

The Archives of Information Technology: More Than Just Computers.

Sam Blaxland argues that the AIT collection is a rich resource for anyone studying the social and cultural history of post-war Britain.

Introduction

The information technology revolution in Britain is one of the most important, yet understudied, aspects of post-Second World War history. It has fundamentally altered the way we live, the way we work, how we behave, and how we socialise with one another. To fully understand our recent past, we must understand the development, proliferation, and the history of IT. However, any study of those people who were at the forefront of driving this revolution is itself enormously revealing about the last eight decades of British life. It shows us how those behind the development of IT were drawn from a range of backgrounds, both in terms of sex, class, family occupation, and race. This makes the Archives of IT (AIT), with its collection of recorded oral interviews, fundamentally important: through studying the lives of these individuals, it is also a gateway into understanding the fabric of the country's social and cultural history.

The list of themes that could be explored in this way is extensive. Some are particularly in vogue amongst historians, not least with the rise of cultural history and a focus on things like the history of emotions. Whether such themes are traditional or modern, all are important and they include: the role and position of women; generational change; the contributions of people from ethnic minority backgrounds; immigration and those who came to Britain as refugees; medical history and the development of medical science; industrial and economic change and the rapidly changing nature of work; our understanding of the world and the challenges it faces; how we are governed; how our economy is managed; the nature of warfare; the nature of intimacy; the impacts – both positive and negative – of a society filled with things closely resembling what the great George Orwell called the 'telescreen'.

However, this article will focus on something different, partly as a means of exploring a fascinating theme, but also as a way of demonstrating how the AIT collection can be used to shed new light on a pivotal moment in Britain's modern history. It will concentrate on some key individuals from the archive, most of whom were born between the mid-1930s and early 1950s. It will not examine in any depth their long careers or achievements but will instead focus on their backgrounds, upbringings, family lives and schooling. What is so striking about the development of the IT sector, and more specifically those that led this proliferation in the early post-war decades, is that, on the whole, they were not rooted in one of the higher social classes. Unlike so many aspects of public life, the business world, law, the civil service, politics and academia in this period, which remained stubbornly connected to an established group of more middle-class individuals, the IT sector was very different. Its newness, and the fresh-thinking and talent it required, meant it drew in people whose fundamental qualities were intelligence and innovation – something not related to social class. In other words, it was close to a meritocracy.

By homing in on the early lives of some of the archive's contributors, this piece will therefore ask what the collection can tell both historians, and the public more broadly, about the family

unit during this period, about occupation and class, and about the education system of that era. It will discuss the broader nature of wartime and post-war Britain that was part of shaping this group of men. And they were almost exclusively men, which will also be the subject of comment.

Family backgrounds and occupations

The AIT collection contains testimony from people who, in the main, were highly successful and rose to the top of their careers in the IT and telecommunications sectors. Whilst they are not representative of the population at large, the interviews provide a good cross-section of the kinds of people who drove these industries forward. When scrutinising their backgrounds, it is clear that the collection is peppered with people who had a difficult start to life, but overcame this adversity. The 1930s and 40s was a period where it was not uncommon for people and parents to die young, of diseases like tuberculosis, diphtheria and scarlet fever, as well as from things that are now simpler to diagnose and treat, like heart conditions. Roger Graham, who became a software entrepreneur, came from a relatively comfortable background but his father died when he was aged four, leaving his mother, a housewife, to bring him up. Peter Waller, who became a successful senior manager in the IT sector, had a father who worked at Waterloo Railway station. He died when Peter was nine. Their childhoods were consequently difficult, but they overcame these hurdles. Adversity could even spur on people to think more creatively about their futures: Seeing his father undergo experimental brain surgery to cure agoraphobia influenced Professor Kevin Warwick to research artificial intelligence.

Despite all this, it is hard to ignore the extent to which many of those who have contributed to the AIT collection came from nuclear family households, most of which look traditional to the modern eye. This stability gave them an environment that allowed them to thrive, even if they were not wealthy. Early years and family life are topics that are prone to being romanticised by those reflecting on their own experiences, but there is probably truth in much of what many interviewees say. Sir Robin Saxby, for example, a leading businessman in the IT industry, was born in Chesterfield to a factory-worker father and a housewife mother. He thought of his parents as 'very supportive, very loving, very caring'. Sir Michael Brady, who rose to become Professor of Information Engineering at the University of Oxford and is well-known for his work on computer-based medical images, deliberately chose to stress the 'close-knit' nature of his family and upbringing, which was also 'quite poor'. He attributed it to giving him a good start to life. Richard Holway, a leading IT analyst, thought of family life in the following terms: 'for most of my early life I thought that everybody, you know, had two parents who cared for them, who wanted the best for them, who would sacrifice everything for them'. It is significant that he made these comments having later worked with the Prince's Trust, a charity devoted to helping vulnerable young people re-start their lives, which clearly made him evaluate his own fortunate circumstances.

As part of this nuclear household set-up, it is unsurprising how many interviewees grew up in an era where their mothers were described as a housewife. This was period both when women were discouraged from work once they had married, and had children, but it was also a time where a household could make ends meet from a single wage. Much of this was

antediluvian, and it is certainly the case that side-lining women from work meant much talent going to waste (as we shall see). However, many AIT contributors benefitted from this situation. Ken Barnes' mother was a housewife but Barnes credits her with making him an 'excellent programmer' because of the jigsaws they would do together when he was a small child. This buttresses the conclusions made by some historians that 'it was working-class mothers [who] often had a much stronger desire for education for its own sake'.¹ Barnes went on to found one of the country's first – and very successful – software companies, SPL. Barnes' interview in general is wonderfully engaging. So too is the testimony of Sir Kenneth Olisa. He was born to a single mother and an absentee father who was from Nigeria. Olisa grew up in a poor part of Nottingham and became a highly successful businessman and philanthropist, but he was clear that his mother, with her remarkable force of personality, helped drive him forward. Stories like these allow us re-evaluate the position and role of mothers in this period. They often exhibited significant agency, and played an active role in their children's intellectual and personal development.

There is no doubt that both through nature and nurture, parents influence a child's choices in life. It is unsurprising, therefore, that AIT contributors are often drawn from backgrounds where their parents – mostly their fathers – worked in technical, practical or engineering sectors. Prof Steve Furber, for example, who designed a microchip that is now used in billions of mobile devices around the world, was the son of a mechanical engineer who moved into working in the nuclear power industry. Bill Halbert, a hugely successful software and telecommunications business manager, was the son of a marine engineer. Philip Hughes, the co-founder of Logica, had a father who was a sales engineer for an electrical cable company. Sir Clive Sinclair, known for his work on transistor radios, calculators and computers, was the son of a mechanical engineer, and the grandson of a naval architect. John Leighfield's father, who remained a foreman for his entire career making the bodies of cars, was 'a skilled man, very intelligent, interested in mechanical things' and Leighfield 'got a lot of interest in mechanical things, and electrical things, from him'. He ended up working in senior positions at places like Ford and British Leyland.

However, many contributors came from truly humble backgrounds, and did not even have these familial connections to science, technology, or engineering. Lots considered themselves working-class, and certainly by today's standards of comfort and luxury that is a fair assessment. Ernest Morris, who worked in a number of blue chip firms and rose to become President of the British Computer Society, was born in the Rhondda Valley in south Wales. His grandparents had been miners during a period when over 100,000 people in south Wales alone worked in the industry. His father was a railwayman. Peter Hermon, who was a programmer and consultant who became a Director of British Airways, came from a 'working-class background', and his father was a technical assistant at Morris Motors. Sir Peter Ogden came from, in his words, a 'normal working-class northern family' that had little money, but where his parents were determined to raise their children well and stress the importance of their education. He is now a hugely successful businessman in the IT sector. In the immediate post-war years, however, even a parent working in a profession did not automatically mean that a family was wealthy. Even those from self-described 'middle-class'

¹ See Selina Todd, *The People: The Rise and Fall of the Working Class, 1910-2020* (2014), p.222

families, like Richard Holway, remembered their parents having to sacrifice their holiday money to pay for the school uniform at the school he won a direct grant to go to.

This point about wider economic circumstances is key. What is fundamentally important about the generation who were part of the early IT revolution is that good fortune was on their side. Despite a long tail of austerity after the war, the situation rapidly developed into an unprecedented period of affluence and opportunity, typified by Harold Macmillan's statement in the late 1950s that 'most' of the British people had 'never had it so good'. This also helped the early IT sector develop so quickly. Those people born just before, during, or after the war were therefore in a fortunate position. They did not fight in the conflict, and their adolescence and early adulthood coincided with a stronger economy, more job opportunities and a growth in personal wealth. Ration books were quickly replaced by pocket money.

From the testimonies, there is a sense of it being a stroke of luck to have been born at a time of fast-paced change, but also of relative economic stability. Indeed, the theme of 'luck' crops up regularly. As Sir George Cox notes, 'like most people of my generation...I got involved with computing... by accident and rather reluctantly. I was with a company and they said "we are setting up this new computer department and we'd like you to go into it" and I'd gone there as a Management Trainee and I nearly quit'. As another commented, '[we were] very lucky to be at the beginning of this where everything was to be done'. The people of this era are often called 'baby boomers' – a label that doesn't always carry positive connotations! Indeed, one interviewee even described themselves as a 'typical baby boomer'. The implication is that fortunes aligned for this generation in particularly positive ways. Such things also help explain how so many people came from households where their parents may have had better lives and more opportunities if the economic circumstances had not been so bleak. Ken Barnes, for example, was the son of a sugar boiler (a hard-boiled sweet maker). The family 'had no money', and yet Barnes thought his father's intellectual talents were wasted. This is a common, and a sad, theme. And it was not just confined to the IT sector.

Education

The wider context of post-war affluence in helping make these young men successful is without doubt. It also ties into another crucial factor that is impossible to ignore. When browsing the AIT archive, one cannot fail to notice something about the contributors' personal histories that crops up over and over again, and that is the value they place on their formal education. The post-war years can legitimately be labelled an era of reform in the UK. Tied in with the famous changes in the approach to welfare, education also received more funding and attention from the state. The school leaving age was raised, and the whole school system was remodelled. Universities were given greater prominence in national life, with the block grant they received from the government after the war rising sharply. Such things like the Percy Report of 1945 called for a greater need for technocratic education and the need to train more engineers for the good of the country; science subjects were seen as especially important. Numbers attending university in these post-war years increased significantly. This is the context that many of the AIT 'baby boomer' contributors, lots of whom went to university, benefitted from.

The nature of the post-war educational system itself, however, is worthy of specific scrutiny. The vast majority of contributors who are the focus here were the products of grammar schools. Grammar schools, which selected pupils on the basis of their academic ability (via the means of a test) had long been a feature of British life, but their final incarnation grew from the 1944 'Butler' Education Act. This was the legislation, designed very much with post-war reconstruction in mind, that established the tripartite system of academically selective and rigorous grammar schools; secondary modern schools that would teach the bulk of pupils; and technical schools to train planners and technicians, which were not the success that they could have been. In some circumstances, children from humble backgrounds who got into a grammar school would be given a 'direct grant' to attend a private, fee paying school, almost for free.²

Grammar schools and their legacy are an emotive topic that generate a good deal of public and academic debate. They were always controversial because of the way they divided children into what was sometimes perceived as 'successes' and 'failures', placing those who did not get into a grammar school into a secondary modern, which were often sub-standard. What accentuated this was the blunt instrument of the '11-plus' examination, which even grammar school enthusiasts often admit was a harsh way of making a life-defining decision for people at such a young age. Indeed, for David Butler, a high-profile IT consultant, the system threw those who did not pass the 11-plus 'onto the academic scrapheap'. For John Leighfield, the system was 'evil', although it is difficult to tell from the recorded video if this is said ironically or not. Very interestingly, he also admitted that 'without it...I don't think I'd be sitting here talking to you'. What is often forgotten by modern commentators is that whilst the *system* was unpopular in some quarters at the time, the grammar schools themselves were not. In fact, they were deemed to be the part that worked most successfully. Local authorities, including Labour-run ones, were often proud of their grammars, for reasons we will see shortly. This is why, when the Labour Party proposed introducing comprehensive education in the mid-1960s, they did so with the slogan 'Grammar Schools For All!'

There can be no doubt that the education received at many of these grammar schools was the definition of rigorous. The standards, quality of teaching, and levels of discipline often resembled private schools, as many contributors to the archive can verify. Sir Robin Saxby felt Chesterfield grammar offered discipline, sport, debating societies, art – many of the features of a minor public school. Geoff Shingles, the son of a painter and decorator who ended up playing an important role in building the Digital Equipment Corporation in the UK and Europe, went to a grammar school in Norfolk where discipline was tight and children almost marched from classroom to classroom.

But these schools were also popular for the opportunities they gave for what is more frequently now called 'social mobility'.³ By testing children based on their abilities, as

² Circumstances differed from case to case. Parents would often have to pay for the (expensive) uniform and things like sports equipment in these cases.

³ The phrase was used at the time too. The headmaster of Manchester Grammar School used it in 1958 when describing how institutions like his were 'creating a new middle class'. See Todd, p. 219.

opposed to their postcode or family wealth, grammar schools brought together the sons and daughters of dockers and dentists, bricklayers and barristers, albeit not in equal proportions (for lots of complicated reasons, both socio-economic and cultural, the children of the middle-classes were better represented). As one interviewee who grew up on a council estate remembered about going to his grammar school, 'I was rubbing shoulders with a whole raft of people from very different backgrounds...and I felt I was equal to them'. By the mid-1960s, once these schools had bedded in, state grammars were accounting for as many successful applications to Britain's very top universities as private school applicants were – a trend that was soon reversed when the system was wound down.⁴

Although the debate about the legacy of this education system is a live one, the contributors to AIT prove the point about social mobility in perhaps the strongest way imaginable. An article twice the length of this one could not give a full picture of all interviewees' grammar school experience, but giving a flavour of it is vital. Ken Barnes passed the 11-plus and became one of twelve boys in Oxford ('I was a bright little bugger!') to go to Magdalen College School via a direct grant scholarship. Similarly, Roger Graham won the same kind of scholarship to go to the prestigious Mill Hill School, in what was then Middlesex. Ray Harsant, saw his school as giving people 'from, you know, modest background as I was, a terrific opportunity to make progress'. Cyril Hilsum, famous for his work on infra-red devices and semi-conductors, was the son of an East End market trader who passed his eleven plus, went to a grammar school and won a scholarship to study at University College London. Sir Michael Brady found that his grammar 'changed me completely'.

The list is extensive. Sir Peter Bonfield, who worked in the telecommunications side of IT and eventually helped lead BT to become a growth company; Professor Brian Collins, who had a varied career using IT in the defence industry; Sir Fredrick Crawford, described as 'one of the greatest and the good' of the industry; David Mann, the former Managing Director of Logica; Ernest Morris, the son of a railway man from south Wales; David Morris, a key figure in IBM UK; Dr Bob Nowill, an IT security expert who worked for GCHQ – all grammar school boys, mostly from ordinary or even humble backgrounds. Norman Sanders, who advised Prime Minister Harold Wilson (another grammar school boy, although from an earlier era) on computers, passed the eleven plus and went to school at Wells Blue, in Somerset. The geographical spread of schools is noteworthy too. This is not a group of young boys drawn mainly from selective schools in the south east. They came from the south Wales valleys, from Kidderminster, just south of the Black Country; from Felixstowe in Suffolk, from Liverpool, Birmingham, Newcastle, Leeds – again showing that social class and geography don't have to relate to brains and talent.

Something many of these grammars offered their pupils was access to high quality teachers. In a world where the higher education sector was still comparatively tiny, many excellent minds who might have become academics in another life instead became school teachers. Such people thrived in nurturing those who were bright. Professor Michael Earl, an expert in IT management, 'loved' his education at a grammar in Cheadle, Cheshire, because 'of two or three teachers who were very good, but, in a funny way, taught you curiosity', which was crucial for the work he would go into. For Ewan Page, a computer scientist who rose through

⁴ Quotas were later introduced to try and increase the numbers from the state sector.

the ranks of higher education to become Vice-chancellor of the University of Reading, his grammar school in Leicester introduced him to 'one of the outstanding mathematics teachers of the time', Mr J. W. Hasselgreaves. John Hanby, who went to Woking grammar, found that the school had very high standards and expected students to excel. He 'learnt an awful lot from that', including from 'intelligent and dedicated teachers'. Similarly, Professor Cliff Jones was the product of a 'strict' school where an inspirational mathematics teacher sparked a life-long passion in him. For Sir Peter Ogden, his grammar school in Rochdale was 'nothing very special' and yet it turned out many high-flyers, including him, and he attributed much of his success to 'wonderful teachers'.

Of course, not everyone who was successful in this sector came from a relatively humble background. The AIT collection contains people who were the products of wealthy families and an elite private education. But these people are strikingly rare, and one thing is clear: the development of IT in Britain was driven by a crop of exceptional grammar school boys, many of them who had risen from nothing. This tells us something fundamental about Britain's post-war education system, which received significant investment from the state, and where a University sector was slowly encouraged to take more people into its fold. For those historians and commentators who argued that selective education reinforced the class-based privilege of the post-war years, the Archives of IT provides example after example demonstrating – for this particular sector, at least – that this was not the reality.

Women

Several mentions so far have been made to things like 'grammar school boys' – and this is deliberate, because the important people from this period were almost exclusively male. As with the case of housewives, discussed above, post-war Britain remained a country where work, school and life roles were thought of in rigidly gendered terms. Whilst there were not strictly 'girls' and 'boys' subjects in schools, what we now call the STEM subjects were often taught more thoroughly to boys, although Dame Wendy Hall, who went to Ealing grammar school, felt very lucky to have been taught by 'fabulous' and 'fantastic' teachers, particularly in maths and the sciences. She went on to become a professor of computer science and a fellow of a number of prestigious bodies. The world of work, and especially of fast-paced industries, was inherently masculine, and probably off-putting for many talented women. Although not as relevant to the IT sector, this wider context of certain jobs being for certain people would have filtered through and conditioned ideas the industry. Well into the 1970s and 1980s, advertisers, employers and politicians targeted women with language related to domesticity and the home, whilst workers were often presented wearing cloth caps or in macho scenarios.

Despite all this, the collection contains testimonies from five pioneering women from this period who did break into the sector, and made a huge impact. They are Dame Wendy Hall, Bridget Blow, Judith Scott, Elizabeth Sparrow, and Jane Tozer. Their stories deserve much more research and attention than space allows for here, but some introductory comments can nonetheless be made. The challenges they faced were clear. As one noted, not only was the industry male-dominated when she was young, but such challenges continued throughout her career. Networks were harder to build, and key events towards the end of

the twentieth century, like dinners at the Institute of Directors, could be exclusively male – apart from her! Her attitude to succeeding in this male-dominated world was not dissimilar to that adopted by Britain's first female Prime Minister, as well as many other successful women in this period: 'I saw what needed doing and got on with it and did it, and made my way that way, and I never really thought about the fact that I was a woman. And I think after a little while the people I worked with didn't really think about the fact that I was a woman. I was there, we were there doing what we were doing'. Similarly, Elizabeth Sparrow, a former President of the British Computer Society, never thought (or perhaps wasn't able to think) of her career in gendered terms. She didn't 'conceive of the fact that actually as a woman I shouldn't do as well as a man'. In some senses, this demonstrates a sense of resilience, with talent shining through above all else, but it would be wrong to ignore how much more difficult the world of IT was for women in this period. The presence of so many much younger people in the collection who work on female representation in STEM-related areas, and on inclusivity drives, is both a product of the unbalanced nature of the industry in the post-war years, as well as a real change in the political and social outlooks of later generations. All of this could be the subject of greater study.

Conclusion

Each of the themes touched upon here highlight several vital things about dealing with memory. It is certainly wonderful to listen to the people we are writing about. To hear the passion, hesitation, or sadness in their voices is crucial to aiding our understanding. This is what makes oral history special. Watching some of the interviewees on video adds to this experience, and by picking up on body language we often realise the meaning of something is different to how it appears written down on the page in the form of something like a transcript. Such things make a historian wonder how many written records they have read in the past and might have misinterpreted. However, we must always treat oral history with some caution. No one sets out to lie when being interviewed like this, but memory is fallible, and two individuals can remember even identical moments or occasions very differently. We tell ourselves stories about our own pasts that are not strictly true, but which end up becoming our realities. As humans, we are prone, as well, to nostalgia. An archive like this is also self-selecting. Those in charge of it chose who to interview, and only those who want to contribute do so. What is preserved is therefore a *version* of history, and possibly a rose-tinted one at that. This is especially relevant for statements regarding people's backgrounds, their social class, and their attitude to a controversial schooling system. This is not a criticism in any form, however. If anything, it should be seen as a rallying call for further expansion of the archive – for more contributions, more ideas, more memories, more perspectives, and for more analysis of what has been said. The issue of those earlier pioneering women is ripe for much more analysis, as is the contributions of a more diverse group of people in the more recent past. There is much to be said about those from other countries who made Britain home and made a huge impact in the sector. And the Archives of IT should be promoted, because it is a tremendous resource for this country's social and cultural historians. As we can see from this article, it can be used to contribute to some of the most interesting historical debates about our recent past.