

Duncan Campbell: Resisting IBM: the politics of the great computer war

Last month International Computers Ltd, one of our state-backed flagships of high technology, staged an elaborate launch for its latest product. This is a device called a Distributed Array Processor (DAP) or 'number cruncher': by doing its calculations simultaneously, rather than consecutively as most computers do, it can focus great power on any particular task.

All appeared to go swimmingly. Queen Mary College London, loyally supporting the declared Government policy that publicly-funded institutions should favour publicly-funded home-grown computers, announced that it would buy an ICL DAP. More such machines would be available next year, at some £2.5 million apiece. Then came a setback scarcely noticed outside the computer trade's voluminous technical press: the Ministry of Defence, it emerged, had just ordered an American DAP, known as a Cray-1, for a cost of £5 million. ICL were taken aback. The tender had been so defined as to exclude ICL from the business.

Last week the National Enterprise Board, holder of the public stake in ICL, reiterated its determination to see British computers riding with the surge tide of the world electronic industry. But the tale of the array processors reveals the confusion and ambiguity, which still, too often, lies behind such bold pronouncements: suggesting that the ability to produce coherent policies for dealing with high-technology industry is one that the British political system has yet to acquire.

Supposedly, the Cray-1 was required to enable Aldermaston to design a new generation of H-bomb parts. Why this was an immediate and over-riding necessity has not been made clear, and indeed the very lack of explanation demonstrates the over-riding power of the nuclear-weapons lobby within the establishment. The trouble is that defence policy, however secretive its traditions, cannot readily be separated from computer-development policy: indeed, their close integration in the US has been a principal factor in turning a series of Anglo-European inventions into something close to an American monopoly, expressed through the world-straddling power of IBM.

ICL, almost surprisingly in view of the many ills to which it has been subject – such as the hostility of the Auditor-General, and the recent and controversial disappearance of its charismatic American boss, Geoffrey Cross – remains alive and moderately well. It is the only authentic European challenger to IBM, and announced good commercial results in January. Its success is enough, indeed, for IBM to have 'targeted' it as major opposition, and to have launched a major anti-ICL campaign with the loveable code-name of 'Project Knock-Off'.

If the Government's much-battered economic policy is to mean anything at all, the

survival and prosperity of firms like ICL is indispensable. But in spite of some present comfort, this is far from guaranteed. Chief of the threats which confront the company is sheer confusion over what sort of political backing and direction ICL should seek and accept: the company, and its private shareholders, maintain a certain machismo of independence; Labour is indecisive, to put it mildly; and the Tories have made remarks echoing Ted Heath's unhappy conception in which high-technology firms were to be divided briskly into lame and other ducks. Ambiguity is no proper state for a concern which must endure a brutal warfare for international survival.

Perhaps the worst ambiguity results from the feeling, not confined to Tory politicians, that state backing for ICL represents some kind of temporary and undesirable compromise, to be superseded some day by a return to the 'free market'. A free market can exist at some minor levels of the computer industry: for instance Mr Michael

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Spicer MP, while pronouncing mightily on the brusque new approach that the Tories would bring to managing the national stake in ICL, managed to sell off his own small computer firm, with considerable profit, to American interests. But a little history shows that on the level at which ICL must operate, the computer business has never resembled a free market.

Ordinary capitalist mergers began to consolidate the British computer industry in 1959 with the formation of International Computers and Tabulators (ICT), which rapidly gobbled up the commercial computer divisions of electronics firms like GEC, EMI and Ferranti. Meanwhile, the English Electric Company merged with two of its rival concerns. In 1968 Tony Benn's Department of Industry gave its blessing for the marriage which finally produced ICL. The government took a 10 per cent stake (and would, by understanding, provide most of the revenue), while GEC and Plessey took about 20 per cent each. Although other firms continue to make specialised 'minis', ICL became and is the only British builder

of big computers, or 'main frames'.

Vast, inevitable confusion dominated the early years. The staffs, the products and the philosophies of the nine or so ancestor concerns were all incompatible. ICT had sold a good many examples of its 1900 series, based loosely on a Canadian design, and meant to be as *unlike* an IBM computer as possible. The new ICL immediately offered a new 'System 4' series, which was explicitly based on a copy of an IBM design from a now-defunct American rival of IBM.

Assisted by £13.5 million from Tony Benn's Ministry, the new firm set out to find a new answer – the 'New Range' of computers aimed at the 1970s. Five competitive teams were set up, within which all the various intellectual and commercial factions were represented – the IBM followers, the proponents of the ICT 1900, and adherents to older and more philosophical ideas. The winning team adopted none of these approaches, but instead a new 'Synthetic Option', which attracted much support because of the sweeping ambition of its approach. It left behind the old designs, establishing a new system in which each user could virtually have a tailor-made computer. In retrospect, the 'Synthetic Option', launched as the 2900 series in 1974, appears, in the manner of many post-war initiatives of British technology, as over-ambitious for the time. Does this perhaps happen because conflicts of interest, instead of being resolved, are merely translated onto a higher level where everybody – for the moment at least – can be happy?

In one particular way, the 2900 series was heroically ambitious. No computer manufacturer delivers a system costing up to £10 million and leaves it standing in a corner like a TV set. The software, the stored instructions and programmes to run the computer may be just as costly as its hardware. And any computer user will need full, reliable service, in addition to means of getting existing programmes to run on the new machine. Here ICL embarked on a venture at which even IBM balked later: simultaneously with the launch of the new 2900 series hardware, they produced a brand new operating system called VME.

An operating system is a mammoth set of logical instructions, so large as to be inevitably flawed somewhere. A major error will cause the system to 'crash', whereon everything stops working for perhaps half-an-hour while the computer is restored. The problem is not unique to ICL computers, but early 2900s crashed more than most.

Much friction, inevitably, was caused. In order to give ICL credibility, the Government committed several departments to ordering 2900s before anyone knew exactly what they would look like: the outstanding case was for a new and sensitive Ministry

of Defence venture at Devizes, known as Bureau West. Bureau West, although its purpose is not entirely clear, has been a barrowload of trouble. Together with another project, the MoD told the Auditor-General, the problems and delays – particularly involving software – had cost them £10 million.

The Bureau West example was not alone among large 2900 orders placed by the Government. Some computers were found to require computers larger than those which had been ordered, because of 'disparities between theoretical and actual performance'. Government computer projects in the DHSS, Paymaster General's Office and the Inland Revenue were delayed or transferred onto hired machines.

Cancellation of a number of contracts was considered. But the Central Computer Agency, part of the Civil Service Department, fought back and won its case that risks of delay had always been part of the procurement policy, and that without it ICL would lose credit, thus imperilling the Government's own investment. After several reviews, all the contracts were allowed to stand. Orders for the 2900 series now stand at around £300 million – with central government and the universities only £31 million of that.

For the moment ICL is secure – though to judge from the Cray-1 case, the Ministry of Defence is hardly appeased. Nobody should imagine, however, that the Ministry's procurement policy has been exactly logical, or likely to extract the best performance from ICL: it is characterised by the dreadful, semi-secret case of the Linesman project.

Linesman was the original name for the providing of an advanced computer centre at West Drayton for the air-defence radar network. For reasons which it may now be impossible to disinter, the hugely complex business of keeping track of all the moving objects in Britain's skies was given not to ICL, but to Plessey. Plessey, despite having 20 per cent of ICL, was the only British firm to maintain a non-ICL facility to build large computers. Throughout the sixties they built a series of military computers known as the XL range, whose details remain very obscure – probably because of their immense oddity as much as for any reason of real security.

The XLs produced for West Drayton turned out to be obsolete and unworkable, composed from bulky and antiquated technology. The whole system was abandoned in 1973, at a cost of about £200 million. Soon afterwards, a large IBM military computer was ordered from the United States. It does not assist the technological credit-rating of Britain's home-grown computer makes for it to be known that both West Drayton and the Ballistic Missile Early Warning System at Fylingdales rely upon IBM computers.

And credit is vitally important in a business where fashion and charisma play a surprisingly large part. Lately, several of ICL's competitors – not just IBM, but other US-owned concerns like Univac, Honeywell and Burroughs – have eaten into its establishment market of customers using earlier ICL machines. Last autumn the prize Tesco supermarket order went to the latest IBM

big-computer model.

Not the least formidable aspect of IBM is its slick and highly-manipulative publicity operation. Files are kept on every journalist making contact with the organisation – in the US at least these are in the form of computer profiles – and access to information is regulated in accordance with the attitude the journalist takes towards IBM and its competitors. The three bulky free weeklies which live off copious computer-employment advertising have an insatiable demand for material, which IBM are happy to supply. ICL, less sure of its corporate image, has never been so manipulatively effective – and it's not clear that emulating IBM would be necessarily admirable. The result, however, is that every ICL failing is fully reflected in the press, while IBM remains largely untarnished. It is a remarkable fact that leaks from inside the IBM system are virtually unknown.

IBM, employing fewer people in Britain than does ICL, has a large turnover (also from typewriters and general business machines). Its policy is to have strong local bases for manufacturing and research, but to repatriate all profits to the US through IBM World Trade Corporation: the profits from Britain are highly satisfactory, but the fact is that, although IBM has 60 per cent of the world computer trade sewn up, Britain remains one place where another company – ICL – has a larger share of the market.

The most reliable evidence about IBM's tactics for dealing with competitors comes from documents unveiled during the long-running series of anti-trust suits which have been fought against the company in the US. These reveal that its basic strategy is to wage war on selected major competitors, while preserving minor competitors to disarm allegations of monopoly.

It was during these lawsuits that the existence of an anti-ICL team, operating in Britain as 'Project Knock-Off' became known. The aim of the team was to remove established customers from ICL: the likeliest method being discounting, in which a secret cut in list price is offered to any

customer who is willing to leave the 'target' firm. Were IBM to do this now, it would be a clear breach of EEC anti-monopoly regulations – 'abuse of a dominant position' – an offence for which IBM is already under investigation in Brussels. (ICL, it should be said, gives discounts too.)

In every way, IBM sets the scene for everyone else. Many builders simply emulate their designs, such as the flourishing Japanese industry. Some, such as their former chief designer Gene Amdahl, try to out-IBM IBM, by offering machines claimed to be larger, faster and cheaper than those he designed for the parent firm. Nobody was too surprised when a recent IBM advertising campaign made the company's deified view of itself explicit: the latest product appeared in a shower of angels, with the caption: 'Another miracle from IBM'.

Whatever the theology, IBM's commitment in Britain has given it 30-40 per cent of the market. Its employees are indoctrinated into a corporate loyalty which becomes a-national: they think only IBM. The results can be almost embarrassing – when ACAS were called in on a recent union recognition dispute. The vote against unionisation, after a terrific internal propaganda campaign, was of Soviet character, with 95 per cent voting against. (In the US there is a new, clandestine IBM Workers' Union).

Secret Colossus

US military sponsorship, augmented by space-agency work, has been largely responsible for American domination of world computer markets: this outpouring of public money has never detracted from the corporate ideology which presents the computer as the product of American free enterprise. The real truth is that much of the early work on computing was done in Britain and Germany – the basic principles were evolved in the Thirties, not by IBM, and not even in America. An absurd degree of secrecy shrouds the British development of 'Colossus' cryptographic computers in 1943, much aiding the transatlantic mythology.

Equally, the computer market has nowhere been left to free enterprise. France, West Germany and Japan have large computer-builders that might be called indigenous. Japanese computers, although effective, have not made great market inroads except in Australia: Germany's manufacturers exploit local loyalties, but scarcely export beyond Belgium. In France, after several unsuccessful attempts at setting up a multinational European concern, the French signed an agreement with the American Honeywell company: the resulting conglomerate is guaranteed 55 per cent cash subsidy if insufficient computer orders come from the public sector. The modest degree of success has required large chunks of public capital. The amount of government finance made available to the computer section in France, Germany and Japan exceeds £100 million a year in each country.

Other vital technologies are closely related to the 'mainframe' computer: small computer systems are the fastest-growing part of ICL's market, and the progress of miniaturised electronics is so rapid as to



create something like turmoil. The visible effect is the flood of pocket calculators in the shops, but other effects remain for the moment less obvious. The power of a small computer can now be compressed into 'microprocessors', occupying the space of a few coins and costing about £10. Britain is making the first tentative steps towards the manufacture of Very Large Scale Integrated Circuits – as these tiny 'chips' are ponderously called. At present they come almost entirely from the US, but ICL has set up a plant near Manchester, and the National Enterprise Board – whose holding in computers and electronics make up the most coherent part of their industrial ragbag – is likely to launch an initiative soon.

Already, the NEB is investing in a new venture to market British software overseas, and has increased its stake in ICL to 24 per cent with the pull-out of Arnold Weinstock's GEC. The question is not whether the state is to be involved in computers: the question is whether it is to be involved successfully.

Some of the effects of public investment have been startlingly beneficial to particular individuals: the striking case being Mr Geoffrey Cross, ICL's flamboyant American chairman, now departed. Cross's five-year reign at ICL certainly procured a steep rise in ICL shares: as stock market operators overcame their loathing of public participation, there was an increase from 30p to over £2.80.

Cross was not directly employed by ICL, but had a contract through G. R. Cross Associates. One part of the deal gave Cross Associates the option to buy 100,000 ICL shares at £1.50 each. Cross departed suddenly last autumn, explaining that his children needed a drier climate: in February Cross Associates exercised its option, procuring a golden handshake of more than £100,000, half of it directly from the public purse.

Machismo

Mr Cross is now in America negotiating take-overs for GEC. His reign at ICL gave the company a certain useful glamour which it lacked before, and gave it tight financial control. But his profitable departure has taken place before anyone can know whether the improvements are lasting ones.

By organising the takeover of Singer Business Machines Cross gave ICL an American base which it never previously possessed, and the half-dozen American associates he brought with him remain in place. One of them, Ed Mack, is the director in charge of product development, and his influence keeps ICL, like IBM, tied chiefly to big-computer philosophy, rather than to newly-fashionable ideas about solving computing problems with networks of small computers connected together. Centralisation rather than devolution fits IBM's corporate character perfectly: whether or not it is the best long-term bet for ICL is not so clear.

The real problem requiring to be solved is a political one: it is a question of the relationship between ICL and its most potent investor.

Cross's attitude towards the government

was a credo of *machismo* which his successor Dr Chris Wilson also supports. They want to stand alone, and to be seen to be distant from the government. It could never be true, of course – and in any case Cross and Wilson certainly wanted the government orders, or in other words, the procurement policy. This presently specifies that all large computers for central government or the universities shall be bought by a single tender from ICL, provided delivery and performance are satisfactory. This is the policy that the Tories would 'review', according to Michael Spicer, MP. (Mr Spicer sold his own computer planning company, Economic Models Ltd, to an American corporation, just two months before making this pronouncement.)

It is hard to see how ICL could have survived 'Project Knock-Off' without the procurement policy. It has, obviously, caused friction with some government departments. And there has been much confusion in the rest of the public sector, such as local authorities, water authorities and the nationalised industries, where the procurement policy does not apply – at least, in theory. In reality, there is considerable pressure to buy ICL. In a recent dispute involving the Anglian Water Authority, Honeywell almost threatened to close down its Scottish manufacturing operation, after alleging a 'conspiracy' against them. The original decision of the water authority to buy Honeywell was overturned in favour of ICL and then switched back to Honeywell – only after a year's delay and a string of High Court actions by Honeywell alleging breach of statutory duty by the water authority. It was really an affair in which there were no winners. The NEDC's computer sector working party has proposed an extension of the procurement policy to the rest of the public sector. Although Honeywell might not care for such an extension, it would at least make the ground rules clear. An extension of the preferential procurement policy to cover these sectors, and also to cover smaller computers (in this case not necessarily only ICL's products) has been proposed by the computer sector

working party. To date the Department of Industry has made no response.

The whole procurement policy will be called into doubt in any case in 1980, when the EEC 'harmonisation' is supposed to remove such restrictions. Any European procurement policy would be a curious animal, because all the US multinational computer companies have considerable investment and employment in Europe. How would one define European? So far, European procurement has clearly benefited ICL; the EEC itself has ordered one of the largest machines, a 2980, as its new main computer, while the European Space Agency has two to use the data from new meteorological satellites efficiently. But in addition, the EEC has begun to tackle IBM.

Trickling Lawyers

Or so it is said. Little has been heard of the investigation since it started in 1973, though it may be speeded up by a direct complaint made under Article 86 of the Treaty – ironically from another American manufacturer. So far, there has been little more to see than a transatlantic trickle of corporate lawyers to a new office in Brussels, ready to combat the EEC attack. They may be an effective prophylactic. On the other hand, if IBM were to lose some of its market-dominating powers, 'harmonisation' with the EEC might not be so great a worry for ICL. No doubt public policy should assure an easy ride for ICL and the industry on the first few laps of any difficult project. But that can hardly be translated into a right to have corporate profits underwritten by a series of uneconomic public sector products.

Technologically, as well as politically, the future is highly uncertain. Although ICL's 2900 line will soon be stable and established, it will have to face a new generation of IBM computers within the year, and technology will have gone one stage further. Additional devices like DAP to improve the 2900s have been announced and more will no doubt follow, but they don't take things further.

There is still a rather stony silence from ICL to suggestions that it be gently led into other areas of computing. The much heralded 'convergence' of computers and telecommunications is one; but at a meeting of the two NEDO working parties concerned, ICL executives stared beadily at the table, while the civil servants proceeded through little more than repeated introductions. And there has been an equal reluctance from both them and the civil service to consider the Neddy party's next stage, an extension of government interest in and preferential purchasing into small computers. There is still no British mini-computer manufacturer. All these subjects – 'convergence', the growth of 'distributed' processing, and a switch to smaller computers – will dominate this high technology industrial sector over the next decade.

Considering the confusion, misjudgments and overblown hopes of the last decade, the British computer industry has survived better than might have been expected. In the years ahead, however, there will be much less margin for error.

