% lower in 1985 than in 1984, but 13% higher in 1986 compared to 1984. For displaced workers, earnings were 10% lower in 1985 and 17% lower in 1986, compared to 1984.

Lower 1986 earnings was due in part to some workers who dropped out of the California labor force. A sizable proportion (17.6%) of displaced workers by 1987 had left the California labor force. Another 14.8% of the displaced worked in California but outside the Bay Area.

Of those who found work in California, 45% were reabsorbed by the high tech sector: 28% worked for another semiconductor firm; 11% worked for a computer firm; 6% found work with other high tech companies. For most, movement out of high tech meant movement to lower paying jobs in lower paying industries with weak opportunity for upward mobility.

Reemployed workers enjoyed a rate of earnings growth 27% higher than of displaced workers between 1984 and 1987. On average reemployed workers lost \$1,374 (current dollars) in earnings between 1984 and 1985. By 1986 they had managed not only to recover their past level of earnings but even to exceed 1984 earnings.

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Displaced workers, however, suffered a drop of \$2,129 between 1984 and 1985 earnings. Their annual earnings remained depressed until 1987 when it exceeded 1984 levels by an average of 4.5%. But when adjusted for inflation, 1987 earnings were actually 4.5% below 1984 levels.

Among affected workers, men did better than women with earnings that were 12% higher than displaced women workers. Hispanics' earnings were 11% lower than that of other workers. (No separate data was reported on African-American worker earnings.)

Displaced workers who ended up working outside high tech fared worse than those who found other work in the high tech sectors. Those who were hired by another semiconductor firm had a rate of 1987 earnings increase 22% higher than those ending up in non-high-tech jobs.

Conclusions and Recommendations

Dislocation caused by the recession was not a cyclical phenomenon nor a problem of marginally attached workers moving in and out of the labor market. Adverse impacts were ameliorated by a fairly robust economy in California and by expansion of other high tech industries in Santa Clara County. The displacement was part of the restructuring of the semiconductor industry which has permanently reduced the labor force, particularly affecting production workers.

The report's authors make three policy recommendations:

- As reemployment in a high-tech job minimizes wage loss, an intensive program of job-matching to place workers in the same or similar industries can reduce earnings losses and minimize the departure of skilled labor from the region.
- Some form of short-term training may be desirable, as displaced semiconductor workers have skills that are not generally transferable across industries. Training will reduce length of unemployment and retain skilled labor in the region.

Although high tech has been a major source of new employment in the region, it is questionable that these industries will continue to provide the same level of economic growth. Silicon Valley's semiconductor industry is suffering a decline in its once dominant position; it has permanently restructured its production; and it's unlikely to expand operations in the Valley. It is likely that California will experience more displacement as other technology-based industries mature.

The Silicon Valley has been losing its share of production, but as R&D centers are being located elsewhere, it can expect to lose some of its technological leadership as well.

- To reverse these trends, the industry, with support of state and local government, must play a more active role in creating the infrastructure needed to maintain economic development and to promote job creation.

EISENSCHER'S COMMENTARY

As early as 1980, in testimony before the California Senate Industrial Relations Committee, speaking for the United Electrical Workers, I said:

Runaway jobs... illustrate an industry-wide phenomenon in the electronics industry which dominates the Silicon Valley....The relocation of jobs outside the Valley is a strategy shared by all large electronics manufacturers under the misleading term "product development"....

Companies are transferring basic production work, such as fab and test, out of the Valley to satellite plants. They are not abandoning production in the Silicon Valley entirely. They are retaining sufficient production capability and workforce to develop and test new devices, to manufacture limited production devices....After working out all the production and design bugs...long-term production is transferred to a facility in Salt Lake City, Albuquerque, Dallas and so on.

In an industry in which 75% of the production workers are women and 35 to 45% are members of racially or nationally oppressed minorities, the effects of "product development" have a particularly racist and sexist edge. Those who are its victims are precisely the most exploited, lowest paid, and most discriminated against sections of the workforce....

"Product Development" is nothing more than a fancy and deceiving cover for profiteering at the expense of workers and their communities.

That assessment has been confirmed by the Ong/Mar report.

Nationally, between 1985 and 1986, 11,000 semiconductor workers... 19,000 component industry workers... and 34,000 computer industry workers lost their jobs. Between the end of 1984 and March of 1987, the U.S. electronics industry cut its employment by 120,000 jobs.

Yet labor productivity for the top 25 corporations during this period improved. Between 1985 and 1986, revenue per employee jumped 6.4% on an increase of 1.4% in shipments per employee.

(continued on page 4)

Between September of 1984 and August of 1985, the unemployment rate in the Silicon Valley surged upwards by 33% with a loss of 6,000 of the 200,000 electronics industry jobs. In a three year period, electronics industry employment in the Valley declined from its peak of 212,000 to 180,600. The EDD reports that as of March of 1990, Silicon Valley electronics employment stood at 187,500.

Layoffs don't tell the whole story. In 1985, 64,000 Silicon Valley workers were placed on compulsory short weeks under California's "work-sharing" Unemployment Compensation program (in which workers collect pro-rata unemployment compensation for partial weeks of work). 10% wage cuts for many and wage freezes for most others added to the economic effect.

The restructuring of work, reduction in employment stability, and tenure of employment is compounded further by the economic instability of high tech business.

In another study of EDD data by Phil Shapira a few years ago, he found that the average electronics industry manufacturing facility had a life expectancy less than half that of all manufacturing plants in California (6 years as against 13). Technological change in the industry contributes to this differential, but that is not the whole story. Business failures are far more frequent in this notoriously speculative business sector. Successful businesses, in their quest for capital, often succumb to mergers and acquisitions that lead to closure or consolidation of facilities. As companies

grow they very soon internationalize their production, with resulting closures of domestic facilities.

A Warning

Communities competing for a piece of the high tech action are too often tempted to make quick concessions to influence corporate investment and site decisions. Those which have succeeded in securing a high tech base can be just as easily dissuaded from adopting protective measures by fear that any perceived change in the "business climate" could induce firms to flee or expand elsewhere.

Communities which blindly pursue high tech manufacturing as an apparent cornucopia of jobs and economic beneficence need to adopt more sober, realistic, and cautious expectations and development plans which account for the inherent instability and negative impacts which reliance on high tech can have.

As industry pursues its profit and market objectives, decisions made in the board room can have profound effects on a community's economy, workforce, tax base, welfare and public health burden, its environment, development and infrastructure, and much more.

Appropriate planning and rigorous regulatory controls must be developed to enable a community to monitor, moderate, ameliorate, and protect itself from the downside of high tech development.

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