



WOMEN WHO MAKE THE CHIPS



Les Levidow

'Chips with everything': Originally coined by Arthur Wesker to entitle his play in the 1960s, the phrase was taken up again in the late 1970s by promoters of a grander spectacle, the Information Technology Revolution. In this new era, potentially all human endeavours were to be computerized by using devices containing ever-cheaper integrated circuits etched onto tiny silicon chips. Time magazine has been giving away free calculator-watches in that spirit of media hype around chips as cheap, fun toys.

The chips certainly do come cheap to the Western and Japanese manufacturers who incorporate them into industrial equipment or mass-produced consumer items. Although the heralds of the electronic paradise dub them 'labour-saving devices', many users are discovering the ways in which the clerical and industrial applications increase drudgery rather than reduce it. That effect is even more true for those who make the chips. Doing the most labour-intensive jobs in the microelectronics industry, these chip makers are prime targets for each firm's attempts to minimize its labour costs in a highly competitive market. As a result, they bear a great human cost that remains hidden to all who use microelectronic devices.

Even in affluent Silicon Valley, California, the chip makers form the lower part of a two-tier labour force. They are mostly Hispanic or Asian women, many of them 'illegal' (or 'undocumented') immigrants who live in constant fear of being sacked or even deported. They work for the same firms as highly-paid computer professionals but might just as well be living in a different world (Hayes 1987, 1989).

HEART AND SOUL

On a global scale, most chips are made by workers who do live in a different world: Southeast Asian countries, whose governments impose severe restrictions on workers' right to organize, while imposing few health & safety requirements on the Western multinationals who run the plants there, most of them US-based. Each government actively courts these firms by offering special 'competitive advantages' in Export Processing Zones (EPZs). Such is the logic of 'export-oriented industrialization', by which each Third World country will supposedly prosper by finding its niche in the international division of labour.

Yet the resulting investment uses no local products and generates little extra employment beyond the chip makers themselves. It leaves behind only polluted environments and damaged workers. In the USA or Japan, microcircuits are photochemically 'printed' on silicon wafers; with other materials, these are then flown in to each EPZ for slicing into tiny chips and bonding to circuit boards, which are then incorporated into microelectronic devices for export.

In Penang island, one of Malaysia's states. there is one such

place conveniently located near the Bayan Lepas airport. On the main road just outside, numerous microelectronics firms -- each protected by high security fences -- occupy both sides of a veritable 'Silicon Highway'. With no trace of irony, a National Semiconductor building bears the slogan, 'Heart, Soul and Microelectronics'. That slogan aptly expresses the diligent performance demanded by such firms, which offer little compensation for rapidly exhausting the heart, soul and body of their workforce.

A similar message comes even from the government. As Malaysia's Deputy Prime Minister said in 1978, 'Workers must uphold their dignity and not cause problems that would scare away foreign investors. They should instead be more productive so that government efforts to attract investors would be successful.' In this way, politicians try to win support for their efforts towards creating a 'better investment climate'.

Immigrants of the EPZ

Like their counterparts in Silicon Valley, Penang's chip makers are immigrants, too. Roughly three-quarters are Malay women who were brought up with traditional Islamic values in other parts of the country, then recruited from their villages to Penang's Export Processing Zone (EPZ). There such a woman gets her first experience of factory work, of Western dress and cosmetics available in the shops, and of independence from her village elders. Her parents usually resent that independence, at the same time as appreciating the daughter's much-needed contribution to the family income, often amounting to one-third of her factory wages.

Despite local unemployment, the firms have the least skilled work done by these immigrant women rather than by Penang's unemployed men. Local people, especially Chinese, are employed mainly as skilled labour and managers. In contrast to the Malays, they would be less willing to do the unskilled work under such unpleasant conditions at such low wages, at least not without protest. And Malay men remain unwilling to do such work, once it has been defined as 'female'.

Electronics firms claim that they prefer to employ women because they are naturally better suited to the routinized work of the electronics assembly line: nimble fingers, acute eyesight, greater patience. During Britain's Industrial Revolution, factory owners gave similar explanations for why they replaced well-paid, skilled male workers with women and children. In the case of the 'microelectronics revolution' in Malaysia, the employers' real reasons are as transparent as they were in nineteenth-century Britain. As Intel's personnel officer has admitted, 'We hire girls because they have less energy, are more disciplined and are easier to control.'

Malays, especially those from rural areas, are seen as 'happy-go-lucky' people accustomed to living simply, if only because the fertile land yields plentiful fruits and vegetables in return for little work. Although real-life Malays don't fit such a simple stereotype, they certainly have had little to prepare them for the rigours of working for a Western

multinational, especially the new health hazards involved -- including dizziness, headaches, worsening eyesight as well as respiratory diseases. These hazards may not be unique to the microelectronics industry but they are more easily imposed upon workers unfamiliar with the chemicals and conditions that cause the hazards, especially where governments oppose any legal safeguards that would damage the 'climate' for foreign investment.

Overt mass protests have been rare in Penang's EPZ. In 1980 workers at numerous electronics firms struck for higher wages; after returning to work, they received a much smaller wage increase than they had been promised. Demonstrations occurred with the closure of three microelectronics firms in 1985, when all 1500 workers from one plant took to the streets, though without winning anything. The firms have averted much potential protest by learning how to manipulate both the women's traditional submissiveness and their new-found consumerism. As an extra safety measure, the government set up the EPZs with restrictions on trade unionism; in 1970 it also exempted firms there from the law protecting women from night-shift work.

Long-term workers' organization has been made more difficult by the legal restriction preventing the electrical workers' union from organizing electronics workers. Trade-union organizers face the sort of anti-union measures that typify Southeast Asian EPZs. They must also beware a peculiarly Malaysian one, as 'religious police' keep on the lookout for any Muslim people committing the Islamic sin of khalwat -- 'association' (close proximity in private) between a man and woman -- a sin for which, under Shariat law, a court will impose the penalty of a fine or jail; for zina, adultery, the penalty is whipping.

DOWN SILICON HIGHWAY

The predicament of these microelectronics workers first became widely known in the West through Rachel Grossman's now-classic 1978 expose, based on a ten-week trip around Southeast Asia. Although more recent publications have elaborated on her argument, they have provided little update on her findings. The rest of this essay, based on a brief trip to Penang in 1986, will emphasize what has changed there since her report. The fact that both I and my interpreter were both men, however, certainly affected the responses that I received to my questions and limited what the women were willing to tell me.

In my interview with a group of microelectronics workers in Penang, the translation back and forth between English and Malay was done by Bala, a staff member at Sahabat Alam Malaysia (SAM, or Friends of the Earth Malaysia). For many years Bala has worked behind the scenes to help microelectronics workers to organize themselves and demand what few rights they have under Malaysian employment law. In a country where the trade unions have made little effort to help empower these workers, the need has been filled by SAM, which defines its 'environmental' brief to include all health and safety hazards, as well as those forms of modern 'development' which threaten the livelihood of peasants, fishermen, forest dwellers, etc.

there and wanted to go back to their mother; many believed they were possessed by spirits.

As women first arrived in Penang from a relaxed village life, Bala said, they initially couldn't meet the firms' production quotas and couldn't stand the pressure; moreover, they weren't allowed to leave the assembly line when they wanted breaks. Although they were working on the same line, they were unable to protest openly. Reaching her limits of endurance, one of them would break into the 'hysteria', then others would join in.

As Bala explained, nowadays the hysteria happens only a few times a year because most of the women are able to meet the quotas: they've become 'good workers'. Originally the women were working all week long and were even asked to come in to work on their rest days, while nowadays they are on short working weeks, only three or four days per week, so they have more time to rest. Management benefits twice: it pays the workers only for the three days and gets more production for that pay. Moreover, the workers are able to release their tension through the consultative committees set up by management. As one American manager once said so touchingly, 'If people believe management cares, there are no problems. Hysteria doesn't happen.'

When I asked the three women about the hysteria, and whether they believed in possession by spirits, they replied with mock groaning and then burst out laughing. Apparently by now these women were far enough removed from the hysteria for it to be a laughing matter. Yet the change since the 1970s seemed less about improved working conditions than about the women's acculturation to the factory's work discipline.

Jane thought that at Intel the hysteria had occurred for lack of proper food, and because lack of adequate cooling had allowed the equipment to over-heat the air, which of course was full of chemicals. 'People go in and come out on an empty stomach. Sometimes they feel like vomiting.' On one recent occasion there, a worker on the line fainted and fell down, apparently because of the heat. 'The die attachment department must be kept hot for the production process, so the management reduces the air conditioning there.' So the heat is not simply a by-product but an essential condition of production, to which the workers must adapt themselves.

According to Aziz, at National Semiconductors the hysteria still happens a few times per year: 'The workers' health is affected right from the beginning. There are psychological effects because the section demands that each worker meets a fixed quota. If a worker can't meet it, she goes to work with an in-built fear. People can't stand it, they scream, fall down, then get taken to the nurse.' Aziz continued her account: 'The hysteria was frequent in the early days but not anymore because now the workers are used to the working conditions. It usually happens in the afternoon because they have been travelling in hot, humid weather, then go into the air-conditioned factory, then into warm parts or the canteen, and back and forth. But people still don't understand the exact cause.'

Apparently most of the workers now affected come from the same

dormitory or hostel. 'If one worker gets the hysteria, it can spread to the others, so they can believe that it comes from the house. But it really comes from their working conditions', she said.

From Rachel's experience at AMD, the hysteria happens only a few times per year and at most to two or three people at a time. Yet the psychological strain now seems to be transferring from work to home. As she described one episode, 'A friend of mine, living in a company-provided dormitory, dreamt that a friend came to visit her. In the dream she tells her friend not to disturb her. She wakes up, discovers the friend is not there, then screams and faints. The next day another friend had the same dream. The next day the hostel supervisor brought in the bomoh [village spiritual healer].'

On one level the dream might be understood as an Islamic villager's reaction to the fast pace and enforced social isolation of assembly-line work. Is it peculiar to an Eastern culture, though? As distant as all this may seem from Western psychiatric problems, on reflection the story could parallel the way that tensions from our work invade our most private selves, and even construct our nightmares. When we fail to deal with those tensions collectively, we too bring them home to haunt us.

Anthropologist Aihwa Ong (1987) found much evidence to warrant interpreting the spirit possession as a moral protest. Spirit invasions of factory toilets and prayer rooms suggest the distress of moral violation, by virtue of village women being subjected both to factory discipline and to the sexual attentions of male supervisors, particularly non-Islamic ones. As the women are often reminded that their 'honour' is at stake, it is understandable that resistance to factory conditions would take the form of spirit possession -- sometimes by the datuk, the male ancestor.

Beauty contests

In the 1970s many microelectronics firms invited cosmetics vendors to sell their wares during the lunch break on the women's pay day. They encouraged a competitive ethos around Western fashion, just as they did around productivity targets. The firms also held 'beauty contests', whose winners would get all-expenses-paid holidays, sometimes even to the USA. 'I will try my best to take part in this contest hoping to bring back joy and glory to the No-1 company', as one 'beauty queen' was quoted in National Semiconductor's employee newspaper.

When I asked about these contests, the women laughed, as they're not held anymore. The last was in 1983, on the tenth anniversary of the establishment of AMD in Penang. At National Semiconductors the last one was held in 1980; since then, there have been only competitions for singing pop music.

Why the change? Perhaps because many workers rebelled against the contests? No, because the Malaysian government asked the firms to stop, as part of its promotion of Islamic morality -- one of the few examples that seems to have benefited women.

What had the workers thought of these contests? Like many of the Malay women, these three felt that it downgraded oneself to participate. As Aziz explained, 'It is the traditional Malay culture. We have been brought up not to expose our beauty to others. Of course, we don't all follow this tradition. Of every ten women, perhaps three didn't like the beauty contests, while the other seven took part.'

When she stated that the Chinese women liked the contests far more, I asked why: 'Because of the reward they expected to get by winning. Unlike the Malays, they want to earn more, to win prizes and promotion.' Did the firm really use the beauty contests to decide promotions? At this point Rachel interjected: No, at AMD, 'bonder bonder!'. All three women laughed, and Bala had to explain her quip: 'If you're a bonder, you'll always be a bonder.' I found Rachel's comment ironic, given that Chinese people often look down upon Malays for showing little interest in competition and success. Here a Malay was ridiculing the inflated expectations of the competitive Chinese.

Durhaka

In addition to encouraging a competitive ethos, both within and between plants, the microelectronics firms' management have attempted to manipulate durhaka, the traditional Malay injunction against women's disobedience to authority, especially to that of older males. How smoothly is this deference transferred from communal village life to a modern factory? Even apart from durhaka, fear of being sacked has certainly deterred potential protest. Yet the women's vulnerability arises as well from an individual and collective deference that is cleverly structured by the firm.

As Rachel described durhaka, 'one should not disobey the elders or disagree with them' -- though Aziz hastened to add a novel escape clause, 'except when there is something bad done to us'. All three women agreed that disobedience is against God's teaching but denied its relevance to their factory situation. They insisted that durhaka applied only to the family and so didn't stop them from complaining about their working conditions.

Yet these complaints are always made to a committee, elected by the workers but set up by management. They rarely protest directly to the managers, whose replies tend to put the women back onto the defensive. As Rachel recounted, 'When there's no work for us to do and we are pushed around, we are given such answers that we cannot fight back -- such as, that there are no materials available. By moving around, you can learn more jobs. Sometimes in the same day.'

Sometimes don't they get so angry that they want to complain directly to the manager? Replied Jane, 'Yes, but we wouldn't succeed. And we wouldn't want to create problems and be out of our jobs. Sometimes we are very vocal about it and want to fight with them. But after hearing their explanation, we are convinced by them. Sometimes we believe it is our fault.' For example, where the equipment is supposedly designed for the workers to make defectless products and to check them, 'if you come out with defects in spite of that, then you have to accept the punishment

leave, often it's not granted, and then the supervisor uses threats and blackmail with her. Things have improved a bit because of some pressure, especially protests from the Muslim fundamentalists.'

Workers' education

In the face of such obstacles, how can outsiders help strengthen the workers' hand? In the education programmes set up by SAM(FoE), seminars deal with health and safety, basic needs, leadership and workers' rights. They also take up economics, politics and current issues. Although SAM co-operates with local trade unions, Bala feels that they 'aim at training only the up-and-coming official leaders'. He says, 'SAM aims to train grassroots people to make demands and to provide a potential leadership of their own.'

How does SAM try to build up the necessary self-confidence? Bala describes a typical frustrating episode: The first session will be arranged through informal contacts, who pass the word very secretly to people whom they trust and who will come. Many do come to the first session, where we give an introduction about their basic needs in the factory. They ask questions, recommend what we should do, and agree to bring more people the next week. But the next week not a single one will turn up. Why? Perhaps because we are men. Also, someone who attends these group discussions will leak the information that so-and-so was leading a group discussion and that certain workers were there. The management then warn the workers that they must not attend such discussions or else they will be dismissed immediately.

In response to the firms' obstruction, SAM decided to open up a resource centre near the workers' dormitory. By the mid-1980s there were three such centres -- one by the Malaysian Trade Union Congress, one by the electrical workers union, and the Young Workers' Centre headed by a university lecturer. However, when the centres opened, the electronics employers federation gave instructions that no workers must be permitted to attend them; if found there, they would be dismissed.

To enforce that rule, Bala said, the firms brought in a top-ranking officer to live in a house by one centre, to stay there and watch. He needn't watch all day because the workers can't come during working hours anyway. Outside of working hours he or someone else will be there watching. So most workers are too frightened to visit the place.

Had the women thought of forming a trade union in the factory? Said Aziz, 'I have always thought of it, but until now I thought I couldn't do anything. There is no support from my friends because they are afraid of losing their jobs if found out.' These are just some of the obstacles that SAM faces, simply in getting the most interested workers to attend meetings in their 'free' time.

Despite the obstacles, the centres have had sufficient success to attract repression. Their activists were among those detained without trial in late 1987, when the government invoked the Internal Security Act (a legacy of British counter-insurgency) to

arrest dozens of key political figures as supposed threats to 'national security' and/or 'racial harmony'. If we substitute the term 'investment climate', we have a clearer view of the government's motives.

STYLISH FREEDOM

The government has also attempted to portray the microelectronics firms (particularly the Japanese ones) as respecting traditional values, amidst public concern about a supposed moral threat to female purity. In Penang's EPZ, dominated by US-owned firms, the women workers have acquired factory-specific nicknames such as micro-syaitan (Microsystems 'micro-devils'). They are more generally dubbed Minah lektrik ('hot stuff'), whose several connotations include the lure of the bright city lights. Academics have attributed the moral threat to rural-urban migration, Western culture and economic freedom for women seen as 'less religious' or having 'loose morals'. Newspapers have even spread scandal stories about the factory women servicing soldiers and tourists. Such stories displace the real problem of prostitution, which arises not from the women's new economic independence but from its loss when their failing eyesight or ill health results in being made redundant.

A more general displacement of the women's problems is described by Aihwa Ong (1987): 'Greater public control came to be exerted over their "leisure" time (which in actuality was very limited), while simultaneously diverting attention from the harsh realities of their "working" time.' This control includes guidance and surveillance by Islamic fundamentalist groups which denounce consumer culture; yet they divert attention from the women's grievances by supporting some firms' claims to respect traditional Malay values. Many factory women accept Islamic guidance, to defend themselves from suspicion of immoral behaviour.

Many other women resist such control. They assert their independence through dress styles and social, evening socializing between men and women. That exploration has gone furthest around the Bayan Lepas EPZ, which also has the distinction of being located in a somewhat urbanized and multicultural island; Malaysia's other EPZs are mostly located in the mainland's rural areas, more imbued with Malay rural traditions.

What does this new way of life mean for Malay women in Penang's EPZ? Their first experience of wage labour frees them from their village elders' authority, which is then replaced by an economic and even psychological dependence upon the firm, often to the extent of accepting blame for their failure to adapt to degrading working conditions. The women are free to enjoy Western goods and fashion, yet the consumption and even the styles are structured by advertising and the electronics firms themselves, sometimes to the extent of being made a job requirement.

Although the women have a nominal 'sexual freedom', it can become an availability for their managers, who directly or indirectly manipulate their sexuality. Moral sanctions discourage liaisons between Malay women and non-Malay supervisors, partly as a way of protesting unequal treatment of workers.

