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Chapter 1

HP Comes to the UK – the Bedford Operation

In the 1950s, Hewlett-Packard was predominantly a US company. Its sales of electronic measurement instruments were growing rapidly, up from $5.5M in 1951 to $28M[1] in 1957, an average annual growth of over 30%. In 1957 it became a public company[2] and issued its first annual report. These were the early years of the electronics and communication technology revolution, which would dramatically change the world in the decades to come. Electronics companies needed test equipment for design and production, and HP was becoming the premier supplier of instruments, producing these at its main manufacturing plant on Page Mill Road, Palo Alto, California, in the heart of Silicon Valley.

At that time, Bill Hewlett and Dave Packard outlined their company philosophy:

"Hewlett-Packard's philosophy is simple, direct and known to all who have contact with the Company. Basically, it is to strive for leadership in its field by producing only those instruments that contribute to the art of measurement – and do so on the basis of value, quality and dependability at reasonable cost. Hewlett-Packard believes that profits are an essential means to all the Company does for its stockholders, its customers and its people, and that the Company should reinvest a substantial part of profits into continuing research and modern manufacturing facilities."

It was a successful formula, with up to 10% of revenue reinvested in new product development each year. This, coupled with the ability to attract and retain clever and creative people, ensured there was a steady stream of new instruments. HP often claimed that a substantial portion of current revenue came from products introduced during the previous two or three years.

By the late 1950s, HP's reputation and financial muscle put it in the position to make acquisitions of other companies with complementary test products. These were mutually beneficial arrangements, with HP either making an outright acquisition or taking a controlling share. Some familiar names from that era were Boonton Radio (radio frequency

[1] These figures come from the 1957 annual report. In the late 1950s, HP started to acquire other companies making complementary test gear. This added to their portfolio and revenue. In the later annual reports, they consolidated the sales from these subsidiary companies in earlier years even though they pre-dated the acquisition. This was done to show the growth on a "like-for-like" basis, however it is very confusing for the historian as HP (the parent company) never did this total business in the earlier years. For example, in the 1961 annual report, the 1957 sales are given as $45M, well up on HP's sales of $28M, as it includes the sales from several acquisitions, although in 1957 they were not part of HP!

[2] This meant it also issued shares, although the business was largely self-financing and had little requirement to raise capital. For many years HP shares were rarely traded on the stock market, being held mostly by the directors and employees of the company. Most of the new shares in the Company were issued through the Employee Stock Purchase Scheme.

instruments), Harrison (power supplies), Dymec (test systems), Moseley (chart recorders) and Sanborn (medical instrumentation).

This combination of new product development, advanced manufacturing facilities and acquisitions, fuelled an impressive growth in HP's business. From 1952 to 1962, sales increased ten-fold from $11M to $110M, and this was solid business from tangible products.

While the main focus of HP's business was the USA, in the 1950s its reputation began to spread internationally, where the products were sold through third-party representatives. Being of US manufacture, they were also subject to import tariffs, for example in Europe where it could be as high as 33%. HP had done well, but clearly its future growth would depend on better penetration of international markets, particularly in Europe. In 1957, the Treaty of Rome created the beginnings of the European Common Market or European Economic Community (EEC). HP needed to establish a presence, and the first step in 1958 was to set up a European subsidiary, HPSA, in Geneva Switzerland. In due course this became the European headquarters for its sales/service operations and international financial transactions. The venture was a success, as the 1959 annual report stated that sales had increased 50% in Europe that year

Next, in 1959, the Company set up its first international manufacturing operation in rented facilities in Boeblingen near Stuttgart in West Germany, with the first shipment of products later that year. These were all designed in the USA, but being manufactured in Europe, they avoided a lot of the import tariffs. Germany was one of the first six members of the EEC, so HP had a small stake in the "Club of Europe". By 1962, Boeblingen had expanded to 30,000 square feet and European sales again grew by 46%, with the total international business reaching 15% of the overall sales of $110M.

Many other European countries, including the UK, were not part of the EEC, but were members of the European Free Trade Association (EFTA), formed in May 1960. When Britain tried to join the EEC, the French President Charles de Gaulle famously vetoed the application in 1963 on the suspicion that the UK was a "Trojan horse" for US influence. It probably occurred to HP's board that a foot in the EFTA camp might be useful as well as the EEC. An advantage for HP of manufacturing in the UK was that it could benefit from the "Commonwealth Preference", meaning it could export more cheaply from the UK to places like Canada and Australia.

The UK was an obvious choice for a US company given the strong rapport that existed. Also, it may surprise the 21st century reader that in the early 1960s Britain was a world leader in science and technology, probably second only to the USA. It was noted for its aerospace, avionics, electronics, communications systems, computers, radio astronomy, weapon systems and nuclear industry – all prime targets for HP's products.

In late 1960, Bill Hewlett and Dave Packard started to think about establishing a facility in the UK. Hewlett asked one of his engineering staff from design labs in Palo Alto, John Doyle, to go and investigate. John had come from England, so maybe they thought he would understand the language and appreciate the local mores and traditions. He recalled visiting his family for Christmas 1960 and extending the trip to explore possible sites and renew connections.

The Bedford Operation

After John Doyle's investigation, another senior HP manager, John Cage, got involved in the spring of 1961, and an early site they considered was in Burgess Hill in Sussex. John Cage[3] was the engineering manager of one of the four HP product development divisions in California, and had been a university professor before joining HP. John originated from Dallas, Texas, and had some good contacts with Texas Instruments (TI), the semiconductor manufacturer. He asked their advice on where best to locate the new HP facility in the UK. TI had set up a small manufacturing plant in Bedford in the 1950s, on a new industrial estate in Kempston. Bedford is a town about 50 miles due north of London, quite close to the A1 trunk road to Scotland. Since TI was an important local employer in a new industry, they were allowed to name their street Dallas Road. In 1961, TI was in the process of moving to a larger factory in Manton Lane, Bedford, so their old buildings became available to lease to HP. The buildings had a total of about 15,000 to 20,000 square feet of space. John Cage headed over to the UK to help start up the new operation in Dallas Road in the second half of 1961, becoming HP Ltd.'s first Managing Director. He and his family lived in a house HP bought in Kimbolton Road, Bedford.

One of the early UK employees at the Bedford site was David Simpson, who remembered meeting John Cage, "*whittling pencils with his Texan boots firmly placed on his desk*" – an unusual sight, one imagines, in the conservative office environment of the early 1960s! In an interview with the author in May 2013, David Simpson, then aged 87, recalled some interesting memories from half a century earlier. David came from Ceres in Fife, the son of a butcher. He got into electronic design in the post-war period and was recruited into Hughes Aircraft, the defence and satellite manufacturer. In the late 1950s, he was involved in setting up one of the first inward investment companies in Scotland when Hughes built a microelectronics factory in the new town of Glenrothes in Fife. Through contacts between Hughes and HP, David was invited to meet Bill Hewlett and Dave Packard at the Connaught Hotel in London. The interview was mainly about engineering, David having been involved in design. They got on well and he joined the new operation at Bedford in 1962, becoming John Cage's "understudy" and a key player at HP UK in the 1960s. "*John Cage was my mentor, getting me into the HP management style, and we helped John and his family adjust to life in England.*"

Hewlett-Packard Ltd. was registered with Companies House on 24th April 1961 as Company Number 00690597, which marked the start of its official operations. The directors were Bill Doolittle (USA – Chairman), Bill Hewlett (USA), John Cage (USA – Managing), C. J. Cottrell (USA) and two UK directors, Fred Barton and Ken Sinclair.

John Doyle recalled that when he arrived in Bedford in July 1961, he found that Texas Instruments had moved out of their old premises in a hurry and the place was in quite a mess.

"First I got the place cleaned, then all the old gear removed and the walls painted so the building could be used. My first hire was a retiree called Sid Richardson who knocked on the door and asked me who was going to look after the roses in the front flower bed and make the tea. He lived right across Bedford Road and had seen some lights on and my car in front. At the time, my desk was an office door set across two packing cases and my seat was another packing case, so I hired him and we began to get things shipshape."

[3] John Cage is also remembered as the joint editor/author with Barney Oliver of an important handbook, "Electronic Measurements and Instrumentation", published by McGraw-Hill in 1971.

In a way, John and Sid were the founders of Hewlett-Packard Ltd., a business which grew from these small beginnings to a turnover of £500 million and employing 4000 people at various sites across the UK, 30 years later. It was a reminder of the beginnings of HP itself, when in 1939 Bill Hewlett and Dave Packard started their company in a one-car garage at 367 Addison Avenue in Palo Alto, now a California Historical Landmark and considered by many to be the birthplace of Silicon Valley.

To get the new factory started, John Cage and John Doyle selected several employees from Palo Alto, who transferred to Bedford for a while. Amongst these was Frank Boff as Technical Manager who had worked on frequency counter design[4]. He led a nascent product development group, as right from the start, the intention was to develop products in the UK, not just manufacture them. Another key player in the start-up team was George Newman who looked after accountancy and production control. This was an early assignment for George, who went next to Japan to set-up YHP. Later, his judgement was credited for much of HP's reputation for financial integrity. Production Specialists, Larry and Nita Miller, helped to train the local staff in production techniques and skills. They were followed a little later by Alan Watts, who had been in charge of the "Milwaukee-Matic" automated milling machines in the advanced manufacturing department at Palo Alto, and he took on the role of Machine Shop Manager. John Doyle had also been involved with this project having bought and introduced the Milwaukee-Matic into production, and for a while he was Bedford Manufacturing Manager. Alan remained with HP in the UK for many years, later becoming Personnel Manager in 1967. John Doyle arranged with the Midland Bank in Bedford for all employees to have a bank account so they could be paid directly. He also arranged for a customs agent and shipper. By October 1961, the new factory was up and running.

Of course, the HP team needed to recruit locally as well, and staff numbers increased rapidly from just 13 in October 1961 to 24 at the end of the year, and 88 by December 1962. One of those early recruits was Hugh Smith, who joined the Bedford operation in April 1962, initially as a test engineer, testing the first units of the 606A signal generator. Hugh, who in later years negotiated many of the product transfers, recalled that the first products manufactured in Bedford were frequency counters (Model 524C/D), large instruments using vacuum tubes (20 inch cube, weighing over 120 pounds and costing around $2.5k). John Doyle recalled, "*At the Christmas party in 1961, I handed out the punch to celebrate the shipping of our very first 524 counter.*" Next came some radio frequency and microwave signal generators, also using valves, (Models 606, 608, 618 and 620), products that normally had quite high import duty, and a microwave sweeper (8690). These were referred to as "Transferred Products" or "Licensee Products", as they were being manufactured here under licence from the originating US division.

In the next couple of years, more products were transferred: AC and digital voltmeters (400D and 3440A), power meter (431B) and oscilloscopes (140A and 175A with associated plug-ins). There were also more transfers of frequency counters from the Frequency and Time Division, most notably the 5245L, a 50 MHz transistorised counter with digital nixie-tube display. It was one of HP's most successful products, being a compact unit with a variety of optional plug-in modules adapting it for frequencies up to the microwave region. Bedford

[4] A.F. (Frank) Boff was famed for his chance discovery of the Step Recovery Diode (SRD) when he was working on high-frequency counter plug-ins. Also known as the "Boff Diode", it generated a broad powerful comb of high-frequency harmonics from a lower frequency input and gave a very narrow impulse. This was a valuable invention for HP's high-frequency signal generators and counters, and also gave the Company a technology lead over Tektronix in the sampling oscilloscope business.

employees recall that it sold in the UK for around £1000, and large numbers were produced, up to 100 units per month. I've been told that around half the Bedford turnover was coming from this unit in the mid-1960s.

Hugh Smith made some interesting observations about the advantages of transferred products at that time.

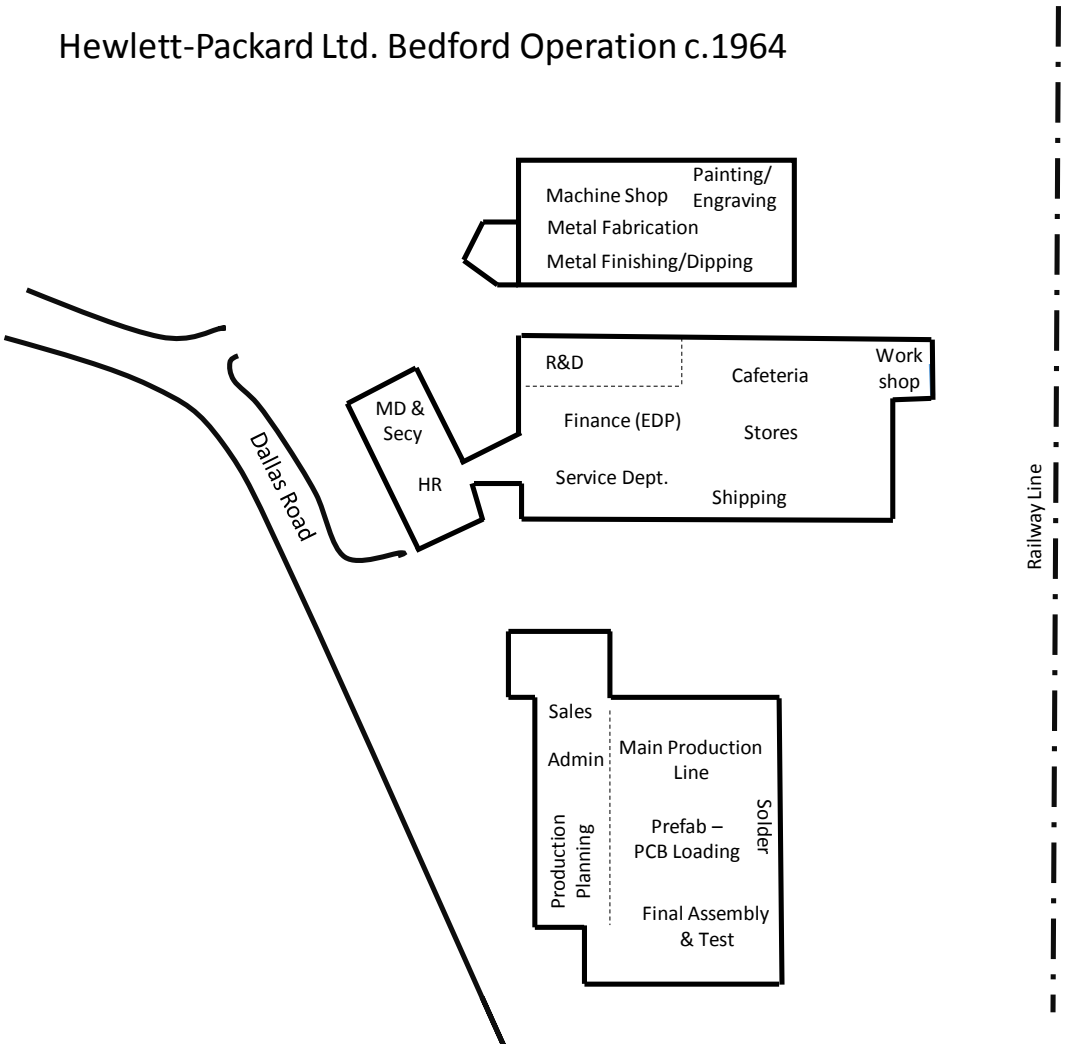
"Basically we could increase sales by taking advantage of the lower selling price and other benefits from local manufacture. Our customers no longer had to pay duty on a complete instrument, but only on the smaller amounts of parts we had to import to make it. For example, a locally produced signal generator could be almost 25% cheaper than the identical model imported from the USA. Another advantage was the improved "image" which local manufacture created for HP. There were many reasons for this, some tangible such as the prospect of better service and support, and some intangible such as the undoubted preference many people had to buy from a local source. Local manufacture also gave us the opportunity to compete for UK government business which HP would never have got with imported instruments."

Ah, those were the days! From January 1963, a new sales/marketing department in Bedford led by Dennis Taylor gave HP direct contact with customers in the UK, instead of working through a representative which had been Livingston Laboratories. Hugh Smith joined this group as service manager.

The objective of this product portfolio, selected for the international market, was to make as much as possible of it in the UK to avoid the import tariffs. Some modules had to be imported from the US parent division, but a substantial amount of mechanical and electrical fabrication and assembly took place at the Bedford plant. At that time, RF and microwave instrumentation relied on various types of tuneable cavity devices and tuning mechanisms, which required precision engineering (e.g. metal turning and milling). Bedford also did sheet metal fabrication of instrument cases, for example ruggedized cases for military contracts. This required aluminium welding which was done by a West Indian called "Neville the Welder" (Neville Martin) – a dab-hand at the process. The finished cases were spray-painted in-house, sometimes with a "spatter" finish and the front panels engraved with the various labels. A fair amount of the production therefore had little to do specifically with electronics. There was plenty of work, and HP continued to recruit locally. By the end of 1963 there were over 150 employed at the site, which rose to 215 by the end of 1964, when shipments reached just over $3M ($250k per month) according to a report by Ray Smelek.

Alongside the transferred product activity, Frank Boff's R&D team started development of some home-designed products in the frequency counter area. Frank recruited a couple of lead design engineers, John Hearn and Don Summers. The first product they developed was the 5090A Droitwich Receiver, which provided a frequency standard by locking onto the very stable 200 kHz carrier frequency of the long-wave radio transmitter at Droitwich[5].

[5] At the time of writing, the transmitter still operates, broadcasting BBC Radio 4, however the frequency has changed to 198 kHz so the Bedford box would not work anymore.



The second instrument from Boff's team was the 3734A 2 MHz Frequency Counter (introduced in 1964, selling for $940), which filled a gap in the range from the US division. The lead designer on this was Don Summers. It was the first use of the "37" model number prefix which was reserved for instruments designed in the UK at Bedford and later South Queensferry[6]. In addition, they did some work on plug-ins for the counters being built at the factory, particularly the 5245L mentioned earlier[7].

[6] Initially the 3734A had the number 5534A in line with instruments from the US Frequency & Time Division, being a repackaging of the 5532A with frequency range extended from 1.2 MHz to 2MHz.

[7] One of these was the ill-fated 5259A which illustrates the hand-crafted approach to manufacture in those days. The plug-in effectively extended the 50 MHz range of the basic 5245L into the 500 – 1000 MHz range by down-converting the incoming signal using a comb of frequencies generated from the counter's internal 20 MHz reference using a "Boff Diode". To bring the signal within range for the counter, a specific frequency in the comb had to be selected by manually tuning a precision cavity resonator, of the type mentioned earlier. To take account of machining tolerances, each unit was calibrated on the production line and the tuning knob marked with the calibration frequencies. This unique knob was then engraved and fitted back on the plug-in. This was fine initially, but after a few month's use, slight wear developed in the moving parts and the knob started to lose calibration. The customer complained and returned the units to Bedford. HP had to supply replacement units (5254A) from the USA with better-machined parts and higher spec – and roughly twice the price. Apparently, some of the machined cavity resonators from the 5259A were to be found around the factory many years later being used as ashtrays or to hold paperclips!

Meanwhile, once the factory was running smoothly, some of the original American contingent headed back home. John Cage returned at the end of 1962 and David Simpson took over, becoming HP Limited's next Managing Director. In summer 1963, a new player arrived from the USA in the person of Ray Smelek. Ray and his family occupied the HP house on Kimbolton Road. Ray had been asked by John Doyle to go over to Bedford for a couple of years to transfer the production know-how on two microwave signal generators. Later, David Simpson asked him to take over as manufacturing manager, so Ray extended his UK assignment.

These early foreign-service employees must have experienced a bit of a culture shock when they first arrived in the UK in the early 1960s, despite speaking roughly the same language. David Simpson commented that John Cage was very worried about his diet as it seemed only high cholesterol foods were available in Britain – in the early 1960s, most people here were happy to eat, and "healthy eating" was a thing of the future. However, when John went back to the US, tests showed his cholesterol had dropped, so "Old Blighty" must have been doing something right.

In his autobiography "*Making My Own Luck*", Ray Smelek, wrote that "*It didn't take long to feel we were living in an entirely different country. Everything seemed more formal. The kids had to wear uniforms with ties and blazers to go to school, and the man who took care of our yard (garden to us) wore a suit and tie while mowing the lawn.*" The old currency of pounds, shillings and pence (Smelek calls them "schillings") was a challenge. A family holiday at Butlin's Clacton-on-Sea was an eye opener. "*The kids loved it, but I thought, 'How in the world did I get talked into this???' The first morning was the back-breaker. At 7 a.m. over the loud speakers came 'Zippety Doo Dah, Zippity A …, etc., and a very loud 'Good morning campers – time to rise and shine!' I left that morning and went back to work, leaving the rest of the family to enjoy Butlin's!*" Obviously, Ray was a true company man.

No doubt our US friends saw the whole experience as an adventure, but cultural and regional differences were shortly to become a major issue for many of the other employees at the Bedford site.

Running out of space

Business was growing rapidly in Europe, 30 to 40% per year, double the rate in the USA, and HP wanted to expand its manufacturing operations in Germany and the UK. When Bill Hewlett visited Bedford in 1963, he was impressed[8]. "My observation is that our overseas people are top-grade. In Bedford, for instance, I toured the production lines and talked to many of our people. They learn quickly, and have great enthusiasm and pride in their work."

The floor-space in the existing rented buildings would soon become inadequate as the employee numbers increased. HP had leased a third building for its main production line (see the site plan earlier) but this would soon be insufficient for the anticipated growth. HP would instead prefer to build a new facility suited to future needs. Dave Packard commented (critically) in the HP Measure[9] magazine, "*The rapid growth of both our manufacturing and*

[8] HP Measure magazine, July 1963
[9] HP Measure magazine, November 1964

marketing operations has made it necessary to expand our plant. In England, however, the government takes a very strong hand in all business affairs, and because of various regulations, we are prevented from doing any appreciable building in Bedford."

In the early 1960s, the government was actively discouraging further business development around London and the Midlands as there was a shortage of labour and housing. Their policy was to create economic development in various areas of the country where unemployment was higher (typically 6% or more). For example, when the major Midlands car manufacturers wanted to expand, they had to build new factories in Scotland (Rootes at Linwood and BMC at Bathgate), over 300 miles from their main facilities. In HP's case, any development exceeding 5000 square feet in Bedford would require Board of Trade approval.

HP's initial strategy was to lobby for permission to expand in the Bedford area, arguing that they were bringing high-value employment to the area. In his autobiography, Ray Smelek recalled a dinner meeting at David Simpson's house in Bedford where Bill Hewlett met with the UK Minister of Trade (possibly Edward Heath)[10]:

"We explained our operation and what we were trying to accomplish over time as a long-term employer in the UK, and how having to relocate would create a major setback in those plans. Hewlett told the Minister that HP had made a big investment in England and employed more than 200 people there and that HP was prepared to invest much more over time, but that the company might have to make a business decision to move everything to its plant in Germany if it couldn't expand. The Minister's answer was quite astonishing! He said, 'Do what you have to do.' I had the task of driving the Minister back to London – it was a very quiet journey."

Despite the Board of Trade restrictions and Bill Hewlett's threat to move everything to Germany, HP stayed in the UK and started to look at the various development areas. I've heard there was an early plan to move to a site on St. Neots Road in Bedford. Apparently the way had been smoothed for this expansion by local MPs and businessmen, but for whatever reason, commercial or political, the plan was not taken forward. Maybe a move to a development area, and the opportunities it offered, began to appeal to the pioneering spirit of Bill Hewlett and Dave Packard. Perhaps the disruption would not be as great as they first thought. HP had only been in the UK for two or three years in rented premises, although it had grown rapidly. In fact the forced move away from the London area, with its congestion and high land prices, may have been a blessing in disguise considering how large the factory eventually became[11]. There were also various development area "carrots" from the UK government including grants, tax breaks and new subsidised housing for incoming workers.

The government's Economic Development Areas included South Wales, the South West of England (Devon/Cornwall), Tyneside and Scotland. David Simpson, Ray Smelek and others evaluated the options and Ray wrote a report on the pros and cons. HP corporate management also had an input. Dave Packard objected, for some reason, to Tyneside, while Ralph Lee (VP of manufacturing) preferred the South West (Plymouth was a possibility) as it was nearer the "sun-belt" – Scotland being too cold and in the far north. Bill Hewlett favoured Scotland partly because of his admiration for Scottish engineers, particularly the genius of the mathematician and physicist, James Clerk Maxwell, whose famous equations

[10] Heath was Secretary of State for Industry, Trade and Regional Development, October 1963 to October 1964.
[11] Ironically, HP did a lot of development with several large buildings in the Thames Valley/Reading area in the 1980s, however 20 years earlier this would probably not have gained approval.

anticipated radio waves and other electro-magnetic radiation decades before they were put to use. Right from the start, the central belt of Scotland was a strong contender with its international airports nearby (for ease of travel and import and export of goods). Another factor was its world-class universities in Edinburgh and Glasgow. HP's interest in the universities stemmed from its close association with Stanford University in Palo Alto, which led to an informal requirement that all new expansion sites should have a local engineering university within driving distance.

A further attraction of Scotland was possibly the emerging "Silicon Glen". A number of major electronics companies had set up here, starting with Ferranti at Crewe Toll in Edinburgh in 1943. Others were NCR, Honeywell, Burroughs and IBM, who opened a manufacturing facility at Spango Valley, Greenock in 1953. And then there was the Hughes factory in Glenrothes, the first semiconductor plant. Similar companies nearby was attractive as there would be a skilled and knowledgeable workforce (although poacher could also be poached) and also an infrastructure of component and sub-contract supply companies would exist.

A key person in all this was of course the Managing Director, David Simpson. David, being a Scot and having set up the Hughes factory in Glenrothes, was an advocate for HP coming to Scotland. He had good contacts with Scottish Council for Development and Industry (SCDI), particularly Lord Polwarth[12] who was an enthusiastic promoter of Scottish industry through his chairmanship of the SCDI. Not surprisingly, David was accused of bias by some, even of "engineering" the move to Scotland, but ultimately Dave Packard decided that Scotland was to be HP's new home. The question was then, where should it be.

David Simpson's natural choice was to return to Glenrothes where he had found the local staff in Fife very helpful with the Hughes project. Apparently Lord Elgin also assisted by entertaining Hughes executives at his house, "Broomhall", near Dunfermline. In the spring of 1964, David Simpson set up a visit to Glenrothes for Dave Packard, but it turned out to be a bit of a disaster:

"The Glenrothes Development Corporation had prepared a full scale lunch and reception for our VIP visitor. Unfortunately, we encountered some major delays at the ferry at Queensferry (this was several months before the new Forth Road Bridge opened), due to a football match in Dunfermline. Then, my car got a puncture on the Fife coast road. I had never previously had a puncture on my relatively new Jaguar and had few clues where the tools etc. were kept. That day my admiration for Dave Packard increased as my composure disintegrated. He took charge of the wheel change, and sometime later a slightly dishevelled Chief Executive and his harried Managing Director arrived at Glenrothes. The superb lunch had to be abandoned and there was a brief presentation before we had to begin the return journey back to Edinburgh airport. As we waited again for the ferry across the Forth, Packard said, 'I quite like Scotland, why don't we build the plant on the other side of the river?' Shortly after, we started negotiations for a site in South Queensferry, and on this occasion Glenrothes lost out."

West Lothian Council were very keen that HP should take a site in their area and David Simpson recalled making a presentation with John Penrose, HP's financial director, hoping to

[12] Obituary http://www.heraldscotland.com/sport/spl/aberdeen/lord-polwarth-renowned-leader-of-scottish-industry-1.66550

receive grant assistance for the new building. Oddly, a Glenrothes project that failed, almost cost HP the loan package.

"We were presenting our 'cast-iron' case for getting financial support to build the factory, believing HP's reputation went before, when one of the lay members of the council took exception on the basis that our project sounded just like 'that pig business in Glenrothes'. This was an allusion to the infamous Cadco[13] affair in 1964 when the Hollywood actor, George Sanders, and colleagues duped the Glenrothes Development Corporation out of a large amount of cash, promising to develop three factories and the world's largest pig farm, creating 2000 jobs. With difficulty, we persuaded the group that HP was not into pigs and left with the offer of support."

As to the potential site in South Queensferry, HP may have become aware of this through the town's Provost W. Lawson, who was hoping that HP would come to the Royal Burgh. The plot of land was just to the south-west of Dalmeny railway station and had been the site of an anti-aircraft gun emplacement and ammunition store during WWII. Most of the land in the area belonged to the Earl of Rosebery, who resided at Dalmeny House. He was opposed to industrial development and wanted the land kept for agricultural use, however this former military site had been abandoned since the end of the war 20 years earlier, mainly because of the massive concrete structures that remained.

The negotiations that followed with the Earl of Rosebery's factor, Mr Carruthers, would in David Simpson's words, "fill a book". Provost Lawson was enthusiastic and helped to "oil the wheels", and the fact that Rosebery's son, Lord Primrose, was an engineer and knew of HP may also have led to a successful conclusion. HP was able to purchase 17 acres of land with an unofficial agreement for a further 17 acres in the future, however the Earl insisted the new buildings should be low-rise to minimise intrusion on the landscape. As for the old gun emplacements, explosives had to be used to remove them!

In early 1965, Alan Watts, who had been asked by David Simpson to liaise with the various parties involved in the construction of the new plant, described some final negotiations:

"British Rail has offered to sell us the access road to the site (North Entrance), together with twelve cottages, for the sum of £4300 which, at today's prices is pretty good. We have not yet accepted this offer, but, according to David Simpson, we probably shall, although no plans have been made for the disposal of the cottages.

"Finally, it seems that the only negotiation to complete concerning the actual site is to determine how much land we have to give up, or rather set aside, to provide a tree coverage for pheasants which evidently abound in this area. Apparently the land owners are insisting that we plant these trees for the protection and propagation of the 'wee birdies'. Anyone for pheasant?"

A superb site

All the effort and negotiations paid off, as HP acquired a magnificent site on gently rising ground overlooking the iconic Forth Railway Bridge and the recently completed Forth Road Bridge. The small town of South Queensferry at the foot of the hill, a former fishing village,

[13] Cadco: http://www.fifetoday.co.uk/news/local-headlines/cadco-affair-remembered-50-years-on-1-2939775

was picturesque and steeped in centuries of history surrounding the ferry crossing. Surely there were few more attractive places for a new factory to be built. The plot was bounded on the east by the main railway line to the north, and next to Dalmeny Station. There were fields to the north and to the west where in due course the Scottish Special Housing Association (SSHA) constructed houses and flats for the incoming workers to this economic development area. On the south side, the initial plot of land was bordered by the tree-lined Lovers Lane, an ancient route to Dalmeny village. In fact there were quite a lot of mature trees round the perimeter of the site.

By the autumn of 1964, HP was ready to discuss formal details of the move with the Bedford employees. However, as David Simpson recalled, a visit to Bedford by Tam Dalyell (the West Lothian MP) and his wife somewhat anticipated the announcement when Dalyell leapt up onto a desk and told everyone they were moving to Scotland! It was controversial, and David was hoping to take a more persuasive approach.

In a memo to all staff dated 15th October 1964, David Simpson outlined the plan:

"We can now give more details of our plans to relocate the factory to Scotland over the next two years. Firstly, timing – it will take four to five months to plan and design the new 140,000 square feet factory (the initial phase was around 90,000 sq. ft.) and about twelve months to complete the building, assuming no major snags. The planning phase will start at the end of this month, so it will be March 1966 at the earliest before a transfer to the permanent factory can be made. Obviously the Machine Shop and the Stores will be among the last to move because of the expense and labour in setting them up in the new plant.

"To take care of our expansion during the year (60% growth in 1965), we will start taking on wiring staff in the new location for training by the end of the year. Andy Mellish (production manager) will go to Edinburgh after his visit to Palo Alto to set up production of power supplies and voltmeters in a 10,000 square feet temporary building. Joe Myers will join him there and the 175A oscilloscope will be the first major instrument to be transferred to the new plant.

"The production lines in the new plant will require complete support from Bedford and all pre-fab assemblies (printed circuit board loaded with components), metal work, cables etc. will be put together in kits and sent up by road. One member of the quality (QA) staff will go up to the new factory in the quite early stages to make sure quality does not suffer in the transfer phase.

"To keep our production up to the new targets for 1965 ($400k/month)[14], we will actually need more people at Bedford and we are relying on everyone's continued support in this coming year. We have worked out some ideas to encourage people to stay with us until the Bedford operation is phased out. Every person employed at Bedford will be offered at least the same job in the new plant. Our planned expansion will offer many opportunities for promotion and progression."

The opportunities certainly seemed to be there. HP reported its overall business from customers outside the USA had grown 34% between 1964 and 1965, and by then it accounted for 22% of the total volume (much of it from US exports).

[14] This gave an annual total of nearly $5M, over 50% more than the $3M shipments in 1964.

HP was hoping that many of the Bedford employees would be tempted to move north, if only for a few years, as by then they had assembled a skilled workforce. It was a big decision for many of them to leave relatives and friends, and move 350 miles north to another country. I imagine most of them had never been to Scotland, and when they joined HP in Bedford had assumed if the company moved it would be to another location in the home counties round London. David Simpson's memo outlined financial and practical assistance to those who chose to move, while the subsidised SSHA housing mentioned earlier provided accommodation nearby to those not wishing to buy a house.

Groups of employees went on visits to Scotland in 1965 to see Edinburgh and the general area, the new factory site, South Queensferry and the SSHA housing. The September 1965 issue of the in-house newsletter, *Readout*, had the schedule for the visit:

TRIP TO SCOTLAND FOR EMPLOYEES AND THEIR FAMILIES

Friday, 17th September

Depart Bedford (Midland Road) Station 10 p.m. SHARP

ITINERARY

Saturday, 18th September

7.16 a.m.	Arrive Waverley Station, Edinburgh, followed by breakfast at Royal British Hotel.
9.30 a.m.	Sight-seeing tour of Edinburgh including Edinburgh Castle, Royal Mile, Holyrood, the Colleges and main shopping area.
12.30 p.m.	Lunch at Hawes Inn, South Queensferry.
2.00 p.m.	Tour of South Queensferry including the new plant, schools and housing, followed by sight-seeing in the Trossachs.
6.30 p.m.	Dinner at Royal British Hotel, Edinburgh.
10.05 p.m.	Depart Edinburgh, Waverley Station, for Bedford.

Sunday, 19th September

7.12 a.m.	Arrive Bedford (Midland Road) Station.

A local newspaper in Bedford took a photo of one of these groups, which included Ken King:

"Yes, I remember the trip well; that's my wife clutching the brolly! It was organised by Eileen McLeod of Personnel, standing behind me, far left. We travelled by the overnight train, and were then bussed around. We went to the South Queensferry site where concrete was being poured for the first floor front of Phase One, and there we met Jimmy Martin, our security man for many years. We had lunch at the Hawes Inn. Coaches took us to look around Dalgety Bay, then in the earliest stages of construction. Eileen apologised for the fact that we would not, after all, see anything of the Trossachs as she had been advised that there was not enough time in the day to fit in the excursion. Of our departure and return I remember nothing, but we all agreed that the move to Scotland would be an adventure, and something which we all looked forward to with excitement and high expectations."

In the end, about 100 employees and their families transferred to South Queensferry (roughly half the workforce at the end of 1964). In a way it was a tribute to HP being a good employer, as in those days there were plenty of alternative jobs available in the south east of England, instead of moving to Scotland[15]. However, as Hugh Smith commented, the cultural and lifestyle differences between England and Scotland in the 1960s, were not to everyone's

[15] Not all the Bedford staff were affected by this move to Scotland. Those involved in the Sales & Service activity (around 50 to 60 employees in 1966) would stay in the south where most of HP's customers were. In due course they moved to new offices at Slough, as described in the next chapter.

liking and some of these employees did not settle and eventually returned to England. Others, such as Hugh and Ken King, did stay and spent the rest of their careers at South Queensferry, becoming well known contributors to the operation. In Appendix 3, I have compiled a list of some of the original Bedford employees who came to Scotland. For those who worked at the plant over the years, there are some very familiar names on this list.

To replace the people who didn't make the move north and to prepare for further growth, HP started recruiting Scots by the end of 1964. With its reputation, HP was able to attract some experienced staff from companies such as Ferranti in Edinburgh. David Simpson recruited a few former colleagues from Hughes. Some of these new employees were sent down to Bedford, so for a while there was a bit of an invasion from North of the Border. Hugh Smith vividly recalls this time,

"People from Scotland were staying in B&B accommodation all over the area, in places like the Bakery at Kempston. Every Friday night there used to be a convoy of cars heading north. The presence of the Scots did create some 'nationalistic' feelings with the locals, and may have influenced some existing employees not to move north."

One group which would definitely **not** be moving to Scotland was Frank Boff's R&D team. Frank was apparently quite outspoken on the matter and for a while carried his team with him. Ray Smelek described the uproar that ensued, and claimed that Frank Boff phoned Dave Packard, complaining that the General Manager was ineffective and, if he was in charge, the company would stay in England. If it didn't, he was quitting! Dave Packard assured him he was quite happy with the move to Scotland, so Frank resigned, along with several of the R&D team, including Don Summers. After a short period, Don did re-join HP in Palo Alto, in time becoming manufacturing manager at the Stanford Park Division. By a curious twist, Don eventually ended up in South Queensferry more than 20 years later, when he took over as General Manager of a new venture, the Queensferry Microwave Operation. Never say never.

It meant that David Simpson needed to build a new R&D team from scratch in Scotland. However, they found some outstanding people in Edinburgh who eventually had a profound influence on the future directions of the Division as we shall see in the next chapter.

Like many others who came later, I just took the factory for granted with all its processes, systems and organisational structure. It was just there, and it never crossed my mind how much effort would be needed to establish such an operation in all its myriad details. John Minck, HP veteran of Stanford Park and great chronicler of all things to do with HP[16], summed up the achievement of these early years in an introduction to Ray Smelek's story:

"Starting in the 1960s, in one country after another, HP set up manufacturing operations, first in Germany, then the UK, and Japan. Little acknowledged were the teams of HP employees who became the managers of those first international outposts, buying land, building HP-style buildings, hiring entire factories full of every skill, from janitors to R&D geniuses. They trained local teams and inculcated the HP Way into those foreign cultures, until they became almost congruent."

[16] A Narrative History of HP http://www.hpmemory.org/timeline/john_minck/inside_hp_00.htm

The upheaval of moving from Bedford to South Queensferry obviously produced quite a lot of unhappy people, but offered new opportunities to many others. The future of HP's manufacturing division was in Scotland, there was no going back. In the next chapter, I'll describe the building of the factory and how the Division established itself in its new home.

Acknowledgements

Thanks to the following former HP employees who have helped with this chapter: Hugh Smith, David Simpson, John Doyle, Magnus Hunter, John Minck, Ken King, Graeme Stewart and Ray Smelek (from his autobiography – Ray died the year before this chapter was written).

The new factory as envisioned in 1965

This isometric view appears to include all three phases of the building as originally planned, although the architects were only asked to design Phases 1 & 2. The linked building at the front was to be the Canteen and Social Club, but was never built. The canteen was in the north east corner of Phase 1, and the Social Club initially occupied one of the old railway cottages beside Dalmeny Station. The garden in the foreground was Japanese-style. It was built, but didn't work in the Scottish climate and was removed after a couple of years.

2

Chapter 2

Building the Factory and the Early Years in Scotland

The date is Friday 14th May 1965, it is mid to late morning, and the location is the recently acquired HP site at South Queensferry. This is how the HP *Measure* magazine[1] described the scene:

"A fog-shrouded hillside in the suburbs of Edinburgh was the scene of warm Scottish hospitality, when local government officials welcomed Hewlett-Packard to Scotland in a colourful sod-cutting ceremony. The ground-breaking was for Hewlett-Packard Ltd.'s first building scheduled for completion in mid-1966." The photo caption reads, *"Ceremonial spade in hand, Secretary of State for Scotland, George Willis, breaks ground at the HP Ltd. plant site as, left to right, David Simpson, Lord Polwarth, Bill Hewlett and Provost W. Lawson, smile approvingly."*

It must have been a proud day for old Provost Lawson, having helped to bring a US high-tech company to his home town, with all the prospects that the new factory promised in the future. It is possibly stretching it a bit to describe South Queensferry as a "suburb of Edinburgh", and the fog-shroud looks more like the familiar sea mist or East Coast "haar". In the official photo of the event, the morning sun is just beginning to break through on the scene, and the ceremony appears to be taking place more or less at the front of where the new building would be. The assembled company have their backs to Dalmeny station, and apart from the VIPs mentioned already, there are quite a few other smartly-dressed spectators, most of whom it has not been possible to identify nearly half a century later. After the official event, the spectators moved to another part of the site where Bill Hewlett operated a bulldozer and some PR photos were taken, which provide glimpses of the former military bunkers.

Amongst the spectators, a youngish man with dark hair and beard, arms folded, on the left of the photo, is thought to be Mike Morison, one of the architects of the new building. In the autumn of 1964, HP engaged the Edinburgh firm of architects, Ferguson Marshall & Morison, to design the new factory. The firm, which later became Marshall Morison & Associates, had quite a close association with HP South Queensferry in the early years, so some background on the company and what they did for HP is appropriate.

Marshall Morison & Associates

The architecture practice was set up around 1964, with three partners, Ferguson, Michael Morison and James Marshall. Morison was the youngest partner and the older Ferguson appears to have retired from the practice in the late 1960s, when it became Marshall Morison & Associates (MMA). Their main office was at 16, Great Stuart Street in Edinburgh, and

[1] HP *Measure*, July 1965

they set up a branch office in South Queensferry (presumably after winning the HP contract) in one of the town's historic buildings, Black Castle (dated 1626), situated on the south side of the High Street between The Vennel and East Terrace. They specialised in commercial/industrial buildings, the HP factory being one of their earlier contracts. Two similar projects were carried out for Signetics in Linlithgow and Motorola, East Kilbride, both in the late 1960s. In Edinburgh, they designed the AEWU building, St. David's House at 145 Morrison Street (redeveloped 2012), and Shrubhill House on Leith Walk, just up from Pilrig. The latter is considered a bit of an eyesore by some, but was listed in 1998. At the time of writing, permission has been granted for its demolition. One of their best buildings was Trinity Park House, a serpentine office building on Ferry Road opposite the junction with Inverleith Row at Goldenacre and around the corner into Trinity Road South, however it was not that visible being behind the original stone walls surrounding the site. It was occupied mainly by the Inland Revenue and the Health Service, but after they left, it was demolished in 2007/8 and replaced by the inevitable housing development.

Following the first building for HP, MMA completed Phase 2 (part of the original plan) and also the Sports and Social Club. Around 1975, Mike Morison left the company, and James Marshall formed a new venture called the Multi-professional Architectural Practice (MAP)[2]. MAP designed the later Phase 3 addition to the original block of HP buildings around 1979.

MMA developed an interest in South Queensferry, and a well-known building designed by them is the Queen's Retreat pub and the adjacent shopping centre (c.1970), just along Lovers Lane from the factory. In 1971, they published a book "Consideration of the Revitalisation of the Royal Burgh of Queensferry", presumably hoping to impress the town council.

The new HP Factory

To comply with the planning restrictions of a low-rise development, Ferguson Marshall & Morison designed a two-storey building with the full-height frontage facing north overlooking the River Forth and its two bridges. The rear of the building effectively backed into the hillside with the lower floor partly in an excavation so the rear elevation consisted of only the upper floor. Apparently, the Earl of Rosebery specified that the building should not exceed a certain height above sea-level, so the excavation allowed the two-storey building to meet the condition. Alan Watts gave an idea of the design preparations in a March 1965 newsletter:

"As with all major projects of this kind, many facts and figures have to be accumulated and sieved through before final designs can be made. Jim Marshall, who is one of the Scottish architects, has visited many of our plants in the USA in order to observe the flow of materials and designs of buildings, so the best ideas of our American cousins can be integrated with those of our Scottish architects to produce a modern and efficient factory, which should be a joy to work in."

This first phase of the new factory, begun in the summer of 1965, was approximately 50 metres wide (165 feet) and 100 metres long (330 feet). The upper floor ran the full length of the building, whereas the lower floor ran about two-thirds the way back, giving a total floor-

[2] His new partners were Henry Paterson and Thomas Michie. The business continued until 2005.

space of around 90,000 square feet (8,500 square metres), about three times as much space as they had in Bedford.

The construction was a conventional 1960s curtain-wall building, meaning the external walls were not load-bearing. The ground floor was a reinforced concrete slab, six to eight inches thick, which supported reinforced concrete columns around two feet (600 mm) in diameter at approximately 10 metre spacing. These in turn supported the first floor, which again was reinforced concrete using a "waffle" or "egg-carton" construction on the underside to increase the stiffness without a large increase in mass. This had sufficient load-bearing for offices and light industrial use for the main production lines. The heavy machine tools, sheet metal fabrication and finishing, printed circuit board manufacture etc. were all accommodated in the rear half of the ground floor. The flat roof was constructed out of steel trusses supported on widely-spaced steel pillars, so the upper factory floor was virtually an uninterrupted open space, with a central stair-well, lift and toilet block. There was an external stair-tower built with concrete blocks, slightly offset from centre on the front elevation, separated from the main building by glass corridors, also forming the main entrance to the factory reception.

Visually, the building gave the impression of being split-level, with the upper floor oversailing the ground floor on the north and east elevations[3]. A rumour circulated that this was an HP-style feature imported from the USA (possibly by Jim Marshall), where it was intended to provide some shade from the Californian midday sun – not usually a problem for a north-facing building in Scotland!

Upstairs, there were windows the full length of the north elevation to take advantage of the fine views across the Forth. The curtain wall at this level was constructed with vertical anodised aluminium extrusions and slate-blue panels above and below the aluminium window frames. The recessed ground-floor wall was built of concrete blocks with a relief pattern popular at the time, interspersed with more windows. The blocking was painted to match the panels above. The east wall had a similar construction, this time using large panels of corrugated aluminium sheet punctuated by narrow vertical window bays every few metres. Half way up this east elevation there was a walled yard, continuing the decorative concrete block design, which housed maintenance workshops, garaging, heating plant, electricity sub-station and so on, all neatly concealed.

A former employee, Fred Wigley, remembered the first building going up in the 1960s,

"I was brought up in Kirkcaldy and had relations in Edinburgh, so as a small boy I was a frequent traveller across the Forth Bridge. I remember vividly, watching the Road Bridge being built and then the major building works by Dalmeny station. What was it? Little did I know at that time, the major impact this building would have on my life."

HP described the new building thus:

"Although a highly functional and complex plant which must be flexible to allow for a wide variety of specialist activities, great attention has been paid to both external and internal

[3] As first built, the upper floor also oversailed on the west elevation, however this would soon be absorbed by the Phase 2 extension.

design – structure, landscaping, textures and finishes – to preserve the local amenity and to provide a stimulating workplace for Hewlett-Packard employees."

It was not a particularly expensive building, but I found it quite pleasing, as first built. It had a clean, sharp, 1960s high-tech look with its use of aluminium-framed cladding and strong vertical lines. Competently designed, it had a light and "airy" feel, evident from the publicity photos taken at the time of its opening. Sadly, its attractive appearance was greatly compromised in later years when the exterior was given a drab 1980s brown coating and later still, the east side was concealed by a mass of very unsightly air-conditioning plant. It was, however, a utilitarian building and this equipment was necessary as the place expanded in later years. Employees will remember the original cooling system was not very effective[4], and hardly capable of dealing with all the heat from electronic instruments and computers. Even early on, I recall the electricity consumption was about 2MW, which was all dissipated as heat.

The new factory took about 10 months to construct and was largely complete by March 1966. What HP got was a building of wide-open uncommitted space, the whole of the upper floor being covered with pale grey plastic tiling. There were a few areas divided off by glass partitions, but most of the production and office space was "open plan", with areas divided up only by office furniture and work benches. This was very much what HP wanted – no offices with doors. I've described HP's management ethos in more detail in a later chapter, but an important starting point was having the right building.

One drawback with the factory from the start was the lack of any proper provision for cabling in the solid concrete floors. Services had to be run mainly at ceiling level in both ground and first floors. This could be easily concealed behind false ceilings, but to get to desks and workstations it was necessary to have unsightly cable drops from the ceiling, or drill holes through the concrete floors. This was tolerable in the early days of a few telephones, but once PCs and computer terminals came along, it became a major problem. However, for the time being, the wide-open empty spaces made setting up the new factory very easy.

Moving in

On April 27th 1966, there was a "topping-out" ceremony, attended by Bill Doolittle (Vice President of International Operations) who gave a talk about the future prospects for HP Ltd. and the new factory, to be known as Division 14 in HP's corporate structure. Between late spring and summer, the factory moved from Bedford to South Queensferry. It needed a lot of organisation as the plan was to keep production going throughout the move. For more than a year before, HP had been recruiting and training new staff in Scotland, so the South Queensferry operation could start up quickly. Although about 100 employees would move from Bedford to Scotland, many more people were needed.

In the February 1966 issue of the employee newsletter *Readout*, a page called "Pre-Fab Patter" gives an idea of what was going on:

[4] Some of us thought there was no air-conditioning, however one day I was shown the compressor in the plant room to prove there was.

"Congratulations to all the Scots who made it back to Bedford after Hogmanay! A special welcome to the Scots Lassies who have joined us at HP Ltd. We hope their stay in Bedford is a very pleasant one. Let's help them all we can to take to Scotland the quality of workmanship which we have helped to maintain in Bedford. Ed King is now based in South Queensferry, extremely busy with our programme for recruiting and training 'wiring girls'. We have now reached 1966 when the big move will soon be starting. The days will go by far too quickly for those of us who cannot move with the Company and have enjoyed every moment of our working days with HP Ltd. By the way, we are still waiting to taste the Haggis!"

The June 1966 issue of *Readout* had an article about the accounts department by John Penrose (Company Secretary). This included several photos of staff who had already settled into the new premises. John, and other managers such as David Simpson (Managing Director), had their open-plan offices along the front of the building next to the north-facing windows.

In the same issue, Alan Watts, in an article "Machine Shop Patter", described the move north and also the range of processes needed in this vertically integrated factory:

"CRASH! With our hearts in our mouths, we rushed to the scene of disaster to see what had happened to our faithful guillotine. There it was, lying on its side with an ever-increasing stream of hydraulic oil flowing over the new concrete floor that had patiently waited to receive its host of machines.

"Fortunately, this was the only major disaster that occurred during the transfer of the machine shop from Bedford to its new home in South Queensferry. All the gang did an excellent job preparing for the move, while still producing parts for R&D and the lines, down South and up North, right up to the last minute. I did have some slight doubts as I watched Jim Peachey during the moving preparations. Jim seemed to get a fiendish pleasure from ripping things down, and he and his gang, armed with hammers and the fork lift truck, devoured all before them.

"We are very happy to welcome Ken King back into the department. Ken has been assigned the printed circuit board facility and, initially, will help set up the plating shop. Bill Fulton has been assigned the transformer winding group and is busily preparing for the installation of the necessary equipment. David Stobie, who has just returned from his trip to Germany and the US divisions, will advise on the technical installation of both the plating shop and printed circuit department.

"With the addition of the plating facility and an increase of machines and staff in the machine shop area, we intend to produce all the vinyl-coated aluminium parts[5] *in the sheet metal department and speed up the lacquering process by installing dip lacquering.*

"We have also expanded our tooling area and welcome Meyer Averbuch into the fold as our Tool Engineer. Meyer hails from South Africa originally. In order to cope with the

[5] Vinyl-coated aluminium was used for the top and bottom covers and side covers for the instruments. The vinyl coating was textured so needed careful handling to avoid marks. Originally a slate-blue colour, HP instruments changed over to an olive-green around 1970.

anticipated flood of new tools[6], we are adding two tool makers (Derek Muir and John Wastle). Finally, we welcome Bob Somerville as our new engraver, and Anne Wright and Annie Kay as our new riveters.

"We are truly excited about the prospects here in South Queensferry, and are determined to finish up with a division second to none."

The machine shop was one of the last departments to transfer, and by August the factory move was complete. HP had been in Bedford almost exactly five years when the doors closed for the last time. The next major event was the official opening of the South Queensferry plant.

"By yon Bonnie Brae" – Thursday 22nd September 1966

An engraved glass panel at the entrance of the new building had the following inscription:

> *This plant was officially opened*
> *by the Rt. Hon. William Ross MBE MP*
> *Secretary of State for Scotland*
> *at South Queensferry Scotland on*
> *Thursday 22nd September 1966*

There was a great gathering that day of VIPs, employees and people from South Queensferry and neighbouring communities. Unfortunately, Willie Ross was unavailable for this special event and his place was taken by Lord Hughes, Under-Secretary of State, so the glass panel was always a bit of a misrepresentation!

Some of the UK Sales and Service team and their wives were flown up from London on the Wednesday afternoon ready for the opening the next day. "*The weather was bad, the plane was diverted to Glasgow and we were brought across to Edinburgh by car*", as recalled by Hugh Smith. "*We stayed at the Carlton Hotel and were taken by car to the plant the following morning.*"

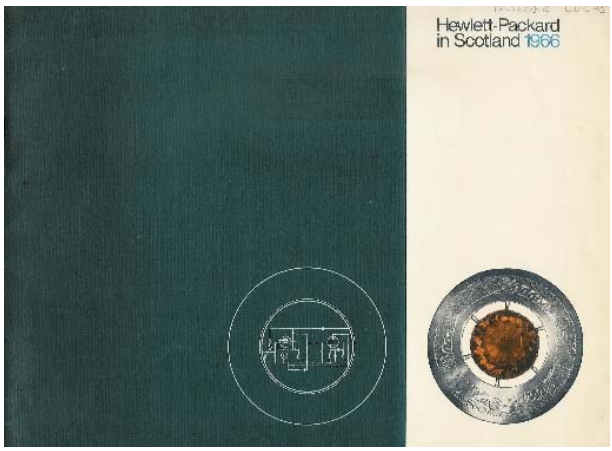
A large area was cleared of production in the middle of the upper floor and over 300 seats laid out facing a top table set-up towards the west wall. There were speeches by David Simpson, Bill Hewlett, Dave Packard and Lord Hughes. HP's *Measure* magazine for October 1966 recorded what it described as the "Historic day at Queensferry" with the subtitle, "By yon bonnie brae", presumably recalling the Scottish song Loch Lomond and the gentle hillside of the new factory site. The article quoted Dave Packard's speech in which he referred to "*the great men of science and engineering whose brilliant careers unfolded within a few miles of where we are gathered.*" He mentioned James Watt's interest in scientific instruments as well as Graham Bell and James Clerk Maxwell who were natives of Edinburgh. It was a clear statement from him why HP chose South Queensferry.

"It has been a fundamental policy of the Company to locate our laboratories near universities and colleges, recognising that scientific achievement often stems from close collaboration between academic and industrial communities. The proximity of world-

[6] The tools were mostly designed to go on the metal shop presses for punching and shaping the aluminium sheet.

renowned universities to our South Queensferry plant portends a bright future for us and, we hope, the universities."

In his closing remarks, Lord Hughes referred to the long history of Scotland and South Queensferry, and that the 300 employees at the new factory could now make a history of their own.



To mark the commemoration, HP produced a handsome booklet "*Hewlett-Packard in Scotland 1966*" featuring a Celtic brooch which was used as a graphic design element in the brochure. This had information about the business, the new building, and the production, of which about 70% was exported. The introduction by Dave Packard summed up the day:

"We are delighted to have you join us for the official opening of our South Queensferry plant. We believe today's dedication will mark the beginning of a new and important chapter in the industrial progress of the Edinburgh area. We are certain it opens a new and important chapter for Hewlett-Packard Limited. All of you with us today can justifiably share the sense of accomplishment which is represented by this new facility.

"To Hewlett-Packard employees, I say: Your hard work and enthusiasm are directly responsible for the rapid growth of our UK operations and have made the new plant economically feasible and desirable.

"To Government and community leaders, I say: Your enthusiasm for the industrial future of this area was instrumental in our decision to settle here. Your helpful co-operation has lightened our job in making this move.

"And to the citizens of South Queensferry and neighbouring communities, I say: Your warm hospitality has created a friendly, comfortable environment for our employees and their families.

"We are especially pleased to be situated near old and distinguished educational institutions. Our company works at the ever-advancing forefront of scientific knowledge and we hope our activities here will interact in mutually beneficial ways with the professors, the students, and the ideas of this University community.

"We hope that our company, as it grows and becomes a permanent part of this community, will continue to merit the friendship of each one of you. We are honoured to share with you this welcome to our new home."

David Packard, Chairman of the Board.

The booklet noted that HP then employed over 10,000 people worldwide and marketed 1800 different instruments, systems and accessories (with a turnover of $200M):

"HP's undisputed technological leadership is in the hands of well over 1,000 scientists and engineers at the Palo Alto headquarters and other centres. At South Queensferry a vigorous programme of activity is under way, extending the product development already initiated before the move from Bedford. The UK Company is largely autonomous, has its own all-British management, its own research and development facilities, and is mainly financed from its own retained earnings. The latest US technology and management techniques combined with local skills, engineering talents and enthusiasm, guarantee dynamic growth."

With all these proud and ambitious statements, the employees must have felt under some pressure to deliver the goods! The booklet noted that production had ramped up rapidly at the new factory and already exceeded the volume prior to the move from Bedford.

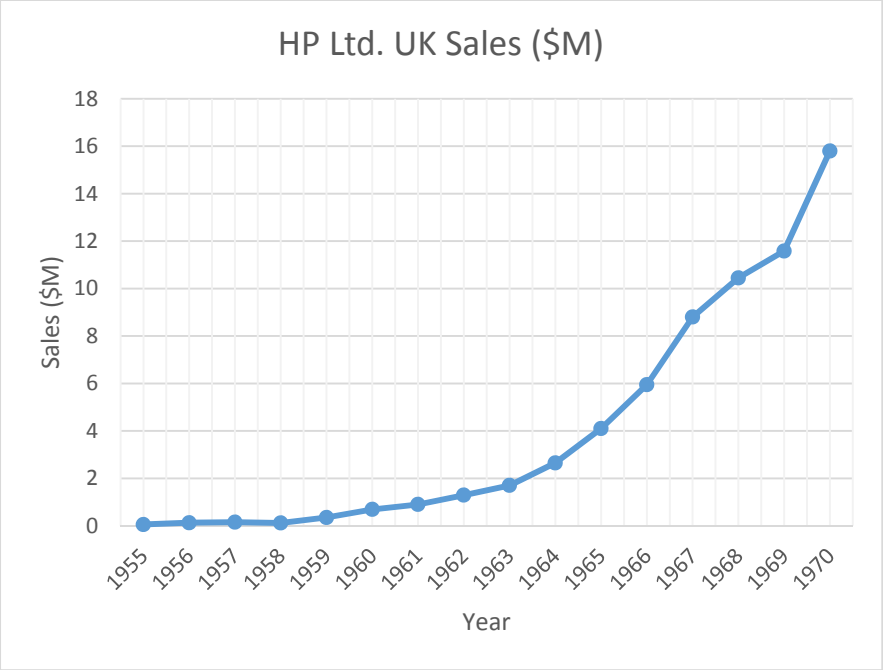
HP's financial year ran from November to October (and still does), so the 1966 fiscal year (FY66) ran from the 1st November 1965 to the 31st October 1966. They must have met the year-end target, as on Friday 18th November a celebration took place with the first of the famous Beer Busts at the South Queensferry factory (more about these in Chapter 6). Employees arrived at work that morning dressed a bit smarter than usual. In the afternoon they headed down to the canteen, which in those days was at the north-east corner of the factory, and here there was free food (usually steak and chips) and free drinks – as much as you wanted. They danced into the night to the music of Cam Robbie's band[7], the Chessmen. The canteen and training room became more like a night club, although there would probably have been a pep talk from David Simpson about how well they were doing – with the added facts, figures and percentages to justify the free booze. BBC Television came along to film some of the occasion for "*The Money Programme*". John Wastle (Tool Room) remembered it, "*Ray Smelek had to run around and push the BBC out of the door before they started filming the factory folks getting sozzled. It must have been a culture shock for Ray – Scots and their liking for bevvy!*"

The Marketing Division

When HP came to the UK in the early 1960s, there were two strands to its business strategy. One was to manufacture selected products locally to avoid or reduce import tariffs on products sold in the UK or other EFTA/Commonwealth countries, the transferred products I described in Chapter 1. The other strategy was to establish a local sales force to sell all HP's products (including imports) directly to customers in the UK, rather than using a representative. This had the advantage of closer coupling to customers for selling and after-sales service. Called the Marketing Division, this was very much an integral part of the Bedford operation and was led by Dennis Taylor who reported to David Simpson, the Managing Director. The Marketing Division handled all UK sales and service activities with customers, and also took care of marketing required for the manufacturing and product development side of the Bedford operation, such as sales literature, promotion and user manuals.

[7] Cam Robbie was a well-known band leader in the Edinburgh area from the 1950s to the 1980s. Apparently, he was a favourite of Princess Anne, having played at her 21st birthday bash at Holyroodhouse.

The sales and service team was set up in late 1962, Hugh Smith being appointed as Service Manager. At that time, there were just five sales engineers and managers covering the UK, but a combination of greater focus along with HP's expanding product portfolio meant sales began to pick up. As shown in this graph, UK sales grew impressively in the years that followed, reaching $6M by 1966[8]. Just to clarify, these were the total sales to UK customers



and included some products manufactured in Bedford but also equipment imported from the USA. (Of Bedford's manufacturing output, around 70% was being exported in the mid-1960s.) The direct sales force had increased to 13 staff by 1966, most of whom were focussed on the mainstream electronic instruments. Of the others, two specialised on the Sanborn medical instruments and one on electronic components. Electronic instrument sales were divided into three regions: Eastern, Western[9] and Northern, with about half the staff focussed on the Eastern region which included south-east England.

In 1966, the Marketing Division employed around 60 to 70 staff, mostly on sales and service. Apart from the direct sales staff already mentioned, there were people involved in post-sales service, applications, order processing, promotion, transport, stores and other administration. A small number of staff, headed by Leon Hughes, worked on marketing for the manufacturing side. When the manufacturing division moved to South Queensferry, the product marketing team led by Leon Hughes also went to Scotland, and soon after Hugh Smith was asked to join them to manage the transferred products. But it didn't make sense for the sales and service team to move north, as most of the customers were in the south of England. In a memo to all Sales and Service Personnel in January 1966, Dennis Taylor explained they would move to new offices in Slough during May and June, around the same time as the Manufacturing operation moved to Scotland.

[8] In the 1960s, the exchange rate hovered around $2.80/£ until late 1967 when the pound was devalued to $2.40. This resulted in an immediate 16% rise in local selling price for imported HP products.

[9] The Western Region staff might be of most interest to former South Queensferry employees as it was headed by Tim Brameld who became Queensferry Marketing Manager a few years later. Also in his team was David Baldwin who rose to become HP Ltd Managing Director in the 1980s, by then a major enterprise, and lastly Derek Smorthit who was well-known in UK sales for many years.

From being highly integrated in the early years, this was the first step in the split between the manufacturing side and sales side of the UK operation. In the years that followed, South Queensferry became an international design and manufacturing operation with its own worldwide product line, as we will see in later chapters, eventually exporting 90% of its output. The UK sales operation grew massively in later years, particularly after HP got into the computer business, and several new facilities were set up in the Thames Valley in the 1980s, including its UK headquarters. South Queensferry's management increasingly reported into Palo Alto for its day-to-day activities, although, being legally a UK company, it had a dotted-line report into UK headquarters for personnel management, consolidated financial statements and tax.

The New Research & Development Team in South Queensferry

HP rightly set great store on its research and product development. To quote again from the 1966 commemoration booklet:

"Hewlett-Packard's research and development teams are commissioned to produce electronic measuring instruments that contribute to the advancement of science, industry and human welfare. Diligently pursuing these ideals, they have consistently introduced revolutionary concepts. Among the Company's more recent contributions are such sophisticated devices as the frequency synthesizer, the cesium beam frequency standard and the microwave spectrum analyzer."

With a number of the key R&D staff in Bedford deciding not to move to Scotland, HP needed to find some new recruits. One of the lead designers, John Hearn, did move north and became the first Engineering Manager at South Queensferry. In the spring of 1965, HP advertised for electronic and mechanical design engineers. Some of the interviews took place at the George Hotel in Edinburgh and apparently Ferranti, who thought their engineers might be a target, put a spy outside to see who was going in. The story is that the "spy" applied for a job too! One of the questions the applicants were asked was, "*Do you have any ideas for new products?*"

HP attracted some talented people. One team, Gordon Roberts and Brian Finnie, came from Edinburgh University where they had been doing research on the use of a noise stimulus for analysing structures, large industrial plant and control systems. They had a contract from the UK Atomic Energy Authority to develop a test method for the Dounreay Fast Breeder Reactor in Caithness. Their proposals were for innovative instruments to generate and analyse noise using digital techniques, a remarkably novel solution in 1965. Their first product was a digital noise generator based on a random number generator, or more correctly a digital pseudo-random sequence generator. These ideas were similar to those used for data encryption and code breaking of the type done at Bletchley Park. There is much more detail about these products in Volume 2, Chapter 13 on Dynamic Signal Analysis.

Some other new recruits came from Ferranti, including Peter Carmichael. When asked about his ideas, he replied, "*A test set for microwave links.*" Peter had been working on the design of microwave radio links at Ferranti in the early 1960s but had difficulty using regular general purpose test equipment to check the performance of the modules and systems. He had a proposal for a special purpose signal generator and measurement receiver which would make these microwave link measurements more efficiently and accurately. At first it might

have seemed that a dedicated test instrument would have a rather limited market compared to the general purpose test gear HP sold, such as signal generators, counters, oscilloscopes and so on. However, Peter argued that microwave links were a growing sector and were being used all over the world for the long-distance transmission of telephone traffic and television signals. Thousands of links were being installed in North America alone, and there was nothing on the market specifically to manufacture, install and maintain this equipment. The microwave links needed to be very accurately aligned or they would add background noise to telephone calls and distortion on TV signals. After speaking to HP, Peter encouraged some of his colleagues to apply, including Finlay Mackenzie and Alistair Lucas.

The interesting point about these product ideas, is that there was almost certainly nothing similar being developed inside HP at the time. The product proposals were all about solving a particular measurement problem for a specific group of customers – an application rather than the measurement of standard parameters (frequency, time, signal level, voltage etc.) for the general electronics market. Most of HP's products were in this latter category, and they did it very well. Product definition was quite easy – using what we called the "*next bench strategy*". You just needed to speak to the electronics engineers at the next bench and they could tell you what features and specifications they wanted in electronic instrumentation. HP had over 1000 engineers so there were plenty of inputs. However, none of them were designing microwave links or analysing large control systems, so the new products being proposed in Scotland were a fresh opportunity.

Some of the electronic and mechanical design engineers recruited in Scotland were temporarily seconded to Bedford to complete existing projects on frequency counters. Magnus Hunter, one of HP's first new graduates in 1965, recalled that he and Alistair Lucas went to Bedford to work on an enhanced version of the 3734A Frequency Counter, raising its top frequency from 2 to 5 MHz. A little later they produced a 12.5 MHz version, the 3735A.

However, HP wanted to get started on the development of the new product ideas in Scotland. This was nearly a year before the factory was completed, so the design teams had to find some temporary accommodation. Gordon Roberts and his team, working on the digital noise generator, set up a design lab in a room at his house in Edinburgh. Peter Carmichael and his colleague Finlay Mackenzie got to work on the Microwave Link Analyzer (MLA), and they were offered some space in Provost Lawson's offices at the South Queensferry Council Chambers. More staff were hired to strengthen these teams but didn't have a place to work, so they were eager to move into the new building. Gordon Roberts commented that the R&D teams were the first group to move in during the spring of 1966, "*We all thought the new plant would last for ever!*"

Building up the Business

It would be a while before these new Queensferry-designed products would be on the market and producing revenue, so meanwhile the Division grew its business by adding to the transferred product portfolio. Some of the products they added were Audio Distortion Analyzers (331A-4A), Test Oscillator (651B), RMS AC Voltmeter (3400A), the new 180 Series Oscilloscopes (with plug-ins), Moseley X-Y Chart recorders, Harrison Power Supplies (6200 Series) and Sanborn ECG Recorders and Series 780 Patient Monitoring units for intensive care. I remember these medical instruments in production in the early 1970s. They were quite distinctive, being painted a shiny ivory colour rather than normal HP colours,

presumably to make them look clinical and hygienic. Orders for all these transferred products continued to rise, and August 1967 was the best ever month with orders of over $1M.

By late summer 1967, the first two Queensferry products were ready to launch. In the December 1967 issue of *Readout*, David Simpson commented on the success:

"Our R&D engineers have been covering themselves with glory with the release of the 3722A Noise Generator and the 3701/2/3A Microwave Link Analyzer to production. The 3722A was shown at a large electronics show in San Francisco, Wescon, and made quite a technical impact, which is reflected in a forecast 15 units per month in 1968 – we have already sold 34 units. The response to the MLA has been overwhelming and Peter Carmichael's team have had a very hectic time designing and developing."

Finlay Mackenzie, 'second in command' on the MLA project, took the new instrument on a three week tour in North America in October 1967, visiting all the key microwave link manufacturers and operators. One customer commented, "*This is the best instrument HP has introduced since its 8551B Spectrum Analyzer.*" For those in the know, this was praise indeed as the 8551B was one of the finest instruments HP produced in the 1960s. Production volume on the MLA was initially 15 units per month but rapidly rose to 30 units per month. Its selling price at launch was $7.2k, so the sales volume quickly reached about $200k per month which was over 20% of the Division's business. It was a highly significant instrument in the history of the new Division, and I have covered the story of the MLA and its inventors in more detail in the next chapter.

These home-designed products were a big step forward, as they truly had a global market, unlike the transferred products which only sold in Europe and the Commonwealth. A high proportion of the Noise Generator and MLA sales were exports to the USA, HP's home market.

At the end of 1967, the prospects for the Division looked very promising, with strong sales of the transferred products and a new contribution from its own worldwide product line. There was a lot of growth in business and employees in the 18 months since the factory had opened, but high growth also leads to challenges and management problems, which began to emerge in the months that followed.

However, as Christmas 1967 came round, employees ended the year on a high note with a nice Christmas bonus and profit sharing. No doubt there was a Beer Bust too. The Christmas Dance was held in the North British Hotel (now the Balmoral), Edinburgh on December 20th. "*After a magnificent dinner, 600 employees and friends made their way to the Banqueting Hall and its adequate supply of liquid refreshment, where there was dancing to Jim Brown's Band until the small hours.*" The Division sent out special Seasons Greetings signed by the

management team. The Christmas decorations reflected images of some of the products including the MLA and Noise Generator.

1968 – A Turbulent Year of Challenges and Changes

In his report at the end of 1967, David Simpson commented on some developing quality problems[10]:

"I visited HP Canada in Montreal and saw some really poor workmanship on a 180A Oscilloscope and an X-Y Recorder that had just been unpacked from their Queensferry boxes. There were dry-joints, solder blobs, scratches, out of specification performance, and I was left saying, 'I don't see how it could possibly happen.' How does it happen? Do we blame the operator, the test man, the inspector, the Q.A. man, the manager? Everyone is involved, but in HP, as you know, we rely upon people doing high quality work without dozens of inspectors checking every stage. I want you all to think about this and to remember that in a more and more competitive world, the customer will only buy the best. The best must be HP."

These workmanship problems may have been a combination of shipment pressures, resulting from the growth in orders, and also the fact there were a lot of recently recruited staff. Former employees have commented that the components being sourced locally were not always of the highest quality, which affected reliability. Embarrassingly, quite a lot of these problems emerged in the flagship Microwave Link Analyzer. Customers were delighted with the new product, but not when it broke down. It used quite a lot of reed-relays (delicate electro-mechanical switches) which turned out be intermittent. The initial solution was to find some better reed-relays and select the best ones at the factory. Longer-term, they were designed out and replaced by electronic switches. Another problem was related by Bill Lauchlan, one of the test engineers, "*Reliability was a big problem on the early MLAs. All the wires connecting to PC Boards were through push-on connectors. Unfortunately they would loosen off after the instrument got bumped around a bit. Later we changed over to all-solder connections.*" Quality had to be designed-in as well as built-in.

Perhaps aware that the rapidly expanding division needed to pull together and adapt its management structures, David Simpson arranged a management retreat at the Reo Stakis Dunblane Hydro over a weekend in February 1968. Around 50 to 60 managers and supervisors assembled, including several staff from the sales division in Slough. It's not clear what was discussed in the six workshop groups, but it is significant that Bill Hewlett and Dave Packard were present some of the time, so it must have been important. In general, HP's management style was quite "hands-off", but Bill and Dave did get involved if they thought something needed sorting out – they certainly weren't there for a holiday. Magnus Hunter remembered that on the Sunday there was heavy snow, "*The bus took us from Dunblane to South Queensferry and I picked up my car in the factory car park, and drove home late at night through deep soft snow on the road to Edinburgh.*"

Magnus observed that there were probably three key issues. There was the high failure rate, particularly on the MLA, and customers were complaining. There was declining morale on

[10] Annual failure rate showed a marked increase: 10.6% in 1966, 15.9% in 1967 and 26.4% in 1968 which was equivalent to 1 in 4 instruments failing in the first year. This was probably due to MLA reliability. Following attention this went back to around 15%, with an annual warranty cost of 1.5% of revenue.

the production lines due to the expansion and lack of leadership, and thirdly, David Simpson was carrying too much on his own shoulders as he lacked a full team of good functional managers. Magnus recalled there were some further meetings in the late spring, when groups of people were taken aside to identify the problems.

One problem was the R&D department. Initially it was led by John Hearn, but when he transferred to the USA, there was a difficulty. The two possible successors were Peter Carmichael and Gordon Roberts, but it was well known that they didn't get on and would never be able to work together, so David Simpson took on the role in addition to his other responsibilities. Eventually, Gordon was appointed as the new R&D Manager, and Peter moved to production engineering and later became Quality Manager. Although a considerable loss to the design side, Peter was able to focus his engineering skills on the reliability and quality issues which were pressing.

There were various other management changes during 1968, but two in particular are worth mentioning. Not long after the Dunblane conference, a new Marketing Manager, Mike Meara, was appointed. Originally from South Africa, he worked in the UK and then went to California where he got an MBA at Stanford University while working for HP in Palo Alto, before transferring to Scotland. A second "import", in August 1968, was Ray King as the new Manufacturing Manager. Ray had been successful in HP's Loveland Division in Colorado. He was an American-style "big guy", and gave the production side at Queensferry new impetus. These appointments certainly "beefed-up" the management team, and there is the sense that Bill and Dave had a hand in these changes.

While all this management churn was going on, the business continued to expand. In a curiously-titled article, "*Auld lang syne is now*", in the April 1968 issue of HP's *Measure* magazine, there was an update on progress. The payroll at South Queensferry had reached the 450 mark, while the sales division in Slough accounted for another 127 people. Recruitment of the right new staff was important, and the article gave some insights on this:

"The apparent labour shortage that had helped prompt the move from Bedford was not a problem in the Edinburgh area. However, the HP recruiters found a challenge or two. Home telephones, for example, are a rarity in the area, so getting in touch with job seekers turned out to be an exercise in mass communications, using advertising, publicity, bulletin boards and other techniques to attract people. As it developed, the Company enjoyed unusual success in this undertaking. Applicants flocked to the site, and HP was able to maintain a very high standard in its selection. Oddly enough, more than 80% of applicants already had jobs, but the HP approach was new and interesting to them."

This new approach was HP's management ethos, known as the "HP Way", which gave individual employees more freedom and less "over-the-shoulder" supervision. I've covered this in more detail in Chapter 5. The article also noted that the Microwave Link Analyzer was already the Division's top-selling product, just a few months after introduction. The March 1968 issue of *Readout* described the product as a "staggering success", with the factory receiving a rush of orders and many of the production staff working extra time to keep up with targets.

In an internal Newsletter in August 1968, the Managing Director, David Simpson, reviewed business performance after the factory had been open two years:

"July orders of $1.6M, an all-time record for HP Ltd., set the scene for another very successful month. Production was ahead of target at $863k, and best of all, operating profit rocketed up to 27.6%. August, I know, is turning out to be a tougher month but let's all try to keep up the tempo of production and shipments, so that profit sharing will be really something at the end of the year."

The production volume of $800k was roughly double the figure for the final year in Bedford three years earlier, showing the increased capacity and range of products in manufacture. The mention of profit sharing would have been particularly interesting to employees since at that time it was calculated on the profit at the Scottish division, not the company as a whole. David also referred to the new products they would add in 1969:

"Right now we are in the middle of planning our activities for next year, and among the exciting new products we will be making is the 2116B Computer (HP's first mini-computer). Jack Dellow will be going to Palo Alto next month to start the transfer procedure. Andy McAvoy is going to Colorado Springs to bring back the 1802A 100 MHz plug-in for the 180A Oscilloscope."

The "Queen's Award" and a new Managing Director

At the end of 1968, David Simpson decided to move on to some new opportunities after he was invited to join the board of George Kent Ltd. at the time of its merger with Cambridge Scientific Instruments (famous for the first commercial scanning electron microscope)[11]. After those early years, shaping the HP UK operation, he started-up many high-tech businesses in an amazing entrepreneurial career, lasting over 65 years. When I met him in 2013, he said in some ways he wished he'd stayed at HP, but perhaps his true vocation was in new ventures.

His place was taken by Dennis Taylor who had managed the sales side of HP UK from 1962. Dennis took up his new position as Managing Director at South Queensferry in February 1969. In some ways it was an unusual choice as normally HP appointed its top engineering staff into these senior positions. Dennis had been involved in design at EMI in the 1950s, but most of his experience was in sales. He certainly knew the UK business very well and would be able to rely on the new team of functional managers at the factory, appointed the previous year.

Dennis had a pleasant duty in his new job when, on the 21st April 1969, the Division received the Queen's Award to Industry for technical innovation on the Microwave Link Analyzer. The Lord Lieutenant for West Lothian, the Marquess of Linlithgow, visited the factory to present the trophy and congratulate the team led by Peter Carmichael. In his letter to all staff, Dennis Taylor said, "*I would like to congratulate all of you, and particularly those concerned with the MLA project, for their efforts. This really establishes our Company in the UK as a significant contributor to British industry and I am sure that by your continued diligent effort,*

[11] This merger, which also involved some other companies, was part of a government sponsored initiative by the Industrial Reorganisation Corporation (IRC) to create the largest instrument manufacturer in the UK. David recalled, "I became the youngest director of the new group, responsible for strategy. I believed that I could transform an "old world" organisation into an HP-like company. Although we did quite well at Kent/Cambridge, it was never an HP." Later, David became President of the Gould Corporation Inc. in 1980. He was awarded a CBE for services to the electronics industry, and has several honorary degrees.

HP Ltd will go from strength to strength." Graeme Stewart remembered that all employees got the rest of the day off after the Queen's Award presentation.

Later in the year, there was another landmark with the introduction of the Correlator (3721A), which was the third new product originated at South Queensferry. It was the other half of the noise testing solution proposed by Gordon Roberts and Brian Finnie for analysing structures and control systems, and was the companion to the Noise Generator (3722A) introduced a couple of years earlier. Conceived in the spring of 1967, it was the first time such a complex measurement had been implemented entirely using digital techniques, and the designers took advantage of the first generation of logic integrated circuits which had just come on the market. In effect, they built a special-purpose fixed-programme digital computer in a measurement instrument. Two and a half years later in November 1969, the Correlator was ready for its first production run on the line. (There is a detailed description of the Correlator in Volume 2, Chapter 13).

Dennis Taylor noted that the Correlator would have a world-wide market with applications in almost every field of engineering and research:

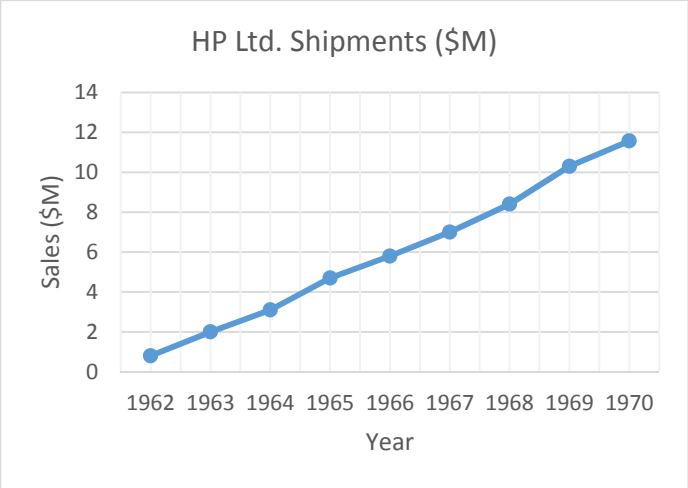
"The Correlator was first introduced at a press conference held in the USA in September. The instrument was very well received with excellent coverage in technical journals reaching a wide range of scientific and industrial interest. This was followed by an equally successful UK press conference held in London in October. To date we have sold 29 units."

The new technology in the product was a challenge, and Magnus Hunter transferred to R&D full-time to work on production procedures and test methods, and to make sure it was suitable for production when transferred around November 1969. The first customer units went out in early 1970.

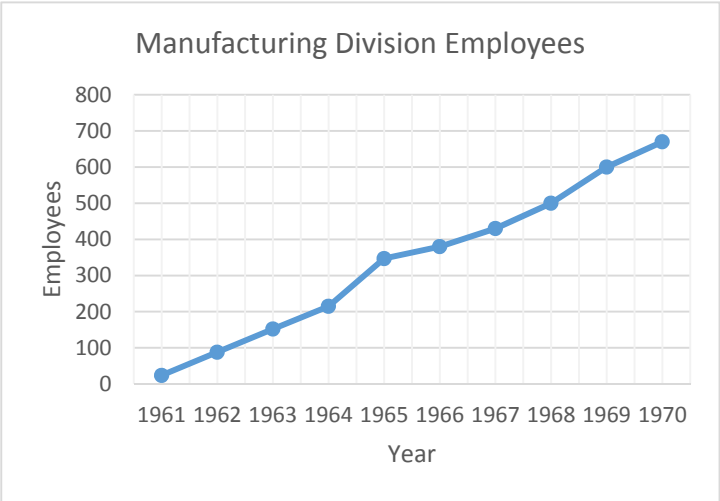
Taking Stock

Coming to the close of the 1960s, I'll round this chapter off by taking stock of how far HP Ltd. had come since it set up business in Bedford in 1961 with just a handful of employees. In the eight years that followed, the company moved to a smart new factory in Scotland, and by 1969 employed around 600 people. By then, it manufactured around 70 different transferred products including a range of general purpose test equipment (oscilloscopes, voltmeters, counters, and signal generators), computers, and medical instruments for hospitals. Alongside this, the design team in Scotland had developed three very original and innovative products that took HP into new markets, and many more would come from the South Queensferry R&D lab in the years that followed.

In 1969, the annual turnover had reached $10.3M (£4.3M), of which around 25% was generated from the three new Scottish products, predominantly the MLA. The steady growth of business over the years is shown in this graph.



The number of employees increased in line with the business, with just 24 at the end of 1961 reaching around 600 at the Scottish factory eight years later. There would by then have been over 200 additional employees in the UK Sales and Service Division in Slough. Despite the disruptive effect of the move from Bedford to Scotland, HP managed to retain many of its key workers and had little problem recruiting new staff in Scotland. This graph shows the growth in employee numbers over the years.



The UK operation had made a very solid start, and the home-designed products, particularly the MLA, had given the Division a clear identity in the Corporation, which would define its future directions. In the next chapter I will tell the story of the MLA and its inventors, and how this evolved into the Division's speciality – Communications Test.

Acknowledgements

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5

Chapter 5

Working at HP

"Working at HP" was the name of a one-day introductory training course for new recruits at South Queensferry. Used for quite a few years, it could be described as an induction or orientation to the wonders of the HP management philosophy, famously known as "The HP Way". When the South Queensferry factory opened in 1966, the management techniques were as revolutionary as the electronics technology it produced. The HP Way underpinned the whole ethos of the place, its organisation, its open-plan office environment, and the way employees were encouraged to think about their work and communicate with each other. It wasn't a case of, "Do it the HP Way, or else!" – well, not most of the time anyway.

Over the years, much has been written about "The HP Way" and how it shaped the Company. One of the most interesting books is by Dave Packard himself entitled "*The HP Way – How Bill Hewlett and I built our Company*". Published in 1995[1], the year before Packard died, every HP employee was given their own copy with a letter from the CEO at the time, Lew Platt. More of a personal memoir, the book describes how the founders wanted the Company to operate from the earliest days in the 1940s. The idea was to create a family atmosphere, a single status organisation that encouraged communication and trust between staff, so employees felt they belonged to something. It created loyalty. It was the antithesis of the assembly line model of the time, where the individual employee was a tiny and insignificant cog in a huge machine.

Hewlett and Packard believed if employees were given a lot of freedom to achieve clearly defined objectives and the responsibility to do it with minimum supervision, they would be more satisfied in their work and also more creative and efficient. It's tempting to see this as vaguely altruistic, paternalistic and Utopian; the "soft management" approach of consensus and compromise. However, Bill and Dave were not running a charity – the formula focussed very much on business and obviously worked, as for many years HP achieved remarkable growth, innovation and profit. The HP Way was a business success story as well giving employees job satisfaction. It was significant that very few employees left HP; staff turnover was low, and many people spent their whole working life with the Company, often retraining and moving into different jobs and responsibilities as things evolved. Many of the female staff who left to start a family, returned to the factory later. This led to valuable continuity in the workforce, and the talented engineering staff HP attracted stayed with the Company.

[1] "The HP Way" by David Packard, Harper Collins (1995), ISBN 0-88730-747-7. A lot of the material was shadow written by David Kirby and Karen Lewis (HP PR and Archives respectively). Karen Lewis told me some years later, "*I worked very closely with Dave Packard in the last five years of his life. He was a brilliant, quick and decisive man, and working with him, day after day, on the book project was one of the highlights of my career.*" Chapter 11 in the book focusses particularly on the HP Way management philosophy.

In his book, Dave Packard wrote about his trust in people:

"From the beginning, Bill Hewlett and I have had a strong belief in people. We believe that people want to do a good job and that it is important for them to enjoy their work at Hewlett-Packard. We try to make it possible for our people to feel a real sense of accomplishment in their work. Individuals should be treated with consideration and respect, and it has always been important to us to create an environment in which people have a chance to be their best, to realise their potential, and to be recognised for their achievements."

The Silicon Valley author, Michael Malone, goes so far as to describe Hewlett-Packard as the "*World's Greatest Company*" in his book[2] "*Bill & Dave*". This is a comprehensive analysis of the personalities and the business, and also of what happened to the Company after the founders departed. Malone summarised the family ethos of HP thus:

"Hewlett-Packard, at its best, was the most emotionally complete work experience of any major public corporation, ever. This was the HP Way at its full flowering: a fabric of rules, experiences, myths and legends, relationships, and rituals as complex as any real family – and just as difficult to describe to an outsider."

The HP Way idea started in California, but the basic philosophy transferred successfully to other countries and cultures, including Scotland[3] where its values seemed to fit quite comfortably. From the foregoing, you might believe that working at HP South Queensferry was a "bed of roses" which it was not, however most of the time things went pretty well along the HP Way. Many of us who worked there over the years will recall managers who did the HP Way thing brilliantly, while others hardly did it at all and probably shouldn't have been supervisors. Nevertheless, the culture and the management processes were embedded in the place from the beginning and were reinforced by training and procedures.

In the next part of the chapter, I'll look at some key ingredients of the HP Way and how they worked at Queensferry.

Management by Objective

This was the cornerstone of the HP Way. Management by Objective (MBO) was the idea of defining and setting goals, targets or values, and then giving employees and organisations flexibility on execution. It was "hands-off" management, in contrast to Management by Directive where individuals and groups were told specifically what they should do. It was fundamental to Hewlett and Packard's philosophy of de-centralization, giving a fair degree of autonomy to the Company's operating units. The MBO concept was intended to operate right across the organisation, from top to bottom. It was most significant at the division level, where local management had a lot of freedom to run their part of the business. The South Queensferry plant ran like a small self-contained operation within the larger Corporation. It was self-financing and a profit centre within the company, while using the global sales and

[2] "Bill & Dave" by Michael S. Malone, Portfolio/Penguin (2007), ISBN 978-1-59184-152-4.

[3] Weather apart, maybe Scotland and California do have something in common as illustrated by the light-bulb joke. "How many Californians does it take to change a light-bulb? Six, one to change the bulb and the other five to share the experience. How many Scots does it take to change a light-bulb? Two, one to change the bulb and the other to get dressed up in a kilt and sing about how great the old one was!" Experiences shared.

service network to distribute its products – the flexibility of a small company while applying the strengths of a larger organisation.

The objectives for South Queensferry were simple: To develop test products for the global telecommunications market, and to deliver the target growth and profit on its business. Beyond that, it was left to the Division management to decide what products to build and for which markets, what processes to use in production, as well as other factors such as recruitment and pay, product pricing and so on. In other words, the business strategy was locally driven, though occasionally vetted by corporate management. It felt more like a dynamic small business; it all seemed to be in-house and so created a strong sense of local ownership. This same model was replicated at the many other quasi-independent product divisions in the USA and internationally. The business model was very effective, certainly in the earlier years when the objective on product charter or field of interest could be clearly defined for each division (oscilloscopes, signal generators, signal analyzers, frequency counters, medical, computers and of course, telecommunications test). By 1978, there were around 30 of these operating divisions, most of them with worldwide product responsibilities. Hewlett and Packard believed individual divisions should not have more than 700 to 1000 employees, to ensure good internal communications.

MBO was also supposed to apply to individual employees and teams in the Division. At each employee's annual appraisal, their supervisor would set some objectives for the coming year. These could be about maintaining existing levels of performance and also looking at new ideas and improvements, which we called stretch or development objectives, depending on the scope of the job. The key to MBO was giving employees space, and the freedom to make mistakes and learn from them, as John Wastle commented,

"First and foremost I would always stick to the basic rule: trust your employee, give them the responsibility and ownership of their tasks, learn to stand back and resist the urge to step in, interfere and take over. If things don't go to plan or the exact way you want them to go, try to make alternative suggestions, but let the employee work it out as their responsibility. Gradually this will build employee confidence and ability, and their trust in you."

At the top of the MBO tree, so to speak, were the Corporate Objectives which Hewlett and Packard began to formulate in the 1940s and 50s. In his book, "The HP Way", Packard described succinctly what they were trying to achieve:

"Any organisation, any group of people who have worked together for some time, develops a philosophy, a set of values, a series of traditions and customs. These are, in total, unique to the organisation. So it is with Hewlett-Packard. We have a set of values – deeply held beliefs that guide us in meeting our objectives, in working with one another, and in dealing with customers, shareholders, and others. Our corporate objectives are built upon these values. The objectives serve as a day-to-day guide for decision making. To help us meet our objectives, we employ various plans and practices. It is the combination of these elements – our values, corporate objectives, plans and practices – that form the HP Way."

By the mid-1960s, these had evolved to seven Corporate Objectives:

1. **Profit** – best single measure of our contribution and source of corporate strength.
2. **Customers** – improve the quality, usefulness and value of our products to them.
3. **Field of Interest** – seek new opportunities where we can make a contribution.

4. **Growth** – sustainable growth, a requirement for survival.
5. **Employees** – To provide employment opportunities for HP people that include the opportunity to share in the Company's success, which they help make possible. To provide for them job-security based on performance, and to provide the opportunity for personal satisfaction that comes from a sense of accomplishment in their work.
6. **Organisation/Management** – To maintain an organisational environment that fosters individual motivation, initiative and creativity, and a wide latitude of freedom in working toward established objectives and goals.
7. **Citizenship –** contribution to the local community and institutions.

I have shown the full text for 5 and 6, as these are relevant to this chapter and seem to embody the main facets of the HP Way which was to empower employees. The Corporate Objectives changed little over the years: the version published in 1986 was broadly similar, with some changes to the wording.

In essence, I think Packard was quite conservative in his approach to business. He seemed cautious about excessive growth and speculative investments, and this gave a reassuring stability to the Company for many years. Hewlett and Packard had a strong antipathy to the short-term strategy of "hire and fire". They wanted to provide job security, perhaps because they had seen the devastating effects of mass lay-offs in the Great Depression, as Packard recorded in his memoir. An illustration of this was HP's policy when business was slack to ask everyone to work a nine-day fortnight at reduced pay rather than lay people off. As Finlay Mackenzie said, "*The spirit of the place was such that employees were happy that everyone hurt a little so that no one hurt a lot.*"

MBO and the HP Way relied on regular, informal communication between all levels in the organisation and there were several strategies to help this.

Open Plan Office and the Open Door Policy

In his book, Michael Malone described the Open Plan Office as the visual analogue of the HP Way. There were few physical barriers to communication, and the layout said, in effect, this is a single status company – a sort of "democratization" of the workplace. There were no offices with doors, even for senior managers. They had larger areas to accommodate a meeting table, but otherwise it was the same furniture as the rest of us, there were no frills. When the South Queensferry factory opened in 1966, this was very unusual in British industry with its traditional hierarchies, status symbols and multiple canteens, all of which promoted the "them and us" culture. Of course, the open plan and the HP Way were imports from the USA, not home grown.

As I mentioned Chapter 2, HP's brief to the architects of the new factory was for wide open uncommitted space, especially on the upper floor containing offices, R&D labs and main assembly lines. Department layouts were created using the office furniture and work benches, with only a few low partitions which could be moved if necessary. Even the production area merged seamlessly into the office area. We perhaps didn't appreciate it at the time, but this made communication very natural and informal, particularly between departments, and undoubtedly led to cooperation and a cross-fertilization of ideas which would never have happened if employees were holed-up in small offices. It all helped to create that feeling of belonging to one team.

Another aspect of this informal communication was the Open Door Policy. The intention here was that managers and supervisors were always accessible to employees to discuss ideas, problems or whatever. From the Managing Director downwards, you didn't need to make an appointment; if you went round to their desk they would speak to you if they weren't in the middle of something else.

First Names and MBWA

All employees were expected to wear a name badge. These were quite simple, with the person's full name and the HP logo in one corner – not like the security tag with photo ID of today. In the early days, they were engraved in house with white writing on a black background. Later blue on white, with an HP badge in the corner. If you travelled a lot outside the division, the name badge had South Queensferry Division, for example, along the bottom. Wearing this at another division or sales office, immediately made you part of the bigger HP family. Like me, I imagine many former South Queensferry employees still have some of their name badges.

In the factory, everyone referred to each other by first names, including the Managing Director. In the 1960s, this was quite unusual. While you might use first names within a work group, a supervisor or manager would usually be referred to using his or her surname and title. In all my years at HP, I don't remember anybody ever being addressed using their surname (except as a joke), not even Hewlett and Packard themselves. It would have seemed so formal you might expect something bad was about to happen. When I took up my job at Queensferry in 1970, I remember my dad quipped, "*Ah yes American companies, only when you are really familiar with someone do you get to know their second name!*" He was the headmaster at a traditional boys secondary school where pupils and staff were all referred to by surname only, first names were never used. It's hard to imagine anything more different to HP, where the universal use of first names was intended to create a family feel in the organisation, a feeling of belonging to something.

Another idea used to promote working relationships was "*Management by Walking Around*", or MBWA. According to his memoir, Dave Packard came up with this idea while in his first job at General Electric. He found a solution to a complicated technical production problem by informal chats with staff on the production line. He believed supervisors should have regular informal contact with employees in their department as this would give them a better understanding of the task, and they would make better decisions by tapping into the collective knowledge and experience in the group. The other side of the coin was that employees would feel more valued and their contribution appreciated if the manager regularly asked them about their work and complimented them on their achievements. It was a great motivator, and it was also an opportunity for staff to raise concerns with their supervisor.

The MBWA emphasis was on informality. You were not supposed to walk around simply because you wanted something done or thought there was a problem to be fixed. You wanted to avoid the idea of a hidden agenda. It was best to schedule some time each week for MBWA and not link it to other things that were going on. With hindsight, I now realise I didn't do enough of it as a supervisor, but I wasn't alone. Years later, I worked for a manager who didn't do MBWA at all and I felt quite isolated, having no idea how I was doing until I got a pay rise at the end of the year.

Of the various HP Way ideas, this was probably the most powerful and yet the least used. It was far too easy for managers to look on it as an optional extra, and there were always more important things to do such as meetings, planning, budgeting and fire-fighting. It also required skills in social interaction, and some managers were better at this than others. From time to time an edict would come from Corporate that we needed to do more MBWA, and I recall when John Young was CEO he sent a message that supervisors would be assessed at their annual review on how well they did MBWA. However, over the years I think the focus on MBWA declined, which was unfortunate.

Performance Evaluation

Everyone had an annual review by their supervisor called the Performance Evaluation (PE). This involved a "one-on-one" meeting and the use of the Performance Evaluation Form. The PE form was the key element. The first page had a section to list the key responsibilities and tasks for that particular employee's job. Then followed sections for around 10 specific performance criteria such as technical competence, teamwork, communication skills, dependability, work quality, leadership, organisation and so on. For each of these, the supervisor was supposed to fill in something constructive about the past year and what the goal might be for the next. The employee's performance on each of these criteria was ranked in one of five levels: improvement needed/acceptable/good/very good/exceptional. Then there was an overall performance summary with similar ranking, and this told the employee how they scored for that particular job. Next came one of the most important sections which listed the objectives for the coming year, in the spirit of MBO. These objectives could be about maintaining performance and often included some new assignments or gaining new skills, possibly through internal training courses. Finally, there was space for the employee to write something if they wished, perhaps about their aspirations, maybe comments on management effectiveness – or otherwise!

From what I remember, there were three versions of the PE form: a general one for most staff, a technical one for the engineers and a management one for supervisors. They were similar, but had different specific performance criteria.

The problem was filling them in. As a supervisor, if you had several employees reporting to you, it amounted to a considerable task over the year. Of course you could fill it in like a school report – "A good year's work" or "Could try harder" – though the Personnel Department was expecting more constructive comments. Writing something helpful for the employee, and tactful if improvements were needed, was challenging and took time. Inevitably, supervisors would put off doing the PE which often got three to six months overdue.

By the early 1980s, the blank PE form was being generated by computer with name and employee number[4] already included. Personnel logged it and sent reminders if it wasn't completed on time. There was no escape. Then somebody had the bright idea that employees couldn't be given a pay rise if they didn't have an up-to-date PE on file as logically they wouldn't have a current performance rank. No supervisor wanted to go to their

[4] The HP SQF employee numbers used 5 digits. Mine was the memorable 66699!

staff and say there was no pay rise because they hadn't bothered to do the PE! It didn't guarantee quality, but it made sure they were done on time.

Done conscientiously, the PE was an excellent process that reflected the HP Way philosophy of treating employees with respect. HP considered Performance Evaluation as very important, and for many years we had workshops and training courses at South Queensferry for supervisors on how to do it effectively. Ideally the filled-in form would reflect what was discussed between supervisor and employee – you weren't supposed to fill in the form and hand it to the employee as a "fait accompli". After the one-on-one meeting, usually in a private conference room, the employee would review the completed form, add their comments and sign it. It then went to the supervisor's boss for review before being filed by Personnel.

If you've got a good idea, it's tempting to try and make it better. This was the fate of the PE form. During the 1980s and 90s, more sections were added to it. There were job position statements, stuff about who the customers were and the deliverables, maintenance objectives, development objectives and how you as a supervisor could help. You were also encouraged to put in numerical measures for performance, percentage improvement or whatever. It was well meant, but became very tedious and repetitive. I felt the process got bogged down with its own dead-weight.

Sometime in the late 1990s, it was replaced by a slimmed-down form. You could fill it in on-line and, when complete, an email was sent to the employee telling them they could access it on the server. It was a lot more impersonal than the early days, but probably had better punctuality as the form was limited to 2000 characters! It seemed a bit watered-down, and reflected the general decline of the HP Way in the 1990s, as discussed in a later chapter. It also went hand in hand with a new method of salary administration, which I'll describe next.

Job Grading and Salary Administration

All the jobs at the South Queensferry factory were allocated a Grade from 1 to 13, which determined the salary band. Deciding on the grade for a particular job was a difficult business as you had to compare it to other jobs with different content. Staff in Personnel spent several years refining this to come up with a process that seemed fair and impartial. Each job description was scored on specific attributes such as qualifications needed, experience, technical skill/knowledge, people responsibility, impact on the business, creativity, physical dexterity and so on. This was supposed to check for parity between different jobs on the same grade. Some jobs had a large population of employees, for example Production Assembly Specialist (PAS I/II/III) and were easier to assess, while others, such as "Product Quality Manager" or "Social & Recreation Manager" had just one employee, which meant it was possible that the value of the job might be coloured by the particular individual's capabilities, something job grading had to avoid.

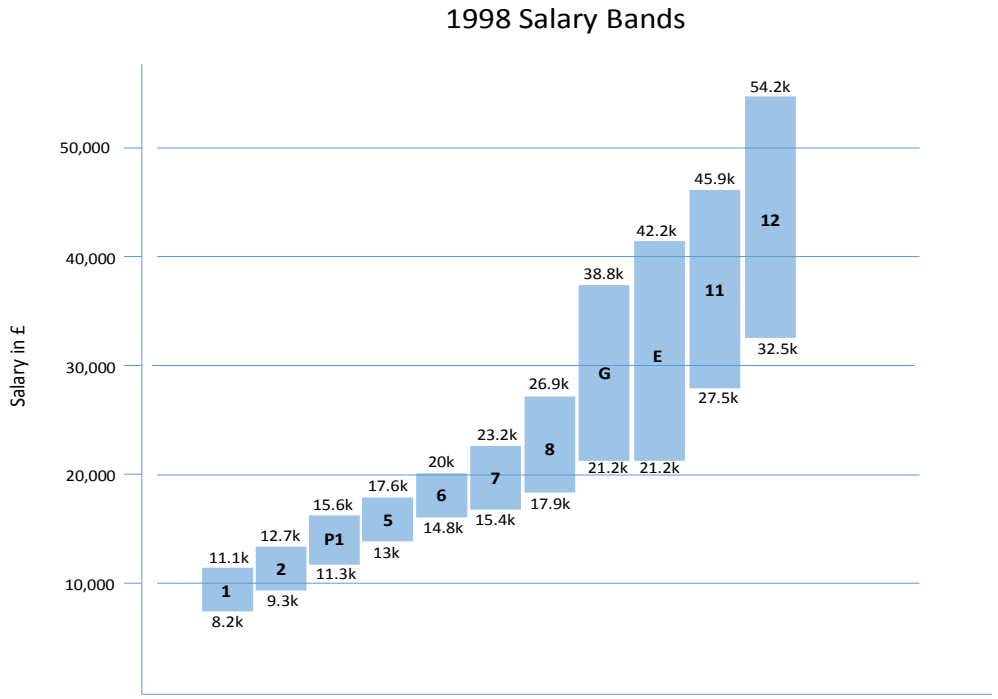
The QTD Job Matrix from 1988, on an adjoining page, gives an idea of the scale of the task. Many of the higher-grade jobs (Grade 8 and above) were engineering related and involved with new product development and introduction. Most of these employees were graduates and it demonstrated the importance HP accorded to this activity. The Job Matrix defined everything except Functional Managers since they were covered by the Executive Grades, managed by Corporate rather than at South Queensferry. In later years, a Grade 14 was added

QTD JOB MATRIX - MARCH 1988

GR	MARKETING	R & D	MANUFACTURING	Q.A.	ADMIN	PERSONNEL	P.C. SHOP	GR
13	Product Mkt. Mgr. Sales Manager	Section Manager	Materials Manager II Manufacturing Eng Mgr II		Comms Facilities & MIS Mgr.		P.C. Engineering Mgr.	13
12	Product Support Mgr. Product Manager II Sales Dev. Mgr II	Project Manager II	Manufacturing Engineering Mgr I Engineering Services Manager	Product Quality Mgr.	P.C. Div. Accounting Mgr QTD Accounting Manager		Accounting Manager	12
11	Product Manager I Contracts Manager	Project Manager I R&D Eng. Serv. Mgr. Tech. Centre Mgr.	Application Specialist IV Manufacturing Engineering Supv. Manufacturing Section Manager	Quality Eng. Mgr.	Telecomms/IOS Manager	C & B Manager Training & Dev Manager	Production Manager	11
10	Reg. Sales Eng. II Prod. Mkt. Eng. II Prod. Support Supv. Marketing Eng. II Print Serv. Mgr.	Sen. Prod. Designer Sen. Design Engineer Computer Serv Co-Ord	Fab. Production Mgr. Prod. Planning/O.P. Mgr. Senior Manufacturing Engineer Special Handling Supv.	Statistician Quality Audit Manager	Maint. Manager Traffic Manager Facilities Eng. Supvr Accounting Supervisor	Mgt. Development Manager Employment Manager	Senior Process Engineer	10
9	Product Support Eng. Prod. Mark. Eng. I Reg. Sales Eng. I Prod. Mkt. App. Eng.	Product Dev. Eng. Prod. Design	Manufacturing Eng., Materials Eng. Tool Eng. Mgr., Man Specs Mgr. Mfg Handling Mgr., Appln. Spec II Manufacturing Section Supervisor	Reliability Phys. Eng. Elect Equip Maint Supv. Man Audit/Prod Reg Supv. Standards Engineer Reliability Engineer Inst. Reliability Supv.	Facilities Engineer Building Services Supvr Accountant	C & B Specialist Training & Dev. Spec.	Process Engineer (P.C. Production Supv)	9
8	Technical Author II Prom. Pubs. Supv. Pubs. Prod. Supv. Illust. Mkt. Services Photo Studio Supv	Assoc. Dev. Eng. Micro-Elect Supv. Assoc. Prod. Designer	Assoc Materials Engineer Toolroom Manager Application Specialist I Assoc. Manufacturing Engineer	Assoc. Rel. Eng. EMC Engineer	Safety & Security Officer Maint Supv - Elect/Mech Office Automation Supv. Applicn Spec I, Customs Supv.		Maintenance Supervisor	8
7	Technical Author I Commercial Admin.	Librarian & Info. Officer Project Support Co-Ordnr P.C. Design Supv. Computer Aided Designer Computer Systems Admin.	Test Engineer II, Sheet Metal Supv M/C Shop Supv., Tool Engineer I Specials Engineer, Buyer Assist. Manufacturing Engineer Silkscreen Supervisor	I.E. II Systems Admin Comp. Rel. Syst. Eng. Assoc. Rel. Physics Eng.	HPDESK/O.A. Applicn Specialist Payroll Controller Assistant Accountant	Social & Recreation Mgr	Process Quality Engineer Inspection Supervisor	7
6	Photo Tech.	Micro-Elect Eng.	Test Engineer I, Main Stores Supv Production Controller, Toolmaker Master Scheduler, Receiving Supv. Manufacturing Assembly Supervisor Metal Finish Supervisor	Component Rel. Eng. I.E. I	Tech. Maint. Spec. (Elect) Tech. Maint. Spec. (Mech) Computer H/W Specialist Executive Secretary Packing & Desp. Supv.	Industrial Nurse Buttertone Bailiff C & B Administrator	Production Controller	6
5	Illustrator Senior Secretary Clerical Specialist Prom. Pubs. Specialist	Sen Micro Elec Assy Spec Senior Secretary	Draft IV, Skilled Machinist Test Technician, Skilled S/M Op Sen. Secretary, Clerical Specialis Toolroom Machinist, Spray Painter Man Specs Specialist	Skilled Inspector Senior Secretary	I/C Controller, Cashier Clerical Specialist Secretary II Tech. Maint Spec (Plumber) Joiner, Painter, Snr. Secy Mail/Desk Supervisor	Security Officer Senior Secretary	Photo Lab Technician Senior Secretary	5
4	Print Room Op. Graphic Systems Op. Composer Op. Secretary II Prod. Support Clerk Clerk III	Micro Elect Assy Spec Clerk III P.C. Layout	PAS III, Draft III, Clerk III Mechanical Inspector III, Materials Handler II Metal Finish Op II, Mech Op III M/C Shop Op III, Secretary II Axial Lead Insertion Programmer	Inspector III	Secretary II Technical Maint. Assistant Import Control Clerk Build Serv. Asst. Clerk III		Process Operator III Photo Lab Operator	4
3	Secretary I Clerk II		PAS II, Materials Handler II Labourer, Driver, Senior Janitor Secretary I, Metal Finish Op II Clerk II, M/C Shop Op II Silkscreen Op II Toolroom Assistant	Inspector II	Telephonist/Receptionist Packing/Despatch Clerk Cost Clerk Secretary I Senior Janitor Clerk II	Clerk II	Process Operator II Secretary I	3
2	Clerk/Typist I		PAS I, Materials Handler I, M/C Shop Op I, Clerk Typist I, Metal Finish Op I, Janitor		Janitor, Mail Clerk Clerk/Typist I	Bar Person	Process Operator I	2
1								1

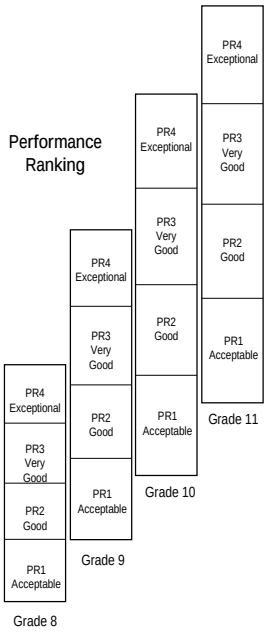
at the top of the Matrix, which was roughly equivalent to the low-end executive grade.

Each of these grades had a corresponding salary band derived through years of experience in the market for some key jobs such as production assembly workers, test engineers, machinists, clerical staff and design engineers. The Personnel Department also engaged with other companies in the sector to exchange salary information to ensure HP's pay rates were competitive and tracking general inflation. HP paid above average and although individuals complained about their salaries from time to time, in general employees were satisfied. If you looked for another job outside, it was difficult to match HP's pay levels.



This illustration of the salary bands in 1998 shows how HP could implement its policy of performance-related pay within each grade. The range within a band was typically greater than the difference between bands, particularly for the higher grades. Each salary band was divided into four performance ranks (five in later years) as shown in this example. If your Performance Evaluation rated you Very Good, you could expect your salary to be in the PR3 part of the band. It was as simple as that. Here's an example of a review slip I got in 1989. For Grade 13, the minimum was £2052 per month and the maximum £3420, 67% higher.


Emp. No. Name Location Code Effective Date
066699 HUGH WALKER 14 6260 FEB 1989
From Base Rate
SALARY MOVEMENT FROM : GRADE 13 VERY GOOD 2450.00
To Base Rate
TO : GRADE 13 GOOD 2579.00
+5.3%
Reason
MERIT
Approved
SALARY RANGE 13 : MINIMUM 2052 MAXIMUM 3420
Approved



The system was transparent – an employee could expect good correspondence between the rank on their Performance Evaluation and what they got paid. However, the problem was that over time, employees migrated up the salary band. This was inevitable really, as the HP Way philosophy and the PE process were all about encouraging people to do their best, with the incentive of performance-related pay. By the 1990s, this skewed how the salary bands worked with the majority in the upper two bands. It was as if everyone had moved up a grade. It was then decided that not everyone could be that good, and a new idea of Relative Ranking came in whereby groups of employees were ranked in order of performance to force-fit them to a more even bell-shaped distribution around the centre of the band. I remember this being introduced at South Queensferry around the time we got a new General Manager, Chuck Acken, who came from the USA. Initially I thought it was his idea, but it probably came from Corporate.

The issue here was that whatever your PE might say, your position on the salary scale was now determined by a group of managers putting you somewhere in the pecking-order relative to other employees. I remember being at some of these meetings in the late 1990s and being astonished how folk were moved up and down the scale based on quite subjective and superficial comments. For a supervisor, this was a problem since you couldn't discuss other people's performance and salaries with an employee. The employee could be meeting their objectives and making good progress, but their salary position might decline if others were deemed to be improving faster. It was a mess. I'm sure some felt it was OK and justified, but it seemed to me a retrograde step that undermined the principles of the HP Way.

Benefits – Pensions, Profit Sharing and Stock Purchase

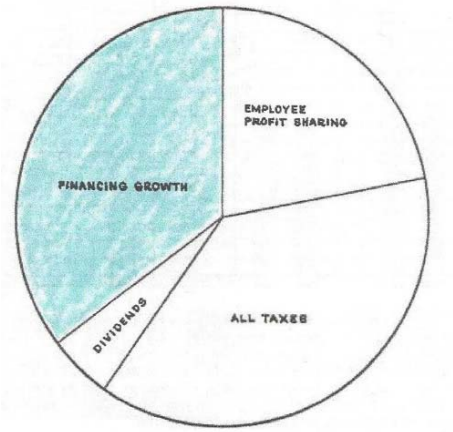
We enjoyed some good benefits at South Queensferry which, along with the attractive pay rates, meant very few employees wanted to leave the Company.

The most valuable benefit was the non-contributory final salary pension. Many of us joined HP in our young days when the idea of pensions seemed irrelevant, particularly as we didn't have to pay anything. As the years went by, we realised what a valuable perk this was. HP's provision was quite generous with a pension of $1/50^{th}$ of final salary for each year of service. Some schemes, like those in the public sector, only do $1/80^{th}$ per year. There were a couple of drawbacks. The pension wasn't fully inflation-proofed, and because the scheme was free, it wasn't clear initially what if anything you might get if you left the Company, though in later years we got an annual statement clarifying that. From 1997, employees did make a small monthly contribution which gave some additional inflation proofing. To give an idea of what the scheme was worth, it is thought HP was paying the equivalent of 50 to 70% of each employee's annual salary into the pension fund each year.

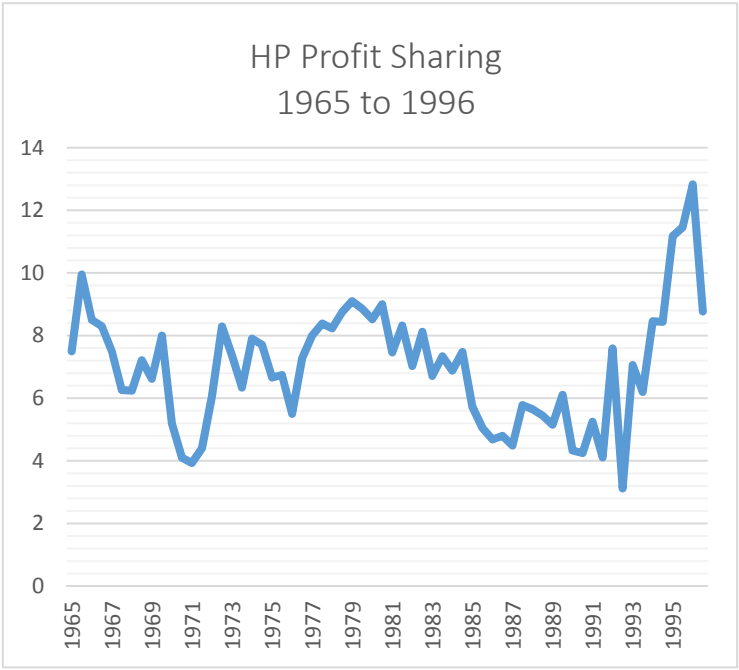
Benefits also included free cover for life assurance and prolonged disability, and later there was subsidised private medical insurance for those who wanted it.

After you'd been with the Company a few months you became eligible for various financial benefits. These were very popular with employees, particularly Profit Sharing. This went right back to the earliest days of HP in the 1940s, with Hewlett and Packard's desire that employees should share in the Company's success and feel they had a stake in the business. In the August 1975 issue of "Measure", Bill Hewlett showed this pie chart of how HP's

accumulated profit of $900M had been split, which demonstrated that a significant fraction went back to employees in profit sharing and much of the rest was reinvested in the Company.



Profit Sharing happened twice a year, in June following first-half results and then in December following the annual results announced mid-November, so a bit of extra cash for summer holidays and Christmas. The amounts were quite significant, varying between 4% and 12% of salary, based on the overall performance of the Company, as shown in this graph.



Often, the results announcements were made over the Tannoy system by the CEO, piped in from across the pond. "*Hello, this is John Young with the results for FY83.*" After a great deal of verbiage on performance in different sectors, numbers, and percentages of this and that, "*…now, the number you've all been waiting for. Profit sharing for the second half is 7.34%.*" If it was a high number, above 8%, (equivalent to another month's salary) you could sometimes hear muted applause around the factory. Then he would sign-off wishing all of us and our families a happy holiday season, as the end of year results were always announced just before the US Thanksgiving Holiday.

Of course, the Profit Sharing was taxed at the highest rate you paid on your income. In later years, there was a UK Government scheme whereby you could put the cash into HP shares, which, if you kept them for three years, you could then sell free of income tax. An external company ran the admin on that for us.

HP Shares were a big thing for many employees at the factory. There was a scheme called the Employee Stock Purchase Plan (ESPP), started by HP in 1959, in which you could allocate up to 10% of your monthly salary to the purchase of HP shares. This was accumulated over three months and then shares purchased at the average stock price over the period. The company contributed an additional 30% to the fund so you effectively got the shares at a discount. Some employees sold the shares immediately and pocketed the cash – a useful short-term savings exercise with favourable interest. This was one of the options available to employees in the ESPP, however I've since read in Dave Packard's memoir that they took a rather dim view of this as they expected employees to hang on to their shares. The ESPP was the main way HP introduced new shares into the stock market.

Many employees did hold onto their shares, never sold anything and accumulated large numbers over the years. The HP share price did very well, particularly in the 1980s and 1990s once shares started to be traded substantially on Wall Street. In the boom times, the share price rose rapidly and every two or three years the shares were split when the price rose to around $100, doubling the number of shares you owned. It was very lucrative for those who kept their shares, and there must have been some "HP Share Dollar Millionaires" at South Queensferry by the late 1990s. It could become an obsession for some, as a few dollars change in the share price resulted in large swings in their investment. The value of the shares was eventually mostly in Capital Gains, so you couldn't sell too many without getting clobbered by the Inland Revenue. Nevertheless, it was a nice problem to have. No doubt financial advisors would tear their hair out at so much equity being tied up in one company, which was also the company you worked for – a very high-risk strategy. When the bubble burst in late 2000 and the share price started to tumble, there were glum faces all round.

Finally, there was one more financial benefit which was the annual Christmas Bonus. It was equivalent to two week's pay and was added to the December payslip, so plenty of cash for the Festive Season. Occasionally there were gifts too if things had been going well – a bottle of whisky or a Christmas hamper.

HP's basic pay rates were above average, and then there was also a great deal of icing on top of the cake. No wonder employees were keen to hold on to their jobs at the factory.

Women Working at HP

All the foregoing benefits and pay scales applied equally to male and female employees – there was never the idea that women would be paid less for doing the same work as a man. The only difference was pensions in the earlier days, when men's retirement age was 65 and women 60. The arrangements for widowed spouses were also different. All this was brought into line with unified benefits in later years, with a retirement age of 60 for everyone.

On average, women did earn quite a lot less than men at the factory, but this was just down to the type of work. Large numbers of women were employed in production assembly, in clerical and secretarial roles, whereas the higher grade jobs in engineering and design were almost exclusively a male preserve. Given the focus on electronic engineering at South Queensferry, this was a factory largely managed by men.

In the early days, very few women trained as electronics engineers. I was involved for some years in the 1970s on the university "milk round" where we went looking for promising engineering and computer science graduates. In all those years, I don't remember ever interviewing one woman. In the 1980s, things began to change and more young female graduates joined HP in R&D, particularly in software design, technical product marketing and production engineering. Some of them rose to senior positions in the 1990s, so there weren't any real barriers at HP.

One of the new graduates was Nicki Innes, who joined HP in 1988 and later became European Sales Manager. "*I was always treated fairly and given opportunities to progress at HP, and later Agilent. It was a great place to work from a female employee's perspective.*

Of course there were some slightly sexist remarks and banter from a few of the men around the factory, but nothing derogatory and we all took it in our stride."

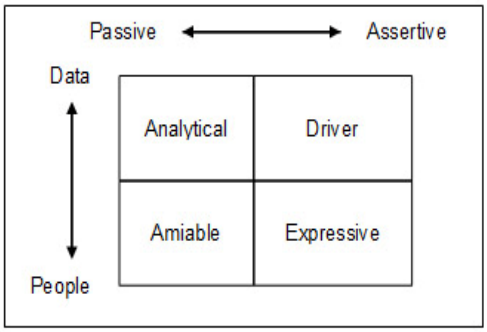
A small team encouraged more female workers to gain qualifications in electronics and become test engineers on the production line. A short article in the June 1977 issue of *Readout*, reported, "*Our latest group of test technicians has just completed their formal training with Jim Masson. Two out of the six just happen to be ladies, who are plunging into the ranks of what hitherto has been the sacrosanct domain of the 'weaker sex'. Avril Brown and Margaret Work make HP history by being the first of many lady technicians (or so we hope) of the future.*" The factory also got involved with work experience schemes for pupils at the local high school and other schools in Edinburgh. South Queensferry was an early participant in the "*Take Our Daughters to Work Day*", an initiative started in the USA in the early 1990s. The idea was to introduce girls to the world of work and let them see what went on inside the factory, hoping they might consider it when they completed their education. The first of these took place on 25th April 1996, when 40 girls aged 11 to 15 years were hosted at the factory. "*Take Our Sons to Work Day*" followed in the summer.

There was also support for expectant and working mothers at the factory. Flexible working hours[5], part-time work and job sharing made it easier to juggle home commitments. The medical department provided health screening and advice. In the 1990s an on-site crèche called "Nippers Nursery" attached to the social club and set up by a former HP sales engineer, Pauline Galloway, offered pre-school child care for up to 50 children. Nicki commented, "*Both my boys went to Nippers. I could look out of the factory window and see them sleeping in their prams in the nursery garden. I could leave work and be with them in minutes. Excellent! What a great service to have on-site.*"

Be All You Can Be – Red Ink and White Lightning

I'm sure many employees would agree that HP helped them to be what they wanted to be in their career aspirations. Over the years, numerous training courses[6] and workshops were run at the factory, and the Company was usually happy for employees to attend external seminars and conferences to improve their knowledge and skills, and broaden their perspectives.

I have vivid memories of the first course I went to in 1971, less than a year after I started at South Queensferry as an R&D engineer. It was the "*Sales Sonics*" sales training course originally devised by Larry Wilson in the USA. The participants were mostly HP salesmen and the course was led by South Queensferry's Sales Manager, Bob Powell, at the Esso Motor Hotel in Edinburgh (now the Holiday Inn at Blackhall). The idea behind the course was that a successful salesman not only satisfied the customer's need for a product or service



[5] There was no clocking-in at the factory. From the 1970s, you could start work anytime between 7 am and 8.30 am and finish between 3.45pm and 5.15 pm, with a 45 minute lunch break. Employees were trusted to put in the working hours, so it was all very flexible, and in some jobs it was possible to work from home.
[6] I have listed many of the key training courses in Appendix 4.

but did so by listening and tapping into the emotional needs of their social style which typically fell in one of the four quadrants shown in the diagram.

Another young R&D engineer, David Guest, commented,

"*It was quite an eye-opener. I learned for the first time that sales people saw the world entirely differently from us product developers. The most memorable part was a set of vinyl discs of 'sales vignettes' which we got in the course binder and were played during the seminar. The crass 'whizz-bangs' and over-dramatic American voices are so bad I can never bring myself to throw the discs out!*"

It is true that "techies" like David and myself had never come across anything like this at university, and it changed our perspectives. How enlightened and farsighted of HP to send us young engineers on this sales course. Before long we would need to go with salesmen to visit customers about new product development, so it was good to know the rules.

The interesting thing about this course was the use of the personality profile shown above. Earlier in this chapter I showed how open communication and interpersonal relationships[7] were at the core of the HP Way. The model popped up quite often in various training courses about management and communication. Sometimes the names on the quadrants changed and there were additional refinements, but the basic idea remained the same. In one course called Social Styles, there was an extensive questionnaire which you filled in along with your colleagues (subordinates, peers, manager), and the results fed into some software to determine how you and others perceived your profile.

The most frequently run training courses focussed on the key elements of the HP Way. For many years, these courses were usually run by Bob Stevenson from the Personnel Department and took place in the appropriately named "Stevenson Suite" located next to the old canteen. The "Suite" was quite plush with fancy pictures on the wall and upholstered chairs, but the biggest incentive to attend Bob's courses was the canteen lunch served with "refreshments", as recalled by Keith Willox:

"Lunch would be served by a waitress at a pre-set table including an option of the day's 'lunch special' accompanied by 'red-ink and white-lightning, or mick-jagger and pig's-ear', to use Bob's description. This was before the days of health and safety and the 'teetotal police', when drinking wine at lunch was 'posh'. The afternoon discussion and debate was much livelier, for those not needing to sleep-off the alcohol!"

A short interview with Bob Stevenson in the March 1979 issue of *Readout* gives an idea of how many courses were run.

"From his diary, he gave me a synopsis of his plans to run 4 x 'Orientation Classes', 4 x 'Managing at HP' Courses, and 11 x 'Performance Evaluation Workshops'. Most of those are for Managers and Supervisors, but on top of that he plans nine workshop sessions entitled 'Working at HP' for non-supervisory staff. A busy year indeed for our lad from Derby. He will be supported by a host of other eloquents, such as Jim Stewart, Jimmy Queen, Dave Brodie, Hugh Walker, Peter Green, Bill Fulton and George Morgan."

[7] People are all different and have different needs and expectations. One observation is that people in diametrically opposite quadrants may have markedly different styles and priorities, so could have more difficulty communicating.

A lot of "red-ink and white-lightning" must have been consumed that summer – "Drinking at HP", one of Bob's better courses!

The new "Working at HP" course seems to have been a success judging by the report in the April 1982 issue of *Readout*:

"On the 11th and 12th March, sixteen members of our non-supervisory staff spent two days in a different environment to take part in a 'Working at HP' course. It was the 24th such workshop to take place since the first one back in November 1979. Since that time, some 350 people have taken part in the venture – and by the end of next year it is hoped that everyone will have had a chance to attend.

The recipe is a simple one. Take sixteen or so people from all parts of the plant, provide a nice mix of background, job and personality and a convivial blend of males and females. Eliminate the cares of the day-to-day routine and expose them to a stimulating dose of information on the HP Way, business structure, company policies, performance evaluation, salary administration and what have you. Allow plenty of time for discussion and encourage participation. Bob Stevenson is pleased with the way it has developed. 'It is more than telling people what the Company is trying to achieve. It is also about hearing, or better still listening to, the feedback to see where it is we are succeeding and where we are failing.'"

Over the years, many of the courses were about management training of various kinds. Some courses focussed on leadership, how to get the best out of employees, managing managers and so on. These often used the quadrant model described earlier and revolved around the Management by Objective (MBO) principle of the HP Way.

Others focussed on business and at HP there was always a strong emphasis on professionalism in business management. In these courses we learnt about organisation, business planning, setting targets and budgets, measuring results and the corrective feedback loop. There were courses called the "*Process of Management*", "*Building Market-Focussed Organisations*", "*Finance for Managers*", "*Financial Tools for Decision Making*", "*Scenario Analysis*" and "*Ten-Step Business Planning*". And there were more specific courses on for example Marketing and Manufacturing Management. Many of these courses were imported from HP Corporate Training in the USA, some were bought-in, and a few were produced locally. Some of the courses on finance were devised at least in part by the Division's Financial Controller, Jim Rigby.

In the 1970s, a team of HP managers tested their expertise in the Scottish Management Game sponsored by *The Scotsman* newspaper. In 1975, the team of Andy McAvoy, Dave Goodwin, Bill Oliver, Hugh Smith and John Anderson led by Sam Bateman, won the trophy which was presented to them by Sir Monty Finniston, Chairman of British Steel. They also won a week's trip to West Germany to observe the business scene there, as recorded in the HP Measure[8] magazine of August 1975.

Another topic of interest was time management. It was easy for supervisors to find much of their day taken up with random events and problems, and picking up other people's tasks,

[8] "The game Scotsmen play", HP Measure Magazine, August 1975, p7.
http://www.hp.com/hpinfo/abouthp/histnfacts/publications/measure/pdf/1975_08.pdf#page=7

possibly as a consequence of the HP Open Door policy. So, they had insufficient time for core activity and development. A popular course offering some solutions was "*Managing Management Time*" – a set of video tapes by William Onken, based on a Harvard Business Review paper[9]. The idea here was that managers should give advice to peers and subordinates but not necessarily take responsibility for the task itself, referred to in the tapes as the "monkey". Once the "monkey" had jumped onto your shoulders it was hard to get rid of it! Are you controlling events, or events controlling you?

In the early 1980s another solution came along called "*Time Manager*", developed by Time Management International. This was a fancy ring-binder with diary pages, planning charts, "to do" lists, expenses forms and so on. There was also a one-day course on how to manage your time, which included setting some time aside each day, A-time, for your own work. HP South Queensferry bought into this package, and quite a lot of managers could be seen walking around carrying the Time Manager like a bible. Some also added business information so they had it at their fingertips at all times. This was in the days before tablets and laptop PCs, although eventually the Time Manager got superseded when HP brought out the first of the famous Palmtop Computers[10], or Personal Organisers, in the early 1990s.

Of the various courses, many employees regarded skills training as the most useful and applied some of the techniques in later life. I've already mentioned the "*Sales Sonics*" course, and another taught around the same time was the "*Kepner-Tregoe*" problem solving technique which trained staff in a structured way of collecting information, analysing it and then finding solutions. Two more bought-in courses focussed on negotiation skills[11] and effective presentations. The latter, known as the "*Decker Method*" was particularly popular. The instructors told us how to organise the pitch with a few key points and not too much on each slide. Then, how to present them – making eye contact with the audience and using gestures (but not too many), and also moving around and not staying rooted to the spot by the projector or screen. They made a video too, so we could see how we did. Many of us still use the tips we picked up on that course every time we speak to a group of people.

Two areas of skills training that had a direct impact on the South Queensferry operation were Total Quality Control (TQC) and IT skills.

In the early 1980s, HP became aware of the emerging idea of Total Quality Control (TQC) or Total Quality Management (TQM), which was coming out of Japan[12]. In the years that followed, TQC processes pervaded almost all aspects of the South Queensferry operation. It was particularly applicable to improving product quality (reducing failure rates and warranty costs) and trying to get things done "Right First Time" so there was less re-work. We were

[9] "Management Time – Who's got the Monkey" by William Onken and Donald Wass, reprinted by HBR in 1999. http://www.kingfahdweb.com/library/self-develop/monkey.pdf

[10] One of the best-known of the early models was the HP 200XL, introduced in 1994 and still well regarded.

[11] This was "Situational Negotiation Skills", originally developed by Stanford University and sold commercially by the Bay Group. It was run in South Queensferry in the early 1990s by a former HP Sales Manager, Derek Smorthit.

[12] W. Edwards Deming is usually credited with bringing TQM ideas into the mainstream through his pioneering work helping to re-establish Japanese industry after WWII. An electrical engineer and statistician, Deming believed progress and efficiency only came from a scientific approach of gathering information (data) and analysing it to make decisions. It was no good relying on hunches or opinions. I remember around 1980, Bob Coackley, the R&D Manager, returning from a trip to Japan where he'd seen TQM in action, probably at YHP, the Japanese HP Division, and saying, "If we don't watch out, the Japanese will eat our lunch. We need to get our quality processes sorted out." At the time not everyone agreed with him, but he was right.

encouraged to measure results and monitor how a defined process was operating, something that should have seemed very natural in a factory making measuring instruments! The Quality Department had a TQC guru, Keith Price, who helped staff apply the TQC method and also helped to run training courses on the key skills and processes.

Quite early on, HP adopted IT systems to run the business. In the 1970s we had the COMSYS system for sending text messages between the various Company sites around the world, a rudimentary form of batched email. By the 1980s, HP had its first Personal Computers, the HP 150 Series, which ran proprietary software such as a basic word processor, HP Word. There was also a semi-realtime (store-and-forward) email system called HP Desk with personal internal email addresses, which was developed in the early 1980s by HP's Office Productivity Division at Pinewood, Wokingham. My email address was *Hugh WALKER/HP1400/G1*. This was mostly through terminals on our desks connected to the HP 3000 central computer in IT. As this was introduced throughout the factory, the IT department ran courses on how to use HP Desk, and, for those who needed it, HP Word.

In the late 1980s, HP introduced its first IBM-compatible PC, the Vectra, and around 1990 the first generation of Microsoft Windows 3.1 software appeared. South Queensferry adopted this system throughout the plant and fairly quickly new HP Vectra PCs appeared on people's desks, networked back to the central computer. There was quite a major training programme run by the IT department to introduce employees to the Windows Graphic User Interface (GUI) and the mouse, and also applications like file manager, word processing and spreadsheets. For several weeks, two of the large conference rooms (Nevis and Morlich by the front door of Phase 3) were set-up with new PCs for these training sessions. Many of us got our first introduction to the future of personal computing, and when the Home PC revolution came along a few years later it was familiar ground thanks to the training at work. Use of computers and videos also featured in self-paced training courses on various topics. In the 1990s, a conference room was set up as a permanent Training Room for employees.

Finally, there were some courses more about personal development rather than direct business need. It is interesting that HP was willing to spend time and money on what might be described as "intangibles", but it underlines the holistic approach the Company took to staff training. We had courses such as "*Building Support for Your Ideas*" and "*Dealing with Stress*". The stress course was memorable as at one point we had to lie down on the floor in the darkened conference room and practice slow breathing. The instructor also advised us on diet and interpersonal relations. Another interesting course was about *Personal Presentation*. An image consultant from Bristol, Lesley Dingle, came to the plant and tutored us on introductions – eye contact, handshakes and looking interested. The first few seconds are critical. She checked the tailoring of our suits and recommended personal colour combinations to complement our natural colouring. My designation was "Summer Man" and I got a little wallet of colour swatches to match.

Perhaps the most controversial of these courses was called "*New Age Thinking*", a concept developed by Lou Tice in the early 1970s and delivered through his company, The Pacific Institute in Seattle. In essence it was a "be all you can be" positive thinking recipe, and was based on the common-sense idea that if you imagine positive and successful outcomes, they are more likely to happen than if you think negative thoughts. Some of the Queensferry management team were enthralled by the possibilities, presumably having been on a course in the USA. In the mid-1980s South Queensferry had, against all the odds, won a large contract to supply British Telecom with a test system called RATES. A lot of this came down to the

positive "can do" attitude in the factory and the UK sales team, what Finlay Mackenzie called "our infectious enthusiasm". Perhaps they thought a dose of "New Age Thinking" could do it for everyone else in the Division.

So around 1988, South Queensferry paid quite a lot for course materials, videos and train-the-trainer sessions, and we learnt how to think and act differently – get out of the rut and achieve great things by imagining success. We all got a creditcard-sized holder to write down our daily affirmations along the lines of "I can, I must and I will because I believe in myself". Some employees were uncomfortable with what smacked of mind games, and the affirmations felt like a belief system or religious observance without the God bit. There was also a question whether staff might set unrealistic affirmations and be disappointed. Nevertheless, several hundred went through the course, which was later renamed "*Investment in Excellence*".

I imagine few people persevered with the daily affirmations, but the course made you think about your own mind-set. And that was the value of the numerous training courses we took at HP. They changed our perspectives and gave us skills, insights, self-awareness and a better understanding of teamwork. The courses were central to working life at the factory, and the cumulative effect of all this education over many years helped to make the South Queensferry site a world-class operation. One former employee, Jane Coles, commented, "*One thing HP did for its employees was to give them confidence and the ability to be an individual. I always remember we weren't allowed to pass a ringing phone – we had to answer it, even if it wasn't our phone.*" John Wastle, who joined HP in metal fabrication and later became a manager in international procurement, summed it up. "*HP got it right with all those training courses. They taught me a lot, and I put it into practice. I doubt if other companies did it to that level …. not even today. They are missing a huge benefit to their businesses.*"

"Readouts" and Talk-Ins

The staff newsletter was called "*Readout*", and started publication in the mid-1960s in Bedford. Apparently the name came from the digital readout on one of the first products designed in the UK, the 3734A Digital Counter. The February 1966 edition had the Counter as part of the title, and claimed it was published monthly by and for employees of Hewlett-Packard. Monthly turned out to be ambitious, and typically it was issued three or four times a year. There were also gaps of a year or more when there was nothing. A lot of work went into producing each issue, collecting stories and photos, writing articles and interviews, and then getting it designed and printed. This was all done by employees with other jobs to do, but the results were surprisingly good. The earlier issues were multi-page A4 booklets, but after a gap of three years it was revived in 1976, reappearing in A3 format tabloid and mostly stayed that way in later years. For the next 10 years it was edited by Bob Brennan who also took many of the photos, and whose commitment guaranteed this excellent publication. Bob's day job was photography for manufacturing processes.

The contents were fairly consistent over the years. There would be a homily from the Managing Director and sometimes a business story. In the earlier years there was quite a lot of detailed business information on turnover and sales, but this decreased over time as the Company became more cautious about possibly giving away data to competitors. Sometimes there might be a profile of a factory department or an individual, but a large part was about sports and social activities and the Social Club itself. Another regular section featured photos of new employees and news of marriages and births. There were also plenty of photos of events, so *Readout* remains an excellent chronicle of life and times at the factory.

At the end of 1986, *Readout* reinvented itself as a UK-wide newsletter also covering the many HP operations that had sprung up in the Thames Valley and Bristol. This diluted the Scottish content and it became less interesting. In response, around 1989 South Queensferry came out with a local newsletter called *QUIP* (Queensferry Internal Post). The content was quite similar to the old Readout, but was duplicated on the photocopier so didn't usually include photos.

The other means of mass communication was the so-called "Talk-In". These occasions happened about four times a year and the whole factory would crowd into the canteen (later the cafeteria) to hear a report from the General Manager or maybe a visiting corporate executive. It resembled a mass meeting, but without the "show of hands" as there were never any Unions at the South Queensferry plant. The purpose was to update staff on the business situation and any significant changes to operations, and hopefully to announce a Beer Bust. At the end of the talk, employees could ask questions[13]. "Talk-Ins" were a feature throughout the life of the plant, along with more frequent departmental "Coffee Talks". Of course when the site got very large in the 1990s, the three separate Divisions at the factory did their own sessions, and on occasions when it was just for managers and supervisors, the "Talk-In" might take place in the Social Club. Sadly, in the final years "Talk-Ins" became a vehicle for a senior executive from HQ to visit the factory and say more staff would lose their jobs.

Eating at HP

I could have included this in the benefits section as the meals were heavily subsidised and the coffee breaks free. For many years the canteen was situated in a large area at the north east corner of the lower floor in Phase 1 (the original building), overlooking the Forth Bridge. It could seat around 150 – 200 people. The food was quite tasty and all prepared in-house, although somewhat like school dinners. There was usually a choice of two or three hot meals, various snacks and a salad, plus a filling pudding of some sort. Portions were quite generous and the prices ridiculously cheap. A canteen pudding cost about 5p and was served

[13] In later years, I got a bit of a reputation for asking awkward questions, so when my hand went up there would be a few titters of anticipation, but no doubt anxiety up front, "Oh no, what's he going to come out with now?"

by "Sweet Mary", "*Mind yer fengers, son, it's right hot!*" I think the arrangement was that employees paid for the ingredients, and HP paid for the preparation and overhead costs. At one point there were complaints from some of the female staff that they weren't getting fair shares. Apparently the dinner ladies tended to give larger portions of stodge to the men. In the interests of equality, this was quickly rectified: "*Mair chips, doll?*"

In addition to the standard main courses, there was also a "special" most days. This was the opportunity for the chef to show off with things like "Sirloin Steak Garni", "Medallions of Pork Zurich", "Beef Stroganoff", "Fillet of Sole Meuniere", or a carvery, though on occasions his *cordon bleu* aspirations went a bit too far when he tabled "Squid in Own Ink", which didn't get a lot of takers! The "special" was presented on a larger oval plate or "ashet" and cost about twice the normal meal price, but was still ridiculously cheap and very filling. If you lived on your own, you could make this the main meal of the day.

The canteen staff also did the catering for social and business events in the factory such as the Facility Reviews and functions in the social club. If we had some VIP visitors, the canteen could be relied on to do the business. A row of tables was set up at the far end of the canteen all nicely laid out with table covers and one of the dinner ladies got dressed up in a waitress outfit to do the honours. The food was usually very good and got compliments. We all ate in the same canteen, including corporate visitors. There was no executive dining room.

An article in the February 1978 edition of *Readout* gives an interesting profile of the canteen staff with some statistics on the operation. Fourteen staff including two chefs and the well-known dinner ladies reported to Colin McFarlane. The previous year, the canteen concession had moved from Commercial Catering to Bateman Catering, a subsidiary of Grand Metropolitan Hotels. HP was looking for value and performance as they were subsidising the catering to the tune of £70,000 per year in the late 1970s when there were around 700 employees at the plant. "*Every week we consume 2,000 main courses and 1250 hot roll sandwiches (bacon, fried egg, square sausage, black pudding etc. for breakfasts). We drink 7,500 cups of tea/coffee and eat 2,000 sticky buns.*"

Coffee breaks were at 9.30 a.m. and 2.30 p.m. and were supposed to last 10 minutes. Coffee and tea urns were brought to various places round the factory by the "coffee break trolley girls", to use the description in the *Readout* article. In our area, this was the elderly Mary Scott or "Coffee Mary". In the morning there would also be a tray of cakes or biscuits such as shortbread, rock cakes, various biscuits and usually doughnuts on Friday, however you weren't supposed to help yourself until the appointed hour signalled by the hooter! Many employees also had filled breakfast rolls from the canteen, ordered in advance. In later years, the free cakes were limited to special occasions, but the tea urns were replaced by automatic coffee/tea stations round the factory where you could help yourself as often as you wanted during the day.

In the spring of 1979, the canteen got a new manager, Richard Paterson, whom employees will remember as the face of the food department for many years, along with his assistant, Chef Tom Dudzik. Around 1989, Richard took over the catering concession by establishing his own company, Cost Effective Catering (CEC)[14]. He used the HP concession as a springboard to win contracts at other workplaces and institutions in the central belt during the 1990s. One of the South Queensferry marketing staff, Garry Irvine, helped them set up the

[14] At the time of writing (2014), CEC continues in the contract catering business, based in Edinburgh.

business. "*That was when computers were taking over and they needed some marketing and computer help. I set up a few Lotus 123 spreadsheets to help their workflows and accounting interfaces to HP.*"

By the late 1980s, the old canteen was becoming inadequate as the factory expanded and the new Building 5 opened to house the Queensferry Microwave Operation. There were then around 1200 employees on site. So, in 1989 work started on a completely new stand-alone cafeteria and kitchen building, situated between the old plant and the new Building 5, connected by a glass corridor. No doubt the catering team had a lot of input on the design which included spacious kitchens and seating for around 300. The outer walls were mostly plate glass overlooking the landscaped grounds round the factory. In later years there was some decking and picnic tables along the west side of the building overlooking a pool with fountains that doubled up as a reservoir for the fire sprinkler system. Instead of the old metal-framed Formica tables the replacements had wooden tops, upholstered seats replaced the plastic ones and the floor had carpet tiles. With the décor upgrade, the name was upgraded too, and it became the Cafeteria, which opened in February 1990.

As the *QUIP* newsletter reported,

"*The whole concept of a move from a canteen environment to one which reflects the design vision of a restaurant has been achieved by use of ceiling detail, lights and layout. The service area has been designed to give a better flow of customers and at the same time give increased food visibility. We look forward to seeing you in the new restaurant on the 12th February, where you will be entertained by the Louisiana Ragtime Jazz Band while sipping a special cocktail with your lunch.*"

The lunchtime offering also got a makeover. As well as the previous hot meals and "specials", there was a help-yourself salad bar, a baguette station, pizza oven, hot and cold deserts, and by the late 1990s, a Costa Coffee bar. Occasionally they had themed menu items for the week. One I recall in particular was a Far Eastern menu when the catering staff dressed up in oriental garb. On another occasion they did a "Curry Night" when employees and their families could come along to sample various dishes and learn about spices.

A popular annual event was the Christmas Lunch, which was normal cafeteria service with a full Christmas dinner and a glass of wine/bubbly in earlier years. The brass band from the neighbouring South Queensferry High School[15] came and played carols for us, and you got a Christmas cracker too, so many employees wore paper hats. The last one I went to was in 2001, when the factory population was at its peak and it was difficult to get a seat. I wish now I had taken a photo of that happy scene while the band played on, as it would probably never be the same again.

The cafeteria was a busy place in the late 1990s when there were around 2000 employees on site. Between 11.30 am and 1.30 pm, over 1000 main meals were served each day and numerous snacks and sandwiches. At busy times there were three cashiers to deal with the numbers. The cafeteria reopened late afternoon for employees on the back-shift, however some of the stuff was a reheat of the food from lunchtime.

[15] Apart from a free Christmas lunch for the band, the factory donated musical instruments to the school.

The smart new facility was perfect for hosting large groups of visitors, particularly at evening events. In the 1990s there were the "*Partners in Productivity*" seminars when customers from all over Europe were hosted at the factory. Another annual event was the week-long training for specialist HP sales engineers in telecom from all over the world. This usually culminated in a grand Burns Supper in the cafeteria on the final night when much whisky was consumed.

"Like a Small Town"

This was how one former employee described the place. She was reflecting on the final scale of the site with over 2000 employees and the various facilities and services we enjoyed.

Top of the list for many employees was the Sports and Social Club. As mentioned in an earlier chapter, the first Social Club was more of an on-site boozer in the old railway cottages. When the new Club opened in 1971, the pub was an important part. It opened at lunchtime and again around 5 pm for the evening. It was popular as the drinks were attractively priced, though not so good if you wanted to get away from talking about work! There was also a large games hall and changing facilities, and before long a football pitch along the west side of the factory. More sport was added with the squash courts in 1979, and in February 1991 a well-equipped gym opened with a fitness instructor, which employees could visit during the day. And then also in the early 1990s, the Nippers childcare nursery opened alongside the Club. Altogether, quite a lot of facilities. With the pub part, however, the "teetotal police" eventually cut out the alcohol at lunchtime and by the 2000s it had been renamed the "Agilent Club Café", a far cry from the railway cottage boozer 40 years earlier.

Another facility from the earliest days was on-site banking. HP wanted to pay employees directly into a bank account and not handle pay packets, so to make this easy a bank sub-branch opened in the factory twice a week. Scott McLean, who joined HP in EDP (Electronic Data Processing) in 1968, recalled,

"*One of my early programs was to write the transfer to magnetic tape of the HP SQF payroll in the format that British Linen Bank could load into their computer system, a forerunner of BACS. I worked with the famous Etta Murray and became good friends with this great lady who ran the payroll and didn't suffer fools gladly. I was very relieved when the transfers worked as otherwise I would have been rather unpopular with the workforce and even more so with Etta!*"

Many older employees will remember Etta. If you went to see her and didn't have all your information, you would be sent packing with the words, "*You're no good to me without your employee number.*"

When I joined in 1970, the British Linen Bank had an office next to the reception. Within a year this was taken over by the Bank of Scotland and a new banking facility set up near the bottom of the stairs in the middle of Building 1. This opened on Tuesday and Thursday with three tellers and a manager[16] so you could arrange loans, get foreign currency and also get cash as this was a time well before cash machines. In the late 1980s, the sub-branch moved

[16] I recall this very well when I was summoned to meet a Mr McGilp, having run up some unauthorised overdrafts. He informed me that "*anticipation of your salary to this extent cannot be permitted*".

upstairs to the back of the building and an ATM was installed. The cash machine reduced the use of the branch and some employees moved to other banks so the facility was gradually scaled back.

In 1992, it was somewhat replaced by a new venture, the American Express Travel Shop, next to the ATM. For many years the factory used American Express for buying travel tickets, foreign currency and travellers cheques. As the site expanded and added the Queensferry Microwave Division which had close links with HP divisions in the USA, the demand for travel mushroomed. American Express rented space at the factory and set up a travel office with several staff. They handled all HP's travel requirements and also those of other nearby businesses. You simply handed in your approved travel request and picked up the tickets and money before you left. Along with this, there was also a retail side selling package holidays, city breaks, insurance, car hire and travel tickets to employees. There were display stands of travel brochures alongside the corridor and with 1500 to 2000 employees on site, it was an attractive business particularly around profit sharing time.

The factory always had a surgery to deal with minor accidents and provide health care to employees. In the early years, this was run by Nurse Laureen Munro, followed by the tanned Vera Cockburn remembered as an enthusiastic dispenser of "Strepsil" throat sweets. A doctor visited regularly and you could make appointments to see him. There was also an optician who made weekly visits. All staff had to have safety spectacles whether they worked in production or not, so eye tests were done to find out if you needed prescription safety specs or plain ones.

The scale of the surgery and its services expanded as the employees increased. By the 1990s, it was more like a medical centre with multiple rooms and two full-time occupational health nurses, Shelagh Bell and Margaret Trainer, both NHS trained. They were involved, along with the company doctor, Gordon Leckie, in the layout of the new medical centre at the back of Phase 1. It had two offices, a shower/rest room, optician's room, audiometry room and a treatment room. Dr. Leckie visited three times a week and a physiotherapist two days a week, while the optician came once a week and chiropodist once a month. The staff could give all kinds of specialist advice catering for expectant mothers, travel vaccinations, those requiring counselling, diet advice, physiotherapy, and so on.

Margaret and Shelagh commented,

"*HP looked after the health of employees in a way we've never seen elsewhere. It was part of the paternalistic ethos, with an emphasis on education, prevention and safe practices. We always got the support and resources we needed, such as equipment for cholesterol testing. We felt part of the team, and HP benefited as employees would stay at work since we could deal with minor injuries on site. Sometimes we stitched folk up – literally not metaphorically! If an employee was feeling unwell, often they would still come to work knowing we could help them. HP had one of the lowest rates of absenteeism in the country.*"

In the 1990s, Shelagh and Margaret came up with a number of initiatives for a healthier workforce, eventually winning several awards for the factory. More about that in Chapter 10.

I suppose you could say the wellbeing of staff was also in mind with the layout of the site which had grass and trees and the odd garden bench dotted around where you could take a

break in fair weather. Near the west gate there was also a small wildlife[17] garden/oasis in the late 1990s, with pools and plants, promoted by Jim Steele.

So, the HP "small town" had a diner, a Costa Coffee shop, a pub, a gym and fitness instructor, sports facilities and a football pitch, a nursery, a wildlife garden, a bank, a travel agent and a medical centre. But the other thing a town needs is "council workers" to keep the place ticking over, and for HP this was the Maintenance Department – in later years Facilities Management and then Workplace Services (WPS). In the 1970s, the maintenance staff took care of everything in the day-to-day running of the factory – repairs, modifications and operating the plant. Like other aspects of the South Queensferry operation in those early days, almost all of it was done in-house.

Norman Clark[18] was in charge of a team of around 17 staff including electricians, plumbers, fitters, janitors. There was somebody to look after the grounds and cut the grass, another to look after the company cars in the garage round at the service yard. The yard also had a workshop for the joiner who carried out all kinds of woodwork. When some new engineers joined, a batch of extra work-benches were knocked together by the joiner. A few years later a couple of decorators joined the team. As the building got larger and older there was always work to be done, particularly sprucing the place up before the annual "royal visit" of executives from Palo Alto. Many employees will remember Alex Millie who was creative and a dab-hand with the spray gun. He produced many interesting abstract designs in corridors and stairwells round the factory. To quote *Readout* in 1981, "*We used to spend large sums of money, refer to consultants and hire outside contractors to keep the plant spick and span. Now, Alex, the "Degas of the Décor", has shown just what one man combining technique, flair and imagination can do to the wide open spaces of modern industrial premises*." Poignantly, I noticed that some of Millie's Murals reappeared briefly as the buildings were being torn down in 2013.

The maintenance team had their offices, workshops and stores round the service yard on the east side of the plant. Their names and faces were familiar to everyone in the factory as they went around in their blue uniforms, and there were some real characters[19] too. Later the yard was replaced by a huge assembly of ugly air-conditioning plant and the team moved inside. By then, a lot of the work was being subcontracted, so Facilities Management was more like project management. I think I liked it better when it was done in-house and the maintenance team were all HP employees and part of the "small town".

Business Travel

Being an international manufacturing site with a worldwide product line there was a need for business travel, particularly for managers and staff in R&D and marketing. There was regular traffic to HP in Palo Alto and the European centres in Geneva and Amsterdam. The Queensferry Microwave Division had close links with HP divisions in the San Francisco Bay

[17] There was quite a lot of wildlife on the site in the form of a colony of rabbits. There was justified consternation when someone seemed to have been given permission to shoot at them.
[18] Mike Farrell was the first Plant Engineer, and Norman took over in the 1970s.
[19] One of the team, Colin Clark, was probably unique in being the only HP employee to have witnessed the complete arc from birth to zenith to final demise of the South Queensferry site. He was there in the 1960s and when his job disappeared in the final years he joined the firm providing site security. He probably saw the last employees leave the building in 2010.

area and also a division in Spokane near Seattle. As nearly 90% of the equipment produced at Queensferry was exported, customer visits took us to all parts of the globe.

HP's travel policy was quite generous. There was no daily allowance but you were trusted to be sensible on expenses charged to the American Express Card you were given. As mentioned earlier, we usually got airline and rail tickets from the travel office before we went. Rail travel was always first class, but the policy on air travel varied. There were times when we travelled business class even on long-haul flights, but when they wanted to save money there were years when it was all at the back of the plane. We usually stayed in posh (four or five star) hotels particularly in the cities. HP had negotiated very favourable corporate rates with chains like Hilton, Marriot and Holiday Inn, and there was a travel manual listing preferred hotels.

As some employees set off on these international jaunts to seemingly exotic places, there was probably a bit of envy back at the factory. However, these business trips weren't like holidays, although it was stimulating to meet new people. There was a lot of on-going travel and you rarely spent more than a night or two in the same hotel, which made it tiring. The fancy evening dinners were work-orientated affairs, occasionally with customers, but more often with the local HP salespeople who took the opportunity to tell us what was wrong with Queensferry products. Even if it was a quiet evening with colleagues relaxing in the bar with a few "Harvey Wallbangers", the talk was usually of company politics and product strategy. It was hard to get away from it. As the American Express Card came out at the end of the meal, it was customary to give thanks (jokingly) to Bill and Dave for what we had received. A former marketing colleague, Reid Urquhart, made the tongue-in-cheek suggestion for an appropriate training course called "Dining at HP", saying, "*This would be one of the more expensive courses, but with many successful graduates! It would define a 'balanced meal' as one in which the cost of alcohol consumed exceeded that of the food.*" He proposed a good course leader would be another marketing engineer, Graeme Nelson, a noted gastronome and *bon viveur*.

There was a course for some staff who went to dodgy parts of the world called "*Safety at Work and Travel*", which gave advice on self-defence and how to recognise threatening situations. Apparently the instructor wore a black jacket with a large yellow SWAT logo on the back. One participant commented, "*I remember at the end of the day they gave us a weapon disguised as a key-ring as a last line of defence. I'm sure if anyone had used it, the Company would have been in deep trouble!*"

Visiting many HP offices round the world, what struck me and others was the uniformity – the HP Way was pervasive and crossed cultural boundaries. Manufacturing divisions, sales offices and even the Corporate headquarters at 3000 Hanover Street, Palo Alto, had the same open plan, informal atmosphere. The name badges, the use of first names and the generally open and friendly attitude of employees, made it feel like a home from home.

Business travel wasn't all work. On long trips, there were weekends for sightseeing and on free evenings perhaps a trip into town for some entertainment[20]. Camaraderie and friendships developed, enlivened by travel tales, which have endured long after our working days at HP.

[20] For example, I remember on more than one occasion going on a group activity to an outfit in Amsterdam called the "Banana Club" – I'll leave the rest to the reader's imagination. However, it would not be advisable to use the HP American Express Card in such an establishment.

Joining HP

The first day at work, especially in a permanent full-time job, is something most people will never forget. Particularly so for many at HP South Queensferry, as it would be probably the most important job and for some the only one they ever had.

When establishing the Bedford operation, and later with the move to Scotland, HP needed to recruit quite a lot of experienced people in design, test and metal fabrication for example. HP advertised in local newspapers and also word got around that the factory was an interesting place to work with good pay and prospects. For some, the contrast with their previous workplace was quite pronounced, as Graeme Stewart recalled after joining HP in 1965. "*There was just one canteen for everybody, instead of the four in a previous workplace. Another difference, of course, was the use of first names and the name badges. I remember Bill Hewlett visited Bedford shortly after I joined, and David Simpson, the Managing Director, introduced me to him on first name terms. I could not believe it!*"

John Wastle recalled his interview at the plant in the 1960s.

"*I was just about at the end of my apprenticeship at Ferranti, when this new American company set up in South Queensferry called Hewlett-Packard. What I started to hear about it intrigued me, so I sent off an application for a job as a toolmaker. I got an interview and was impressed by the way I was treated. I was shown all around the plant by Meyer Averbuch who explained the type of tooling work I'd be required to build. I was also introduced to the top managers including David Simpson. I left that day thinking, this company is really different, and hoped I could be part of it as it was in its infancy. When I got back from my summer holiday, there was a letter awaiting me from HP offering me a job. The salary was £76 per month, lower than the £83 I was getting at Ferranti, but nevertheless the following Monday I handed in my notice.*"

Another group recruited in considerable numbers were school leavers and apprentices. In the early years, the production side was labour-intensive with many staff employed in loading printed circuit boards (PCBs) with components, and hand-wiring the instruments which required neat work and good soldering. Once the PCBs had been loaded in Prefab and wired into the instruments on the Production Assembly Line, they were ready for testing. This was done by the test engineers. I have described this process in more detail in Chapter 8.

While the testing was done almost exclusively by men, either coming in as experienced engineers from other companies or as youngsters with recent technical qualifications, the workers in Prefab and Production Assembly were women, referred to in the early years as the "Prefab Girls" and the "Wiring Girls". In the 1970s there were probably around 200 of these workers. Many of them were young women who had recently finished at school and were trained by HP in the production processes. Following an application, they would come to the factory for some evening classes to assess their manual dexterity and soldering ability. They needed to have good eyesight too, as the components were small and identified by tiny numbers and colour codes. Apart from Prefab and Assembly, there were also production jobs for women in the department making transformers and cable assemblies which employed around 50 staff in the late 1970s. Many came from South Queensferry and other towns and villages in West Lothian, and particularly Bo'ness. The factory was not particularly convenient for public transport (apart from Dalmeny station serving Edinburgh and Fife), so

to help with travel to work, HP ran two or three buses to outlying areas until well into the 1970s.

In the production area there was someone called the "housemother", an interesting idea imported from HP's factories in the USA. Production staff, particularly the younger women who were new to the factory, could go to her for help with personal problems, work issues or grievances and discuss them in confidence. It was a personnel/welfare role, but the housemother was very accessible and being an experienced production worker herself, understood the situation. A problem shared is a problem halved, and the goal was to deal with concerns quickly so staff could get back to work and not worry.

HP needed a lot of graduates in electronics and computer software for the design lab and also marketing and production engineering. These were often the staff who drove the Division forward with inventive ideas, process improvements and new products. While the Division did occasionally recruit experienced professionals, the great majority of its intake was from final year students at university, whom we called the "new graduates". I think there was an idea that young engineers were more innovative and less likely to be hampered by industry conventions. Anyway, a lot of effort went into selecting the right people. We were looking for new graduates with good analytical ability and technical knowledge, but also a spark of creativity, enthusiasm and imagination. Someone who could pick up an idea and run with it. Perhaps a bit of a wildcard, or somebody who would today be said to have Asperger's.

Early in the year we joined the so-called "milk-round", visiting selected UK universities with a good reputation in electronics and computer science. These were not necessarily the famous big-name establishments like Oxbridge, although HP did take a fair number of graduates from the four main universities in Edinburgh and Glasgow. During a day's visit we would interview up to ten students and select say one or two promising candidates. They would be invited to the factory, maybe five or six at a time, on an all-expenses-paid trip for further interviews. After technical interviews in the morning, they all went for lunch with a host. Meanwhile, the interviewers met to decide who were the most interesting.

It reminds me of an amusing incident in the 1970s. We had interviewed a chap who seemed pretty sharp and could answer the questions but was rather rough and unkempt, so there was a question about his suitability. When the lunch host, Ralph Hodgson, returned we asked how he got on with the guy. "*He ate his peas with a knife!*" To which the R&D Manager, Bob Coackley, responded, "*Oh no, that does it.*" Can't remember now if that meant he was in or out. After lunch, the candidates went on a plant tour while the chosen one or two had another interview with a manager.

If a candidate was hot, we'd make an offer pretty quickly as there was a lot of competition for good electronics engineers in those days. I think most graduates did accept the HP job offer. Quite a few came from down south, as I did, so the move to Scotland was a new experience, as Jim Steele recalled, "*The day I joined in July 1979, the security guy, Jimmy Martin, told me, 'Get yersel a wee pint o' heavy in the Club' – I had no idea what he was talking about, but I did by the end of the week!*"

When I joined as a design engineer in 1970, it was straight in at the deep-end, doing project work within a day or two, and learning on the job. By the 1980s it was more organised, and new recruits went on a six month graduate training programme involving stints in various departments and also a small design/build project done as a team.

Of course there were many other job opportunities at the factory, for example in metal fabrication and finishing, technical writing and publications, administrative jobs in production planning and order processing, marketing and sales, accounting and personnel. Most employees who joined HP were there for many years, in some cases for their whole working life. The job at the end of their career was for many not the one they had when they joined, so staff needed to be adaptable and willing to retrain.

Long Service Awards and the "Golden Cage"

Having taken the trouble to recruit good people, HP was keen to hold onto them. Valuable employees with experience are difficult and costly to replace, so the strategy was to make it more attractive to stay, the longer you had been with the Company. For a start, there was the gradually accumulating equity in the non-contributory pension, and the amount of annual leave increased by a day for every five years from what I remember, so long-serving employees had up to six weeks paid holiday.

Every five years you got a long-service award with a lunch and presentation, usually in the Social Club function hall. There was also a group photo, now a great resource for spotting former employees. At 10 years you also got 10 HP shares, which in the early years was worth quite a lot relative to salary. The quality and value of the gift increased with the years of service, as did the celebration. For my 25 Year Award, my wife and I were invited to an evening function in the Nevis/Morlich room at the factory. The cafeteria put on a splendid meal with plenty of alcohol and then there were speeches recalling past times followed by the award presentations. On that occasion I got a Tiffany wristwatch. The 30 Year Award was a similar event, this time at the Balmoral Hotel in Edinburgh. I remember it was in March 2001, just after the site had reached its zenith. It was all downhill after that. Here is a photo of the gifts I got from 5 to 25 years. You selected your gift from a brochure and there were corresponding items for female employees.

Another strategy to hold onto key employees was the issue of HP Stock Options. These were granted twice a year to employees who were critical to the business – particularly managers and staff involved in new product development – people HP couldn't afford to lose. Typically for 100 shares or more, they gave the employee the option to buy the shares at the specified price, however you had to wait four years for the option to be fully vested. When the share price was steadily rising, the options became valuable as long as you stayed with HP – they lapsed instantly if you left. The usual practice when exercising the options was to sell some of the shares immediately to pay the option cost. There was normally a tax liability, but you still got a load of cash or a bundle of HP shares for nothing. Of course it only worked if the price

went up. In my final year I got some Agilent options, but the stock market price always remained below the option price so they were never worth the paper they were printed on.

For many years the HP options were very valuable and by granting more every two or three years there was a strong incentive for an employee to stay put. We used to call it "The Golden Cage". For the ambitious, there were not enough senior positions on offer at the Telecom Division, however eventually there were two new operations on site (the Microwave Division and the Systems Division) offering opportunities to the upwardly mobile. Then there was the UK sales company down south, and Computer Peripherals and HP Labs which started in Bristol in the 1980s. This was a benefit for HP too, as Peter Green who worked in R&D and Production Engineering for 12 years commented, "*I was one of several staff who took Queensferry culture down to Bristol to start the Computer Products operation there.*" Some employees headed over to HP in North America for opportunities there. Growth at HP was such that very few needed to, or wanted to, break out of the Golden Cage.

Benefits and Drawbacks of the HP Way

"It was just like a big family." How many times have you heard that as people recall their old workplace in a fit of nostalgia? It's almost a cliché, but at HP South Queensferry it really was the case because staff turnover was so low. As I described earlier, it was a primary intention of the HP Way to create a family feeling of belonging to something. It went further than that, as Jane Coles, one of several employees from the extended Coles family, recalled, "*It highlighted how willing HP was to employ families – perhaps they saw the importance of social upbringing and work ethics that permeate through families.*" Jane, who was a Management PA, and her husband Vic Winn, were two more Queensferry employees who transferred to Bristol in the early 1980s.

In the HP family, like any real family, the same people always seemed to be around with their various endearing or irritating personality traits, and as the years went by, popped up in different jobs. Some people you got on with better than others, but it wasn't a good idea to make too many enemies as a few years down the line, who knows, the same person might turn out to be your supervisor. "Horrorsville"!

HP invariably promoted from within, which had many benefits. It gave employees a career path, and supervisors were well versed in the whole management ethos of HP, which was important. This philosophy went right to the top of the Corporation and all senior staff including the CEO were HP veterans, until the late 1990s[21]. At Queensferry, the same people tended to be in middle and upper management positions for long periods, although there was quite a lot of rotation. You might think this would lead to a stasis in organisation and procedures – the lack of new blood creating a tendency to do things the Same Old Way (SOW). On the other hand, HP chose employees carefully and many had initiative and creativity, and were receptive to new ideas. Then there were the regular training courses described earlier and encouragement to develop in new jobs, plus as the factory expanded over the years, there was a steady stream of new employees coming in at lower levels. The place always had a dynamic feel about it.

[21] The appointment of Carly Fiorina as CEO in 1999, as successor to Lew Platt, broke the tradition. This, and other similar external appointments, confirmed, for some, the wisdom of the earlier HP strategy.

As we saw earlier, decentralization and the HP Way engendered commitment and a strong sense of ownership in the local business at South Queensferry. This was particularly true of management and those involved in product development and marketing. It was as if they owned the business and had a major stake in it. There was a tremendous desire to win in the global marketplace. This high level of commitment was very beneficial to the business, but at times went too far. Some employees became wedded to the factory and their "work-life balance" was way out of kilter. HP dominated their lives and they would often work into the evening or take work home[22]. The staff in marketing had a lot of dealings with North American sales offices and divisions, so it was tempting to stay late to make telephone calls[23] because of the time shift.

I remember a fellow marketing manager in the early 1980s declared we should all be working at least an hour extra every day "*to beat the competition*". Peer pressure meant his subordinates felt they also had to stay in the office until their boss had done enough. A few years later I sat next to a conscientious colleague and friend who made lengthy bulleted "to do" lists, sometimes over two sides of A4. He often worked late, took work home and seemed stressed. When I suggested he was doing too much and needed to leave more time for his personal and family life, he looked at me sincerely and said, "*I care about this place, I care what happens to it.*" I don't want to give the impression these people were being forced to do this extra work. They really wanted to do it, they got a kick out of it. They got satisfaction and excitement because of the feeling of commitment and ownership. They put much of their personal time and mental energy into the business, and HP rewarded them with higher salaries, stock options and perks like company cars. But they didn't really "own" the business, not even a small part of it, as we all discovered years later. You could say the HP Way had created the illusion of something that in the end wasn't really there.

Another interesting question is whether the HP Way concept is still applicable to large scale businesses in the 21st Century. This is a topic discussed at length in Michael Malone's book "Bill & Dave". Malone commented that many have tried to copy the HP Way, but none have really done it as successfully as the originators.

Some tenets of the HP Way are applicable to any business today – treating employees with respect, equal opportunities, performance-related pay, training and employee development. But the key facet was Management by Objective (MBO), the trust in people, and the marked decentralization of decision making in quasi-autonomous divisions – the agile small company ethos within the large corporation. In the political realm today, we are familiar with federal government, small nation states and devolved local democracy, but 50 years ago in the 1960s, industry, like politics, was usually monolithic and centrally controlled. The HP organisational model was therefore very unusual for the time, but was undoubtedly the magic ingredient that made the Company so successful.

To me, the concept seemed to work brilliantly until the 1980s. By that time HP had grown enormously and was morphing into a computer company. The computer business needed the economies of scale, and the numerous instrument divisions were beginning to overlap in their product charters, which resulted in internal competition between these intentionally autonomous businesses. HP's solution was to group the separate divisions into tightly-knit groups with group management. The divisions were intended to work together and cooperate

[22] Some staff indulged in self-styled initiatives that they found interesting and thought valuable to the business. These non-mainstream projects were nicknamed Extra Curricular Activities or ECAs.
[23] We did get a telephone credit card, so it wasn't necessary to stay in the factory to make calls.

rather than compete, so a quite complex arrangement of matrix management with dotted-line reporting evolved. It was a way of trying to preserve the old HP ideals while accommodating the need for larger operating units. By the 1990s, I felt this was leading to a top-heavy structure with sluggish decision making – exactly what the original HP organisation had tried to avoid. I will return to this topic in a more depth in later chapters.

While many would agree there was a happy atmosphere at the factory, that doesn't mean it was always without problems or friction from time to time. Some people complained about their pay or grade relative to other employees, or had issues with their supervisor or other workers, and maybe felt they were treated unfairly or passed over for promotion. The open communication and freedom of action sometimes led to cliques forming, while a few supervisors didn't always observe the HP Way principles. On the whole these matters were more to do with human nature rather than basic faults in the way the factory was run.

As our memories of working at South Queensferry gradually recede into the past, and the factory itself has disappeared, most of us realise with hindsight how fortunate we were to have worked there and enjoyed the many employee benefits and the family atmosphere. Sheila McCutcheon who came to the factory in 1979 to work on printed circuit board design, commented,

"*I spent 13 very happy years at HP – even though I hated writing Performance Evaluations! No other place where I worked matched the team spirit, opportunities and friendship that I encountered while there.*"

Another employee, Bill Shanks, who was a test engineer on the production line and later calibrated and repaired the factory's test equipment, summed-up how many of us feel:

"*The whole factory was just a superb place to work, I sometimes can't believe it's all gone.*"

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