Gerry Martin
An Invisible Life
(1930-2004)

Alan Macfarlane

Who was Gerry Martin?

The influential *A Social History of Truth* by the American historian of science Steven Shapin is dedicated to a certain 'T.L.Martin, Gent.' The Museum of the History of Science at Oxford acknowledges as one of its major benefactors a certain Gerry Martin. The co-author of a recent book on *The Glass Bathyscaphe* is Gerry Martin. The inspiration and funder for one of the major intellectual networks of the later twentieth century, the 'Achievement Project', is Gerry Martin. Those in the specialized field of the collection and understanding of scientific instruments know of a Gerry Martin who is a world authority on microscopes. Yet a search on 'Google' reveals only two references to Gerry Martin. One is to his collaboration with the author of this piece, the other is to a Gerry Martin who was a co-founder of a firm called Eurotherm Ltd. Can these all be the same person? To confuse us further, he was christened Trevor Lewis Martin, but at some point changed his name to Gerry, or Jerry (he signed his letters in both ways and when I asked him which it was, he said he did not mind).

Personal and early career

Gerry was born in Alvechurch, near Birmingham, on 26th March 1930. He was the son of George and Estelle (Stella) Martin (née Lichtenhein). His father did many jobs, but at the time of Gerry's birth was working for Scammel Trucks.

Gerry early became fascinated in making things and after education at the local grammar school decided not to go to University but to become an apprentice in industry. Between the ages of eighteen and twenty-one he worked for Ether Industries, an engineering firm near Birmingham.

He then went in May 1951 for three quarters of a year to America which changed his life. He was sent to Chicago by the managing director to spend nine months with Wheelco Instrument Company to improve manufacturing co-operation between the two companies. His diary and letters of the time show him to have worked in the factory comparing techniques of instrument manufacture, and he recorded that none of his US colleagues understood the whole process of instrument making. On the other hand, they had some far more advanced ideas on company structure and organization, particularly in relation to an equal treatment of workers, which was to influence him considerably. Many of his far-reaching ideas were already fully formed by the age of twenty-two.

He returned to England early in 1952. A certain Dick West had set up a company in the States to make temperature control systems, called West's Instruments. West wanted to set up a branch in Europe and Gerry and Jim Hartnett (some sixteen years

older than Gerry) were made respectively Managing Director and Chairman. The branch started in London but soon moved to one of the areas of highest unemployment in southern England, Worthing, Sussex, where it has remained.

A little later West died in a plane crash and his brother took over. At this point Gerry and Jim became dissatisfied with the firm and decided to set up their own business, Eurotherm.

The Eurotherm phenomenon

With three other partners, Jim Hartnett (Chairman) the brilliant Mike Somerville (technical director), and the imaginative Jack Leonard (Sales Director), Gerry (Managing Director) set up Eurotherm Ltd in 1965, a control engineering company. These four designed, manufactured, assembled, packaged, sold and delivered their products.

Gerry's share of the capital was raised by taking out mortgages on his house. Part of the assembly of machinery was done in his garage, garden shed and on the kitchen table, often with the assistance of Hilda his wife. It was touch and go at first. There were times when the children's shoes were unmended and when the family could not cash cheques as they would bounce. They had to become profitable within six months – and just managed to do so. They started above shops in Ann Street in Worthing, West Sussex, moved to an old bedding store in Chatsworth Street and then to a factory in the Broadwater estate.

The firm began to prosper. Within four years the company had a turnover of £1m and a growth rate of 20 per cent and overtook all the competition. Gerry was setting up Eurotherm companies with local nationals all over the world. In the first five years companies were established in the United State, Germany, France and Switzerland. Hong Kong, Italy, Japan, Korea, Holland, Belgium and Austria followed. As Peter Tompkins, who is currently responsible for the global activities of Eurotherm as part of the Invensys group, writes, the company was very nimble and responsive: 'We configured to what the customer wanted.' It was product innovation on proven technology.

Semi-conductors were introduced to an industrial world relying on fragile and inaccurate galvano-metric measuring systems. And later imaginative work by Brian Chessel transformed non-linear signal recording into linear, using polynomials – enabling three separate recordings of such features as humidity, temperature and pressure to be recorded in linear form on a single piece of paper at the same time. This was the Chessel Strip Chart Recorder. The firm also created the Shackleton variable-speed motor with high technical specifications to allow for such uses as printing.

When Eurotherm went to the Stock Exchange in 1978 the initial public offer was 82 times over-subscribed and the shareholders, including many of the staff who had been given shares in the company, became millionaires overnight. Gerry had by then left. When asked by a young engineer as it went public what his response was, he said, 'It has been an interesting day.'

What was Gerry's secret for success?

The propitious and revolutionary changes in engineering are one factor behind the success. The technical brilliance of some of the engineers, including Gerry, another. In relation to Gerry, Jack Leonard described Gerry Martin as a most innovative thinker; intelligent and not inhibited. Because he had not been to university he had not been told 'you couldn't do it'.

But there is something more and on walks along the shores near his beloved retreat in Cornwall, Gerry explained to me what was important to him.

Gerry felt that it was in the organization of firms, and above all their ability to attract and enthuse excellent people, that success would lie. He would spend a huge amount of time interviewing and choosing really excellent staff – he reckons something like 40% of his time was spent on this activity. He described this, in hindsight, as a kind of anthropology. He would often spend days with a top applicant getting to know them before hiring and trusting them.

So he would aim to choose a very good engineer cum organizer and train them up within the firm, with a small group of experts round him. When they were ready, they would be encouraged to set up their own sub-branch.

The idea, in his words, was to set up sub-companies which would 'rob' the parent company of their very best people. There was amicable competition with these sub-companies, but no serious conflicts. The sub-branch could count on support from the main company, and part of the profit would feed back into the parent company. The managers of the new companies would receive a proportion of the equities of the new companies (25% in some cases), and the rest would remain with the parent company.

The new company was given great freedom and encouraged to develop new projects. To Gerry's sadness, this idea did not continue down to the lower level, i.e. there was no replication of these sub-companies. The unique ethic of the parent company was not repeated.

Peter Tompkins, illustrates some of these feature when he writes: 'Gerry recruited me back in 1972/3 (very thorough, my interviews lasted from October 1972 to March 1973) and I joined the following month. I reported to him and he was a fascinating man to work with. I regard myself as highly privileged to have worked with someone so intelligent and analytical and yet fully appreciative of the need to empower and motivate his colleagues.'

A combination of astute judgement, deep technical knowledge, enthusiasm, and trust in other people paid off. Numerous affiliated sub-companies were formed and the parent company also prospered. I asked what was the chief benefit the parent company received. Gerry said 'fun'.

The philosophy was also based on a developed sense of collaborative equality. There were no separate dining rooms for managers and staff, no separate uniforms. It was a team of equal players. I asked Gerry about the egalitarian nature of the firm. He said that this went against the grain of the times. Many firms, however small, often had

separations between managers and workers. In one he saw in Scotland, there were three different dining rooms for different levels of staff and the Directors always dined in dinner jackets.

This philosophy certainly reflects Gerry's modest and unassuming character, as shown later in his life in his unostentatious life style. Workers were given shares in the company and there was a sense of making useful things as part of a collaborative team, a sense of fulfilment in a job well done. He told me that part of the inspiration of this came from the American company Hewlett Packard, which had similarly started as a very small outfit in a garage and through a particular egalitarian and communal ethic grown into a giant organization very quickly. Gerry had several helpful discussions with them about their methods.

His approach also involved binding his team together by trust. Jack Leonard recalls that 'There was no clocking in – people were trusted to arrive on time'. In many discussions about the ethics of business, Gerry made it clear that he trusted his co-workers and seldom found evidence of corruption, disenchantment or cynicism in the business world he inhabited.

His creative organization style also reflects deep thought about company ethics and organization. I asked Gerry whether he had been able to think widely during the incredibly busy period when they were building up the firm. He said yes, he was always thinking about the philosophy, the underlying strategies of wealth creation. The interest in the well-spring of achievement which he showed so remarkably in his work with academics during the last 25 years after he left Eurotherm was present then.

For those familiar with Japanese management practices of the time, with commitment, involvement and the sub-companies branching off from the main one, there is a remarkable parallel. Gerry travelled a good deal in the Far East and set up branches in Japan and may have picked this up consciously or unconsciously.

So Eurotherm ended up with branches all over the world and made important contributions to the success of many other companies, including Pilkington's glass, for whom it made temperature control gauges.

Philanthropist and Academic Networker

Although Gerry had decided not to go to University, it is clear that from very early on he was filled with that curiosity about the world which is the basis of all intellectual activity. Until the age of 48 when Eurotherm went public, and he retired from the company, he applied this to the building up of the company and the invention and making of useful things.

That he seems early on to have felt that there was another career he would like to follow is indicated by the fact that three years after the founding of Eurotherm, in 1968, as the company began to prosper, he created the 'Renaissance Trust' which would make it possible to support the study, in his language, of 'the causes of achievement'.

The funds, in the form of some shares in Eurotherm, amounted to a considerable sum when the Company went public, and for the next twenty-five years he used this money with great skill and tact to support numerous different intellectual ventures.

One part of this venture was to improve the public understanding of science and technology by supporting various museums of the history of science. When he was three years old and ill in bed with mastoids, his doctor gave him a small microscope (a Culpeper). Ever after Gerry was fascinated in scientific instruments and became a world authority on microscopes. With colleagues all over the world he built up one of the finest collections of scientific instruments in the world. He was an advisor and Board Member of various committees of the Museums of Science in London, Oxford and Cambridge and widely regarded as not only a collector but expert. He held many discussions with world authorities in the field of instruments and their history. He amassed a good library in this field which, with characteristic generosity, he gave away to those he knew would be interested.

An account of a small part of his work here is provided by Professor Jim Bennett, with whom he worked closely.

'Gerry gave generous support to both the Whipple Museum of the History of Science in Cambridge and the Museum of the History of Science in Oxford. He paid for photographic equipment for both museums, while at Cambridge he met the entire cost of the exhibition 'Ivory Sundials of Nuremberg', and also paid for the publication of the fine catalogue by Penelope Gouk that accompanied the exhibition.

In Oxford he either made major contributions to, or wholly paid for, a number of very important acquisitions, as well as donating instruments from his own collection. A particularly significant contribution to the development of the Museum in Oxford was that he paid for the feasibility study that initiated the recent extensive redevelopment and expansion of the Museum, as well as all the costs of preparing the plans that were the basis of a successful application to the Heritage Lottery Fund. This seed-corn was absolutely critical, since there was no funding available in the University, and Gerry's contribution was made without knowing that anything would come of the whole idea.

He supported scholarship in the history of scientific instruments more generally. He funded the first three years of the research project that eventually, after further support from charitable trusts, led to the publication of the now-indispensable 'Directory of British Scientific Instrument Makers'. He also funded the Visiting Professorship at Imperial College held very productively for some years by Gerard Turner.

For the History of Science itself, he was instrumental (along with others) in creating the accommodation for the subject in the Modern History Faculty, following the appointment of Professor Robert Fox. This provided offices for the Professor and a research assistant, as well as a seminar room that has been a focal point for the subject in Oxford. He also provided continuing support for the Professor.'

Another part was a five-year project, from 1990-5, called 'The Achievement Project', managed by Dr. Penelope Gouk at Oxford. This consisted of various strands. There were annual symposia on 'What is achievement' (1990), 'Creativity and its Measurement'(1991), 'Vocation, Work and Culture in Early Modern England' (1992),

‘Clusters of Achievement: Amsterdam, London and Paris in their Golden Age’ (1994), ‘Lost Causes’ (1995), several of them giving rise to published collections of papers. There was a project funded to the tune of a quarter of a million pounds on ‘The Growth of a Skilled Workforce in London, c.1400-1750’.

There were a series of ‘Museum Seminars’ at the Museum of London and the Science Museum. There were a number of network group meetings on ‘Geographies of Innovation’ (Oxford, 1992), ‘Dreams of Reason, Worlds of Practice: Science Skill and Engineering’ (Johns Hopkins University, Baltimore, 1993). These brought together scholars from all over the world .

The activities continued to be funded by Gerry even after the Achievement Project officially ended in 1995. Organized very creatively by Professor Patrick O’Brien, there were two major strands. There were three sets of seminars on ‘Global History’ at the Institute of Historical Research. In 1996 there was a series ‘Great Theories and Theorists’, the following year on ‘Technologies’, and the year after on the book of E.L.Jones on ‘The Wealth and Poverty of Nations’.

There were also further international conferences. In 1999 the theme was ‘The Global History of Material Progress’, in 2001 ‘States, Smithian Growth and the Formation of Markets in Europe and Asia, 1368-1815’, in 2002 ‘The Evolution and Diffusion of Steam Power and Steam Engines in Europe Compared with China from 1589 to 1914’.

Gerry was also actively involved, and provided some of the funding, for four highly successful seminars at King’s College, Cambridge from 1993-6 on the comparison of scientific and technical progress in Europe and Eastern Asia. This culminated in April 2003 in a larger seminar on ‘Understanding the Evolution of the Global Economy Through the Histories of Materials, Communities and Artefacts’. A film of Gerry’s contributions, in which, with graphs and diagrams he summarizes much of his life’s work, is available on the web.

Among other things, these seminars and conferences have fed directly into a successful M.Phil. course on ‘Global History’ now run by Professor O’Brien at the London School of Economics.

Gerry also provided bursaries for several Ph.D. students. He gave private grants to a number of academics to help them in their research. He also funded a series of seminars and an international conference on epistemology run by the physicist Professor John Ziman, which led to the publication of Technological Innovation as an Evolutionary Process (2000) (which includes a paper by Gerry on ‘Stasis in complex artefacts’). He supported work in ‘cognitive science’ and computing science over many years at the University of Sussex.

At Birmingham University Aaron Sloman, Professor of Artificial Intelligence and Cognitive Science, remembers Gerry as a mentor who showed him ways of management then unthinkable in university life – such as proper interviewing of job candidates. He had other ideas about organizations, and constantly stressed the importance of mutual recognition of achievements and the necessity for teamwork in the solution of all complex problems.

What was particularly remarkable about this philanthropy was not only its scale, the equivalent of more than ten million pounds in present prices, but the way in which the money was given and Gerry's involvement. The nearest one can find as an analogy was a model Renaissance patron, deeply interested in what was being done, involved and supportive, yet always careful to avoid any sense of pressure or obligation on the part of the recipients.

Professor Margaret Boden, Research Professor in Cognitive Science at Sussex University, characterises Gerry as a man with vision and the imagination to realise when a project was interesting: "He was aware they were risky, they might in some sense fail. He was hugely generous and he took the pressure off people – he never left them with an attitude that the had funded the subject and expected a result." She also comments that he 'funded the sort of research projects which would not get funding from "orthodox" sources, because they were too "weird" and/or too "risky". Gerry not only had the vision to see the potential, but also the wisdom – and generosity – to see, and to assure the people concerned that he saw that, success was by no means ensured and that "failure" would therefore be alright. It was not worth taking the risks otherwise. But even "failure" is the wrong word, since something interesting would have been learned, even if the original goal proved elusive. You could say that he was interested *both* in individual creativity/achievement, *and* in organizational creativity, and, especially, "pan-cultural" achievement where everything seems to blossom at once: hence the choice of name for the "Renaissance Trust"'.

Often Gerry would sit at the back of many meetings and only occasionally interject with a profound comment. He would look distinctly embarrassed when he was thanked. This, with the roll-call of his donations, might give an impression that he was a passive funder of other's work. In fact, very often the themes to be pursued and the ideas for projects would come from discussions with him.

The roll-call of his donations might also give the impression that he was only concerned to fund intellectual activities. I discovered quite early on that this was not the case. He gave generously to a charity to relieve poverty and deprivation in the third world, and efforts to save ancient shamanic practices in Nepal.

He gave donations to develop a Medical Research Library in Sussex, to hospitals in India and Palestine, to help set up centres to help victims of torture, and to many others. They were all made anonymously. And they often involved effort on his part. One story illustrates this. After diagnosis of cancer he sought out a not yet established department of cancer research in Sussex University, the head of which came out to see him. They discussed microscopy requirements, and he hobbled out to his shed to demonstrate his precious high powered research microscope to her, and then donated it to the department.

Thinker and intellectual collaborator

Gerry has always been curious about how the modern world has developed, and in particular the role of technology and science in this. He was heavily influenced by David McClelland's book on *The Achieving Society* and gradually built up a network of friends and colleagues, including experts in computing, history, history of science,

anthropology (Penelope Gouk, Steven Shapin, Robert Fox, Derek Keene, Maggie Boden, John Ziman, Jim Bennett, Patrick O'Brien, Simon Schaffer and myself among them). With them he discussed the interplay between technology and society and developed a number of interesting and original ideas on how this worked.

Over the years he read widely, talked to leading experts, amassed a useful library, and thought deeply. As Patrick Reade writes, 'The breadth of his personal knowledge in subjects unrelated to arcane advanced electronics was breathtaking – he could, without reference to texts, converse at length on the changes and advances over one century in microbiology or metallurgy or the history of art or the encumbrances to the development of science in early medieval China or Japan.'

He started with a core of simple and central ideas. That the foundation of life was material. That we can only understand our world if we keep referring to this physical base. That the shifting of atoms, as he called it, is the fundamental feature of this world. That progress only occurs through the exchange of ideas, through networks and collaboration. That there are many obstacles and traps to progress, but they can be overcome. That history is moved by blind variation and selective retention, in the phrase of Campbell. That there are patterns in history, but much is accident.

But while he came back again and again to these ideas, he also was flexible and open-minded in his journey. Starting with electronics and engineering, he moved to economics and psychology (creativity theory). But in the last years we spent most time on social structures, ideas, political systems. It was possible to discuss everything with him and he effortlessly absorbed such great thinkers as Montesquieu, Tocqueville, Adam Smith and Yukichi Fukuzawa into his thought systems. He was in the best tradition of the self-taught, enquiring, mind who had learnt to learn at an early age and through energy, application and high intelligence, mastered many fields.

His 'Renaissance Trust' was aptly named, for the essence of the Renaissance was that in people such as Leonardo da Vinci it was still possible to combine the arts and the sciences, to unite the practical making and doing of things with abstract speculation. Gerry was a true Renaissance man.

Gerry did not find it easy to write. Many of his thoughts and ideas never made it to paper. Among these are the following papers, all of them available on www.alanmacfarlane.com. 'Thoughts on the absence of industrial capitalism and science in Tokugawa Japan. September 1993.'; 'Further thoughts on the absence of industrial capitalism in Tokugawa Japan. February 1994'; 'Fertile ground: some very preliminary thoughts. July 1994'; 'Cultural Diversity and Economic Growth. December 1994. 'Conditions in the West. November 1996.'; 'On the foothills of modernity: reflections upon a Japanese fan'. December 1997; 'Introduction: preliminary reflections on some problems and approaches. April 1998.' 'Thoughts on the approach to the Dartford Tunnel. May 1998.'

As well as these there is one book which contain many of his most important ideas. Gerry developed the important theory of the triangle of knowledge, which explains how science, technology and mass production are linked. He combined expertise as an engineer who had made things, an industrialist who had organized things, and a collector and discussant with academics. He brought together much of his experience

in making precision instruments, his observation of the triangle of knowledge, and his recognition of the need to embed artefacts in history and *vice versa*. This was embedded in a book he wrote with Alan Macfarlane and published as **The Glass Bathyscaphe; How Glass Changed the World** (Profile, 2002). His most recent work includes an article on Glass shortly to be published in *Science.*

Some personal memories

I met Gerry in 1990 and since then we have worked intensively together. We have travelled through China, Japan, Nepal, Italy and elsewhere together and every month or so would spend a day talking and walking either at his Sussex home or in Cambridge. He read and re-read my last five books and many of the ideas in them were suggested by our discussions.

Indeed it is impossible to disentangle our thoughts, so I will just give one very small example of the sort of inspiration I received from him. In my diary for 7th July 2002 I noted: '[The idea of a book of letters to my grand-daughter] came up as an idea in discussions with Gerry. We have talked before about trying to find a format where I could get my ideas to a wider audience. The writing of *Glass* and now of *Tea* encourages us in that direction. But what might be the device which allowed me to bring together all the various thoughts and writings, simplifying them and making them more generally accessible? Gerry suggested that I consider writing a series of short, simple, 'Letters to Lily'. These would be in the tradition of *Alice in Wonderland*, the *Narnia* stories, the *Just So Stories* etc., ie. serious truths made amusing and accessible by apparently writing them for children.'

I started to write the Letters at the end of 2002 and for the next year Gerry read, re-read, encouraged and discussed them. Many of them contained our shared ideas over the years and he was particularly enthusiastic about ideas on democracy and the dangers of economic predation on productive industry.

One of Gerry's memorable phrases was that for the increase of reliable knowledge, centres of knowledge must be 'bounded but leaky'. Our relationship, where from entirely different backgrounds and experiences of bounded speciality we 'leaked' into each other's minds, is an example of what he meant. It was a great privilege to work with such a gracious, humane and wise man.

Some hints of the man.

Gerry was a great maker of things. He had a shed full of ancient Samurai armour, swords, lathes, tools. He would go out and build things for friends and family. He was very good at this, though it sometimes led him into trouble. He rigged up such a hugely powerful searchlight in his garden that the police were called after Gatwick Airport, some 30 miles away, recorded that it was confusing pilots who mistook it for the airport landing approach light.

I remember an ingenious microscope which he made in a remote village in the Himalayas and proceeded to lift up small children to peer through it and gain their first amazed sight of tiny objects.

Not only were his shed and barns filled with objects, but when he opened the back of his car, the large boot was always full of boxes, books, snake serum, flip-charts, a host of things he had collected and was working on.

So a few of the bits that are Gerry Martin stand before us. He remained almost invisible and the only wider recognition I know of is the Honorary Degree he received from Sussex University. His humility and reticence was remarkable, as was his warm and close relationship with Hilda (née Jarvis) his wife, their two children Louise and Tim, his beloved grand-children, Megan, Rosie, William and Jo, and his other close family.

I saw him with children when he accompanied my wife and I to Nepal in 1992 and I saw then, which I saw many times, that like Einstein he retained that child-like sense of wonder at the world which is the essence of greatness. This made him love children and love the pursuit of knowledge as an infinitely pleasant game.

A climate of opinion: some tributes from others

And, of course, Gerry is not dead. He enriched all those around him and as in Auden's words on Freud, he is now 'a whole climate of opinion'. Many minds and lives have been seeded by his care and insights. Here are just a few, to which others will be added.

The eminent Sinologist Professor Mark Elvin wrote to me of Gerry that 'He was a strangely original and engaging person, and possessed of a great generosity and sweetness of disposition'. The economic historian Professor Patrick O'Brien comments 'In death he remains as inspiring as he was in life. He is one of the most remarkable men it has been my privilege to count as a friend'.

Dr. Simon Schaffer, the historian of science writes: His long and brilliant work as interlocutor and indispensable supporter of work here in Cambridge and in so many other places was, I now realise, often directed by a passion for questioning which was a kind of immortality. I see this as an extraordinarily distinctive feature of his whole worldview. In his interest in the Cambridge-based work on museum exhibitions, scientific change and international competition, for example, he was very clear (to paraphrase Francis Bacon) that truth comes more readily from error than from confusion. Getting the right puzzle, even if it proves recalcitrant, was half the battle, and partly because it was then a way of showing so many others how to go on in new and exciting ways.

Renaissance was exactly the right word: not just any revival or renascence, but under Gerry's aegis a revival so powerful and committed that it would prevent any future regression.

This came through astonishingly in his support for the work at the Whipple a decade ago. No-one else would have or could have been more graciously firm with a group of errant historians and scientists. This was not only (though it was also) a superb connoisseurship of the material culture of past sciences.

The insistence, at a series of our meetings, in bringing that famous bagful of treasures, was precisely to bring our questions back to what counted: the intelligent reorganisation of material techniques and substances to further the best human purposes. Nothing made him sadder than wastefulness, for this reason; and nothing made him happier than an argument with tools.

Gerry reckoned no-one irreplaceable: he saw how whole groups of inquirers and makers could carry human purposes together. This was, for me, one of the most moving aspects of his work as patron, inspiration and provocateur. But I think he is irreplaceable, and he would appreciate the irony.'

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Gerry was the invisible man, symbolized by the fact that one of the people at the five-person discussion at the centre of the television series 'The Day the World Took Off' was Gerry. But we only see the back of his head, as he fills in while an American colleague was about to arrive. Without him, the series would never have come about. But he is never mentioned. If there is an opposite to the *eminence grise*, he was it. He shaped a generation of work in the fields where history of science, technology and society overlap and became for many people part of the air they breathed. He died peacefully in Sussex on 14th January 2004.