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RUTHERFORD APPLETON LABORATORY

INFORMATICS DIVISION

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ESRC Public Policy Study Group

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R W Witty

Seminar - The Impact of New Technology
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(see next page)

1. INTRODUCTION

RWW attended this seminar on behalf of David Talbot who was invited because the Alvey Programme was one of the high technology programmes under review as part of public policy. The agenda and attendees list are appended.

This note was dictated, rapidly, so please forgive the lack of style.

2. JIM NORTHCOTT

Jim Northcott is an academic who has been doing regular studies of the take-up of high technology in France, Germany and the UK. Some of the headlines of his talk were that only 3% of UK industry currently uses computer integrated manufacturing. The Germans make much more use of micro-electronics than the UK or France. When asked what the major difficulties were and to rank them in order the following were found.

- (1) Lack of expertise, especially at the experienced project leader level.
- (2) Economic situation in UK (not France or Germany).
- (3) The costs (ie no money to invest in new technology because survival is the key issue in the UK).
- (4) Finance (raising the necessary capital, this was worse in the UK than Germany or France).
- (5) Software is a bigger problem than chips or sensors.
- (10) Unions and shop floor problems (worse in Germany).

No great attempt had been made to interpret the above list. However, the ones about lack of expertise and the general poor state of UK manufacturing industry were not surprises. The fact that unions and the shop floor were seen as the least of the problems could be a surprise. However, when one looked at the fact that UK industry was actually doing far less automation than the Germans it is not surprising that the Germans have more problems with the unions than the UK.

Northcott's survey showed that job losses due to automation were less than 5% of overall job losses which are due to the macro-economic factors such as the recession. Job losses were amongst unskilled shop floor workers. To first order no strikes were caused by these job losses because firms had just used natural wastage.

During the ensuing discussion great stress was laid on the fact that there is too little training going on in the UK. There are too few public training courses available and a great disincentive for small companies and large companies to train is that staff typically get poached as soon as they have been trained.

Another point to come out from the discussion was that the German banks and financial institutions take a much longer term and closer interest in the management of industrial companies from the UK which tends to be rather short term and profit driven. This works to the advantage of the Germans.

3. DR JAMES DODD

Dr James Dodd works for one of the City's stock broking firms. He gave a general overview of the workings of the City mentioning that the major sources of capital for industry come from the pensions, the insurance companies and the unit trusts. All of these are run by investment managers who are under pressure from the contributors to the funds to invest in a worldwide portfolio which must be seen to out-perform the all share index and the other institutions. There is real competition amongst these institutional shareholders. This has a significant impact on the style of investment and tends to make it short-term and profit driven in contrast to the Germans. Because these portfolios are incredibly wide with the funds having shares in hundreds of companies it is very difficult for any fund manager to take any sort of interest in the shares. The German industry intends to use long-term debt to the banks rather than to sell a stake in the equity.

After a fascinating tutorial on such things as dividends, share prices and price earnings ratios it became clear that the City regards Micro Electronics as principally consisting of the four big companies GEC, RACAL, Plessey, STC and Ferranti. The small software houses and other small companies do not really seem to figure in things very much. It was stated that over the last six months there had been an increasing collapse of confidence in the UK electronics industry by the City. I think what was meant by this was that they were not making the sort of profits which made the investment trust managers money so they were going out of fashion. Also it seemed that the massive boom in electronic share industries was something of a fashion in the City and all that is happening now is that electronic shares are coming back to the national average, ie the City is now beginning to treat electronics in the same way as any other industry.

The UK market as seen by the City is divided into four areas, defence, telecommunications, computing and semi-conductors. When the UK Government in 1979 made a commitment to a 3% increase in defence spending in real terms this was translated into increasing use of electronics in weapon systems. In fact all of the increase in defence spending since 1979 has gone into electronics, given an 87% increase over the last five years in defence electronics. This meant that the big four suppliers all had an increase in business so their share prices and profits went up. Now that things are not quite so cushy in the defence sector with the cessation of the 3% real growth there will be a similar massive 87% decline in the business of defence electronics. With the impending Trident project whose major costs will be with USA companies rather than UK industry the City again sees a massive decrease in the defence electronics business. This is really what has underlined the collapse in the City's confidence in electronic shares rather than anything to do with Sinclair.

Another factor is the privatisation of British Telecom which was a cushy customer for the big companies in the early '80s and as was demonstrated at the latest ACARD meeting by David Leeky. British Telecom's attitude is that no one in the UK is a big enough supplier to actually stay viable in the telecommunications industry and so they are beginning already to write off UK suppliers. This has made the City even more nervous because the City recognises the world over capacity in the suppliers of switches and the massive capital investment needed to produce new generations of products.

Recently MoD has reduced the level of profits which companies can make from defence contracts and for the first time ever defence exports have started to fall. This again makes the City very bearish about defence electronics. In the general computer market the City sees the slow down in the US markets which are going to be reflected in the UK and sees that in components the world wide capacity is now increased to meet the demand.

The big four UK electronics companies are all sitting on cash mountains or cash molehills depending on their size. It seems that many of them have been making fairly unimpressive acquisitions with their cash mountains. Plessey has acquired Stromberg Carlson in the US which has just all gone wrong. Racal has acquired various firms including Chubb and Decker and Milgo which has gone wrong. STC recently acquired ICL and the market is apparently very worried about the possibility of this being a success. The City also sees that the UK electronics industry is extremely vulnerable because it is in too many markets in too small a way. The City reckons that the UK spends around £900M a year on R&D budget in the big four companies. This was claimed to be the same as just one Japanese consumer electronics firm. Therefore the City's view is not enough R&D is done in UK companies to keep them in the world market.

The City sees that the hardware industry is getting to be an increasingly tough place to do business whilst there is still growth in the software sector. However, going into the USA, the biggest market, has been a disaster for the UK small firms. The City is depressed by the fact that the small firms have all been making the same mistakes one after another and not learning. The City is asking the following questions.

- (1) Is the electronics business changing ie are we approaching market saturation?
- (2) Is the UK about to go through a period of rationalisation or of complete surrender of its capability? For instance, will there be only one telecommunications supplier in the UK and no mainframe manufacturer within a short space of time.
- (3) Public spending and British Telecom. Will the purchasing power be used properly to support and maintain UK industry? The feeling is it will not for overseas competition and research and development budgets reasons. The City perhaps thinks that British industry will not be able to compete with the overseas competition and one underlying reason for this is the too small a scale of the R&D budgets allied to our lack of marketing aggression.
- (4) The UK must find a better way to market UK products abroad, particularly in the US, which we are not achieving at the moment.

Dr Dodd would make a good speaker to give a pre-SE staff meeting talk. If DET agrees then ask DCF to fix up an invitation.

4. FRANK LAND

Frank Land is a self-styled expert Alvey watcher. So far as I can tell he has read the Alvey Committee's report and very little else because most of his comments seemed to have no great insight whatsoever. Given that RWW was sitting six feet away from him his opening remark was that he was all in favour of Alvey and that his comments were not to be seen as a criticism!

Frank Land began his presentation with a review of the history of the UK computing business from the 1940s onwards. This was interesting as it highlighted the unsuccessful interference by Central Government in splitting the UK electronics industry into a DP community separate from a defence community. It was his view that UK Information Technology policy had always been driven by the supply side which meant ICL and computer manufacturers and by strategic concerns which meant MoD. No consideration whatsoever seemed to be given to the market needs or any long term consideration of the development of the industry as a whole.

Commenting specifically on the Alvey Programme Frank Land felt that its weakness was that yet again it was completely driven by the supply side and had nothing to do with market pull. He felt that now Alvey was totally dominating the research policy of the UK and that its weakness was that being research only he could not pull projects through into development, product development, training and all the other things marketing, like marketing which are necessary to have a successful industry.

On the whole nothing terribly damaging was said about Alvey by a typical academic of the worst kind. I think my presence had some benefit here. We had a reasonably strong support from someone from the Treasury called Geoff? who was recently in DTI and claimed to have written the economic case for the Alvey Programme. By and large the overall feeling of the meeting was in support of Alvey, however Alvey was seen to be only one very small piece in what was needed to be done.

5. ROBOTICS

Mr Derrick Hunter of Taylor Hitech Limited described the work of his small company which employs 60 people building robotics systems for helping to inspect and repair nuclear reactors. Interestingly enough but not surprisingly he several times alluded to the fact that the software was the most difficult, expensive and unpredictable part of the systems he was building.

To summarise a very long talk the most depressing point was that he claimed his company had a ten year lead in technology over the Japanese yet he was about to be wiped out by the Japanese because the Japanese together with the Government and the nuclear industry in Japan had the willpower and the ambition and the determination to actually overtake him in the robot field and go out and carve themselves a big slice of the world market. Whereas his small company was struggling to survive in the next 12 months. He could do nothing unless he got a time and materials contract from the CEGB and he had absolutely no plans for growth whatsoever. He could not actually plan further than a few months in advance and was the typical sort of demoralised, defeated, small industrialist. I think it would do the Prime Minister good to meet people like this so that she would perhaps make some amended statement about how the small companies are going to rescue this country from its present economic state.

6. JILL HILLS

Jill Hills had been studying industrial policy in the Information Technology sector. She had spent some months in Japan to gain an insight into how the Japanese work. She gave a definition that a national industrial policy was one which caused a change in the international competitiveness of that nations industry over that which would appertain if market forces alone were left to operate. Industrial policy included such mechanisms as tariff barriers, Alvey Programmes, non-tariff barriers, etc.

She advocated the theory that a very centralised Government such as the Japanese enables very effective non-tariff barriers to be erected because of the close control and communication between industry and the Government. In a decentralised form of Government such as the USA it was very difficult to create these non-tariff barriers and so the use of tariffs was the natural way, hence the current calls for protectionist measures in the USA and some of the things which operate within the EEC. She saw the multi-nationals ie the big American companies operating overseas within other nations as ways of getting over these tariff barriers.

In Japan the state is seen to be superior to the industry and the industry does what it is directed to do by the state. This enables the strong Central Government to erect these non-tariff barriers and have very collaborative forms of a programme. In the UK she advocated the theory that the UK is essentially a liberal country which would tend to indicate a decentralised form of Government such as in the USA. There is a strong separation between state and industry but because the UK is a small country and actually has a highly centralised Government system then we are half-way between the Japanese and America. It seems that we have the worst of both worlds. We have all of the restrictions of centralised control of Government but because the state is not superior to industry, because of this separation of state of industry, we essentially have a free industry subject to all the market forces as in America, but with Government interference which they do not have in America.

Studies had shown that 90% of all European technology agreements are with the USA and not with other European countries. This is fairly significant for those people trying to create a European information technology industry.

For various reasons the USA is currently buying up the European information technology companies. In spite of much of the emotion which is expended about Japan it is actually the USA rather than Japan which dominates the European industry, especially through the multi-nationals. Again it was pointed out that the UK represents less than 5% of the world IT market and this is likely to decline rather than grow.

An ideal information technology policy was seen as having the following components.

- (1) R&D policy.
- (2) Technology transferring/diffusion policy.
- (3) The development of standardised products.
- (4) A supply policy for domestic firms.
- (5) The development of the demand for products.
- (6) The development of users and an appropriate labour force.

In the discussion it was pointed out that Government departments tended to act completely independently of each other and even though we had central Government and control we actually had lots of independent and sometimes contradictory central control. The UK therefore is a very small market in world terms fragmented even further by political decisions and political indecisiveness. There was a lack of unreality in Government policy which required additionality and market supremacy as necessary cases before Government support could be given. This is fairly unrealistic given the world competitive situation.

In the end all were agreed that the UK had no information technology policy let alone an effective policy or a controlled implementation of that policy. As a final remark the gentleman from the Treasury pointed out that in the UK we spend £2B on research and development for defence, £2B on research and development in the civil sector of which the information technology community receives around £100M a year. This was a clear indication the Government was not really interested in the information technology industry.

ESRC PUBLIC POLICY STUDY GROUP

Seminar on

THE IMPACT OF NEW TECHNOLOGY

at

Royal Institute of Public Administration
3 Birdcage Walk
London SW1H 9JJ

7 June 1985

Programme

9.30-10.00 Registration and Coffee

THEME FOR THE MORNING : INDUSTRIAL INVESTMENT IN HIGH TECHNOLOGY

CHAIRMAN Professor Roger Williams

10.00-11.15 Speaker : Mr Jim Northcott : Policy Studies Institute
London

"The Diffusion of New Technology and Patterns of
Industrial Investment"

Discussant : Mr David A Broad

11.15-12.30 Speaker : Dr James Dodd : Fielding Newson-Smith & Co
Brokers

"Financial Performance in the Hi-Tech Sector and the
Application of Venture Capital"

Discussant : Mr Bob Daniels

12.20-1.30 BUFFET LUNCH

THEME FOR THE AFTERNOON : HIGH TECHNOLOGY AND PUBLIC POLICY

CHAIRMAN : Professor Maurice Wright

1.30-2.45 Speaker : Professor Frank Land : LSE

"An Assessment of the Alvey Programme"

Discussant : Mr Philip Virgo

2.45-4.00 Speaker : Mr Derrick Hunter : Taylor Hitech Ltd

"An Industrialist's View of Hi-Tech Public Policy"

Discussant : Mr G M White

4.00-4.15 TEA

4.15-5.15 Speaker : Dr Jill Hills : ESRC Research Fellow
University of Manchester

"British Industrial Policy and the IT Sector"

Discussant : Dr Paul Stoneman

Convenor : R W Daniels University of Lancaster

ESRC Public Policy Study Group

Seminar on the Impact of New Technology

Royal Institute of Public Administration : 7 June 1985

LIST OF PARTICIPANTS

Mr Jim Agnew	Office Auto. Unit	DTI
Mr N Angier		
Mr John M Barber	Representing Sec. State	DTI
Mr John Blundell	HM Treasury	
Mr J F Bonsall	Dept of Environment	
Mr Tim M Brady	SPRU University of Sussex	
Mr S F Brailsford	Sec. Research & Tech.Cttee.	C.B.I.
Mr Jeremy Bray MP	House of Commons	
Mr David A Broad	British Micro Man. Gp. and Industrial Consult.	
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