

With All Due Respect.....

A History of the Real Time Club

Second Edition

**published on the occasion of the Club's
45th Anniversary**

June 2013

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Author's Note

Since the power of steam and electricity were first harnessed in the early 19th century, it seems that every successive generation has witnessed the birth of a new industry. Each one introduces new social and economic opportunities, as well as its own set of governance challenges.

In researching and writing the history of the Real Time Club I have been privileged to meet some of the early inventors and entrepreneurs who led the development of the information and communication technologies industry in Britain. The enthusiasm and humour with which they embarked on their journey of replacing the social and political structures of the old order with their own vision of electronically-enabled opportunity still shines through, and it has been a pleasure to tell their story.

That story is still unfolding. Members of the Real Time Club continue to press for improvements in the use of ICT in the country's education system, for better government support for home grown technology start-up ventures, and for Britain to take its rightful place as a world class centre for technology development. They continue to explore new applications and advances in the technology, and many are leading the way in addressing the managerial and social issues being exposed by it.

My thanks go to all the members who, directly or indirectly, assisted me with the task of preparing this history, and to all the rest whose combined efforts have helped to bring about this information age.

S.F.R.
June 2007.

In the five years following initial publication of *With All Due Respect* the pace of technological change and its impact on the lives of ordinary people has continued to speed up. The benefits that information and communication technologies now deliver in areas such as productivity, healthcare, logistics, environmental protection, education, governance and entertainment are legion.

BUT, and there is a big but, we are beginning to learn that in our rush to embrace these benefits we lose sight of the social costs, we neglect the disenfranchised and we fail to debate the important issues that govern the future of our relationship to technology.

So today, perhaps even more than when it was first conceived, the Real Time Club has an important role to play. It is by constantly challenging the authority of everything from science and government to popular opinion that we are able to find solutions that serve rather than enslave us,-- and that has been the *raison d'être* of the RTC since its foundation. With new young pioneers joining, and many of the original members still playing an active role, the Club continues to provide a forum for lively, constructive and often irreverent debate about the future of this exciting industry and its role in society.

S.F.R.
January 2013

With All Due Respect

45 years of the Real Time Club

The oldest IT Dining Club in the world

Inauspicious beginnings

In 1967 an American entrepreneur with experience in the emerging field of 'real time' data processing arrived in the U.K., intending to set up a software house. He was keen to plug into the local network of people who shared a common interest in the applications of this new technology, and organised a dinner for that purpose.

The evening was a huge success. Held in the Bourbon Room of the Institute of Directors' headquarters on Belgrave Square, it was attended by twelve leading entrepreneurs and academics in the fledgling British computing industry. After dinner, each person described his interest in real time data processing and the group agreed to a subsequent meeting to discuss particular problems over a good meal.

From this unassuming start, the Real Time Club was born. Meetings became regular events and the original twelve diners were joined by other prominent figures from business, academia, government and the press. The format of a dinner followed by discussion and debate, usually led by an invited speaker, became an established tradition. A secretary emerged to organise speakers and venues, and a Chairman was eventually appointed to keep the increasingly lively debate sessions under control.

Deliberately free from formal structure, rules or a permanent meeting house, this loose association of people who shared a passion for challenging and changing the established norms of a hidebound society has flourished for forty-five years. Individually and collectively, members have influenced British society and its governments to use information technologies to help build a better world.

Was the Club a product of its time, or could it have emerged and thrived in any commercial environment? Will it be able to survive the continued changes in both the industry and its user communities, as real time computing becomes increasingly ubiquitous around the globe?

CHAPTER ONE

Building a Network

Technology in Topsy-turvy Post-war Britain

Britain in the 1950's and 1960's seemed to be running at two speeds. The Attlee government had shaken the foundations of society with the creation of the first welfare state. Veterans recently returned from the war, and the armies of civilian labour who had kept the country's industries working during their absence, were impatient for social improvements, jobs and education. Technological developments in transportation, communications and computing were irrevocably changing the speed at which business could be transacted, and demonstrating how quality of life at all levels of society could be radically improved.

But the old order was reluctant to accept the inevitability of change and the huge potential that electronics engineering offered to deliver economic prosperity. Britain's Civil Service was still run by mandarins of the imperial establishment to whom 'technology' was a derisory occupation ranked somewhere below 'trade'. As a result, the entrepreneurs struggling to build a computing industry in Britain found it difficult to find sympathetic or understanding allies in government.

One new technology, the production of atomic energy, did capture Whitehall's imagination, but while the government backed the 1957 opening of the first industrial-scale atomic power station at Sellafield in Cumbria, it deliberately ignored home-grown computer manufacturers with its 'buy-American' policy. When challenged it upheld this policy as a way, "to encourage inward investment".

On the street, things were starting to look up. The rush to build housing to meet domestic demand, and the push to produce exports to balance the country's trade deficit, fuelled a consumer boom that inspired a national 'feel good' factor. British ingenuity was claiming pride of place in rapidly expanding global markets. The Vickers Viscount was a huge success in the new commercial airline industry, the Jaguar and Austin Mini captured the luxury sports and economy segments of the motor vehicle markets, and British music, fashion and design were setting trends around the world. London was once again claiming centre stage, a position that inspired many young Britons with entrepreneurial instincts to dream of changing the world.

Despite this, the economy struggled under the burden of war debts, the cost of two additional conflicts (Korea and Suez), and the French veto of Britain's application to join the European Economic Community. Moreover, the winds of change were slow to reach the old combatants in U.K. plc – management and the unions. Britain's productivity levels were among the lowest in Europe and labour unrest was growing,

while politicians and company directors made a series of poor decisions that resulted in the decline and/or failure of several key businesses and industries.

The persistent lack of support from government and an unhealthy industrial climate combined to drive many of Britain's best technological developments off-shore, to countries that were quick to identify and capitalise on their commercial potential. It was 1964 before a government administration acknowledged the importance of a technology industry to the future of the British economy. Declaring that the Britain of the future would be forged in the "white heat of the scientific revolution", Labour's Harold Wilson created the first Cabinet post to oversee the development of British technology.

From 1966 to 1970 this post was held by Tony Benn, who demonstrated his staunch belief in the need to break down the old order by renouncing the peerage he inherited from his father, Lord Stansgate. Despite Benn's tireless energy, however, the government's ambivalence to direct interference in the affairs of business remained a millstone around the necks of young visionaries who needed direct government support to help them build a domestic industry in the face of growing competition from the U.S..

An Invitation to Dinner

Among its many scientific achievements, Britain was at the forefront of the development of the modern computer. One hundred years after Charles Babbage produced his mechanical Analytical Engine, a team working at the Bletchley Park code breaking centre used electronics to speed up the calculation process. Their Colossus code breaking machine is cited by many as the earliest modern computer. For others, however, the true origin of the modern information society was the design of another Bletchley Park alumnus, Alan Turing, for a stored programme computer. Turing's blueprint formed the basis of the first working machines built by rival teams at Manchester (Baby) and Cambridge (EDSAC) universities.

Remarkably, the first commercial computer was built by a catering company, J Lyons Ltd, to manage stock control for its chain of teashops. Inspired by research from Cambridge, the LEO (Lyons Electronic Office) was sold all over the world, but the company, unable to obtain the finance it needed to expand, was eventually merged into International Computers Limited (ICL), Tony Benn's attempt to create a British computer company that could compete with world leaders, IBM. Although the country clearly lacked the conditions to exploit its developments in the commercial marketplace, its research and technological expertise was recognised around the world. American companies were keen to gain access to British technology and often did so through joint ventures. For example, in the early 1960's the National Cash Register Company teamed up with Elliott-Automation to provide that company with much needed marketing muscle, first for the National Elliot 400 series and later the 803, the first solid state processor, which was partly designed by RTC member Iann Barron while still a student at Cambridge.

But despite Britain's early technological lead, by the time Alan Marshall arrived in London from the U.S. in 1967 to start a branch of his software house, Computer Systems International (CSI), the struggling British computer hardware industry comprised only a handful of major players (ICT, English Electric, EMI and Elliott-Automation). Working quietly at the fringes, there was also a small but influential group of researchers in the academic community, and an equally small but determined group of entrepreneurs running service and software companies.

As one of the early members of the SAGE (Semi-Automatic Ground Environment) design team based at the Massachusetts Institute of Technology, Marshall had spent ten years working on radar technology, "the essence of real time computing", for the U.S. Air Force and Navy. In 1964 he left to take up a project in Sweden, where he stayed to start his software house, CSI.

Three years later he decided to expand his business into the U.K. market. Soon after his arrival in London he began to seek out people who shared his interest in the commercial possibilities of high speed data processing. With the assistance of freelance computer journalist Rex Malik, he met several of this new breed of entrepreneur, starting with Dick Evans, who had founded Timesharing Limited based on a licence from Bolt Beranek and Newman in Boston, Massachusetts.

Evans put him in touch with a number of others, including Stanley Gill at Imperial College; Jim Foord at Rolls Royce; Roger Needham at the Cambridge University Mathematics Laboratory; Donald Davies at the National Physics Laboratory; Paddy Sanford-Johnson at Rank-Xerox; Pat O'Donnell at the International Publishing Company (IPC); Keith Corliss of CEIR; H. Lane of Shell Oil; Peter Herman of BOAC; Philip Hughes, who founded Logica; Roger Wesson of Vickers; Derek Carter of Hawker Siddeley Dynamics; and Charles Ross, who had just sold his group of real-time computing companies to International Publishing Corporation (IPC) to set up International Data Highways Ltd..

Although they were all working at the same technological frontier there had been little time for communication between these pioneers, so rather than pursue each of his new contacts individually, Marshall invited them to a dinner to get acquainted. Eleven people accepted his invitation. Marshall distinctly recalls that Mark Thompson, Managing Director of CSI, decided not to attend, as his presence would make the numbers up to an unlucky thirteen! The choice of venue, everyone agreed, was pleasingly ironic – here was a group of youthful entrepreneurs bent on revolutionising the old order, dining in the Georgian opulence of the Establishment's symbolic citadel, the Institute of Directors' headquarters on Belgrave Square.

Talk over drinks and dinner revolved around the challenges of building a software and computing services industry in the post-imperial, post-war climate of 1960's Britain. Towards the end of the evening, each diner was invited to introduce himself and his interest in real time computing, and it was agreed to meet again. Calling themselves

the 'Real Time Users Group', the diners published notification of their first official meeting, held on 27th June 1967, in both the Financial Times and the Guardian. .

Although the group was first and foremost a dining club, the 'Real Timers' quickly recognised that collectively they had the power to influence the political, commercial and social environment within which they were trying to build a new industry. There was an unwritten agreement that they would be able to exert pressure within the industry more effectively if the major hardware suppliers were excluded from their meetings, but journalists, politicians and civil servants were seen to be more advantageous allies, and these were to be invited as both members and presenters over the years.

Exhibition at the Royal Festival Hall

The creaking telecommunications infrastructure in 1960's Britain was a major inconvenience to commercial and private users alike, but members of the fledgling Real Time Club felt they were paying an unduly high price in terms of lost business opportunities for themselves and their industry.

According to an article appearing in the November 5th, 1966 issue of Business Week magazine, Intinco Ltd., a company co-founded by Charles Ross, had introduced its revolutionary SCAN (Stockmarket Computer Answering Network) system to traders on the London Stock Exchange at least four months before a similar real time system would be available on Wall Street. In the post war race to establish national excellence in emerging technologies this was a real coup for Britain, yet the delays in obtaining new telephone lines meant that London clients were waiting up to six months to have their systems operational.

For Dick Evan's Timesharing Ltd., Britain's first online service bureau, the shortage of exchanges and poor quality of lines was creating both service and cash flow difficulties at a critical time in the company's development. Problems like these were being echoed around the Real Time Club dinner table, so it wasn't long before some members of the group began to think of ways to convince the General Post Office (GPO), which operated the national telephone network at the time, to upgrade its infrastructure.

In early 1968 a small sub-group of Real Timers, led by Ross, proposed a demonstration of Britain's capability in shared access systems, aimed primarily at the House of Commons' Select Committee of Science and Technology. Major General L.E.C.M. Perowne of the Royal Corps of Signals was appointed to organise what would turn out to be the first exhibition of all the on-line, real-time computer services available in the country at that time.

In his initial planning document, Perowne stated that the group's objectives were "to demonstrate to important members of the Government Departments concerned the progress being made in this area of computer application in business; and to show

that, in this context, the technological gap between the UK and USA has been substantially narrowed, if not eliminated.”

The longer term objective, Perowne continued, was to

“.....influence Government to ensure the timely provision of adequate resources, particularly in telecommunications, to enable full benefit to be derived from the revolutionary developments in technique now entering the stage of practical application on a wide scale.”

In other words, don't let the GPO hold back progress in Britain!

Planning for the event, which they called 'Conversational Computing on the South Bank', commenced in April and proceeded with military precision. The Meeting Room of the Royal Festival Hall, chosen for its close proximity to Westminster, was hired for the 3rd of July 1968, when eleven organisations would demonstrate their systems. Professor Stanley Gill, Director of the Centre for Computing and Automation at Cambridge University and President of the British Computer Society, agreed to Chair a presentation, with several of the more influential guests invited to attend a luncheon for further discussions.

The group aimed high in composing its guest list. Tony Benn, as Minister for Technology, declined his invitation, but his Joint Parliamentary Secretary, Dr. Jeremy Bray, accepted. The Select Committee, chief target of the demonstration, was unable to accept in an official capacity because to do so would mandate a report back to the House of Commons, but several interested members managed to attend individually – despite competition for their time from a Test Match, the Henley Regatta and Wimbledon!

Many of the systems on display were at the forefront of global developments. Guests were able to view working demonstrations from the University of Cambridge, Queen Mary College (University of London), Timesharing Limited, Culham Laboratory (UKAEA), Atomic Warfare Research Establishment, the University of Edinburgh, the National Physical Laboratory, De La Rue Bull Machines Limited, International Data Highways Limited, British European Airways and The Rank Organisation.

With the support of the Postmaster General, Perowne had been able to get ten special telephone lines allocated for exhibitors' use, so that all the systems were online to computers located around the country for the duration of the exhibition. JHH Merriman, the GPO's Senior Director of Development, was appointed to make a statement outlining what the GPO was doing in the matter of data transmission lines for the future.

To the surprise of many, the text of Merriman's speech re-affirmed the GPO's conviction that its existing programme for infrastructure development was sufficient to meet all forecast voice and data transmission needs for the foreseeable future. He

lauded the GPO's own Datel system for data transmission, and somewhat arrogantly threw the ball back at the Real Timers with a series of 'what do you guys really want' questions. Imagine their sense of vindication, when, at the height of the show, as live demonstrations were in full swing, the telephone lines carrying data traffic to and from the exhibition hall juddered to a halt!

Merriman managed to come up with a list of GPO 'over-ride' numbers that enabled the show to continue with few people realising what had happened, and Perowne graciously made no mention of this glitch in his summing up report, wherein he noted that many of the 200 Members of Parliament, Senior Civil Servants, industrialists and academics had expressed keen interest in what they had seen.

For the ambitious Real Timers, however, Dr. Bray's invitation to submit, in writing, a considered response to Mr. Merriman's exposition on behalf of the Post Office marked the real success of the day and the beginning of four decades of the challenge and influence that would come to define the Club.

Applying Pressure

What the Real Timers were intent on achieving was no less than the creation of the first universal data network – in effect, the Internet as we know it today. Their vision stemmed from the work of Donald Davies of the National Physical Laboratory, who had developed the original packet switching algorithms. It was his design for a Stored Program Computer Controlled Data Transmission Network that opened the possibility for a telecommunications infrastructure of sufficient speed, quality and cost effectiveness to enable the kind of business traffic envisioned by the early real time service creators.

Their concerns were twofold: firstly, the Americans had seen the packet switching technology and were moving rapidly to overcome their own internal barriers to implementing a national network; and secondly, demand for such a service in the UK was driving an alarming growth in privately developed networks that would be incompatible with each other. The Real Timers knew that Britain's economic growth could potentially be retarded for decades if the country did not develop its own national infrastructure quickly.

So over the next two years, while the Club continued to meet, dine and debate on a regular basis, several individuals worked tirelessly to capitalise on their Royal Festival Hall triumph and continue lobbying for a change of GPO policy.

In the weeks following the Festival Hall demonstration, a steady stream of coverage in the press kept the Club's position firmly on the public stage. The leading national and industry papers watched developments closely, as the following quotes make plain:

“... yesterday the deep division in opinion on how [shared computer services] should be provided in Britain between the Post Office on the one hand and users and makers of time-sharing systems on the other was made abundantly clear.” (Financial Times, July 4, 1967);

“Among questions basically left unanswered at the seminar were the effect on both the economics and efficiency of the GPO network of long period data transmissions calls on a network designed for use in time periods of minutes.....” (Computer Weekly, July 4, 1967);

“The benefits claimed by the NPL proposals are immense..” (Electronics Weekly, July 10, 1967);

Several Real Timers used the access they had to Members of Parliament to have judiciously worded questions asked in the House, and politicians from all parties were regularly invited to attend Club dinners,

In August 1968, Lord Bowden of Chesterfield convened a working party with a mandate to investigate the feasibility of establishing a network as set out in Davies’ proposals and Gill’s speech at the Royal Festival Hall. At the same time, Dick Evans, Philip Hughes and Stan Gill began work on a major technical paper that was presented to the Post Office Economic Development Committee on 28 November, 1969. Entitled, “Real Time Computing Systems: The Communications Problem and Possible Solutions”, this 40 page document explored both the nature of real time computing and the problems with current GPO systems, proposing designs for the kind of store and forward network the group believed was needed.

By this time, the issue of the telecommunications system in the UK was gaining wider interest, and the Club managed to recoup some of the cost of producing its report by selling over 250 copies. More importantly, the GPO seemed finally to be taking notice. In May 1970, coinciding quite remarkably with a presentation by the Real Time Club to Sub-Committee “D” of the Select Committee on Science and Technology, an outline proposal for a data network -- identical to the design proposed by the Club -- was circulated and discussed within the Post Office. By April 1971, Merriman himself gave a policy statement which included a target date for implementing such a network.

But the process was painfully slow for the Real Timers. In a further Memorandum of Evidence, this time submitted to Sub-Committee “A” of the Select Committee on Science and Technology in April 1971, they noted --

“In July 1968 we gave two forecasts: one pessimistic and unacceptable, and the other desirable. The pessimistic forecast envisaged a policy statement in 1970. Events are lagging behind even this.....”

Eventually, the GPO accepted the suggestion that a pilot network be installed. The pilot was to be designed for the academic community, linking university research facilities together in what was the beginning of the Joint Academic NETWORK (JANET).

Unbelievably, when the Civil Service finally agreed to fund the project it was on condition that no commercial company could benefit from it, proving yet again in the minds of the struggling Real Time entrepreneurs that the government was the enemy. As Ross put it, “The US and French governments gave their computer industries defence and research contracts. Ours gave us trouble.”

It would be the mid-1980’s before U.K. plc became a full playing member of the Internet-enabled world that, ironically, had been made possible through British-designed technology.

CHAPTER TWO

Surviving the Seventies

The Power of Influence

Although they chafed at the ponderous movement of the government machine, the Real Timers enjoyed significant influence in the corridors of power. Many of the members who led the Club, having been officers in the Armed forces' National Service, were comfortable debating with government officials as equals. Basil Cousins was in the Russian section of the Royal Navy; Bill Freyenfeld was a Captain in the Education Corps; Iann Barron, at 23 years of age, was a Lieutenant Colonel in the Royal Signals; and Bryan Mills, Brian Oakley and Charles Ross were Subalterns in the Intelligence Corps, Royal Signals and Royal Artillery respectively.

Entrepreneurs and academics of today may look back with envy at the very different way in which politicians interacted with interest groups during the late 1960's and early 70's. Ross remembers the buzz of working within IPC, owners of the Daily Mirror newspaper group, whose support had helped win the election for the Labour party. As a result of the publisher's political loyalties, senior members of staff had access to the ear of anyone they wanted within government. This connection may well have persuaded certain politicians to accept invitations to attend meetings and demonstrations, although it was by no means the only source of political influence within the Club.

A not uncommon practice of the day was for politicians to lend their influence for the benefit of commercial organisations, earning a small stipend for themselves in the process, by taking Directorships. In the early 1970's Eric Lubbock, MP was on the IPC payroll and Kenneth Baker, MP was on the Board of Philip Hughes' Logica. The occasional judicious question, composed, no doubt, during a rowdy debate at the Real Time Club, would be raised in the House during those years, helping to influence government thinking on an industry it clearly did not understand.

For example, when the Metropolitan Police set up its first computer system in the early 1970's it chose a (American) Burroughs computer off the drawing board rather than a working (British) ICL machine. This was in accordance with government policy of the day, which favoured inward investment of hardware manufacturing from abroad over the development of a British computing industry. There had also been no provision in the Met's project budget for software, showing how little Whitehall understood about computers and their operation.

The lack of government support for the development of domestic capabilities, in sharp contrast to policies of other European and the American governments, incensed the Real Timers. At their instigation, Eric Lubbock formulated a very pointed question to

be put to the House, but, ever the experienced politician, took care to notify the Minister of Technology, Tony Benn, of its wording in advance. Imagine the Club's delight when Lubbock took the floor to ask what the government was doing to support the British computing industry, and Benn responded instantly that his department had just set up a Central Computer Agency (CCA)!

RTC member Reay Atkinson, the career Department of Trade and Industry man who was eventually appointed to head up the CCA, remembers well the environment within which the Club emerged as a group of people worth listening to. "At the end of the 1960's we had a government that was essentially hardware oriented. The emerging software industry felt it was being excluded from both government thinking and government purchasing, at the expense of not just the individual players in the industry but the future of the UK economy as a whole. That is why we had such an influential group of people, who were commercial competitors outside the Club, coming together to help persuade government to adopt more forward thinking policies."

And the government did begin to listen. The Real Time Club was frequently invited to give evidence to Select Committees on Science and Technology as they began to take a wider interest in computing. These were important briefings because, although no decisions were taken at Select Committee level, they were used by politicians of all parties as a venue to become familiar with current issues.

The Real Time Club was also consulted on Post Office proposals for increased telecommunications charges, and the development of a European Computer Communications Network (COST).

Brian Oakley, head of the Science and Engineering Research Council and later director of the Alvey Programme, also recalls the influence of the Club: "There is no doubt that the idea of real time computing became embedded in ministerial minds during the seventies and I'm quite certain the Real Time Club had a very significant influence over their thinking..... but I'm equally certain that not a single minister would ever admit to it!"

A Coveted Invitation

The original band of twelve diners rapidly grew to a core group of 36 by the end of 1970. Membership was by invitation only, with the requirement that candidates had to be "ambitious and enthusiastic for IT, and prepared to give some time and effort to push IT forward in the interests of the whole Community".

The result was an eclectic mix of highly motivated individuals, all very much aware that they were working at the forefront of a revolution in society. The original entrepreneurs were soon joined by Iann Barron, designer of the NE803 and later the Modular One, precursor to the personal computer; J Harwell, who designed the first programming language ('H') in 1959; Roger Needham, who wrote one of the first

operating systems in 1965; Roy Goodman, founder of the Infotech Ltd training and conference company, plus several entrepreneurs who had started consulting houses.

There were academics but they, too, did not fit the traditional mould. Stan Gill, Director of the Centre for Computing and Automation at Cambridge University, was described by one member as “the only academic entrepreneur I have ever known”. Other pioneering computer academics on the RTC membership roles in those early years included Roger Needham (Cambridge) and Bob Parslow (Brunel University).

In addition, there were several senior IT directors from Blue Chip organisations who needed to be plugged in to developments in telecommunications in order to ensure they remained at the competitive edge in their own markets. People such as Colin Alexander (Burmah-Castrol), D. F. Belsey (George Wimpey & Co. Ltd), Jim Foord (Rolls Royce Ltd.), E.F. Mellen (The Plessey Co. Ltd), A. F. Teal (Shell-Mex & BP Ltd.), John Wootton (Freeman, Fox and Partners), Colin Southgate (Software Sciences Ltd and later Director of the Bank of England) and S Randall (Inter-Bank Research Organisation) were regular attendees at Club dinners.

The inclusion of a select group of leading industry journalists helped to establish the Club as a serious voice of the industry in the British press. Rex Malik, an independent investigative journalist, was instrumental in helping Alan Marshall establish the club and remained a central figure in its operations for many years. In 1968 he introduced Nancy Foy, the editor of Time-Sharing News who had recently arrived from California, and a third member of the press, Computer Weekly’s Chris Hipwell, was invited to join in 1970. For decades these three used the Club as their informal information network, quietly supporting it through their writing, yet never breaking the sanctity of the Chatham House rules under which all meetings were conducted.

Most people attended their first Club dinner either as the speaker for the evening, or as the invited guest of another member. Applications did not exist -- you knew you had a shot at becoming a member yourself if someone bothered to tell you the date and location of the next meeting. From April 1969 until he eventually resigned in 1994, this job was done with quiet efficiency by Mike Plumbe, himself invited by Alan Marshall in late 1968.

As early as 1970, demand for membership triggered an identity crisis among the original founders. Concerned that by taking all comers they risked turning their rather exclusive dining club into ‘just another society’, they decided to limit membership to 40, with new members accepted only to fill vacancies. By 1974, however, the list of active members had already grown to 50, and enquiries for membership were pouring in.

Formal Weekends Away

By 1972 Government had started taking notice of the issues raised by the Real Timers. Over the next few years, several Ministers were to find that time spent enjoying Club hospitality and debates could be informative as well as entertaining. The Post Office was beginning work on the pilot network design put forward by the Club, while changes in the economic and political landscape drew most members' attention back into the challenges within their own businesses.

But although the intense lobbying of the late 1960's had subsided, members carried on dining and discussing the development of their industry. Rex Malik put forward a proposal to orchestrate the establishment of a business computing research and teaching organisation allied to a prominent UK university, but although the Club backed the idea, it became a concept rather than a cause.

It was Reay Atkinson, recently appointed Director of the government's Central Computer Agency, who suggested in early 1975 that the Real Time Club had a more important role to play in the future development of the computerised world.

In a letter to Mike Plumbe, Atkinson expressed the view that the "utterly remarkable group of people" assembled in the Real Time Club "could do an immensely important and creative job within its own membership on first charting the probable course of future developments and then in bringing pressure to bear at least in an attempt to see that progress was made". His suggestion quickly led to the idea of 'study weekends'.

In November 1975 twenty-one RTC'ers, fully half the membership at the time, attended what became the first of three such conferences to be held in the Brighton area. The object of the first meeting was "to discuss the development of computer technology (1975 – 1985) and its effect on the market in limited areas". The group hoped to launch the results of their deliberations at a meeting to be hosted by Ken Warren, MP at the House of Commons the following March.

With the benefit of hindsight, their discussions were prophetic. The expectation of dramatic falls in the price of both hardware and software over the ensuing ten years set the scene. Delegates called for standardisation, particularly in software, to enable more rapid market penetration and lower prices, and they advised that the major limitation on the use of large electronic storage was the cost of data input and output, not hardware.

Interestingly, this largely entrepreneurial group of industrial renegades concluded that the industry was, and would continue to be, driven by marketing, not technology as most observers believed. They also suggested that the vast majority of the systems work of the day was (already) routine and uninteresting.

Twenty-four members attended the second study weekend in 1976 to debate the Club's old bugbear, 'Communications', and the GPO. Discussions focused on the dominance of IBM, which was steadily encroaching on international markets, and the

combined frustrations of high cost and service delays that were forced on the market by the monopolistic position of the Post Office.

By this time teletext (Viewdata) technology had been introduced, raising the prospect of delivering information into people's homes, so the discussions moved on to consider what home users would do with the ability to store and send data electronically. The meeting concluded that both the GPO and the government were erring on the side of hardware-centric thinking; many members felt that the Real Time Club should try to influence attitudes towards system rather than hardware thinking.

The third gathering in 1977 turned its attention to the impact of changing technology on people and society. A trade union representative was invited to give the view from the shop floor, as the Real Timers debated the impact of increased digitisation on employment, education and home life in the 1980's. Already, voices like Iann Barron were suggesting that the technology itself was largely irrelevant and the main issues were around applicability and use. Serious consideration was given to the suggestion that the industry should call a halt on further development to enable society to integrate and adjust to the changes already introduced by computers.

Towards the end of 1977 Ken Warren, MP had introduced Sir Keith Joseph, MP, the new Minister for Technology, to the Real Time Club. Joseph's interest in learning about the industry led to the organisation of an extraordinary meeting in March 1978, the purpose of which was to give him a general briefing on a wide range of issues. Each Club member was invited to submit a written brief, and to take the floor for not longer than one minute – a serious handicap for the more verbose among them!

Members outlined their views on the short and long term development prospects for the industry, what the RTC believed the government's attitude and policies on computing should be, and the future role of the still problematic Post Office.

Hopes ran high that the Club could exert greater influence on government policy when Joseph suggested a further meeting with representatives of the RTC to discuss the latter issue in more depth. Sadly, delegates to that meeting later reported that the Minister's un-stated agenda had been to gain support for his own view that de-monopolisation was the answer, a position which the Club could not fully support.

Sir Keith did go on to commission an internal look at government policy towards information and communication technologies, Out of this study emerged the All Party IT Committee and the Parliamentary Computer Forum which eventually merged to form the Parliamentary Information Technology Committee (PITCOM) in 1981. The purpose of the Committee was to ensure that Parliament was well informed about information technologies and to spearhead the use of those technologies to run Parliamentary business. Needless to say, there has been considerable dialogue between PITCOM and industry over the ensuing years, with the Real Time Club taking an active role.

The Club's final study weekend was held in March 1979 at the Ashridge Management Centre. Under the theme of 'Information Transfer', demonstrations were given of the latest teletext technology from the likes of Viewdata, Ceefax, Infoline and PLATO. Delegates, many of whom had fought a decade earlier for the establishment of a universal data network based on packet switching, dismissed these technologies as unsophisticated. Their frustration when the Post Office launched its own expensive version of teletext (Prestel) the following year was understandably immense.

Intelligent Debate

The heated discussions at Club dinners over the Government's handling of research into artificial intelligence, from the 1970's through to the Alvey programme in the early 1980's, provide a useful illustration of the nature of Real Time Club style debate. In 1973 Cambridge University Professor Sir James Lighthill wrote his "Artificial Intelligence: A General Survey" for the British Science Research Council. In it he divided the subject into three distinct areas of endeavour: work to emulate the way the brain thinks, robotics, and research into how brain circuitry can be translated into electronic circuitry.

Real Timers were enamoured with the idea that computers could be taught to think – here was a way to shake up society and demonstrate the power of their machines! They believed all three of the identified aspects of artificial intelligence were interlinked, so Lighthill's suggestion that future research should tackle each area separately produced howls of protest. Members were even more incensed when it appeared that the net effect of the report was to remove government backing for research into the areas of robotics and artificial language, which RTC'ers believed to be essential.

Suspecting another ploy by the Civil Service to protect its own and reject anything that sounded like technology, the Club invited Alex d'Agapayeff of CAP to give a talk on the AI programme. Brian Oakley recalls that debate as, "one of the best evenings of my life. d'Agapayeff came to speak on artificial intelligence and, typically, the crowd started interrupting and heckling him. He tore up his notes, took the members full on, and eventually had them eating out of his hand!"

The debates continued for the rest of the decade. Then, in 1982 the Japanese government launched its Fifth Generation Computer Systems project, which aimed to build a supercomputer with usable artificial intelligence capabilities. The move, by the world's acknowledged leader in the consumer electronics and automotive fields, so alarmed the U.S. and Europe that they quickly set up projects of their own (the Microelectronics and Computer Technology Corporation and the European Strategic Program of Research in Information Technology (ESPRIT), respectively).

The British government response was to set up the Alvey Programme, through which it proposed to channel investment in precompetitive research in order to gear up the British information technology industry. There were five strands of technology in the programme, including artificial intelligence. Brian Oakley, the appointed head of

the programme, recalls the Club being largely supportive of everything except that one contentious area.

Philip Virgo has a different recollection. “As Basil Ferranti pointed out in one Club meeting, the whole programme was misconceived,” he claims. “Alvey was pure research, and everyone knew that research was only one percent of the total cost of bringing new ideas to market. Besides, the Japanese strategy in these things had always been to get other people to crack the problems they hadn’t worked out so they could then exploit the technology. My suggestion, which annoyed Brian (Oakley) very much, was that we should take our research scientists out and shoot them before they had the chance to produce yet more bright ideas for the Japanese to borrow, thereby destroying what was left of the British economy!”

“Now, looking back, what did the Alvey Programme achieve? The answer is, that annoying predictor software you find in Microsoft Office, which was actually written by Logica using Alvey research and algorithms. And since Microsoft, not Logica, made the money out of it, the Real Timers’ arguments turned out to be right.”

The 1970’s in Retrospect

That the Club and the businesses of many of its members had survived the turbulent 1970’s is a tribute to their hard work and tenacity. The decade had seen post-war Britain nearly brought to its knees. Described as the “sick man of Europe”, the country wrestled with the dual economic diseases of rising inflation and continuing labour unrest.

Rather than invest in new infrastructure and innovation, successive governments seemed determined to prop up the dying foundations of Britain’s earlier industrial era in an uninspired policy of “managing decline”. Shipbuilding, railroads, and the steel and textiles industries gobbled up vast sums of Treasury money, as did behemoth organisations such as British Leyland, BSA and ICL, before all eventually disappeared from the economic landscape.

For Real Timers, the change of government in 1970 to Ted Heath’s Conservatives seemed a perfect opportunity to put forward policy recommendations to support the growth of the struggling UK computer industry. These included the provision of investment grants rather than loans, the abolition of Import Duties that were adversely affecting the cost of parts and equipment, a reorganisation of the Government’s R&D support, a publicly owned communications network, and measures to set up international communications standards to allow free flow of data and services across national boundaries.

However, instead of supporting the industry, one of Heath’s first actions on coming to office was to cancel the Industrial Re-organisation Corporation, contributing to the demise of a number of promising start-ups in IT.

In 1973 Heath decided to take a stand against yet another national strike, this time in the coal industry. Unfortunately, the walk out coincided with OPEC price rises and production cuts that triggered fuel shortages and inflation, which topped 26% in 1975, and eventually brought down the government.

Many businesses feared they would not survive the decade, which saw both the three-day workweek and the Winter of Discontent. With venture capital for technology projects virtually non-existent and the country's own national computer company, ICL, on the terminal list, Real Timers worried about the menace of IBM, whose seemingly unstoppable course to global domination of the industry was ironically being aided by the British government's continued policy of purchasing the American company's systems for its own needs.

By 1980 the Club's appetite for further study weekends had waned, and in 1981 Mike Plumbe raised the question of its future direction. The industry was changing rapidly, with the fore-runners of the ubiquitous personal computer being introduced and economic activity in many developed countries shifting from manufacturing to service-based industries where information technologies had not yet found their niche. It was time for a re-think.

CHAPTER THREE

Order, Order

It was certainly never Alan Marshall's intention to establish a dining club – indeed, according to the man himself, “as an American, I found the concept of a ‘men’s club’ was quite foreign to me”. The tradition was well established in Britain, however, with some notable nineteenth century clubs, such as the Royal Society and the Lunar Society, demonstrating the contributions such congenial associations could make to the world around them.

So when the Real Timers' initial meetings grew into a series of planned slots in the calendar, and various members of what had become an exclusive group began to lobby as a unified force, the thorny issue of *modus operandi* was raised. As early as 1970 a law firm was commissioned to draft a constitution, but when the output ran to 17 pages of legalese, the rebels rebelled. Drawn together by their common interest in breaking the rules that bound British society to an earlier age, they decided to take an ironic lead from the contemporary machinations of the Conservative party leadership elections and operate with no apparent regulations at all!

Thereafter, and for the next 28 years, members agreed to abide by only two rules. The first was that no speaker was to be interrupted for at least five minutes. The second was the Chatham House rule, which states that “participants in the meeting are free to use any information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed”. This rule is still invoked at each meeting and to the best of anyone's recollection, has never been breached.

But even anarchists need some organising force to ensure they come together at the same place and the right time, are wined and dined to their satisfaction, and challenged by bold speakers to think the unthinkable. Although all members were encouraged to suggest speakers and manage an evening session, a nominal Chairman and Secretary quickly emerged, holding the administrative reins for the group.

By virtue of the fact that he had called the first few meetings together Alan Marshall had fallen into the role of Founder, and as a matter of expediency he was the accepted Chairman until he moved to Australia in 1970. Stanley Gill stepped in to the role for the next five years, and was followed by Reay Atkinson and later Bryan Mills. When the role of Chairman was dropped in 1981, Bill Freyenfeld, a master of organisation and communication, styled himself the Meetings Convener and set about orchestrating the annual speakers programme for the next 13 years.

But from the beginning, it was Mike Plumbe who held the Club together. Nancy Foy, the timesharing journalist, once described Mike as the “spider at the centre of the web”. Her observation that “Mike was always quietly pouring the wine and doing

bits of administration” is an understatement. From 1968 until he formally retired from active duty in 1992, Mike maintained the membership list, organised venues, liaised with speakers, sent out notices of events and made everyone feel welcome. His contribution was widely appreciated, and tangibly acknowledged when the Club foundered shortly after his retirement. His dedication to the Club led him to return from 1995 to ‘96 to help it get re-established.

Throughout Mikes’ tenure as Secretary, the club was unofficially governed by a mysterious, Plumbe-selected ‘Council of Elders’ whose views on membership, speakers and events would be canvassed by phone or post. After Bill Freyenfeld began to organise the annual meeting programmes, the triumvirate of Plumbe, Freyenfeld and Stewart Ashton (treasurer) managed all Club business between them, with occasional reference to Mike’s “Council” when required. This unstructured, unelected style of governance suited the Real Timers and continued most successfully for nearly thirty years.

Dining and Discussion

In 1975 the first of many briefing documents for prospective speakers was prepared, in which the Real Time Club describes itself as an “occasional dining club, at which people with an interest in computing can meet privately and informally, and discuss matters of common interest in congenial surroundings.”

The Club’s annual calendar quickly settled into a routine of nine monthly dinner meetings (leaving out July, August and December) held at various hostelrys around central London. The favourites on this list included Bertorelli’s, Leoni’s Quo Vadis and the Saville Club, but occasionally, for reasons of boredom or budget, a new restaurant would be tried out. Club hospitality included a three-course meal, preceded by an open bar and accompanied by wine, although the unrestricted flow of booze occasionally led to cost overruns and the disapproval of other diners!

Following the dinner service, the evening’s invited speaker gave a twenty to thirty minute presentation, and at least forty minutes were set aside for questions and debate from the floor.

What made these evenings so popular with both members and speakers was the no-holds-barred attitude of the Club. Presenters were advised, “as regards style, the Club does not take itself too seriously, and is perhaps more noted for robust exuberance than for respectful deference to its speakers”!

Most speakers entered into the spirit of the evening and many commented on it, as these extracts from letters of thanks clearly demonstrate:

“I would like to take this opportunity to write and say how much I enjoyed myself as guest speaker at the Real Time Club recently. I found the company

most pleasant, which, coupled with the good food, lively conversation and almost limitless amounts of wine that you insisted on placing in my glass (I am not complaining I hasten to add), combined to make the evening a most pleasant one.” (Gerald Janes, Senior Consultant, Peat, Marwick, Mitchell);

“I enjoyed the relaxed atmosphere and the warm welcome I was given by you and the Club. It was especially stimulating to have a well informed audience that was quick to question and ready to debate a variety of views.” (Stephen Finch, Senior Regulatory Affairs Advisor, British Petroleum)

“I even enjoyed the buffeting I got from a Force 10 Gale.” (Brian Jolly, M.D. Systec Consultants Ltd.);

Occasionally, for respected or valued guests, the group could exercise a level of restraint that was sufficiently unusual to warrant a mention. Following a meeting in April 1978, Sir Keith Joseph, M.P. commented, “I was most impressed by the self-denying ordinance which you had imposed upon yourselves.”

For most speakers, the value of the Real Time Club lay in its unique combination of industry pioneers and renegades, exclusion of the major suppliers and complete conviction that computing can and should be used to make the world a better place. They were called on to be challenging and controversial, and they rose to the occasion. Roger Needham of the University of Cambridge Computer Laboratory summed it up in a letter to Mike Plumbe, dated 16 November, 1972:

“It has always seemed to me that the best kind of speech for the Real Time Club ought to be on a subject which could be described as computational politics, or perhaps political computation, and I am hoping to think of something of a suitably scandalous nature.” (the topic he eventually chose was ‘The Politics of Research and Teaching in Computing’)

Over the forty-five years since its inception, the Club has hosted (and roasted) in excess of 250 speakers from as far afield as Europe and the United States. In 1969 the Club was especially honoured to host Commander Grace Hopper, Head of the US Navy’s Programming Languages Section, who returned later in the year to talk to a combined RTC and British Computer Society (BCS) event.

Other notable speakers have included Paddy Ashdown MP, Leader of the Liberal Democrats, Meinard Donker de Marillac of CAP/Sogeti SA in France, M M. Allegre, Delegeue Generale de la Delegation a l’Informatique in France, Dr. Kuo from the Office of Naval Research at the University of Hawaii, Dr. Sandy Fraser of Bell Laboratories in New Jersey, U.S.A., and Vitalij Lvov, Head of the Laboratory for the application of computing sciences to the automation of scientific research, Institute of Automation and Electrometry, Siberian Section of Academy of Sciences (who wins the prize for longest job title) from the USSR. There was even a serious possibility

that Al Gore, Vice President and Presidential hopeful of the United States, would agree to speak to the Club.

Building Friendships

The Real Time Club has been many things to many people. Perhaps its greatest strength was the eclectic and informal mix of entrepreneurs, academics, commercial competitors, politicians, civil servants and journalists who gathered for each meeting. The Club's lack of bureaucracy and absence of major supplier representation, combined with well lubricated open discussion, meant that members felt free to pursue radical ideas with passion and a great deal of good humour.

Genius and passion often come hand in hand with eccentricity, and stories abound of amusing episodes at Real Time Club dinners. For example, Jerry Fisher, Scottish nationalist to the core and described as a maverick with a political agenda, first came to the Club as Computer Manager for the company that manufactured Walls ice creams. The guest speaker at one dinner shortly after Fisher joined was Ian Barron, the modest inventor of the Modular One mini computer, who recalls, "It was to be my first speech on the subject and I made it as complicated as I could just to impress everyone. When I proudly finished my talk, there was an utter silence. Nobody said anything. They all looked miserable, and then this voice piped up from the back of the room, saying, "Can you tell me what relevance this has to ice-cream making?" "

For several years Brian Oakley had the job of briefing government Ministers to attend or even present at a Real Time Club meeting. He remembers telling them, "It will be an easy speech for you, but questioning and interruptions are a feature of the Club. There's nothing you can say that they'll accept lying down; you'll find yourself getting into a real shouting match with some of them. It's fun, but you must be prepared for that." He was often surprised at how much the Ministers actually relaxed and enjoyed their visits.

For journalist members, the RTC was a valuable web of information and contacts. Nancy Foy recalls, "The centre of the industry was in the States and the American companies were very egocentric. For these little tiddler companies in the UK, the networking at the Real Time Club was vital. This was where you learned about the new multiplexers, modems and applications coming out – information that was crucial if it was your business and your money on the line, and a godsend to the select few journalists that were granted admission."

Reay Atkinson, career civil servant, remembers the Club as an invaluable forum within which ideas could be developed. The achievements of the particular group of industry leaders combined with the Club's strict adherence to Chatham House rules meant that government officials could trade ideas and really learn about the rapidly increasing significance of the software component in the industry.

Despite the high percentage of women in the IT field, there were no women in the Club until journalist Nancy Foy was introduced by Rex Malik in 1968. Then, in the

early 1970's Steve Shirley, founder of FI (Freelance International) began to attend meetings and was, in due course, invited to join. She accepted the invitation with alacrity because, in her words, "It was a stimulating group of individuals, and it was a male network that would let me in! Other networks of chief executives of high tech companies were less welcoming of the gender challenge." The shortage of women in the industry has always been an issue of concern to the Club, which continues to work to promote their greater involvement.

Of course, there were other industry and networking associations attracting membership from the same group of people, but somehow the Real Time Club remained unique and popular. One early member recalls, "We had no home, no telephone, no organisation but a lot of liveliness and influence. People wanted to be invited to a Real Time Club dinner more than they wanted to go to a BCS meeting, but you had to join the BCS because you got letters after your name. It's very British to have letters after your name."

The Real Time Club was a place where you could have informal contacts with virtually anyone in the industry, including your direct competitors. For some, this was the source of enmities that have lasted as long as the Club itself, but others found great truth in the old adage that you have the most in common with your adversaries. Enduring friendships developed in the regular meetings and flourished at the frequent summer and Christmas parties that were held in the homes of various members.

There were even spin-off groups. Dick Evans' wife, seeing how often her husband stayed out late for his RTC meetings, organised partners' dinners on the same evenings. Calling themselves the 'Anti-Real Time Club', the group followed the same pattern of dining at various establishments around London. Evans recalls one occasion when the Real Time and the Anti-Real Time Clubs actually dined on different floors of the same restaurant!

Then in 1992, following the Club's twenty-fifth anniversary celebrations, several of the founding members decided to come out of semi-retirement and form the 'Off-Line Club'. They held a few meetings that were tinged with nostalgia, then decided they still had enough fight in them to rejoin the main Club. Many still regularly attend Club meetings, engage in active lobbying, and enliven the proceedings with their penetrating and irreverent questions.

Changing with the Times

The absence of formal rules, combined with a spirit of rebellion and an open bar often led to boisterous behaviour as an evening wore on. Only once has a speaker had occasion to complain about the verbal treatment he received at a Real Time Club meeting. In the manner of a true gentlemen's club, the offending member was quickly taken aside and shown the error of his ways. Letters of apology flew thick and fast, the speaker's forgiveness was secured and, indeed, he became a great friend of the Club for many years.

However, it did seem that as the focus of the club became blurred, boisterous behaviour replaced the reforming energy of the late 1960's, and some members began to find the tone of meetings becoming a little too rowdy. Various reminiscences include the regular use of bread rolls to launch missile attacks, a 'beer garden' atmosphere, and even the attempted jettison of one member over the banisters outside the Saville Club! Little by little, the early and more sensitive members began to drift away and attendance figures dwindled.

By the 1980's the Committee was obliged to launch unheard of membership recruitment drives, albeit conducted in the club's "usual discreet way", to keep the Club alive. Its reputation was still solid, however, and the letters of invitation invariably generated an enthusiastic response, such as this one from Martin Jeffreys, Partner of Wootton, Jeffreys:

"Dear Mike,
At last I have arrived. Philip Hughes is in the New Year's Honours List and I have been elected to the Real Time Club!"

Other invitees were "delighted" and "honoured", with one happy new member referring to his invitation as "one offer I cannot refuse." Only one person wrote to decline his invitation to join: Dr. Alan Cane, Technical Page Editor of the Financial Times, refused on the grounds that he did not believe the Club should have journalists as full members, so he preferred to remain on the Standing Guest list instead (which he did for many years).

However, the recruitment drives prompted concern among remaining old-timers that the Club's unique character was being diluted. In response, Mike Plumbe and Bill Freyenfeld prepared a profile of the Real Time Club after its first twenty years, showing how it had been obliged to change with the industry around it.

In the report, Freyenfeld and Plumbe describe the founding group as, "Computer Industry technical buffs all well-known to one-another, and constituting a cross between an Industry Pressure Group and a Mutual Admiration Society", which, by the late 80's, included "half a dozen assorted millionaires, a couple of MPs, and one CB, two CBEs and two OBEs" who were still a major draw for high calibre speakers.

The Committee recognised, however, that in order to survive another twenty years, the Club needed to extend its net to include a younger age group and a much wider set of occupational backgrounds. It also identified some issues around which to rally the membership, so that through the late 1980's and the closing decade of the Millennium the Club had its most active period of engagement in promoting wider support for the industry and the beneficial use of computing power in society.

CHAPTER FOUR

Powering Ahead in the Eighties

By the 1980's, the face of the computing industry had changed dramatically. Micro computers were proliferating in the office environment, by-passing the short-lived minis, and penetrating the household market at an accelerating rate. This shift was drawing new entrepreneurs, manufacturers, service businesses and management styles into the industry. At the same time, many original Real Time Club members and their contemporaries were moving on or retiring.

Still, membership in the Club remained a distinctive honour, and invitations to join were accepted with enthusiasm throughout the decade. Names such as Philip Virgo of the NCC, Basil Cousins from UNIX Europe Ltd., John Leighfield from Istel, Brian Jolly of Systec, Denis Lee from Brooke Bond Oxo, and Gordon Pocock at British Telecoms joined the membership list in the 80's, keen to carry on the club's tradition for Establishment bashing, yet bringing their own distinctive brand of reforming energy to the Club.

Highlights of the Decade

From the early 1980's, the Club's affairs were being ably managed by the triumverate of Mike Plumbe, Secretary; Bill Freyenfeld, Meetings Convener; and Stewart Ashton, Treasurer. With its dining and speakers programme thus running smoothly, the Club was able to focus attention on other causes and initiatives.

It seemed that the government had finally awakened to the importance of IT for the country's future competitiveness in a global economy. According to Reay Atkinson, the appointment of Ken Baker MP as Minister of State for Information Technology in 1981 marked "the first time, in an up-front and positive way, [that] HM Government was seriously supporting the IT Industry".

Significantly, Baker's first official engagement in his new post was to address the Real Time Club, which was still aggrieved at the way the government treated the industry. Bryan Mills, RTC Chairman at the time, recalls, "That was a riotous evening. I had to stand on a chair to be heard above the barracking!"

To highlight the government's new stance on the industry's importance to the UK, Baker designated 1982 the Year of IT. This coincided with the Club's 15th anniversary, in honour of which a special evening was organised at the House of Commons, with the Secretary of State for Industry, Patrick Jenkin, MP, giving an address on the subject of "Government and the IT Community".

In January 1987 the Club hosted another senior politician, Paddy Ashdown, MP, who talked about "Extraterritoriality in IT". As part of its Cold War effort to keep Western technology out of Soviet hands, the U.S. government had been exerting pressure on any manufacturer whose equipment (or parts) ended up in the eastern Bloc. But the pressure had become increasingly heavy handed, and some UK-based companies

were crying foul in what they saw as unfair restriction of their trade. Ashdown was leading a campaign against this policy.

Anticipating a lively debate, Freyfeld had sent out a flurry of invitations to Ken Warren, MP, Chairman of the Select Committee on Trade and Industry, Michael Ceverley, First Secretary at the U.S. Embassy, and representatives of IBM, which was still perceived by many Real Timers as the villain in the piece. The evening was a huge success, and Ashdown's campaign on the issue helped propel him into leadership of the Liberal Democratic Party.

But although government seemed finally to be grasping the importance of IT, there was still considerable confusion and wrangling over the correct policies it should be adopting to support the industry. In 1988, the Select Committee for Trade and Industry, chaired by RTC member Ken Warren, MP, produced a report on the state of IT in Britain. Having identified a crisis in the country's IT trade deficit and recommended changes to government procurement policies to address it, the Committee was incensed to hear Lord Young, Secretary of State for Trade and Industry, cite Britain's success in the portable telephone market as justification for continuing the government's 'hands-off' policy.

Meanwhile, Warren sought industry views through the Real Time Club. In March 1989 he requested an informal meeting at which members of the Select Committee could be briefed by members of the Real Time Club. Although it took over nine months to find a suitable date for the meeting, it was deemed a valuable exercise by both sides. The issues they discussed included the effect of the Single European Act on IT in the UK, funding for the IT industry, computer security and hacking, and training to meet increasingly serious IT skills shortages.

In May, 1990, Warren reported back to the Club on the "Work and Influence of Parliamentary Select Committees" (on the formulation of Government policy on IT), raising a lively debate within the Club about whether the government should have an IT policy at all!

A Capital Venture

When Margaret Thatcher's government came to power in 1979, one of its key ambitions had been to create an economic environment that would encourage entrepreneurship. To members of the Real Time Club and their colleagues throughout the British computing industry, this was welcome news indeed. However, their access to venture capital was hampered by more than its scarcity; -- few potential investors understood the industry or its products.

Until the mid-1970's the industry had been seen as almost entirely hardware based, with IBM and the other major suppliers dominating the scene. As the importance of software dawned on the user community, and the arrival of mini's and micro's vastly increased the number of users, the market became a confusing agglomeration of start-

ups and spin-offs. A high-tech investment boom was sparked off, with fund-raising prospectuses hyping the kind of investor Utopia reminiscent of the South Seas Bubble.

Several Club members, such as the NCC's Philip Virgo and David Fairbairn, were concerned that this could lead to an investor backlash. Through their efforts, the NCC undertook to publish and distribute a handbook, *Obtaining Finance for High Technology Ventures*, written by Real Timer, Bill Freyenfeld. The NCC also supported what became the City C³ (standing for Computing, Communications and Control) Club.

This particular off-spring of the Real Time Cub brought together the then separate communities of investment analysts, merchant bankers and fund managers for lunchtime discussions with industry and technology experts on how to assess current and potential investment opportunities in the sector.

The C³ Club's purpose, according to Virgo, was "to educate the City in the intricacies of high tech investment, so they could actually sort out reality from snake oil". To maintain quality, it had a tightly controlled membership list of accountants, financial consultants, merchant bankers, stock brokers and fund managers, all with well respected credentials in the investment world.

By 1985 the C³ Club had become an established venue for Chairmen and Managing Directors to speak directly with their lead investors and other players whose views were respected by the rest of the market. Topics from the programme for that year included: "The future of the UK Software Industry"; "The UK Games market: Hiatus or Holocaust"; "Inter-Active Video – Potential and Economics"; "The Economics of Electronic Publishing"; and "Convergence in Practice".

With the help of Richard Sharpe, Editor of *Computing*, and the NCC, the C³ Club organised a series of very successful "Financing High Tech" events, to educate fund-raisers and enable the sponsoring investors to quietly cherry pick any opportunities they would like to pursue further.

The Club also met with Ministers, like the late John Butcher and his successor Sir Geoffrey Pattie, as well as opposition leaders, like the Rt Hon John Smith, and the Select Committee on Trade and Industry, chaired by Ken Warren. At these meetings they made strong representations as to how relations between the high tech industries and the investment community could be greatly improved through more open briefings and contact.

However, by 1988 the kind of networking that the C³ Club had pioneered was either available elsewhere or being viewed as potential malpractice leading to insider trading. The Club's last event was a private seminar for bank managers on "How to value a software house" – pointing out, with typical tongue in cheek, that many of the key rules are the same as for valuing a Boarding House: understanding their markets, their competition, and how to foster and retain the staff that are the basis of their differentiation.

The demise of the C³ Club was not the end of the Real Time Club's interest in the issue of finance for ICT and start-up projects, however, and more direct action was to be initiated during the 1990's.

Training the Next Generation

The issue that galvanized the greatest flurry of RTC reform activity in over ten years was sparked off when the Junior Education Minister, Alan Howarth, addressed the Club in October 1989 on the subject of 'IT in Secondary Education'. The National Curriculum had been introduced in all state schools in the country, and Real Timers had several concerns. During the discussions following Howarth's talk, members expressed their dismay at the poor state of IT education in British schools, pointing out that the curriculum was rooted in out-dated technology and emphasised computer operating rather than information processing skills.

Members also articulated their frustration with the slow rate at which computer-based training was being introduced to the teaching of other subjects, despite its cost advantages and flexibility. Several expressed a willingness to help the Department of Education & Science (DES) tackle these problems, prompting Bill Freyenfeld to write to Howarth with an offer of Club assistance. Howarth's response was to call for a meeting.

The Club quickly convened two special beer and sandwich sessions at a City pub to canvas the membership for ideas and commitment to the project. Over 25 RTC members attended, and a delegation was sent to Howarth's office on March 6th, to outline the Club's proposals. The underlying objective was to give the DES direct access to experience and advice on matters relating to the use of computers in schools from a technologist's rather than an educationist's point of view.

Specifically, the delegation had proposed that the Real Time Club would 'adopt' five secondary schools and a teacher training institution. Under the brief of "observe and assist", a newly formed 'IT in Ed' group within the Club would a) help promote an understanding of the use of IT in education, b) assist with the teaching of IT, and c) provide advice on career opportunities and help with IT in school administration. A schedule of six-monthly meetings was proposed in which Club members would brief Ministers on progress from each of these activities.

This plan was accepted by the Government in a formal letter of thanks from the then Secretary of State, John MacGregor. The high level appointment was important in so far as it gave the Club an official standing as advisors to the government on this important issue. The Real Time Club was the first ICT organisation to be given such an influential standing.

By the end of June, sixty-two Club members had indicated an interest in the project, offering either personal services or the help of their firms (or both). Over the ensuing twelve months there was a flurry of activities, including seventeen projects at Thames

Polytechnic (Avery Hill Campus), the nominated teacher training institution. The adopted secondary schools were: Holland Park Comprehensive; Abbs Cross, in Hornchurch; Charters, in Sunningdale; Rydens, in Walton-on-Thames; and St Maurs Convent, in Weybridge.

It is interesting to note that when the project started, the machine-to-pupil ratio in the participating schools ranged between 1:16 and 1:41. In his outline report, Freyenfeld also notes that most of the schools offered IT courses at GCSE level and reported greater demand than they were able to fill, although in all but one of them the option was to be phased out by 1992 to fit in with the National Curriculum. The Club certainly had its work cut out, and wrote to other industry bodies with invitations to join the programme, but none took the offer up.

Projects were designed and agreed with each school, depending upon its identified needs. They ranged from giving advice to arranging the loan of key equipment, such as Interactive Video Systems (loaned by Applied Learning to Avery Hill and Holland Park), and 'Horace the Robot' (loaned by UMI to Thames Polytechnic School of Education). Advisory work was focussed on giving talks to student groups, providing careers advice and work experience opportunities, giving teacher training assistance and advising staff on IT matters.

A major activity in the first year was the Committee's organisation of a one-day seminar on distance learning at Thames Polytechnic (which would become the modern University of Greenwich), incorporating examples of distance learning programmes for both trainee teachers and trainee nurses.

On the consultative side, in addition to regular Ministerial briefings, the Committee produced a position paper on the potential role of 'IT in Local Management of Schools' (Alan Mitson), and an advisory paper on the 'Selection and Appointment of IT Technicians in Schools' (Paul Embleton). A small delegation from the Committee tabled six specific recommendations to the DES in a meeting with the new Minister for Schools in March 1991, several of which were either accepted or passed on to the National Council for Educational Technology (NCET). And in January '91, the Clerk to the Commons Education Committee invited the Club's views on IT in schools and teacher training, which resulted in the Club's seminal 'Report to the Commons Education Committee'.

However, the following year saw a major restructuring of school status and governance, which pushed the issue of IT in education out of the spotlight. RTC offers of assistance were not always greeted with enthusiasm at the local level, and some of its recommendations were blocked by government officials anxious not to upset the teaching unions.

Status Report No 6 of the IT in Ed Committee's activities, produced at the close of 1992, voices the Committee's growing frustration:

“..... there is a great deal of official complacency. Ministers continue to claim..... that the UK is ‘leading the world’ in the application of IT to education. This claim is mainly based on the official DfE ‘tin count’..... [the] ratio of computers to pupils in our schools. But... one can not lead the world on the basis of obsolete machines kept in store-cupboards.”

It goes on to say that the teaching of IT in British classrooms was probably comparable to other countries, but in the use of IT as a teaching aid for other subjects, “we are certainly well behind best practice in the USA and possibly other countries also.”

By 1993 active membership of the IT in Ed Committee had declined to around twelve, but it still managed to deliver a handful of projects and a major revision of the 1991 Report for the Commons Education Committee.

By then, however, several other industry bodies were beginning to develop their own Ministerial contacts in the education sphere. In February 1993 the RTC’s IT in Committee convened a working party, again inviting other industry organisations with an expressed interest in education, to explore ways of combining their credentials into a single voice for the UK IT community. This time, the British Computer Society, the Women into Information Technology Foundation, and the Worshipful Company of Information Technologists all responded.

The working party recommended to its constituent organisations the formation of a quadripartite Joint Advisory Panel on Information Technology in Education (JAPONITE). This new organisation took over many of the IT in Ed Committee’s activities and all of its formal contacts with what had by then become the Department for Education. The Committee itself was formally disbanded, although a new Education Caucus was formed following the Club reorganisation of 1995.

CHAPTER FIVE

Reconstruction

The early 1990's saw the arrival from America of the Internet, which bore a remarkable resemblance to the national communications network that the Real Time Club had been urging its own government to support nearly twenty five years earlier. However, the revolutionary fire seemed to be going out of the Club, and in 1994 it nearly folded.

Off to a Good Start

Before that happened, however, the new decade began with yet more high level consultation between policy makers and the Real Time Club. In March 1990, a small working party was set up to dine with Michael Colvin, MP and discuss his draft Computer Misuse Bill. The Club had already put forward its views on computer security at a December 1989 meeting with the Select Committee, so the delegation was able to report back to the Club that "most of what we said had already been considered by Michael and his advisers; but we were able to make one or two points which resulted in minor changes during the subsequent Committee stage."

It was around this time that the unofficial RTC 'Council' had begun issuing annual newsletters to keep members in touch with all Club business, including membership and attendance numbers. For the year 1990/91, attendance across the Club's meetings programme reached an all time high of 406. The highest attendance that year was at a regular meeting in January 1991, when 105 members heard James Martin, founder and Chairman of James Martin Associates, talk about "Future Trends in Computing". This extraordinary attendance figure was second only to the 117 achieved at the Club's 20th Anniversary dinner (1987), which was later surpassed by an attendance of 158 at the 25th Anniversary dinner in 1992.

The Quarter-Centenary Dinner was a gala affair, the planning of which had taken nearly eighteen months. All the (still living) founder members were traced, and ten attended. Written recollections of the early days were sent in by Alan Marshall from his base in Australia and Rex Malik, who, sadly, passed away before the dinner actually took place. Mike Plumbe chaired the evening, with contributions from Bill Freyenfeld; Sir Brian Jenkins, the Lord Mayor of London; Jacques Stern, Chief Executive of the Advanced Computer Research Institute in Paris; and Ken Warren, Chairman of the Commons Select Committee on Trade and Industry.

Several notable speakers from earlier years were present and honoured, including Alan Benjamin OBE, Sir Bryan Carsberg, Sir John Fairclough, Sir John Hoskyns, Jean Irvine, Sir Michael Marshall, MP, and Professor Ewan Page. Ever one to campaign for improvements, Bill Freyenfeld made the point in his toast to the guests, that in its first 25 years, the Club had been addressed by only five lady speakers -- Nancy Foy, Grace Hopper, Steve Shirley, Jean Irvine and Barbara Stephens --

reflecting, perhaps, the worrying failure of the industry to attract more women into its employment.

Implosion

Tucked away in the first Club Newsletter had also been a call for volunteers to replace the long-standing and hard working troika of self-appointed Club Officers. The three, Freyenfeld as meeting Convener, Plumbe as Secretary, and Ashton as Treasurer, had agreed to continue in their roles until after the Silver Jubilee celebrations in May 1992, leaving eighteen months for replacements to be found and brought up to speed. Jennifer Benyon--Tinker stepped forward for the role of Treasurer, allowing Stewart Ashton to be dined out in April '92 after fifteen years of service. Another member, Gerald Janes, volunteered for the office of Secretary, releasing Mike Plumbe from nearly 25 years in that post.

That left Bill Freyenfeld unreplaced (unreplaceable?) and he bravely soldiered on, convening meetings for another year. Two members expressed interest in taking on the role of Convener, but when they had a look Bill's exhaustive 'job description' they quietly melted back into the lower ranks!

In 1993 Bryan Mills agreed to step in, as Chairman rather than Convener, and Bill was finally able to make his exit, having characteristically made sure that the speakers programme for the following year was in place. By his own reckoning, he had invited over 120 speakers during his twelve years as Convener, and approximately fifty percent of those were the result of cold contacts. The Club aimed high, and few invitees turned down the opportunity to speak to such a well-respected group -- the most notable exceptions being Prime Minister Margaret Thatcher and HRH the Duke of Kent.

While regular Club business carried on under its new management, Freyenfeld and Plumbe collaborated once again, this time to organise a special dinner in May 1994 to celebrate old friend Ken Warren's newly awarded knighthood. The evening was not an official Club event and the guests, most of whom were over sixty years of age, had long since ceased to be regular attendees at Club meetings. As it happened, however, this reunion of original Real Timers (earlier described as a bunch of clapped-out punch card hacks) proved so popular that further dinners were planned under the typically quirky name of the 'Off-Line Club'.

But the Real Time Club itself was beginning to lose its way. Average attendance at meetings had declined from 38 in 1990/91, to 32 in '91/92, 29 in '92/93 and 26 in '93/94. The rising costs of dining meant that with attendance below 30 paying members, the Club was making a loss on each event. Furthermore, an exercise to re-register all the names on the membership list, thought to be a requirement under the Data Protection Act, had reduced the official membership numbers from over 300 to under 70, forcing the officers to call for a review.

Gerald Janes' note asking for input on the future of the Club brought a flurry of response, and prompted the scheduling of an extraordinary general meeting in December 1994 to discuss the way forward. Saddened at the prospect of losing such a unique association in the IT industry, several people (including both Bill Freyenfeld and Mike Plumbe, who came out of retirement for the purpose), began to rally support from both past and current members. In the process of canvassing Real Timers, they developed a consensus of views that were reiterated at the EGM:

1. The club should not be allowed to fold.
2. The prime purpose of the Club was as a network, although it was recognised that with the emergence of industry organisations such as the British Computer Society, the Worshipful Company of Information Technologists and the Computer Systems and Services Association, there was growing competition in this regard. One member summed it up as follows: "The Club is not unique in providing such a network, but we do it rather better than most."
3. The Club should utilise and extend its reputation and contacts with policy makers in government.

There was also widespread recognition that in order to survive, the Club would have to review and revise its finances, meeting arrangements, membership admission, internal communications and organisational structure – in short, a complete re-think of the purpose and administration of the Real Time Club was needed to make it more manageable and contemporary.

Twenty-three members turned up for the EGM at the National Liberal Club to vote on a series of resolutions that had been prepared by the backroom activists and proposed on the night by Basil Cousins. The first resolution determined that every effort should be made to keep the Club in operation. The second and third provided for *modus operandi* to achieve the reorganisation and maintain a low level of income producing activity until the reconstruction was completely implemented.

The result was the appointment of a Working Party, chaired by Basil Cousins, to consider all aspects of the future of the Club and report back with recommendations within three months. The WP consulted the views of over 180 members in preparing its report, which was accepted at a second EGM at the end of March. The re-named Interim Committee was then tasked with implementing the proposals, all of which were adopted at the third EGM in June 1995.

And thus it was that after twenty-seven years of combined anarchy and benevolent despotism, the Real Time Club finally submitted to the dreaded disciplines of an elected Council, a Constitution and a set of General Rules.

Moving On

The new structure and rules formalised the Club's traditional schedule of nine dinner meetings per year, and provided for a greater number of active officers to undertake the tasks of organising the programme and managing the membership. Minutes of the first Council meeting acknowledged no fewer than 13 elected and appointed officers. These included the Chairman, Vice-Chairman and Immediate Past Chairman, the Treasurer and both a Membership and an Events Secretary. In addition, there were four designated Whips, whose job it was to encourage members to attend events, plus three Caucus Convenors.

One innovation that was instituted in the Club's new General Rules was its Overseas Membership and Links initiative. It was felt that this international flavour would attract more high profile speakers and further emphasise the uniqueness of the Club. However, the effort to identify and maintain overseas members became too great, and only a handful were ever recruited.

The idea of the Caucuses was to lead the Club's activities and contributions on specific and sometimes radical issues of import to the contemporary development and societal impact of information technology. They were:

- the Education Caucus, led by Alan Mitson, which carried on the work of the earlier IT in Ed Committee and, specifically, took on the RTC's turn in the Chair of JAPONITE.
- the Legal Caucus, convened by Gillian Bull, aimed to facilitate a flow of information between members and the government on the impact of law on the ICT industry.
- the SuperHighway Caucus, under Des Lee's guidance, was concerned that the UK lagged well behind the US in exploiting opportunities for linking and sharing resources on the information superhighway.

In convening its Caucuses, the Club recognised the danger of the "jumping on the bandwagon effect", but felt that the uniquely eclectic mix of skills and backgrounds within its membership meant that the RTC could facilitate open discussion between groups that would otherwise "engage in megaphone diplomacy".

The work of the Caucuses enjoyed with varying degrees of success. The Education Caucus picked up from the IT in Education Committee, which had been disbanded in 1993. Through the efforts of the new Caucus and its active involvement in JAPONITE, the Real Time Club continued to make a significant contribution to advancing the use and teaching of information technologies in schools, as discussed in the next chapter.

The Legal Caucus did not meet with as much success, however. Failing to find a cause to rally 'round, the seven members attending its first meeting agreed to an

agenda of ‘head-banging, kite flying and generally letting off steam under the Chatham House Rules’. As this was roughly the same diet offered at the main Club meetings, it is probably not surprising that attendance at Legal Caucus meetings declined swiftly, and it was never resurrected.

After a quiet start, the SuperHighway Caucus announced an ambitious project in 1996. Following on from the IT in Education team’s success with its major report on Information Technology in Schools, the idea was to produce another key report on “ICT and its impact on the City over the next 30 years.”

A call went out in the 1997 Newsletter (which turned out to be the final one issued) for contributions on a range of topics, including:

- A short history of the future (and of futurology)
- The City and the State
- Buildings and Living
- Communications
- Education
- Employment
- Health
- Laws and Crime
- Leisure
- Money
- Shopping
- Transport.

Although several members stepped forward to write different sections of the report, the task proved too complicated to coordinate and the project was allowed to die.

Finally, a fourth group, the Finance Caucus, was launched in 1997, with Charles Ross as Convenor. Its aim was to look specifically at the problems of funding start-ups and early stage firms in ICT. With the full backing of the entire Club, the Finance Caucus took its concerns and recommendations to the widest possible public forum, and was able to influence the direction of government debate and subsequent legislation in this area. The work of the Finance Caucus is discussed in more detail in Chapter Seven.

CHAPTER SIX

The Challenge in Education

Alongside seemingly limitless opportunities for economic growth, the post-war advent of information and communication technologies also brought a pressing need for workers with a new range of skills. Having successfully lobbied for the removal of restrictions on the communications infrastructure that were holding back the development of their industry in the U.K., members of the Real Time Club realised that the lack of skilled workers might have an equally detrimental effect on growth and therefore needed their attention.

More importantly, however, they were concerned that the next generation of young people in this country should not be disadvantaged in an increasingly global marketplace by a lack of up-to-date IT skills. So despite disbanding its IT in Education committee in 1993, the Real Time Club continued to take an active interest in the issue. As it happened, at least a dozen members were active Governors of local schools, so were well placed to understand the difficulties faced by teachers and School Boards.

JAPONITE

The final act of the IT in Ed Committee had been to convene an all party meeting with other industry bodies, out of which the Joint Advisory Panel on Information Technology in Education (JAPONITE) Council was formed. Initial members were

- The Real Time Club
- The British Computer Society
- The Women into Information Technology Foundation, and
- The Worshipful Company of Information Technologists

It was agreed that the Chair of JAPONITE would rotate on a six monthly basis between representatives of each member organisation. The initial Chairman was Bill Freyenfeld of the Real Time Club, followed by Guido Castro of the Worshipful Company, then Colin Wells of the British Computer Society and finally Ellen Neighbour of the Women into IT Foundation.

Initially, the Council took on two primary functions: to take over from the RTC in advising Education Ministers on IT matters, and to exchange information between members on their educational activities, seeking out opportunities for mutual co-operation and support. JAPONITE was not intended to replace the activities of its member organisations, but rather to enhance them through the combined efforts of all four.

Accordingly, the Council carried on with the RTC's established schedule of bi-annual meetings with the Minister of State for Education, Eric Forth, MP. At the first of

these meetings in 1993, two topics were discussed – IT investment and teacher training in IT. Following that meeting, Freyenfeld noted with some surprise that the DfE continued its official line that the use of IT in education was an additional cost which had no potential for off-setting savings, one of the key fallacies that the IT in ED committee had been arguing against since 1989.

At the following Ministerial meeting in May 1994 the topics under discussion were the importance to schools of networking and, once again, teacher training. By the third Ministerial meeting in December 1994, when education for careers in IT and the use of IT to support Head Teachers was discussed, the JAPONITE delegates began to notice changes in the DfE's receptivity to outside advice.

By early 1995, Eric Forth had been replaced at the DfE by Robin Squires, whose dislike of the subject was obvious, and several representatives on the JAPONITE panel were drifting away due to pressures of work or retirement. One Corporate Member, the Women into IT Foundation, was wound down and absorbed into the Institute for Data Processing Management (IDPM; subsequently IMIS, the Institute for the Management of Information Systems), which joined JAPONITE soon after, bringing some new blood to the Council.

As signs grew in 1996 that a change of Government might be on the cards, the Council offered its advisory services to the Shadow Cabinet, with the result that a lunch-time seminar for seven Labour MP's (five of whom subsequently became Ministers) was held in February. That same year JAPONITE produced its first formal work in the shape of a submission to Stevenson's Independent ICT in Schools Commission. The Commission listened, and the preface to its own report notes,

“We have concluded that if the next government does not take steps to intensify the use of information and communications technology (ICT) in our schools, a generation of children – and a generation of adults as teachers – will have been put at enormous disadvantage with consequences for the UK that will be difficult to reverse.”

The General Election of 1996 brought in a new government with a seemingly new, more positive approach to ICT, particularly in schools. Inspired by optimism, JAPONITE produced, in rapid succession, four major documents:

- September, 1997 Response to the Government White Paper “The People's Lottery”, concerning proposals for using Lottery money for Teacher Training in ICT
- December 1997 Response to the Government Green Paper “Connecting the Learning Society – the National Grid for Learning”
- May 1998 Response to the Government White Paper “New Library – The People's Network”
- August 1998 Response to the DfEE Pathfinder Prospectus for the “University for Industry”

May 1998 also saw JAPONITE host a major conference at the Royal Society for School Governors, titled “ICT in Schools”. The conference, chaired by Sir Brian Jenkins and Dr Alan Benjamin (both also members of the Real Time Club), attracted 180 delegates to hear seven distinguished speakers, including Sir Dennis Stevenson.

As the influence of the Council grew, so did its membership. In 1998 JAPONITE was joined by the Institute for Electrical Engineering (IEE), the IT National Training Organisation (IT-NTO) and the Telecommunication Managers Association (TMA, later called the Communications Management Association). The addition of these influential organisations meant the Council was even more representative of the ICT community, and boosted its resources to undertake future activities.

Additional resources were certainly needed for the Council’s next project, the creation of an Internet site in 1999. With the help of external sponsorship, JAPONITE was able to launch its web-based “*IT Governors Journal*”, intended to provide a source of information on the strategic issues around planning, equipping, and training for the use of ICT in schools. The first edition appeared on the JAPONITE web-site in February 1999, with four subsequent issues published in the following years.

Also in 1999 JAPONITE submitted evidence to the Commons Education and Employment Committee which was examining the role of School Governors. The JAPONITE evidence focused on the appointment, duties and training needs of the IT-Governor, which was becoming an increasingly common position under the Government’s emerging programme of grants for ICT development within the National Grid. The Council followed up its submission with an invitation to the Committee for a buffet lunch and briefing in December 1999.

In early 2000 JAPONITE organised a second Governor’s conference on “The Internet and Intranets in Education”. The event attracted both external sponsorship and the attention of the national media. An extensive feature on IT Governors, to which several members of the JAPONITE Council contributed, appeared in the April edition of the *Times Educational Supplement*.

By now JAPONITE had established a solid reputation with both government and school Governors, with the result that it was regularly invited to contribute to sector initiatives. Following a DfEE sponsored conference in April 2000, JAPONITE was invited to contribute to the On-Line Content Evaluation Unit’s scrutiny of web-based educational material in terms of its value for schools and/or commercial markets. JAPONITE was also invited to send an observer and submit its comments on the pilot for a series of Road Shows for School Governors being organised by the DfEE. And at the end of the year, the Council was commissioned by the DfEE to prepare an annotated list of Web-sites likely to be of value to Governors.

Membership in the Council remained fluid, however, with the loss in the year 2000 of two JAPONITE members (the TMA and IMIS), and the re-organisation of the

IT_NTO into the e-skills.nto (www.e-skills.com). A year later, the IEE also pulled out as a result of its own internal reorganisation, reducing the Council's membership back down to four organisations.

2001 saw the production of a major report on "The Employment of IT Technicians in Schools". Initially started at the request of the BCS Schools Committee, the report considered the need for ICT technical support in schools, and the resulting needs for support staff, sources of supply, training, qualifications, remuneration, career structure, and costs. The report was widely circulated and well-received by both the educational and computer press. Plans for a further conference to be held in early 2002 were abandoned, however, after the tragic events of September 11 triggered widespread economic fallout, including the withdrawal of sponsorship for such events.

Despite the collapse of plans for a third industry conference, the JAPONITE Council continued to play an active role in promoting ICT in education for a further two years. A meeting with the National College for School Leadership led to the production of a report in 2002 on various ways in which non-teaching staff, supported by ICT, could relieve teachers of some of their work-load.

There was also considerable work done in the area of establishing ICT-related qualifications for school staff. In 2002 JAPONITE passed on to the BCS a request for input concerning the required ICT capabilities of candidates for the National Professional Qualification for Headship, as well as a power-point presentation outlining the ICT literacy needs of School Governors. At the end of the year, the Council produced a major report for the Government on the ICT literacy needs of Governors, Chairmen and IT Governors, along with recommendations concerning training of same.

Finally, in 2003 JAPONITE produced a major paper, with only ten days' notice, in response to the Government's call for industry views on its White Paper "The Future of Higher Education".

By the end of 2003, however, it became clear that the member organisations, in particular, both the BCS and the WCIT, intended to take a more prominent role in public affairs, including the education agenda, in their own name. Not wishing to duplicate effort across different organisations, JAPONITE agreed to disband.

Real Time Club Education Caucus

In the meantime, the newly formed Education Caucus of the Real Time Club had been busy producing its seminal "Open Report to the Commons Education Committee on ICT in Schools". The 58 page report, endorsed by the Commons Education Committee, whose Chairman, Sir Malcolm Thornton, MP wrote the foreword, was

widely distributed and generated considerable interest within the education and political spheres.

At the same time, and at the personal request of Prime Minister Tony Blair, Dennis (now Lord) Stevenson began to prepare a major report on the state of IT in Education. Twenty copies of the RTC report were requested for the Stevenson Committee's review, and Lord Stevenson himself generously acknowledged the influence of its recommendations on his own final report and recommendations.

One outcome of the recommendations around the Stevenson Report was the formation of an inter-agency liaison group, consisting of the Office for Standards in Education (OFSTED), the Qualification and Curriculum Authority (QCA) and the Teacher Training Agency (TTA), to co-ordinate their ICT policies. The Real Time Club, along with the BCS and IT-NTO, was invited to be an external member of this group, enabling the Club to continue to make private contributions to discussions on the future of ICT in teacher training and the national curriculum.

The following year the Club produced a further report for Sir Ron Dearing's National Committee of inquiry into Higher Education. The Club's 11 page submission explored the likely future impact of ICT on higher education, covering such topics as distance learning and the establishment of Virtual Universities operating across the Internet. The final Dearing report contained 14 recommendations pertaining to ICT, all of which largely coincided with the Real Time Club's evidence.

As the new Millennium approached, the pressures of business had taken their toll in the amount of time RTC members could devote to *pro bono* activities such as the Education Caucus. Nevertheless, the group managed to make significant contributions on a number of fronts.

- The Club was represented on a Task Force formed by the Computer Systems and Software Association (CSSA) to look into the state of the UK Learning Software Industry in 1997. The Task Force Report was published in June 1998.
- In late 1999 the Club assisted the IEE in writing a Foresight Panel Report on "Education in 2020".
- In conjunction with another RTC initiative on finance for SME's in the high tech sector, the Club sought to promote improvements in business and entrepreneurial education in schools.

The Club continued to work very closely with the University of Greenwich School of Education, providing staff members with technical advice, information and training by the ICT industry. In 1999, as part of an ICT Policy Group planning and implementing IT/ICT in the School of Education project, the Club helped organise a mini-exhibition called "Next Steps in ICT". The close relationship between the Club and the University culminated in the appointment of Bill Freyfeld to the University Assembly, a post that he held until 2004.

Legacy

The Club's IT/Ed Project lasted 15 years, ten of which also included its involvement in JAPONITE. Over this period both organisations achieved considerable influence and a number of specific successes in the promotion of ICT in education. As a result of Real Time Club initiative, British schools are better prepared to both teach and employ ICT effectively, to deliver world class skills based on the new technologies.

CHAPTER SEVEN

Finance for Growth

Although the economic force that drove the Industrial Revolution of the eighteenth century owed much of its strength to individual investors in public share offerings, successive British governments in the post-Depression era passed increasingly restrictive legislation on their investment markets. For example, the Prevention of Frauds Act 1936 forbade any company being listed on a UK stock market unless it had three consecutive years of profits. It was also a criminal offence in the U.K. to issue information about an investment opportunity unless said information had been prepared by a recognised City institution.

The effect of these measures, intended to protect the public from the risk of fraudulent share offerings, had been to close the London capital markets to all but existing, profitable businesses. It also cut off the free flow of investment information to the public, creating a powerful layer of intermediary institutions and their instruments, such as investment trusts, unit trusts, investment bonds and hedge funds, which controlled all investment funds for their own profit.

The Real Time Capital Dilemma

Technology start-ups had no access to these risk-averse sources of capital and could not afford the onerous burden of bank loans. The Real Time Club was not alone in its growing concern at the number of entrepreneurs who were taking British developments to US markets, where access to venture capital was much less restricted.

Through its earlier activities in the investment arena, the Club had established its credentials with prominent members of both the finance sector and the Treasury. As a result, when the Bank of England produced a report entitled “The Financing of Technology-based Small Firms” in late 1996, the Deputy-Governor of the Bank, Mr Howard Davies, invited the RTC to participate in the ensuing public debate.

In July 1997 the Real Time Club produced its own report, “A Reasoned Response to the Bank of England Report”, which was widely circulated throughout Government and the Financial Services community. In it, the Club noted that the Bank’s report concerned itself mainly with the funding of existing small enterprises, and paid scant attention to the specific problems faced by start-ups.

A four-point strategy was proposed in “A Reasoned Response”, including:

- changes to taxation to increase the overall supply of venture capital,
- legislation to give the public easier access to investment opportunities in unquoted software firms,

- more active management support for start-up ventures from the investment firms, and
- more proactive procurement support from government to help accelerate the development of markets for British high tech products.

The public debate on these issues was particularly important because the government was due to pass a new Financial Services Act in 1998/9. As these Acts are passed only once in every ten to fifteen years, there was a limited window in which to ensure that the industry could live with the resulting legislation well into the next millennium.

Accordingly, the RTC prepared a formal submission to the Treasury (“Funding Technology-Based SMEs; Key Issues to be Resolved in the 1998/9 Financial Services Act and/or Other Legislation”, March 1998) outlining its core recommendations, which were for the government to:

- provide a mechanism to enable entrepreneurs to seek public subscription much more easily and at much lower cost than is presently the case, and
- adapt UK legislation and regulations to the likely developments over the next decade in the Internet-driven Global Investment Market.

Following publication of the first draft of the government’s Financial Services and Markets Bill, the Real Time Club became a major player in the ensuing consultations involving the Treasury, the Financial Services sector and the high tech industry. Members of the Finance Caucus attended hundreds of meetings with over thirty organisations and responded in detail to Consultation Documents issued by both the Treasury and the Financial Services Authority (“Public Offers of Securities”, “Regulated Activities and Financial Promotion”, “A New Approach to the Information Age”, and “The Permission Regime”).

In June 1998 representatives of the Real Time Club were invited to a private Venture Capital conference organised by the Treasury. The event gave the RTC delegates an opportunity to learn directly from Chancellor Gordon Brown and European Commissioner Mario Monti about their plans to standardise rules for investment across the EU. The Club believed these plans would unduly curtail UK entrepreneurs’ access to the capital they needed, and consequently sent a detailed memorandum to Mr Monti outlining its concerns.

It is interesting to note that the RTC was the only organisation involved in the government’s round of consultations on these issues that directly represented the interests of the ICT community itself.

The central theme of the Club’s argument was that the Government’s responsibility was to protect the public from the risk of fraud, not from commercial risk. Specifically, the Club proposed that “any member of the public should be able to prepare and register a prospectus and solicit funds from the public” with similar levels

of simplicity and safeguards as already applied to the registration of a new limited liability company.

Over the eighteen month consultation period, the Club worked on several ideas, including simplified sub-sets of the public offer of securities (POS) rules for start-up ventures, a loss compensation fund to help investors caught up in genuinely fraudulent offerings, and the facility for wider investment solicitation via the Internet.

The intensity of the Club's lobbying during this period prompted one DTI official to comment, "I must admit that before we first met I had never heard of the Real Time Club. Now, wherever I go in the Treasury or the DTI, or even in much of the City, the name keeps cropping up."

During the course of the campaign, several members of the RTC participated in a debate at the Oxford Union at which Bob May, in his role of government Chief Scientist, was speaking. The RTC delegates made the point that if the provisions proposed by the government in the Financial Services and Markets Bill had been in force in the 1800's, the Industrial Revolution would never have been able to gather steam in Britain! Bob May asked the Club to submit a paper on their proposals, which they did with typical Real Time Club irony. A copy of the paper appears in the Appendix.

Working in association with the Smaller Quoted Companies Alliance and the Centre for the Study of Financial Innovation, the Club eventually concentrated effort on Clause 19 of the draft Bill, which repeated provisions contained in earlier legislation making it a criminal offence to communicate unauthorised information regarding investment opportunities. The government itself had already recognised the unworkability of this clause and was drafting a list of exemptions.

The Real Time Club's solution to the problem for IT entrepreneurs was a concept they called the "Sophisticated Investor", the purpose of which was to remove the onus of investor protection from the government. Rather than merely suggesting this idea to the Treasury, however, the chairman of the Club's caucus invited a long standing friend, the SQCA's solicitor, Tom Mackay, to draft the exact wording of an exemption, which allowed investors to self-certify that they were aware of and able to afford the risk that investment entails, thereby de-criminalising the act of passing on information about un-regulated investment opportunities.

The RTC's exemption went unchallenged throughout the rest of the consultation period, and therefore remained in the Bill which was eventually passed through Parliament and enacted as the Financial Services Act 2000. Referring to this triumph, Dr Andrew Hilton, Director of the Centre for the Study of Financial Innovations remarked to a meeting of his members that "the Real Time Club has won"!

The Real Time Club's exemption is still invoked daily by thousands of Business Angels seeking to invest in start-up and small ventures across all industry sectors. It

has made a significant contribution to expanding the pool of capital available for new start-up businesses in the UK.

Budget Submissions

Among the Club's many proposals for increasing access to and the availability of funding for ICT entrepreneurs had been a number of measures that would fall within the remit of the federal budget. During the course of consultation, DTI officials advised the Club to represent these particular recommendations to the Treasury in a formal Budget Submission.

CSSA Director General, Rob Wirszycz offered to participate in this project, and a Joint Submission was sent to the Chancellor in September 1997. Subsequent submissions were prepared in each of the following three years, covering a number of issues and recommendations, including:

- Start-up funding through government sponsored schemes, such as the Loan Guarantee Scheme and the Enterprise Investment Scheme
- Formation costs
- Corporation tax treatment of new business start-ups
- Capital gains tax
- First-year depreciation of ICT assets
- Directors' personal legal and financial liabilities
- IPR protection costs
- Share options for Directors and employees

The Treasury never acknowledges direct influence on its budgetary measures, but it is certain that officials would have had greater awareness of the concerns of ICT businesses as a result of the Real Time Club's input.

Looking Ahead

By virtue of the high profile the Real Time Club had earned during the Treasury Consultations, it was invited to join in several other initiatives concerned with the future of the Financial Services sector.

In 1998 the Office of Science and Technology's Financial Services Foresight Panel launched a public consultation. Under the heading "Scenarios for 2010", it was tasked with exploring potential barriers to the development of the ICT industry. Ian Bond, Head of the Markets and Trading Systems Division at the Bank of England invited the Club to contribute to a scenario which he had been asked to prepare on the retailisation of capital markets.

One outcome of the Club's extensive investigations and consultation on the Financial Services Act was a deeper understanding of the likely effect that developments in ICT such as the Internet would have on the operation of banks and equity markets. Accordingly, their concerns and recommendations were summarised in a report, "The

Future Use of Electronic Technology in Cash Transactions, Banking and Share Trading”, which was circulated in early 1999.

When, later that year, the government launched its consultations on electronic commerce, the Real Time Club was invited to submit its comments and was again able to claim influence on the subsequent draft Electronic Commerce Bill.

One of the most noteworthy events of the decade for long-term Club members was a comment made by the Prime Minister in a 1999 speech to the Venture Capitalists Association in London. As noted in the RTC Update for that year, the Labour PM said he:

“wanted to change the instincts of theelite.....who regarded entrepreneurs as beneath them.....and looked down on people who had an idea, developed it and went out and made money.”

The Club was so pleased with this apparent change in attitude that it wrote to the Prime Minister thanking him for, “the first occasion in our collective careers that anyone can recall any British politician paying any compliments to Entrepreneurs!”

CHAPTER EIGHT

Into the New Millennium

The arrival of a new Millennium, without the catastrophic systems failures forecast from the so-called Millennium Bug, brought a change in public attitudes to information and communications technologies. The awe and apprehension that characterised the early days of technological innovation had vanished and been replaced with the matter-of-fact assumption that “we **are** the digital generation”. Computing power began to be taken for granted, as were project overruns and operator frustration. Digital power was moving into the commodity space that was occupied by the waning miracle of electrical power a century earlier.

The new developments were in digital media and information systems management. Personal users were looking for functionality through the convergence of technologies. Organisations were looking to leverage their investment in technology by squeezing more value from their information assets. Politicians were talking about joined up government, and expecting the technology to smooth over major organisational cracks.

Innovations at the Real Time Club

One would think that with the de-mystifying of technology, an organisation of young rebels would languish and eventually fizzle out. Instead, the Real Time Club was entering a period of renewed strength at the turn of the Millennium, with cash reserves and energy to spare.

In his *Real Time Update* at the commencement of the Millennium year, Chairman Charles Hughes noted:

“Y2K is upon us and the Government have just appointed their third IT Minister in 27 months! Digital TV is here, digital cable is close, mobile communications are being transformed. We are told that ‘*the UK will be the best place in the world to conduct e-commerce by 2002*’. The government are going to let – even encourage – entrepreneurs raise venture capital, and quantum computing is on the verge of generating a completely new wave of computing.

“What a fantastic industry and what a wonderful time to be Club Chairman. We are in robust health finances are sound, membership is growing and the voice of the Real Time Club is heard in the land.”

During Hughes’ two year watch as Chairman, the Club settled on the National Liberal Club as the permanent home for its regular meetings, streamlined the Club Constitution, took on a professional administrator to help manage Club affairs and began the innovation of formal debate evenings to complement the usual single speaker format.

For the first formal debate, Members heard Harold Thimbleby, Professor of Computing Research at Middlesex University, and Brian Peterson, head of the encryption co-ordination unit at the Home Office, speak for the motion: “This house believes that control of the Internet by governments is imperative for the well being of society”. Against the motion were Tricia Drakes, chairwoman of the Internet Society of England’s Advisory Board, and Christine Maxwell, vice chair of the Internet Society and creator of the Magellan online directory. Following a period of heated discussion, a vote was taken and the motion was defeated by 45 to 14. A two-page spread in *Computer Weekly* magazine covered the evening’s proceedings, raising the Club’s profile yet further in the industry.

Also during Hughes’ watch several key initiatives were launched, including the Club’s published Manifestos, the SCALE 21 Programme and the Leading Edge Caucus work on quantum computing.

Foresight and SCALE 21

In May 1993, William Waldegrave, MP, published the Government’s White Paper, ‘Realising our Potential - A Strategy for Science, Engineering and Technology’. The White Paper announced that the Government would launch a Technology Foresight Programme, led by the Chief Scientific Advisor, to ensure closer interaction between scientists, industry and government. The paper initiated a series of consultations to identify future opportunities and threats for Britain’s science, engineering and technology industries.

The first round of Foresight aimed to identify the likely social, economic and market trends in each of fifteen sectors over the next 10-20 years, and the developments in infrastructure required to prepare for future needs. By the second round, the focus was on the opportunities arising from innovation, and implications arising from the first-round panels’ findings on education, skills and training.

This had been Real Time Club territory for over a decade, and when the Club found points of disagreement with the ICT sector study it did not hesitate to fire off a robust -- some called it aggressive -- riposte. Their concern was with the long-term education implications of the transition from an industrial, mechanical society to the intellectual requirements of the information and cognitive age.

Following on the heels of their position paper, the Club invited Lord May of Oxford, then Chief Scientist and later President of the Royal Society, to address a monthly meeting. In the discussions that followed his speech, the Club formed the idea of running a Foresight Associate Implementation Programme for the DTI, specifically to explore the issue of IT skills for the future.

A special Resolution had to be drafted to enable the Club to run the programme under a Memorandum of Understanding with the DTI. The object of the programme was to “identify the new skills, capabilities, aptitudes, talents and professional competencies

needed to develop a highly skilled and adaptive workforce so that the whole community can realise the full potential of the Information Age”.

The programme, called SCALE 21 (Skills Capabilities Aptitude Learning Environment in the 21st Century), became the most ambitious project the Club had attempted in its 34 year history. As project lead, the Real Time Club facilitated a collaboration with several industry bodies, including eSkills-NTO, IMIS, Calibrand, BCS, IAP, IEE, Oxford University, RBI, the Royal Institution, the London Business School and the Talent Foundation.

Three working parties were set up to explore three key issues:

- What are the actual training and qualifications available in the IT world
- What are the intellectual skills and competencies needed by the IT industry
- What are the attributes and support requirements of successful entrepreneurs

Over 2,000 people participated in the research, making it the largest and most comprehensive study of the subject ever attempted. The leading industry periodical, *Computer Weekly*, offered its support by promoting the work in a series of feature articles. One article on the study results noted:

“A survey by the Real Time Club, a group of 150 IT entrepreneurs, has found that the industry lacks strong leaders and people who can deliver results. British IT professionals scored lower on skills than their United States counterparts and were particularly poor at arithmetic and logic, a skill taught in the US but not in the United Kingdom”.

The results of the research were presented at the “Building Britain’s Brainpower Conference” hosted by the DTI in February 2001. They showed in part that there is no correlation between actual computing ability and the traditional measures of academic aptitude used by educational institutions and employers. The main recommendation was for a major research project to explore how the education system might better serve the needs of this new industry.

Sadly, the DTI was in the midst of another major re-organisation at the time these results were delivered and the momentum behind the programme launch seemed to have been lost.

The Brash Upstart

In the years 2000 and 2002, with the publication of its “Manifesto for the Age of Information Technology”, the Real Time Club tried to ignite some more political energy in an industry it felt was becoming too complacent. Apart from the Club’s policy recommendations in the 1970’s, the only other attempt to get IT on the political agenda had been launched by the CSSA (Computer Software and Services Association), with its own Manifesto in 1997.

Part of the Club's objective in issuing these Manifestos had been to stimulate wider debate among fellow institutions, but there was little response from that quarter. Certainly, one of the great strengths of the Real Time Club has always been that it has remained sufficiently small, unfettered by rules and passionate about the industry to be able to rush headlong where others dared not go. As a result, the Club has often acted alone or taken the lead on significant projects in the industry.

This had been the case in the mid-1980's when word began to emerge from the scientific community of a new technology that would revolutionise the revolution of information technology. David Deutsch presented a paper to the Royal Society entitled: "Quantum theory, the Church-Turing principle and the universal quantum computer". In it he suggested that a quantum of light or energy could be used to store and process information.

Because these quantum particles behave in ways that are totally different from the visible world – existing, for example, in several different places at the same time – the ability to use them for computing would spell the end of linear logic-bound systems.

The implications for the speed and power of computer processing, not to mention the possibilities for secure data transmission, were electrifying for a small band of visionary entrepreneurs, many of whom were active in the Real Time Club. The British Computer Society had also seen the potential, and formed a Specialist Group through which many members of both organisations kept a watching brief on developments in this nascent technology.

By the mid-1990's, the European Commission had taken note of quantum work in the laboratory. Over pre-dinner drinks at an RTC dinner one evening, Brian Oakley, former head of the government's Research Councils, mentioned this to Charles Ross, and the two decided to travel to Brussels. There they met with Simon Bensasson, Director of the EC's Long Term Research Unit, to discuss how Quantum Information Processing (QIP) might be included in the Vth Framework Research Programme.

What they felt was needed was a taxonomy of the subject to outline the parameters on which to base a call for research proposals. In order to be acceptable to the research community, the taxonomy would have to be peer reviewed at an international conference, but by the time Bensasson had worked out his timetable for the work to be included in the Vth Framework it became apparent that the initial project proposal would have to be completed and approved in under a week!

With Ross and Oakley driving the project, the Real Time Club was ready to move, but the EC could only contract with legal entities. One obvious solution was to have the BCS take the lead, but that organisation's bureaucracy weighed heavily against quick decisions. In the event, some BCS officers were also RTC members, and willing to join in with RTC plans. With their support, a proposal was submitted to the EC within the week and a contract signed with the BCS to launch the Quantum

Commented [MSOffice1]: Not sure which word is better??

Computing in Europe Pathfinder Project. Eighteen countries participated in the project, with Brian Oakley as chairman and Charles Ross as secretary, and their work culminated in an international peer reviewing conference in Helsinki.

Despite the fact that the project was a huge coup for the organisation, the BCS hierarchy were not pleased to find that their authority structure had been bypassed. Their opposition put the project at risk, so the RTC set up the European Institute of Quantum Computing as a limited company to take over the contract if needed.

The project was a resounding success. The group's findings formed the foundation of the Vth Framework € 34m annual Research Programme launched in Berlin in 1999, and the formation by the Electronics and Physical Sciences Research Council of the Quantum Information Processing Interdisciplinary Research Coordination in Oxford. Today there is a strong centre of research in the UK contributing, along with over a hundred institutions world wide, to the building of quantum processors and databases. The Real Time Club's Leading Edge Caucus continues to publish periodic newsletters drawing attention to the various developments in QIP.

CHAPTER NINE

Now We are Forty

During the lifetime of the Real Time Club, the social, political and computing landscape in Britain has changed beyond recognition.

Attlee's welfare state has grown to embrace the health, housing and subsistence needs of a population that has, in turn, expanded by twenty percent. Growth in Britain's finance industry fuelled a credit boom which information technologies supported with the development of the credit card, enabling people in all socio-economic groups to "have it all and have it now", confident in the knowledge that the state safety net will support them into old age.

The resulting culture of consumerism is driving demand for constant innovation and cost reduction across all products and services, which continues to drive innovation in information and communication technologies. Organisations have become more agile and value networks more creative as product cycles have halved every five years for the past twenty years.

Just as the Real Time Club warned, the chronic lack of support for entrepreneurship from both government and the private investment sector drove many promising new ideas from British shores to be exploited in other countries. Acknowledging that despite Britain's excellence in scientific research, the country's record at translating the fruits of the laboratory into commercial products has been well below that of other developed nations, the government recently introduced its Science and Innovation Investment Framework 2004 – 2014 to try to redress the problem.

Meanwhile, increasing domestic labour costs pushed many of the traditional manufacturing industries to lower cost economies, which are gathering steam as a consequence. Developing and emerging economies already account for one third of global high technology exports, and are growing fast. Countries such as China and India each produce eight to ten times more skilled graduates than the UK, and investment in both R&D and production facilities in those countries is growing rapidly.

Despite these challenges, as the RTC was celebrating its fortieth anniversary in 2007, the UK was enjoying its longest period of economic expansion on record. The employment vacuum left by the loss of hundreds of thousands of jobs in mining and manufacturing has been filled with the rapid development of knowledge-based service industries, many of which rely on the very telecommunications infrastructure that the Real Time Club argued for so passionately in 1968.

The service sector now accounts for approximately seventy-five percent of the UK economy, which enjoys the fifth largest trade surplus on service exports in the world. The country's leading position in financial services persuaded many major

organisations to locate near the London investment markets, and supported the growth of a highly respected business services industry.

London is once again the place to be. Favourable tax treatment has attracted the mega-rich from around Europe, and the combination of a generous welfare system and sustained economic growth has created a net inward migration of job seekers in excess of 100,000 per year.

Productivity is still an issue. While the UK enjoys one of the highest employment rates in the developed world, the productivity of its workers ranks below France, Germany, and the US. Combined with the competitive challenges from developing nations, this issue highlights Britain's on-going need for the improvements in education that the Real Time Club argued for throughout its history.

Ironically, having resisted change and the technology that delivers it for so long, the government has had to adopt both over the last ten years in an effort to manage its burgeoning responsibilities. The Internet is now the favoured delivery point for many government services, and "joined up government" is the concept driving the development of monolithic systems projects to share information and streamline processes across the various service agencies.

Technology Shake-up

As envisioned by Real Time Club members at their first Hastings weekend seminar, the rapid decline in the cost of computing power and digital memory has made electronic technologies virtually ubiquitous in the developed world. Hardware is routinely upgraded in order to keep abreast of the latest advances in power and speed required to run ever more unwieldy software applications. Microprocessors have become the brains that operate everything from space shuttles to the domestic toaster.

The relatively low cost of computing means that it no longer confers competitive advantage to business users. Innovation in both hardware and software is easily reproduced, giving a very short window of exclusivity in which to harvest returns on investment in development and marketing. As a result, organisations must look for new avenues to competitive advantage through the business processes that operate around their information and communication systems.

Computer technologies have given rise to electronically-enabled business transactions that are changing lives, from giving artisans in developing countries direct access to global markets, to providing homebound people with opportunities for work and independent living. Global communications facilities are changing lives in other ways, too, by facilitating the movement of jobs around the world in search of lower cost, skilled workforces.

The environment for research and the exploitation of knowledge is still challenging in the UK. In its paper on the Science and Innovation Investment Framework, the

government acknowledges that public investment in science declined during the 1980's and 1990's. Measures have been taken to reverse that trend, including the liberalisation of laws governing private investment as put forward by the Real Time Club, and a tax credit scheme introduced in 2000 to stimulate business support for R&D. UK scientists continue to be widely respected, however, and are making significant contributions to work in areas such as the quantum computing project that was promoted by RTC.

A New Breed of Computer Professional

The group of twelve who met for dinner forty years ago and ended up forming the Real Time Club, were inventors and entrepreneurs at the leading edge of an emerging technology. Each one had a vision of how these new machines and communications capabilities could change the world – for the better. They were full of ideas for new applications, and mired in the difficulties of making things happen within a world rooted in older technologies and social orders.

Once the systems had been proven, however, these visionaries were moving on to the next big idea. As early as the first Hastings weekend in 1975 members of the Real Time Club were lamenting the “humdrum reality” of everyday computing. It is that reality, however, that drives our business processes today.

These business processes are designed and implemented by people, not computers, and managing them calls for a whole new skill set in the modern IT professional. Where once the computer department was the fiefdom of technologists who spoke in languages unintelligible to the rest of the organisation, employers are now looking to the IT team to deliver real business value through the expert management of relationships with users, suppliers, regulators and other partners.

Organisations have grown to understand the value of the information their technology enables them to gather and manage, but so have a new class of criminal minds. As more and more sensitive data about an organisation's commercial activities and the personal affairs of its customers resides on computer databases, the threat of theft and misuse of that information has spawned the development of new industries in data security and risk management.

These radical changes in the industry have shifted the focus from entrepreneurial to managerial skills. Today's IT Director is responsible for data security, business continuity, compliance with an ever increasing set of regulations, and managing the organisational change that accompanies IT projects – which leaves little time to invent something totally new.

That is not to say that there are no frontiers left. The challenges today are about applying existing systems capabilities better, faster and cheaper, with foolproof security built in and happy people implementing well designed business processes

around them. More and more, in the public eye, the challenge is simply to deliver larger and more complex new systems in less time and with less money.

The Ever Changing Real Time Club

The activities of the Real Time Club, as it contemplates its forty-first year, mirror the divergence of technological innovation from the broadening managerial role demanded of today’s IT sector.

In support of the next information technology revolution (following computers, PC’s, and the Internet), the Leading Edge Caucus continues its work to stimulate and promote the development of quantum computing capabilities in the UK.

In 2003 the Caucus also worked with the Royal Institution in London to develop a debate on “Sentient Computing”, and hosted a talk by Baroness Susan Greenfield, Professor of Neuro-pharmacology at Oxford University, on the subject, “Can Computers help us understand consciousness?”

That same year, the Club launched a new initiative to identify the technical and managerial risks its members foresaw in the coming year. Named the ICT Banana Skins Survey, the project was patterned on a similar study undertaken by the CSFI (Centre for the Study of Financial Innovation) for the Banking industry.

Close to 30 risks were identified in the first report, in which they were classified by severity and likelihood of occurring. The list, which follows, reflects the topics of debate at Real Time Club dinners in the years to come:

Real Time Club
ICT Banana Skins 2004

1. Concealment of attacks	16. IT governance
2. Phishing	17. Copyright law litigation
3. Unexpected attacks	18. System suppliers in court
4. Cyber terrorism	19. IPR Enforcement Directive
5. National Grid fails	20. Systems demographics disasters
6. Data protection too onerous	21. Wireless systems setback
7. Offshore outsourcing hits UK	22. Websites damage brands
8. Users vs IT professionals	23. SCO suit succeeds
9. Personal ID card fails	24. The Disappearing IT Director
10. SPAM halts the Internet	25. Knowledge economy fails
11. Hackers unite	26. Legacy systems halt
12. Extra-territorialism	27. Outsourcing put on hold
13. Disaster recovery found wanting	28. European Software Licensing
14. Disgruntled IT employee	29. Drive by wire accidents
15. Non-resilient systems	

CHAPTER TEN

It was the Worst of Times..... and the Best of Times

On 26th June, 2007 the Real Time Club celebrated its 40th anniversary with a special black tie dinner at the National Liberal Club, with a near-record attendance of 112 members and partners. It was a balmy evening, and founding members could be seen mingling with new faces over drinks on the terrace looking down towards the Thames.

It had been a busy day, with an earlier luncheon for founding members at which Charles Ross gave an address. He spoke about how the three themes that had driven the Real Time Club for the previous forty years -- education, venture capital for entrepreneurs, and funding for scientific research -- would remain relevant into the future. All members attending the events of the day were presented with their own personal copy of the official Real Time Club history, newly published and loaded onto a special commemorative memory stick.

The anniversary celebrations were a huge success and everyone went home to contemplate a relaxing summer break, confident in the knowledge that the world was steaming ahead into unendingly prosperous times driven by the power of technology. Sure enough, in October the Dow Jones Industrial Average index reached an all-time high of 14,000 points. Life, especially for ebullient members of the new information age, was good.

Economic fallout

Despite lone voices expressing concern over the unsustainable U.S. housing market bubble and the banking practice of bundling toxic loans into tradable securities, the first inkling many people had that there might be trouble in the financial sector was when previously solid organisations like the Northern Rock Building Society in the U.K. and Lehman Brothers in New York had to apply for bankruptcy protection in 2008. Suddenly, the whole banking industry was found to be undercapitalised, and what followed was the most painful global financial crisis since the Great Depression of the 1930s.

Credit, which until the Crash had been cheap and easy to come by, suddenly dried up. Banks were frightened to lend to each other, let alone to a small or growing business, so many worthwhile projects were simply starved of cash. Over the ensuing five years, governments, financial institutions, entrepreneurs and the few people who still had money to invest had to redefine their rules and the mechanisms for releasing capital to stimulate business growth. It is an on-going process.

While the banks continued hoarding funds to strengthen their capital reserves, savers were suffering the lowest interest rates ever paid on bank deposits. Several internet-based ventures began to spring up, by-passing the banks altogether by putting people with money in direct contact with those needing investment capital. Some offer a

peer-to-peer lending service while others provide a web-based facility that enables entrepreneurs to raise capital by selling shares in their business to private investors who may opt to invest as little as £10.

By reaching millions of potential investors, these funding services spread the risk for the individual investor while at the same time vastly expanding the pool of capital available to the entrepreneur. Rates of return for investors can be several times what they could achieve on basic savings instruments. Most services provide credit checking and risk assessment of each venture, and have strict requirements on the submission of business plans and financial data.

Both of these funding models are built on technologies that members of the Real Time Club developed, and rely on the clause governing the self-certification of private investors that was written by the Real Time Club.

Meanwhile, the new Coalition government, looking for cost savings in the overblown national budget it inherited, finally admitted that its predecessor's massive project to digitise the National Health Service records had to be written off as not fit for purpose. The project, begun in 2002, had cost over £12 billion by 2011 and still not delivered the national records database as specified. In announcing the cancellation of further work on the project, the Coalition government said it would be returning to a process of localising NHS IT.

The collapse of the NHS project had once again raised questions about the ability of government and its contractors to deliver a large-scale IT project to specification, on time and within budget, a major concern that Real Timers had been expressing throughout the Club's history.

Surviving the storm

The first two years of financial crisis in the global economy saw an unsurprising slowdown in activity within the Real Time Club, as members devoted themselves to the urgent task of survival in their respective businesses. Attendance at regular dinner meetings was slightly down and there was little, if any, time available to pursue special caucus activities.

Gradually, however, business constraints began to ease, and a succession of energetic Chairmen drew larger crowds with some interesting, timely and controversial guest speakers. There was also a concerted effort to increase visibility and attendance at RTC dinners. During Mark Holford's chairmanship, the club once again tried using different venues, including Singapura Restaurant and the upstairs dining room at the National Liberal Club. Both events drew good attendance, as did Mark's signature evening with Vernon Ellis, formerly International Chairman of Accenture and contemporary Chairman of the English National Opera, talking about why the ICT industry should care about the arts. Mark's final evening as Chairman, when he brought along wines from his own impressive cellar as a special treat for the evening's diners, was particularly popular!

When Michael Mainelli took over as organiser, he continued to introduce new themes and ideas to the evenings as a way of stimulating greater participation. During his

year, Club diners were treated to Nerd Night, with several researchers from UCL each discussing their current research projects; Spooks Night, which featured real examples of readily available surveillance equipment; Green Tech Night, during which members played an investment game based on green energy projects; and an evening titled, Dude, Where is My Identity?, when a group of students from Eton and the Oratory demonstrated just how ubiquitous social networking sites have become for young people.

Michael also used his year to take another look at Club administration. A team redesigned the RTC website and captured up-to-date contact details, while the bookings procedure was automated through the use of an online booking system. In another effort to streamline administration and make the Club more universally accessible, Michael convinced Council to abandon the annual membership fee and return to the earlier system of new members being proposed by two existing members and formally recognised by Council.

Around the same time, an Online Community coordinator was appointed to try to develop the network of people included in RTC event invitations. As a professional head-hunter in the IT space, Dominic Connor had amassed a huge database of people across a wide spectrum of the industry. Using the meeting on financial markets as a pilot, he searched his database for people who would find the talk relevant and sent out hundreds of personal invitations to attend. The pilot was hugely successful and has been repeated for many subsequent meetings, drawing many new young members to secure the future of the Club.

Maury Shenk, Chairman from 2010 to 2011, was instrumental in formalising the legal structure of the Club. He also organised one of the most successful events of the decade, when Professor Robert Dijkgraaf, Distinguished Professor of Mathematical Physics at the University of Amsterdam spoke to a joint event with Gresham College on the proposition that “recent discoveries in physics, from Verlinde’s new theory of gravity to neutrinos that may move faster than light, show that the end of space and time is far from over”. A full list of speakers and topics from this period appears in the Appendix.

Has nothing changed?

Bill Freyenfeld, RTC Convenor for 15 years and tireless champion of improving the quality of IT education in UK schools, passed away on 11th April, 2011, aged 83. The September 2011 meeting was dedicated to his memory with a presentation by Professor Simon Peyton Jones, whose talk on “Tackling the ICT Education Crisis in UK Schools” reminded members of how much work still has to be done to achieve Bill’s vision.

And it certainly is a crisis. As the world was coming to grips with the economic fallout from the banking crisis, it became clear very quickly that information and communication technologies must play a major role in rebuilding economic growth, yet developed countries are failing to produce enough IT skills to meet growing demand. Moreover, emerging and developing economies are soaking up increasing numbers of skilled IT workers to fuel their own growth and in many cases their

schools are already better prepared to teach science and technology to their young people. For members of the Real Time Club this was yet another wake-up call for the UK government to tackle the issue of IT education at school level.

In 2006 the BCS issued a warning showing that demand for IT and computer graduates in the UK had doubled in the previous four years, but the number of students studying the subjects in tertiary education had declined by one third. Part of the reason given was that primary and secondary schools were not teaching ICT in a way that inspired students to pursue the subject at university.

Despite this warning, and all the work the Real Time Club had put into its JAPONITE programme and the SCALE 21 research project, the trend continued. A report from the Royal Society published in 2010/1 claimed that there was a fall of 33% over three years in students taking ICT courses at GCSE level, and 57% over eight years in A-level students taking Computing courses. These were disappointing figures to members of the RTC who had invested so much time and energy into the Club's Education Caucus.

New initiatives

With renewed vigour, the Club began to pursue a new multi-pronged approach, supporting several different initiatives targeted towards the twin objectives of developing computer skills in young people and promoting new research projects. For example, the Fortieth Anniversary Dinner was attended by two professors from Cambridge University and two international RTC members from Kansas City in the US. As a result of their meeting, arrangements were made for a promising young American physics student to do a summer internship at the Department of Advanced Mathematics and Theoretical Physics at Cambridge University, working on various aspects of Quantum Physics (a copy of her paper appears in the appendix)

As a quid pro quo, the American members arranged a summer internship for two sixth formers from Highgate School in London to work on a project measuring the curvature of light at the Fermi Laboratory near Chicago. Both students subsequently went on to study physics at Cambridge University. The Club considered trying to make this exchange an annual event by sponsoring one or two sixth form students, but was eventually defeated in its ambition by a combination of apathy on the part of the Institute of Physics, the bureaucratic machinations of Health and Safety regulations and the US Immigration Authorities.

Another opportunity was kicked off when an RTC member gave a lecture to the sixth form at Highgate School on the future of quantum computing. While there he learned of a school project organised by David Smith, the Head of Physics, to enable students to observe the sky through the Mount Palomar telescope via an Internet link. Smith was duly invited to bring along one of his students, Sam Michaels, to give a presentation on this project at a Real Time Club dinner when the government's Chief Scientist, Bob (now Lord) May was a guest.

Yet another whole evening was used to highlight challenges in contemporary research, when a team of five scientists from UCL came along with Anthony

Finkelstein, Head of the Computer Science Department to talk about what they were currently working on and the challenges that lie beyond the bleeding edge.

Financial support

As the Real Time Club continued to attract members new and old to its dining events, its finances once again strengthened enough to enable it to support more external projects. In 2011 under the leadership of Geoff McMullen, Council took the decision to support a project run by Emma Mulqueeney, Founder of the Wired State, whose work on transformational digital initiatives across the British Government, and as a serial entrepreneur, earned her the Wired UK title of Transparency Activist.

Her project, called the Young Rewired State, was aimed at encouraging teenagers to write their own computer code, producing programs to make use of the mass of information in the public domain. Funds provided by the Club helped sponsor a week-long 'program fest' at the Museum of Computing at Bletchley Park, culminating in a competition at the end of the summer. So many young people (over five hundred) booked to attend the event that the venue had to be changed and RTC plans for a picnic were scrapped. The Club has plans to continue supporting this project, and will be donating proceeds from its 45th anniversary dinner to the Young Rewired State.

When the Raspberry pi programmable computer, designed in the Cambridge computing labs, was introduced early in 2012 at a price of £25, there was a frisson of excitement in the Real Time Club. Here, finally, was a device that young people could play around with and use to explore the challenges and excitement of programming for themselves. The Club fell in love with the product and was about to fund a project to place some devices in pilot schools when they discovered that orders for one million units were received on the first day of the product's launch! It was decided that RTC input was not needed to get this particular project into the public domain.

Another RTC initiative followed a talk by Dr Siavash Mahdavi, founder of Within Technologies Ltd and Digital Forming Ltd, two companies that specialise in the emerging process of 3Dimensional printing. Mahdavi talked about the high end applications for this alternative to traditional machining and manufacturing, where it is used to print lightweight parts for aerospace engines or custom-design bone implants and prosthetics for injured patients. He stressed, however, that the real opportunities for this technology to disrupt life as we know it are in the mass customisation of high street consumer products.

The evening's discussions stimulated a group of members including Dr John Collins, lately a member of the Department of Business Innovation and Science's Technology Strategy Board and Dr Michael Brooks of the *New Scientist* to set up the 3 Dimensional Printing Caucus. Determined to avoid the mistakes of the national curriculum which, in the words of Michael Gove, Secretary of State for Education, made IT "so dull and boring it put a whole generation of young people off careers in IT", the 3D Printing Caucus bought a Denford UP 3D printer and installed it in the Priory School in Lewes, West Sussex where youngsters are encouraged to use and 'play' with it. Similar installations are being discussed with other schools.

The objective of these pilot installations is to obtain direct understanding of how best to help students appreciate the potential of a career in this field of design, and to enable those students with other ambitions to be confident in a world where the pace of technological innovation will become ever faster. At the time of writing, the Caucus is setting up We Invent Ltd to develop a programme of best practice that can be rolled out to schools nationwide.

The technological rush into new processes that will turn the founding principles of the industrial revolution upside down further highlights the need to review the country's ability to produce the right skill sets for the future. These are the same skills identified by the Real Time Club's JAPONITE initiatives in the 1980's, and in its SCALE 21 project in the late 1990s; namely, design, innovation, computing, research, engineering and, most importantly, entrepreneurship.

But despite decades of lobbying by the Club, IT education in the UK is still failing young people who should be the talent and hope of the future. Within the broad guidelines of the national curriculum, many schools do not teach computer science and most use their IT classes to teach young people how to use popular office software programs. As the skills crisis deepens, many businesses and non-governmental organisations are being forced to set up their own initiatives to teach children how computers work rather than just how to work with computers. The economic future of the country depends on how successful they are, and the Club continues to push for improvements in education as a matter of urgency.

It's all in the mind

Members of the Club have always been particularly interested in the links between human brain functioning and computing. When Baroness Greenfield gave her talk on Sentient Computing in 2003 she touched on something that many members had often wondered: can computers help us understand consciousness? In 2008, founder member, Charles Ross brought out his thoughts in a book, co-written with Shirley Redpath, entitled *Biological Systems of the Brain*. One of the central themes of the book is how important it is, when designing teaching modules, to understand how the brain learns new information.

Several members of the Club were inspired to take this work further. During his term as Chairman, Maury Shenk organised a special luncheon in May 2010, addressed by Professor John Stein, Emeritus Professor of Physiology & Fellow of Magdalen College, Oxford, to launch the RTC Brain, Mind & Computing Forum. The Forum went on to establish links with the Society of Organisational Learning (SOL) and the Daedalus Trust to explore ways of supporting research projects into how the brain/mind makes decisions, particularly in critical business situations. At the time of writing, there is one project underway with a group of underwriters in the City of London to explore where, when and how the brain processes information and comes to a decision.

In May 2012 Professor Guy Claxton, Professor of Learning Science and Director of Real World Learning at the University of Winchester addressed a joint dinner of the

RTC and the Brian Mind Forum (as it came to be known). He gave a very lucid and impassioned presentation on the crucial importance of equipping our young people to be able to cope with, and thrive in, the ever faster changing world of the 21st Century. His work has shown that where schools are able to depart from a single-minded focus on Ken Baker's national curriculum enough to enable children to explore, experiment and build their own self-confidence in learning, the exam results improve dramatically.

Guy's work chimed exactly with RTC views and at the end of the meeting the Chairman asked how the RTC could help him. A joint working party was set up and subsequently introduced Guy and his colleagues to various publishing and business contacts. Recently Rob Wirszyc, one of the Club's most successful serial entrepreneurs, has joined the Board of Guy's company, The Learning Organisation Ltd. (TLO)

Celebrating 45 years

They say life begins at forty, and for the Real Time Club this seems to have been the case. The five years since its fortieth anniversary saw a flurry of activity as the Club embraced changes in its membership, structure, style of meetings, and causes to support. One thing has remained constant, however – the Club's absolute conviction that something needs to be done to ensure the UK has the necessary skills and support for research to continue to lead the world in computer design and applications.

It is no surprise, therefore, that the person invited to address the Club's 45th Anniversary Dinner at the House of Lords on April 18th 2013 is a champion of that cause. Professor Stephen Furber, CBE, FRS, FEng, and ICL Professor of Computer Engineering at the School of Computer Science, chaired the Royal Society study into computing in schools, which built on earlier work done by the Real Time Club's JAPONITE and SCALE 21 projects. In partial response to the Royal Society report, '*Shut down or restart?*', Michael Gove, the Secretary of State for Education announced in June 2012 that the existing national IT curriculum would be cancelled, saying (finally) that kids need to be taught computer programming and how to design apps. The Club was delighted.

Members attending the 45th Anniversary Gala will hear Professor Furber give a presentation on his €400m 'SpiNNaker' project to build a 'silicon brain', using over a million ARM chips. Dick Evans, one of the original founder members of the Club will propose the toast to the Club, and the proceeds of the evening will be donated to one of the RTC's special causes -- the Young Rewired Society.

Business as usual

From inauspicious beginnings as an informal dining club, the Real Time Club has enjoyed forty-five years of influence at the highest levels of industry and government. Today it is a legal entity, limited by guarantee and managed by a Council of members who are elected according to a written constitution. It has a paid administrator to handle membership and manage Club affairs. The meeting format remains the same,

but there are six regular events per year instead of nine. Membership is still by invitation only, and the Club works hard to maintain the eclectic mix of individuals that has created such dynamism over the years.

But despite the changing nature of the IT profession and the organisation's inevitable move to a more formalised structure and administration, the Club retains the essence of its being – the spirit of challenge and the energy to get things done. Its motto, “A dining club with attitude”, is a true reflection of the RTC experience.

Membership has broadened to include a wider range of managerial and support functions, but the original idea of maintaining independence from suppliers and specific industry agendas still drives the Club. Its unique combination of early visionaries, inventors, academics, lawyers, civil servants, IT managers, consultants and journalists, continues to attract an impressive list of presenters from across the IT landscape.

At the same time, the informality of Club meetings, still held within the protection of Chatham House rules, makes them one of the most sought after networking venues in the industry. As one member puts it, “The Real Time Club is a very informal, very creative environment in which things happen.”

Reflecting on his year as Chairman, Michael Mainelli recalls that attempts to set up both a wiki and an online networking forum on the website largely went un-noticed, while the dinner meetings in London continue to attract a wide group of enthusiastic diner/debaters from all segments of the information industry. “Perhaps that shows us that the Real Time Club is actually doing what it was supposed to do,” he notes, “which is to draw people together in a convivial atmosphere where they can discuss and debate the issues of real time computing, -- and that it will continue for as long as there is a thriving technology sector revolving around the London hub.”

There is little question of the need for such an organisation in an industry that remains poorly understood, despite the ubiquity of its tools and its importance to the future of the country. Industry leaders need a venue where they can trade ideas and information in confidence, while politicians and civil servants, many of whom have little or no experience in the industry, need the independent challenge and support they have always been able to find at the Real Time Club.

Perhaps the true value of this unique and enduring organisation is best summed up in this comment, recently overheard at a Club meeting: “Whenever I want to find out what's really happening in the IT industry, I come along to the Real Time Club.”

Ladies and Gentlemen, I give you the Real Time Club.....

..... which was and is, first and foremost, a dining club, with its emphasis on networking and camaraderie in the industry.

An evening meeting begins with members drifting in, helping themselves to a drink at the bar, and gathering in groups of two or more to trade accounts of the latest developments in anything from a recent football match to a revolutionary new technology. As the dining hour approaches, you can see heads huddled in corners and hear laughter erupt from the less intense conversations in the middle of the room.

At 7 pm. a bell summons members to table, where grace is said and conversations reconvene over the service of an excellent three course meal. New friendships emerge and old ones are revisited, while the wine flows freely. After dinner, over more good wine, the invited speaker takes the floor, and the serious business of challenging the established order of the day begins once more.

Lord, thank you for these friends so fine
and for a glass of Bordeaux wine.
So before we settle down to grub,
God bless us all at the Real Time Club!

Charles Hughes: RTC prayer for Grace,
14 June 2001