

Personal Remembrances

It is with great sadness that I heard that Chris Freeman, a brother in arms for over 35 years, a mentor and a very dear friend, passed away last Monday 16 August, 2010. As we did every year, my wife and I were just starting to organise our visit to Lewes to see him for his 89th birthday. Something we promised him at the 80th birthday celebrations in Lewes back in September 2001. It brought us nearly nine years of fond birthday celebrations with him, Carlota Perez, Pari Patel, his wife and many members of Chris's family to cherish and to remember.

My academic but also my personal life has been heavily influenced by Chris Freeman. I first met Chris when I was a PhD student at SPRU back in 1975. Chris was not just an extraordinarily well read scholar, but he also had a unique personality which could probably best be described as what I would call "anti-elitist". This was clearly engrained in his political convictions but he was probably the only person in the world who would apply it so consistently to himself. To the dismay of Carlota and probably most of his friends, growing older he would stubbornly refuse any sign of the slightest favouritism, for example in getting his hip replaced and thus waited and waited in the NHS queue for an operation.

I still remember vividly my first visit to his (previous) house with my wife on a Sunday afternoon somewhere in 1977. Daisy, his youngest daughter must have been about 18 months and was as lively as ever. Chris was hanging up the nappies, preparing tea, running around with biscuits, and while paying attention to us as his guests, continuously discussing with his daughter. What struck me then, and what continued to strike me over the years, was the particular attention he gave to children, young or old, in exactly the same way he would give it to grown-ups. It was as if their words and ideas were as important to him as say, Nick Stern whom I once met at Chris' house visiting and whose father Chris had known well. Chris had this incredible capacity to be open and equal to everybody: getting a cup of coffee or a chair for his secretary came as natural to him as debating "Malthus with a computer" with Graciela Chichilnisky and Sam Cole. It was this total absence of arrogance, this inert anti-elitism which was probably the most striking characteristic of Chris and which charmed me and so many others.

At SPRU, I did my PhD supervised by Charles Cooper and Chris became one of the examiners of my thesis with Michael Posner. If he hadn't been there I think I would never have passed that viva. Posner, who at the time was inundated at British Rail had probably not had the time to read my thesis. The defense was in his BR office in London and he was called out of the meeting every now and then. In the end it became a lecture by Chris to Michael Posner about all the new, interesting things which had happened to the technology and trade literature since Posner had written his paper in 1961 and which could all be found in my thesis. We came back together from London and had a good laugh... The seventies were also the days that I spent many hours with Chris on boat trips from Newhaven to Dieppe and then on to Paris to meet the OECD crowd: Alison Young, Yvan Fabian, Jean-Jacques Salomon, Geneviève Schmeder amongst others. Times I do remember with great fondness: often we were accompanied by Keith Pavitt. Keith had actually only one purpose in going to Paris – watching French cinema – so we dropped him off at the movies, went off having a good meal and spend hours in long discussions.

It was also Daisy who was ultimately responsible for getting me more closely involved in Chris Freeman's research. Back in 1976, I had of course listened with fascination to Chris's devastating critique of the OECD McCracken report and his radical thoughts on a structural break having occurred in the period of long-term, full employment growth in OECD countries. And I had also been excited by his thoughts on Schumpeter and in particular on the possible existence of Kondratieff long waves accompanying the emergence of "clusters" of new technologies. But at that time I was working with Keith Pavitt on the technological competitiveness of British industry. In 1979 Chris was invited to go to Bochum to what was considered at SPRU to be the most important conference of the year where Chris would present his Schumpeterian long wave ideas in the midst of economic historians. The day before the meeting Daisy fell ill with flu and Chris decided not to go. Charles Cooper, John Clark all declined when asked whether they could replace him, so in the end I went. I presented Chris's ideas and became myself quickly addicted to the radical nature of them. Those days were revolutionary times at SPRU. I won't elaborate here on this, but I remember Ian Miles shouting one evening when we left the SPRU building after a ferocious debate at the SPRU seminar on technology and unemployment to Chris and myself: "Luddites!"

But it gradually became the area where I got myself most closely involved in writing with Chris and many others at SPRU, from John Clark, Roy Turner to Giovanni Dosi, Pari Patel and last but not least Carlota Perez. Chris always provided the inspirational quality, the wealth of historical references to authors some of us might have heard of once, but never read anything of. And then there was the way Chris would make a presentation: impossible to imitate. There wasn't just the oral quality of the lectures given without a single note, without a single hesitation but also the intensity with which he could present his, as well as others, arguments that made you hang on to his every word. Chris' seminars were overcrowded with an audience often begging him not to stop, but to continue his talk. What was so incredible is that Chris' unique oral talent in ordering and expressing his thoughts in both a clear, analytical, logical and compassionate way, was also the exact way he wrote. With sentences which were perfect, where nothing needed to be added. It probably explains why I loved writing with Chris so much from then on! From the late 70's when, I together with John Clark became involved in the book Chris wrote for Frances Pinter – another person who was very fond of him – on Unemployment and Technical Innovation to the last joint publication in Research Policy last year, we always fought on who would be second author. I am delighted that, sometimes while cheating I often succeeded in winning the battle. Chris' passing away leaves us all with a great empty space: the one you could call up to congratulate, lately unfortunately often to sympathize, with the latest performance of the British/Sheffield football team; the one who would ring

you for your birthday, send flowers for your wife's birthday; the one who was always ready to go along with crazy ideas; to passionately defend his views or stubbornly would disagree with you.

Over those fifty or so last years Chris influenced thousands of researchers, policy makers and students across the world in the fields of science and public policy, research and development measurement, the history of social science studies, Schumpeterian and evolutionary economics, research evaluation, innovation management, technology and innovation policy as well as in making both macro- and micro-economics, international trade and economic history more aware of the central role of technological, institutional and social change. Funnily enough, he did so, not by using Information and Communication Technologies, which he had studied so much, but through personal contact, through being available to all without any exclusion and through his openness to alternative views and ideas.

Luc Soete

UNU-MERIT, Maastricht, The Netherlands

Since I first came across 'The Economics of Industrial Innovation' as a young student 35 years ago, Chris Freeman has been my inspiration. Together with a few others such as Dick Nelson and Nate Rosenberg, he helped to create the field of science policy and innovation studies.

Besides his immense intellectual contributions, in particular on the economics of innovation and on systems of innovation, Chris was also very much 'an academic entrepreneur'. Among the innovations for which he was responsible was 'The Frascati Manual', and the subsequent stream of work on S&T indicators at OECD and around the world. Secondly, he set up, shaped and for many years directed the Science Policy Research Unit, SPRU, which during the 1970s and '80s was the leading institution in the field. Thirdly, with colleagues at SPRU and in Germany, he founded and edited for over 30 years the journal 'Research Policy', establishing it as the leading journal in the field.

Chris embodied the notion that the purpose of research is not just to understand the world but to change it - and to make it a better place. He also recognised that this could not be done on an individual basis but required collective effort - working with colleagues in SPRU and with a growing community of innovation scholars from all round the world, including Latin America, Asia and Africa as well as North America and Europe.

He was an incredibly inspiring lecturer, of a type now sadly almost extinct in an age of drab Powerpoint presentations. He was also one of the most intellectually generous researchers I've ever been privileged to meet, always trying to pass the credit for a new insight or some other contribution to someone else, preferably someone junior. Consequently, not only was he one of the most admired of social scientists in the second half of the 20th Century, he was also one of the best liked.

He will be missed by all.

Ben Martin

SPRU - Science and Technology Policy Research

It is a privilege to have known him. Very few people have shaped the way I see the world as much as he has.

Dick Nelson

Columbia University

Professor Chris Freeman was an inspiring and great teacher.

I learned a great deal from him and continue to do so as I reread his works. He was a leader and made generations of students think about the importance of technological change and innovation, as well as the need to know some history when studying economics. He was very much loved by his students, his colleagues and friends. I will miss him.

Nathan Rosenberg

Stanford University

Please receive my condolences for the lost of Prof. Chris Freeman. I will never forget his great personality, his fantastic approach to teaching and learning, and particularly, his humble concern for SPRU and its students. He was always there in our "brown bag seminars", always interest in students' projects, always a friend and a mentor for all.

Martha Burkle

CISCO Research Chair in e-Learning, SAIT Polytechnic

I admired Chris Freeman's published research and commitment to the public interest long before I met him. He presented a model for the highest quality policy research and diplomatic advocacy. When I came to know him I learned about a man of modest brilliance and kindness and support toward all - researcher characteristics of the highest quality that were part of a warm and welcoming personality. I have lost a hero.

My sincere condolences to the family and friends.

Bill Melody

I heard the sad news about Chris. In my memory he will always remain as a dedicated researcher. I will also remember very well when he was enthusiastically building lego with my boys lying on the floor in my home in Linköping - about 23 years ago.

My warmest regards

Charles Edquist

Holder of the Ruben Rausing Chair in Innovation Studies

Director of CIRCLE (Centre for Innovation, Research and Competence in the Learning Economy), Lund University

In 1972 I spent a year at SPRU while on sabbatical from the US National Science Foundation. I selected SPRU because I wanted to be at the best European Science Policy Center and especially with Chris Freeman. My stay more than justified my expectations - especially with respect to Chris. He became a great friend and an outstanding teacher. Consequently I was sad to hear about his death and want to express my deepest sympathy to all SPRU members.

Chris had many facets. He was one of the kindest persons I have known. He was very patient, gentle but incisive in his critiques of publication drafts and in discussions with people of different points of view. But he could also be very strong minded when he felt that his approach was right and in his efforts to build up SPRU to become a leading institution in its field. It also became very clear during my stay that he was the unquestionable intellectual leader of SPRU and a great proponent and early pioneer of interdisciplinary activity in the study and analysis of science and technology which was one of the strengths of SPRU.

He will be missed but will remain a key figure in the development of S&T analysis and policy formulation.

Charles Falk

It was very sad to hear about Chris. He was truly an inspiration.

Ayesha Aziz

MSc TIM 08-09

Chris was an intellectual powerhouse and an inspirational teacher. Jacky and I were privileged to be among the many who learnt so much from him. We admired his integrity, his warmth, his generosity and his genuine humility: he would sit and join in the chatter in a group of students and behave as if he was the novice and they the experts.

Peter and Jacky Senker

Please accept our sincere condolences on the passing of Chris Freeman. Besides being one of the most important economists and professors of our times, he was a lovely man who touched many lives with his wisdom and generosity.

His contribution to the understanding of innovation, innovation policy and development was, without any doubt, paramount. In Latin America, and particularly in Brazil, his thoughts have influenced the work and vision of generations of researchers and policy makers. His sad departure has created an aching void, especially where his vast knowledge and experience are greatly needed and shared.

On behalf of other colleagues of the Brazilian Development Bank, we send you our deepest sympathy and solidarity.

Please extend our heartfelt condolences to his family.

Luciano Coutinho - President

João Carlos Ferraz - Director

Helena Lastres - Office for Local Production and Innovation Systems and Regional Development

I have met with Chris Freeman many times over the past some forty years in the national and international circuit on the subject of science, technology and innovation. I always was deeply impressed by his knowledge, his vision and by his wisdom. Chris was a person of warm personality and great modesty.

I will never forget one special event which took place in the late 1970's. On our way back to Brussels from a three day international meeting at La Roche in the Ardennes, where we met with a small international group to produce a paper on behalf of the European Community. I asked Chris whether he had been here before. He answered in the affirmative whether he had been vacationing there and how long ago that has been. After some time his answer was that it had been in December 1944 when he was fulfilling his military duty in the British army as a tank-commander in the battle of Bastogne. I was deeply impressed and kept silent for quite some time.

Chris was a warm personality and a great friend.

I will never forget him.

Walter Zegveld

Rijswijk, the Netherlands

It is with great sadness that we in the South learn of the death of Chris Freeman. He most certainly was an inspiration to us all and set out an agenda that is still unfolding. His polite patience can serve as a model to us that try to teach

Best wishes to his family and friends

Michael Kahn

IERI, Tshwane University of Technology

Chris Freeman taught me most of the things I have learned as a professional economist of technology, and he will continue to influence heavily my research. A monumental scholar, Chris was -- if at all possible -- even more exemplary as a man: humble, helpful, encouraging ...

Alfonso Gambardella

Dear Chris was such a special man, full of love for everyone, so humble and kind and loathe to acknowledge that he had a brilliant mind and had made such an important contribution to this world. He will leave a huge gap, but will live on in all those he has touched in the many years of his long and productive life. I shall certainly never forget this gentle giant and feel privileged to have known him for the last 20 years.

Susan Lees

I am extremely saddened by this news of Professor Freeman's passing away. He was such a giant among those interested in innovation studies and has been truly innovative in his style and thinking, among other things, the originator of the National System of Innovation framework. He was particularly generous to younger colleagues and took an active interest in encouraging them. We thank him for this life in this world. May his soul rest in peace.

Sunil Mani

The passing of Chris Freeman is for me a significant event, both because I knew and was fond of him over the course of many years, enjoyed his company and his lively humor on the occasions we were together, and because from the beginning of our acquaintance I was forcibly struck by his vision, his seriousness of purpose, and the sheer energy with which he inspired those who followed him into "the economics of research policy" -- the sub-discipline that he, more than any other individual, had brought into existence and continued to animate for so many years.

Paul David

As founding Director of CURDS I am writing to express the sadness of all of the members of the Centre past and present at the death of Chris Freeman.

In many respects Chris was influential in the foundation of CURDS way back in 1977. His leadership in the early days of SPRU was not only inspirational locally but globally. He was way ahead of his time in linking rigorous empirical research to policy and practise but remained forever humble about his contribution to the public good. He was an exceptional leader influencing generations of researchers.

The world has lost a truly great man.

Kind regards,

John

Professor John Goddard OBE, PhD, AcSS

I just learned the sad news. I, as you all, shall miss Chris and his inspiration. I am just one of those lucky ones who had the privilege to know him.

Luigi Orsenigo

It is really sad news that Chris Freeman passed away. We lost our father of the innovation studies! I condole for his death with all of our colleagues in Korea. I believe he went to the heaven, a peaceful and lovely place forever.

He is the greatest scholar and teacher of the innovation studies in recent history. He has been always kind to students and showed himself what is real moral and dignity of a great scholar.

Kong-Rae LEE

Chris has been an enduring influence on my life and work, as he has been for so many others.

Rarely can such an unassuming and compassionate person have achieved so much in intellectual achievements, leaving warm memories alongside admiration.

Ian Miles

I am deeply saddened to hear that Chris Freeman has passed away. I have learned so much from Chris as a student of science and technology policy. He was warm, friendly, kind hearted and a source of inspiration.

After I became an academic, I always looked forward to seeing Chris whenever I had the opportunity. Chris will be missed by many, many people around the world. He will always remain in our heart.

Thanking Chris and god bless, my condolences to Carlotta and family.

Kumiko Miyazaki

As a Technology and Innovation Masters student back in 1995 Chris impressed me the very first time I spoke to him because he was so humble and ready to listen to people.

I told him about my undergraduate dissertation on innovation in high speed trains, and that in one of his literature reviews that I had read about innovation in different industrial sectors this industry was not mentioned. He told me he should have included it and almost apologized about it. I was impressed, this gave me the measure of how much he was keen on sharing views with other people and how humble he was ... He was a Professor, he had written books and articles which are milestones in the field of innovation studies and was sorry with a student ... a great man, an example for everyone.

Thank you Chris

Pietro Ceolin

I am very sorry to hear this sad news.

I think many members of staff who were part of SPRU's professional support team during the 1980s and 1990s will have fond memories of Chris Freeman as a much respected, kind and perceptive presence, always interested in everyone whatever role they had. He made everyone feel that they were a valued member of SPRU with a part to play in its success.

The members of that support team are largely dispersed elsewhere, but I am sure most were very much affected by the

powerful sense of being part of something new, challenging and of enormous relevance to international policy issues. The energy and influence of his work brought a real sense of purpose to our roles in SPRU.

I feel really lucky to have had the opportunity to be involved in SPRU's work during that period.

Maureen Winder

My condolences with the SPRU staff and the family.

I highly appreciated Chris, both as an author and a person.

Loet Leydesdorff

Dear Chris,

In this morning, I heard about you. I would like to say, peace be with you!

Gyu-hee Hwang

Such sad news, Chris was a great help to me in the early stages of my career with his unfailing support and generosity of spirit, as he was for countless others. The legacy is large and worldwide. He was a true scholar and beacon in the intellectual darkness.

Stan Metcalfe

Manchester

It is sad that I cannot see him any more.

Chris used to be like grand daddy for DPhil students, doing whatever he could do to help students, even turning up at seminars organised by the students. We could be encouraged by his warm heart and insights.

I just think of him as a fountain of encouragement. Whenever I feel frustrated about my research, I could get strength by thinking of visions and spirits of research he showed me. I could feel tears in my heart and in my colleagues' when he gave a roaring speech. Even I could see his tears when he talked about his past experience which had driven his research. There was a passion for research and for life in his speech and practice. Thank you Chris for your heart and passion and love which were great blessing to me and my colleagues. I pray God bless you in heaven.

Chaisung Lim, D.Phil.

Professor, Director of the MOT MBA program, Graduate School of Business

Director of the Research Institute for Global Management of Technology for Catching Up (GMOT)

I will express my deepest regret over Professor Freeman's death.

Fumio Kodama PhD

Professor Emeritus (University of Tokyo, and Shibaura Institute of Technology)

When I got the sad news this afternoon I went on to see Chris' lecture on Bernal (www.vega.org.uk/video/programme/86). Chris was a truly generous person and a Titan among scholars in our field, but he was certainly also an incredibly inspiring lecturer..

Indeed, he will be missed by all

Keld Laursen

After a long drive up to the shores of Lake Michigan, I opened my laptop to check up on a day or so of lost e-mail, and in my inbox were a slew of messages reporting on the passing of Chris Freeman. It's apt that I sit here writing this feeling the cool breezes off the gorgeous clear blue lake on this magnificent August day thinking back on his work and life.

Chris Freeman was one of the greatest thinkers and scholars of innovation and the dynamics of the capitalist economy. His impact on me was huge, not just as a thinker but as a person and a role model. He wasn't just a scholar, he was an institution-builder and the institution he built -- the Science Policy Research Unit or SPRU -- helped define the field of innovation studies. He was also a key force behind the journal Research Policy, which published so many key article and essays that shaped this field. Freeman had a most profound influence on my work. I pulled his books off my library shelves just this past year -- his work on long waves, the bundling of innovation and the role of innovation and capitalist crises as I was working on my latest book. He wrote articles and books packed with data and insight but always in clear, concise language. I've tried my best to follow a bit in his footsteps -- to stand as much as I can on the shoulders of this great intellectual giant.

There is so much more I could say about his work and his influence, but right now I am remembering the first time we met. It was twenty of twenty five years ago -- at a specialized academic conference on innovation. He was a distinguished senior scholar, and me a very junior, very beginning assistant professor. I was very nervous to approach someone whose work I had read and who was something of an idol to me -- and to so many of us at the time. But I made my way over and introduced myself and tried to say something that might connect. What came out, rather awkwardly was this: "So what Professor Freeman, what was it exactly, that drew you to the work of Joseph Schumpeter?"

Perhaps reading my body language or understanding my own influences and thought processes better than I did myself, he smiled kindly and replied straightforwardly. "I've always been fond of Schumpeter, but when it comes right down to it, I was really into Marx. But in those years it was taboo to talk about Marx, so I started writing about Schumpeter and the rest is history."

I was blown away by his honesty and candor - how he captured in that one short remark the nature of the academic enterprise so to speak. It was one of the most important sources of advice and inspiration I would ever receive, and on so many levels. His words have stayed right at the front of my mind to be retrieved whenever needed for all those intervening years.

He will be missed but his work and influence live on.

Richard Florida

Please accept our sincere condolences on the passing of Chris Freeman. Besides being one of the most important economist and professor of our times he was a lovely man who touched many lives with his wisdom and generosity.

His contribution to the understanding of innovation, innovation policy and development was paramount.

In Latin America, and particularly in Brazil, his thoughts have influenced the work and vision of an entire generation of researchers and policy makers.

His sad departure has created an aching void, especially where his vast knowledge and experience are greatly needed and shared.

Please extend our heartfelt condolences to his family.

Helena Maria Martins Lastres

Brazilian Development Bank

Indeed, for someone of his stature, Chris was the most generous and kind person I ever met. He invites the best in others and will be sorely missed.

Rene Kemp

Maastricht University

Today we received the sad news of Chris' passing away. A tremendous figurehead of innovation research has left us and it is a sad day indeed. But before going to bed I will cherish the memory of Chris as curious scholar of stature that compares to few. I remember him teaching international PhD students at a course in Maastricht in 1996 - I was spellbound (this was before Power Point presentations) and I ran away after the lecture reading more of his work. When arriving at SPRU as a visiting fellow in 2001, Chris came in every second day or so to Mantell and always had time for a chat about research or other intellectual issues. His succinct comments were invaluable for a young researcher. Although razor-sharp, he always gave them in a friendly and supporting way. Attending the fantastic SPRU seminars, one often had the feeling that Chris asked one or two questions to the presenter exactly to the point early on, and that subsequent questions by the rest of us remained variations on similar themes. One of the proudest days in my life as a researcher was when someone told me that I had been cited by Chris in one of his publications. Such recognition by someone who really understood the dynamic and systemic nature of innovation was almost beyond belief to me.

As a founder of SPRU Chris of course made an unparalleled contribution to the institutionalization of research into areas such as economics of technical change, management of R&D, and innovation policy. Having spent most of my time as a researcher at Linköping University in Sweden, I know that the Tema (Thematic, interdisciplinary, research) department at this university was partly modelled upon SPRU. Much deserved, Chris also received an honorary doctorate from Linköping University in 1977.

You will be dearly missed Chris, but inspired by you we will carry on the baton in our quest for improving our understanding of innovation and technical change. My thoughts are with your family and the entire SPRU and innovation research community.

Fredrik Tell, PhD

Professor

Department of Management and Engineering

With deep sorrow, we became aware of Professor Chris Freeman's peaceful departure, earlier today.

In the last 35 years, we have benefited immensely from his ideas, energy, generosity and approach to life as supervised students, researchers and friends.

Our approach - and of hundreds of Brazilian academics and policy makers - to development and innovation has been enormously influenced by his profound knowledge, original insights and thoughts.

He will surely remain as a shining light guiding our minds and hearts. In our name, as well as of the researchers associated to RedeSist and the Brazilian innovation scholars, we send you our deepest sympathy and solidarity.

Helena Lastres and José Cassiolato

RedeSist/Brazil

I am truly saddened by today's notice of Chris Freeman's death. He was truly inspirational not only when I joined SPRU but also when I was still a first-year student at a different university in another country. In particular, I admire how his work and thinking combines (idealistic) macro-concerns with a clear understanding of individuals needs. My work owes a lot to him. I will miss him and hope his legacy will continue through all those students and colleagues he has inspired over the years.

Ruud Kempener

Research Fellow - Energy Research, Development,

Demonstration & Deployment Policy

Energy Technology Innovation Policy

Harvard Kennedy School of Government

I posted a brief testimonial to my blog, because it mainly has academic readers

blog.openinnovation.net/2010/08/chris-freeman-1921-2010.html

Joel West

There have been so many people who have impressed me as much as Chris did! I had the favour that I knew him and could listen to him!

My condolences to the family!

Bert Sadowski
The Netherlands

Chris was one of my PhD teacher, one of my viva examiners and the one who encouraged me to write my first book, of which he wrote the forward; later we have kept in touch and he has always provided me his precious suggestions for my professional life. He was a great scholar and a great man; I will miss him so much, as many, many others. In his memory, we have to keep on following his teaching and strengthen the scientific community he had the merit to found.

Marco Vivarelli

He was a dear friend and a had a major influence on my life and work as with so many others.

Andy Graves
Bath

I was very sad to learn that Chris has passed away. His contribution was immense both to the development of SPRU and to innovation studies worldwide. We will continue to stand on his intellectual shoulders for many years to come.

John Barber

In the words of Ecclesiastes.. Let us now praise famous men... Their bodies are buried in peace; but their name lives on for all generations."

In 2000, The University of Edinburgh awarded Chris Freeman an honorary degree on the grounds that he was "surely the figure who has made the single greatest contribution to the development of the field of Science and Technology policy studies in Britain and internationally. In setting up and running the Science Policy Research Unit (SPRU) at Sussex University in 1966 - 1986 he helped establish this interdisciplinary field."

We wanted to record his important role as a bridge-builder in the field – helping to bring together economic analysis of innovation with historical and sociological analyses. He was the leading contributor of his generation to these debates. He was also outstanding in the support and encouragement he has offered to colleagues in his own institution and elsewhere. Directly and indirectly his work has touched all of us. I am sure that all members of the Association for the Study of Innovation, Science, Technology will want to extend their sympathies to Chris Freeman's family and to his colleagues in Brighton.

Robin Williams

I was saddened to hear about the passing away of Chris today. Chris was nothing less than the founder of the field of innovation studies as I have known it. His influence has been enormous, not only because of his very influential writings and doctoral students, but obviously also due to the fact that he founded SPRU. Among other situations from SPRU, I fondly remember his (somewhat!) friendly fights with Keith Pavitt about the role of government in inducing technological change in catch-up countries. His hoarse, yet firm voice surely made you listen. Based on many, many accounts, I'm not sure that I can think of another person in academia who was as generous as him—regarding colleagues and not least toward younger scholars.

Keld Laursen
Copenhagen Business School

Chris Freeman was a brilliant scholar and economist of technological and social change. He was also a very kind man who lent his support and advice to several young academic staff who developed their research and teaching careers in Innovation Studies at the University of East London. He will be greatly missed by us all.

Our deepest sympathies to his family and friends,

Gavin Poynter
University of East London

Chris Freeman created a great legacy that gave the developing world hope in the power of science innovation in improving human welfare. The best tribute that we can pay to him is to rededicate ourselves to pushing the frontiers of innovation studies with the same level of intellectual honesty, humility and sense of fairness that Chris embodied.

Calestous Juma FRS
Professor of the Practice of International Development
Director, Science, Technology and Innovation Project
Belfer Center for Science and International Affairs
Harvard Kennedy School, Harvard University

I'd like to express my sincere and heartfelt condolences to Chris Freeman's family, friends and colleagues upon today's sad news. I was first exposed to Chris and his ideas as an undergraduate studying the relationship between society and innovation. From the moment I grasped his neo-Schumpeterian theories there was only one place I wanted to study to expand my understanding. We only met a few times, but the knowledge he managed to impart in those few meetings was an immense help in completing my dissertation.

But far more importantly than any help he gave me, or any other single student for that matter, is his legacy for the academic study of innovation. Indeed, with his work on understanding the nature of technological paradigms and national systems of innovation, he left the world of innovation studies a much richer place than when he arrived, and his passing is a loss that cannot be measured.

Andy Tanner-Smith

MSc Science and Technology Policy, 1996-7

The community of science policy scholars has lost one of its most outstanding people, world wide. SPRU is renown with much of the credit going to Chris. We will all miss him. Please give my condolences to his family and all his colleagues from SPRU.

Lewis Branscomb

Prof emeritus, Harvard KSG

Prof adjunct, UCSD

Distinguished Research Fellow, Institute for Global Conflict and Cooperation, Univ. of California

Chris was a wonderful person. I first met him when he taught and supervised my MSc course essay in 1985. Instead of the usual formal discussion between student and supervisor, Chris said let's meet over a beer in IDS bar to discuss process innovation. That set the tone of my subsequent interactions with Chris. He could manage to work at the highest intellectual level, while retaining a wonderful human touch. As I got to know him over the years, we spoke a great deal about my research on complex products and systems, but even more about football.

He will be remembered for a long time.

Andy Davies

Reader in Innovation Management

Innovation and Entrepreneurship Group

Imperial College Business School

In 1992 I was head of the Department of Innovation Studies at the University of East London when Chris Freeman was kind enough to accept a Visiting Professorship at UEL. Sally Wyatt and I travelled to SPRU one sunny spring day to issue the invitation on behalf of the Department. We sat on the lawn outside the Mantell Building and talked for more than an hour about the creation of Innovation Studies at UEL and its place in the historical development of Science and Technology Studies. Chris reminisced about the influence that JD Bernal had on his early intellectual formation. It was my first face to face meeting with a truly remarkable man who had become a legend to all the young people who had the privilege to be taught by him. I was able to witness first hand the source of that extraordinary charisma that inspired all those that came into contact with him and which was rooted in his complete lack of affectation and in his modesty, as well as his unique intellectual powers.

He will be greatly missed.

Alvaro de Miranda

London East Research Institute

School of Humanities and Social Sciences

University of East London

Chris has been for all my generation of STS workers an icon and mentor. A truly great contributor to our understanding of the field, and a delightful person.

Harry Rothman

Chris will always be remembered as a beautiful human being and a wonderfully gifted researcher who revolutionized innovation studies area.

Although today he acquired wings he leaves his roots deep in all SPRU community.

Aurora Teixeira

PhD at SPRU (1997-2001)

Chris Freeman left a great heritage to us, he has been the inspiration to follow not only professionally, but also ideologically. It was only a few days ago that chatting with Nick about whether Trotsky would wear a bluetooth, he mentioned about how much Chris would have loved talking about it as well. We will miss him.

We will pray for Chris, may his soul rest in peace.

Yari Borbon-Galvez and Maria Del Sorbo

Many thanks for informing us of Chris Freeman's death and for sending the obituary. The obituary was very touching and did homage to the life-time of search and work of an original mind, a giant amongst us.

Terttu Luukkonen

Head of Unit

The Research Institute of the Finnish Economy (ETLA)

Like many of us I am at a loss to understand that Chris Freeman is no longer with us. Chris has shaped the research agenda of so many people, and he was always willing to share his deep insights into the complex world of innovation.

One of my fondest memories is the role that Chris played in a meeting that I had organized in a monastery in Dourdan/France in

February 1989. The meeting brought together some of the best minds in innovation theory from all continents, and from very different backgrounds. The task was to draft an Agenda for the 1990s for Technology Policy in the globalizing world economy. I still don't fully understand how he did it, but Chris was able to get us all focused on one simple question: How to shape globalization in order to foster the diffusion of knowledge and innovation capabilities? During two days (but especially in night sessions), this gave rise to heated debates. Only someone with the natural authority and passion of Chris could bring this group to agree on key policy suggestions (his earlier OECD experience also helped!) By the way, the results of those Monastery deliberations are still available from the OECD: *TECHNOLOGY AND GLOBAL COMPETITION. The Challenge for Newly Industrializing Economies*

Ernst, D. and D O'Connor

Development Centre Studies, OECD, Paris, 1989.

Dieter Ernst, East-West Center, Honolulu

I heard the news about Chris with great sadness. As a student at SPRU, I remember how generous he was with his time, how open he was to discuss everything, and most of all how sharp and precise his reasoning and thinking always was. He's been an authentic role model and an intellectual beacon for all. Original, broad, keen, challenging, humble. A wonderful example of what a scientist should be.

Stefano Brusoni

I was saddened to hear the news of the passing away of Chris Freeman.

I was privileged to have met him, albeit for a very brief period during my student days while at SPRU. He was incredibly polite and humble. His ideas on several issues from innovation to environment to helping the poor were far ahead of the time when they were first presented.

He will be missed by all

K.Thiruchelvam

Malaysia (SPRU, 1993-1995)

Chris: A personal note

It feels strange this Chris will not be around anymore. No one has done more to establish the field of innovation studies, and he was the personal embodiment of Schumpeter's dictum of combining a historical perspective with economic theorizing and statistics in the analysis of the long run evolution of the capitalist economy. His academic accomplishments are many and varied. But what I would like to emphasize here is the strong effect he had on other people. Ever since I had my first encounter with him nearly thirty years ago, meeting him always left me with more energy and optimism with respect to what I and my collaborators could accomplish. In later years, when he couldn't travel any more and we did not see each other so often, even thinking about him had much of the same effect. I have asked myself why this was the case. The most simple answer, I think, was that he cared. The stories about the intellectual support he gave to younger people in the early stages of their career are numerous, and I received my fair share of that. Even if he was not my supervisor, he read and commented upon every chapter of my thesis, and he invited me to take part in stimulating events such as the process that led to the publication of the justly famous IFIAS book (Dosi et al 1988). His engagements in people extended far beyond professional relationships, however. For example, after having met my family, he sent my children, then aged 3 and 6, presents, a practice he continued for some time. Finally, Chris also cared strongly about issues. He was not satisfied with purely academic accomplishments but mobilized his strong intellect and deep knowledge to engage in socially and politically important matters, such as, for example, the unjust distribution of income and welfare in the global economy. Chris wanted to make a difference, and he did. Stuart Blume recently said to me that for him Chris was the role model of an academic. I could not agree more.

Jan

Professor Jan Fagerberg

Center for Technology, Innovation and Culture

University of Oslo

There is little needs to be said about the immense contribution Chris made to the establishment of our field and to several of the key concepts which underpin it. To what is said in the Times I would add the keen interest Chris always had in the work of young researchers - he never tired of hearing ideas from PhD researchers and those in the early stages of their careers. He also had a great talent for synthesising ideas from many sources to create a workable framework.

Best regards

Luke Georghiou

Many thanks for passing this along, it is much appreciated. I saw reference to Chris' passing in a blog yesterday and having been looking for the obituary online, so am very glad to have this.

Please accept my deepest sympathies and pass them along to all your colleagues at SPRU. I am sure that you will be received many messages like this, but I am just one among the many young and eager scholars for whom Chris threw open his office door back in 1987 and responded to all my queries in his usual reflective manner, no matter how naive some of them may have been. I still remember the brilliant analysis in a presentation he gave at an IFIAS sponsored meeting in Niagara on the Lake on the launch of Technical Change and Economic Theory on the relation between Weber and Schumpeter.

As Richard Florida commented yesterday on his Creative Class blog, Chris has been an inspiration to countless young researchers

like myself for the past three decades. He will be sorely missed, but his academic and intellectual legacy is immeasurable.

David Wolfe

I was very sorry to hear of his death. I greatly admired him and he has left a wonderful legacy in terms of ideas, former students and SPRU itself.

Please pass on my sincere condolences to his family and close colleagues.

Geoff Mason

Thank you for letting me know this sad news. Chris will be greatly missed by several members of CREES - I shall pass on the news. A bad week – we learnt yesterday that our former colleague Moshe Lewin, the historian, has died - at the same age as Chris.

Julian Cooper

I am sorry to hear that Chris has died. Actually I remember a tea break talk I had with him where he asked for psychological research on creativity. And you know where that has taken me.

Sven Hemlin

Gothenburg Research Institute (GRI)

Thanks for sending me the sad news and obituary. I count Chris as one of the finest people I have ever known and a great and generous mentor. I know Ian Miles and others I have contacted feel the same. I have asked Zia Sadar if we could have a special issue of Futures either republishing some of Chris' papers in Futures or similar. At the very least I will write about his contribution to futures studies. Warm

Sam Cole

My deepest condolences to the Freeman family. Myself along with fellow students had heard and read a lot about señor Freeman during our SPRU days.

Finally for him this chapter has ended and the next one has already begun.

Am sure he led an eventful life and has left a wonderful family behind, who will remember him for what he was and did.

May he Rest In Peace and God bless us all.

Anuvrat Singal

It was sad to know about Chris passing away.

Chris Freeman was the academic thinker that most influenced my professional training. His contribute was critical for the understanding of a central aspect of the dynamics of contemporary economies. The publication of the 'Economics of Innovation' was decisive in establishing an academic topic that is now taught as a discipline in many undergraduate and graduate courses across the globe.

But my memories of Chris go well beyond the academic achievement. His humbleness was at odds with the arrogance that characterizes a great deal of those raising high in the academic ladder. He had a natural delicacy that led him to provide graciously help to anyone in need of guidance. In a context of global selfishness his civic attitude shall be noted and promoted further.

Manuel Mira Godinho

Professor of Economics

ISEG, Technical University of Lisbon

Freeman is a towering presence in innovation studies. Indeed, it is through his work that some of us discovered that the field we were looking for existed.

Henry Etzkowitz

President, Triple Helix Association

An unfortunate coincidence: I am offering a course on Dynamics of Innovation and in my last class this Tuesday 17 August, we discussed the Freeman's seminal paper "Continental, national and sub-national innovation systems - complementarity and economic growth" published in Research Policy 31 (2002) - unaware that he had died the day before.

Freeman was undoubtedly an outstanding scholar in innovation studies.

Jose M.C. Mello

Visiting Professor

Fluminense Federal University

I was very saddened to learn this news upon turning on my computer earlier this week. I remember being moved to tears many years ago when listening to Chris give a lecture on long waves. Nobody else combined such intellectual brilliance with such humility and humanity. His work and his person have been of profound importance for me and for so many others.

My condolences to his family, friends and the community of scholars to which he gave so much.

Sally Wyatt

Royal Netherlands Academy of Arts & Sciences

I just heard the sad news of Chris's passing away. We all know what an outstanding personality he was and what was his singular contribution to the emerging fields of innovation studies and systems-evolutionary approaches. Chris also significantly affected my professional development, in particular with respect to the gradual shift from a neoclassical economics education to research in the new area of innovation studies and eventually (with the help of Dick Nelson starting in 1977) to research on evolutionary perspectives .

My first meeting with Chris was in Buenos Aires in 1969 and on the basis of a preliminary talk then, I contacted him after moving to Israel in 1970 and after I began searching for a topic in the area of innovation studies. By responding to two research options I presented to him, in a rather detailed and supportive way, he facilitated my `entry` into the field of innovation studies. This was not easy since my own research up to then was in neoclassical growth and trade models (which included learning and technology, but still formulated in neoclassical ways) which was contrary to the research tradition at the Department of Economics at the Hebrew University of Jerusalem.

During the 1970s I was a regular visitor of SPRU where I found support for the new research trajectory I had begun. Chris's influence and spirit throughout were extremely important and I had regular contacts with Chris, Keith Pavitt and others, including joint work with Roy Rothwell.

He will be remembered and I will miss him,

Morris Teubal

Chris was simply the most inspirational person I met in my whole academic career - brilliant, charming and self-effacing.

Professor Alan Cawson

How kind of you to send the news - what a splendid obit! Please send my commiserations to all, particularly Carlotta.

I wish you (the trad Jewish greeting after a funeral) long life!

Jonathan Gershuny FBA

Department of Sociology

University of Oxford

I was very saddened to hear that Chris Freeman has died. I completed my DPhil at SPRU in 1997 and Chris was one of my examiners. Chris was a huge inspiration to me during my time at SPRU. I was incredibly impressed by his learning and above all his humility. He would never stand on ceremony and was always willing to engage into deep discussion with students from backgrounds. Chris will be sorely missed but his legacy and what he gave to Sussex will I am sure remain a living memory for many years to come.

Andreas Credé

DPhil Student at SPRU, 1993-1997

I was very sorry to hear of Chris's passing. Please do pass on my condolences to his family. I only met him once or twice but he had an enormously positive influence and really shaped us all, probably much more than we realise. Thanks very much for forwarding his 'Times' obituary.

Susie Morrow

The death of Chris Freeman was indeed very sad news. Chris was not only one of the founders of the fields of innovation studies and of evolutionary economics but he was also a person of great humanity. If his death is an immense loss for all of us, his example will be a continuing source of inspiration for all the researchers attempting to advance the frontier of knowledge in these fields.

To Chris's family and to SPRU people my most sincere condolences

Paolo Saviotti

I did not find it easy to acknowledge that Chris has departed physically from this world on August 16, 2010. I did expect to see him because when I met him some three months ago, he assured me that I will be able to see him again. His mind was sharp. His memory was intact. His dignity was striking. I had no reason but to believe that we will meet again. It broke my heart to hear the sad news that I did not expect to hear. When colleagues saw me completely consumed in grief and tears, they encouraged me to write my story and even an obituary implying that will make me feel better. But every time I started to think of writing, I got overwhelmed by an icy sadness. I got energy from communication from Gabriela, Luc, Jonathan and finally Carlota. How I wish I can see you and all the good friends of Chris and embrace you to share the grief I know you all have. I am at the moment in South Africa away from family and the close friends who know Chris as I do. I look forward to see you and share our fond memories together. The memories we have are many, alive and deeply soulful, so touching and inspiring. I cannot possibly articulate all my thoughts about Chris in a few words as I am writing this note today.

It is nearly 30 years since I met Chris in 1981 when Robin Murray left as the chief economic Advisor to the Greater London Council. Robin told me that Chris and I will work together and was sure that Chris could provide me full support. Chris told both Robin and me that he had so much work that he was not sure he can give me all what I may expect from him. At that time he was still the Director of SPRU. We discussed it also with Luc and Giovanni and finally Chris agreed. From the day he agreed until he passed away, I experienced nothing but full support, love, respect and commitment to make sure my exiled existence as an academic in UK succeeded. In the period of supervision, it was often Chris who travelled from Sussex to Burdett Road, Mile End in East London where I stayed with friends. He showed genuine engagement and enjoyed discussing with me long hours about

my thesis: Capitalist Technology and Socialist Development. What I remember was how we discussed that the USSR system that came stuck in spite of various experiments would probably implode sooner than later. He was also very interested in the journal we were producing at the time: Russia and the World. I enjoyed in the flat in Mile End his services and kindness where he often made tea with amazing, unexpected and touching humility.

In my post-thesis life Chris was always involved and I was able to see him in Brighton, Lewes and in London. In all the work I asked him to be involved, he always agreed and never failed. For nearly thirteen years he came to Middlesex and gave lectures and personal mentoring to so many younger students, some of whom did their PhDs in SPRU. I remember how much they look forward to learn from him. What was great about him was that he was never in a hurry. When he came to visit us, he stayed not just to give a lecture, but the whole day and interacted with genuine interest with all the students. Middlesex University acknowledged his dedicated service by asking me to ask him to be an Honourary doctor, which he accepted.

What touches me deeply is not just the influence of his rare intellect. It is his disarming humility, and rich humanity that is natural to his being and personality. Above all, what I admire and respect about Chris is the value he held so evidently that remained consistent from his days as a young man: the sincere commitment to see the intolerable condition and situation change for the better for the billions of ordinary people that live especially in Africa, Latin America, Asia, Oceania and other parts of the world. I remember how Chris in 2001 wrote a Foreword to a book we edited on Putting Africa First: The Making of African Innovation System, 2003, Aalborg University Press. Chris wrote: "Especially at this time of global economic instability, this work is needed more than ever to protect science and education from inept and misdirected programmes of 'structural adjustment' and to put the last first. Then the stone that the builders rejected may indeed become the cornerstone of the arch." There are many Africans who put Africa last, but Chris was prepared to put Africa first! Bal also joined Chris and us in supporting the goal of ending Africa's humiliation by making its positive transformation a priority. When we launched the African Journal of Science, Technology, Innovation for Development (www.ajstid.com), he reflected on why he spent his life on the economics of innovation and wrote for the website supporting the importance of the journal by wishing it sustainable success.

Chris was born on September 11, 1921. September 11 represents the Ethiopian New Year. I remember one year in the 1980s when Chris joined me and many Ethiopians at Covent Garden in London as we celebrated the Ethiopian New Year and his birthday at the same time with cultural shows. He had visited Ethiopia and recollected how much he enjoyed his visits to my country. He was always positive when I express my frustrations on how slow things are taking place in Africa from football to research and higher education. He told me also he visited South Africa prior to the 1996 white Paper on South African National Innovation System, though he did not say much regarding his possible contribution beyond acknowledging some participation.

Finally, there are no words to express what Chris has become to mean to me and all those, I am sure who crossed his world. He even spoke with his reticence and silence by spreading positive energy with his inestimable, unique, quiet and humble style. For someone like me who hopes to try to devote ones head, soul and heart to help remove Africa's historic humiliation and contribute to the imagination of liberation, Chris's support, understanding and quiet sympathy was simply a heaven-sent gift. It is not easy to speak or write all that Chris has become to signify and mean to me and others. I felt his love until he left this world. I will continue to feel his spirit from now on, though right now it feels empty without him. I just say that his spirit, humanity, humility and concern for the underdog will live on beating the fear of time. It is the principle that remained consistent throughout his life. It is the one I share deeply as a value and principle that continues to inspire me. If I am not mistaken, I sense an 'Ubuntu spirit' in Chris's life. 'There is an I in You, and there is a You, in I'. I feel that this simple but profound African humanism captured as the 'ubuntu' spirit probably guided his life and the special way he related to children and adults in his world.

Chris was a giant in the creative combination or innovation of the finest intellect with the highest humanity. He remained grounded and with a common touch by shunning all hubris and pomposity that come as hazards and vices to many academics. He understood to tower intellectually without becoming socially elitist. He was a great man who saw and comprehended the limits and drawbacks of greatness itself. He will continue to lead and influence us by his example and wisdom even long after he departed from this world.

It is hard to acknowledge he is no more with us, and not to continue to enjoy all the positive energy that comes from the genuine love and contact I had with him. I will always miss him very much and will remember him fondly and lovingly until I leave this temporal world myself. Let his soul rest in tranquillity in the eternal river of time.

Mammo Muchie on Remembering his PhD Supervisor Chris Freeman

It's no exaggeration to say Chris Freeman changed my life! He inspired me to come to Brighton to do the MSc at SPRU, and I've been here more or less ever since. Every year he would come to North London to Middlesex, invited to give a seminar by Mammo Muchie. As an undergraduate I was transfixed by the fluidity of his talks, delivered without notes or overheads or other paraphernalia that distract the speaker. But the emphasis of his phrasing and his slightly hoarse, no-nonsense voice also impressed me. And then there was the content. Curiously I vividly remember him describing the innovation that was the plastic washing-up bowl, so superior to the scraping, cumbersome metal bowls that it replaced that it diffused extremely rapidly through the economy. For some reason this simple example stayed with me, perhaps because it illustrates how innovation affects the common person struggling in the domestic kitchen. The plastic washing up bowl was mundane compared with the

computing and military technologies that we tended to focus on, but you could see why it diffused and had a role in social and economic development. I met Chris after these talks and he would encourage my interests and offer to introduce me to experts in Sussex.

Since then there have been countless conversations, insights, encouragements, jokes, and kindnesses from Chris. He accepted my invitation to give a seminar before CENTRIM moved to the Freeman Centre, which I believe has turned out to be his last. After the usual brilliant performance, in which he predicted correctly a forthcoming war with Iraq, Raphie Kaplinsky pointed out there were five generations of scholars in the room who had been influenced by his work and his thinking. What an enormous influence he has had on so many of us. This is because of his intellect and work, and his writings remain fantastic examples to emulate. The sadness is that so much of his influence was through his humility and personal empathy, which unlike the publications, will remain only in our memories, but hopefully also in our own lives. Many thanks, Chris, a wonderful man and scholar.

Jonathan Sapsed

**AIM Innovation Fellow and Principal Research Fellow
CENTRIM**

I am so sad for Chris' death. He was a wonderful person, ready to fight for his ideals, always a leader in what he did, superb as a scholar, quite very innovative in his thinking, highly generous with the people around him and so involving in his speeches. He was indeed unique.

We will all miss him, but he will remain forever in our hearts and minds.

Franco Malerba

Our community will miss Chris dramatically. He is a kind and supportive person, especially to younger researchers.

I didn't meet him very often but at least once it was for me very important. At an early stage, at MERIT, I was invited to give one of my first invited seminar and he was present (among a very limited number of persons). The discussion during the seminar was very short and limited; but he took some of his time and we had a very long discussion afterwards, with a lot of advices and interesting insides about the work I was doing at the time and more generally about our profession. He belongs to the few colleagues who make it worth to continue our efforts.

Patrick LLERENA

Professor in Economics, University of Strasbourg

I came late to this subject and first met Chris in the 80s when he visited Canada and saw him later at SPRU and MERIT. His work was an inspiration and, from my perspective, it was especially so in the area of official statistics and the manuals that govern the data collection and interpretation for science, technology and innovation.

Following the OECD Blue Sky II Forum in 2006, forty years after the founding of SPRU, I was delighted when Chris and Luc Soete provided a chapter for the book, Science, Technology and Innovation Indicators in a Changing World: Responding to Policy Needs, that followed the Forum in 2007. It seemed appropriate, and my co-editors Anthony Arundel and Alessandra Colecchia agreed, to dedicate the volume to Chris. The dedication is reproduced below.

"This volume contains a paper co-authored by Professor Christopher Freeman, the same Christopher Freeman who, 45 years ago, drafted the first version of what would become the Frascati Manual and which gave rise to the Frascati family of manuals that support work on a wide range of science, technology and innovation indicators. The manual, and the methods, stimulated much of the debate held at the Blue Sky II Forum. This volume is dedicated to Christopher Freeman in recognition of his contribution to our subject."

Fred Gault

I met Chris only a few times over the years and could only have been a tiny part of his network. And yet, each time, he clearly remembered me and what I was working on. His ideas were the turning point in my research and I have been proud to teach them ever since. I am honoured to have known him; a great and kind man.

Richard Lamming, Exeter

I first met Chris in about 1963. I had been at the University for about a year and lived in a small village, Kingston near Lewes, I used to drive into the university and one day I saw this man carrying a brief case and obviously walking to the bus. It was of course Chris, who, at that time lived in the same village, and he told me he had just arrived at the university and was setting up a small unit looking at science policy. That was the first of many lifts and enjoyable conversations. Why Chris never had a car, I don't know; perhaps he never learned to drive or perhaps his principals abhorred the motor car and for Chris, the latter is more likely even when it caused him to struggle through the rain to catch a very unreliable bus. After that our friendship developed to having in formal meetings at The Jugs Arms. Later I became more involved with SPRU and although I never worked directly with Chris, his comments on the material I produced was always valuable and to the point. After I retired, I became interested in the history of science and in particular the contribution of Islamic natural philosophers. I wrote the beginnings of a book on the subject (which never saw the light of day!) and I sent a draft to Chris. Needless to say he

read it and had many comments. He did however take me to task for not including the social sciences – asking if I did not regard them as sciences. I had to reply that I was married, as he knew, to a social scientist and if I believed that, I would not still be married. I spoke to him on the telephone and invited him to Somerset, where I now live. Sadly he said he was too old to travel. I saw him once more at Charles Cooper's memorial service.

There is little point in repeating the tributes that have been paid to him. I can only say that I agree with all that has been written. But there is one characteristic that hasn't been mentioned. This was his ability to believe that everybody, with few exceptions, was as clever as himself or cleverer. I had an experience of this when I was discussing, and I can't think why, what I might do in the future. He said you could apply to become a scientific advisor to one of the government ministries. In reality, I had as much chance of getting one of those jobs as Chris had of using private medicine.

A man full of humanity and generosity - he will be sorely missed.

Roy Turner

It was with deep regret that I learned of the death of dear Chris Freeman. I will never forget his wonderful sense of humility and his ability to treat everyone with the same respect and reverence - the mark of a truly great person and an inspiration to all who crossed his path. My sincere condolences to Carlota and the family.

Denise Rose

Professor Chris Freeman was a great academic – and a great man. Like all great academics he had a wonderful ability to write remarkably insightful articles in a highly gifted manner in a way that most of us envy! More than this, he was a great personality and his passing is a great loss. Our hearts and best wishes go out to Chris' family at this time.

Professor Steve Brown

University of Exeter Business School (ex SPRU Dphil)

Although I never had the opportunity actually work with and for Chris, he always seemed to be part of the SPRU community - whether or not he was here in person. I remember tracking him down to identify the birds that were in abundance at the back of the Mantell building, his calming presence at meetings, his final speech at the 25th Anniversary conference in the Gardner Arts Centre (without notes or OHPs) where he had to be gently reminded that people had to leave at some point, his breaking the sod for the Centre named after him and having the spade removed before he managed to dig the foundations by himself! I also remember a particular comment. A new member of support staff was anxious not to upset members of faculty by addressing them by the incorrect title. Chris overheard. His own comment? 'People who get upset over titles are very silly indeed' Humility, a calming presence, a true gentleman. Yes, he will be very sorely missed by all.

Janet French, SPRU support staff

I would like to add my voice and words to the many moving tributes to Chris. The sheer number and warmth of people's remembrances speaks volumes for the sweet, gentle, principled man and inspirational academic that we knew and greatly loved. Chris's personal, political and intellectual values underscored everything that he did, and shaped the enormous respect and affection that we all feel for him. He was a role model for us all, not only as an academic, but more importantly, as a human being.

Juliet Webster

Open University of Catalonia, Barcelona, Spain, and Work & Equality Research, London

I met Chris for the first time in 1991, while I was at SPRU and seeking his advice. I got to know him better subsequently, when he accepted a couple of good Sunday roasts at my student's flat at Plumpton. I believe it was only through his help that my supervisor Keith Pavitt saw the light in my thesis. Chris was truly inspirational and I remember him for his gentle manner, warm friendship and his wide ranging concern for social justice. I send my deepest sympathy to all who will be missing him very much, and most of all to his family.

Peter Augsdörfer

Ingolstadt University (Germany) and Grenoble Ecole de Management (France)

I was distressed to hear of Chris's death. He was the most remarkable man that I have known, combining great insight and creativity with a deep humanity. I had the good fortune to land in SPRU, by sheer chance, in 1973 and to spend the formative years of my academic career in that extraordinary institution. Chris was not an efficient manager – it is very unlikely that he would have been offered the directorship of a research institute in today's bureaucratized environment. But he was a marvellous research leader. He had a knack for identifying vital questions and routes to their answers. More significantly, he possessed a rare ability to inspire others, in SPRU and across the world, to join his research mission and give of their best. Despite his strong opinions, at no time did he try to impose his views, another mark of a great research leader, except to insist that theory and policy should rest on firm empirical foundations. He gave us freedom to develop our own territories in our own ways, enabling many flowers to bloom. Nor would he accept hierarchy or any other form of discrimination. He made everyone feel valued, a rare gift among academics.

I recall asking Chris on one occasion about the qualities that he sought when appointing new staff. To my surprise at the time if not after reflection, he said that he attached most importance to iconoclasm: the courage and imagination to take on received wisdoms and vested interests. Chris was himself a steely iconoclast, but without any of the aggression that one normally associates with this type. He was the gentlest and most self-effacing of men.

Sadly, I saw little of Chris after leaving SPRU in 1996. On the few occasions that we did meet, the conversation invariably shifted to the subject of birds, our principal mutual interest as our research was in different fields. Although his ability to walk out with his binoculars was gradually diminishing, he loved to share memories of the birds that he and I had seen. For some reason, I particularly remember a conversation about long-tailed ducks! I can almost hear his wondrous talking about these most beautiful and characterful of sea ducks as I write this. His voice was an important part of his charisma: quite soft and melodious, but always conveying an urgent interest in the topic under discussion and the opinions being offered. What an example he set for us all.

William Walker, St Andrews

I am very much aware of how much my current research on the role of innovation in the prospective transition to a low carbon economy, owes to Chris's underpinning work on both long waves of technological change and the understanding of innovation systems.

I know he was also a great mentor and inspiration to SPRU. He will be sadly missed.

Professor Malcolm Eames Low Carbon Research Institute Welsh School of Architecture

Please pass on my condolences to Chris' family. His name is for me associated with the best of humanity. I owe him a lot, not only for his huge intellectual contribution, or his reference for my professorship. Above all, I remember his open, unpretentious and supportive attitude to students and people who were trying to make it in the field within which he was the undisputed giant. I had arrived in Britain as a refugee and was trying to regain control of my life. I remember crystal clear my first meeting with Chris because he gave me inspiration, confidence and the sense that a truly great intellectual is also a mentor for others. I'll miss Chris but his inspiration will remain with me for the length of my own journey.

Alfonso Molina, M.Phil, Ph.D Professor of Technology Strategy, The University of Edinburgh

I was really saddened to hear of the passing away of Chris Freeman. He was the kind of man you wished was your Granddad. He always looked as if had just walked in from doing some gardening or something. We used to all notice when he came and had coffee in the morning or the afternoon and used to feel very privileged when we had his attention. A verse from the Tibetan Book of the Dead comes to mind;

"But all those good and holy men,
In some base body habiting
Behave not thoughtless, but give heed
To what the noble doctrine says;
Of birth and death the fertile source
And from attachment free themselves,
Thus birth and death extinguishing.
Secure and happy ones are they,
Released from all this fleeting show;
Exempted from all sin and fear,
All misery have they overcome."

Although I always thought his long wave theory was teleological, it emphasised the importance of science and technology in economic history. He was a very good role model to aspiring young academics-we all used to love him.

Bev Holbrook

I'm sure many other people will celebrate Chris's many intellectual achievements. I'd just like to record my appreciation of his personal qualities. In one-to-one conversation he always managed to make you feel that he was interested in what you were doing, and he was a constant source of encouragement. In meetings he would seek to find common ground amongst the participants and to show ways in which people could work together and move forward whatever plans were being discussed - even (or especially) when other people were pulling in different directions. He was someone you always felt you could turn to for advice.

I knew Chris first as a student, when his lectures got me interested in science & technology policy, then as the Director of SPRU during the time I worked there, and finally as a supporter (during his time as Visiting Professor) of me and my colleagues in the Innovation Studies Department at the University of East London. He was as enthusiastic and inspiring when I last saw him as he was the first time I met him. One of the good guys – one of the best of them.

Graham Thomas

Chris Freeman's passing signals the end of an era because, for so many scholars, he was quite simply the finest human being we had the privilege to meet. He somehow managed to combine attributes - like intellectual originality, human compassion, personal modesty and radicalism - that rarely fuse together in a single personality. His memory will endure in everyone who met him.

Professor Kevin Morgan

**School of City and Regional Planning
Cardiff University**

As a non-profit non-governmental organisation, Technology Development Foundation of Turkey (TTGV) has been supporting technology development and innovation projects of the private sector since 1991 with the principles of Frascati Manual. TTGV admires Prof. Freeman's contribution, influence and commitment to the understanding of national innovation system. Please accept our deepest sorrow and condolences for the lost of Prof. Chris Freeman.

Deniz Bayhan (on behalf of TTGV)

Senior Expert

Policy & Programmes Development Dept.

Technology Development Foundation of Turkey

After a Ph.D in engineering from Imperial College, I spent 1971 at SPRU on invitation of Geoff Oldham. At seminars, Chris would manage this early-model 'argumentative Indian' with a gentle but firm: "you've already had a good go". About a dozen years later, on an off-line visit to SPRU, I complimented him on his sprightly good health, adding that the fraternity should look forward to his masterly post-facto analysis of the technological underpinnings of the third Kondratiev long-wave. "No, no, that's not going to be", he remonstrated. I thought of him only the other day; turns out as I read quite by chance Mary Kaldor's obituary of him in the e-version of The Guardian, it was around the time he passed away.

V. Siddhartha ('Sid')

It is with profound sadness that I heard the news of Chris Freeman's death through old SPRU friends. I had the honour and privilege to have Chris as my supervisor during my one-year stay at SPRU as a TAGS student back in 1994-1995. I remember the day I had received the letter of acceptance from SPRU declaring that Chris would be my supervisor during my studies on technology and employment - I was thrilled! He was indeed a legend in the field and I had wondered what I had done to earn such a gift!

Only after I met Chris, I realized that the gift was far beyond merely working with a legend - it was also getting to know a man of extraordinary kindness, a man with a giant heart. His humility, his respect for and openness to hear any idea you would wish to share with him, be it on Schumpeter or Nietzsche or the meaning of life, would make you feel so special, as he was clearly so brilliant and the very fact that such a brilliant man would listen to you with such attention and would even claim to benefit from your ideas, was just so incredibly inspiring!

I have no words to describe how special Chris was to me. His support as a mentor and a wise friend continued for many years after I left SPRU. I visited him in Lewes every time I was in Brighton. I wrote letters to him occasionally to ask how he was doing, to update him on my life and sometimes to pose pretty difficult questions, and he always wrote back words of wisdom and comfort. He sent a bunch of beautiful flowers to my wedding in Ankara back in 2002 and apologized that he couldn't attend. He was just one of a kind.

The last I spoke to him was a couple of years back, when I called him from Geneva at his home in Lewes just to see how he was doing. He sounded frail, but still so sharp and kind. I was thinking of giving him a call again this year, but unfortunately I was too late.

I will miss Chris very much. He will live on not only through his extraordinary work, but in the hearts of many students/colleagues, whose lives he has touched.

My condolences to his family, friends and to the entire community of science and technology.

Umit Efendioglu

ILO – Ankara

Modesty and generosity are the two words that will come to my mind whenever I will think of Chris Freeman. I shall also never forget this precious piece of advice he once gave me: "Do not hesitate to challenge the most dominant paradigm". I am still trying hard... Thank you Chris!

Cédric Gossart (SPRU PhD student, 2000- 2004)

Associate professor, Telecom Institute, France

I first met Chris when I was an undergraduate economics student at Sussex, 1966-69, but this was via a social connection - my mother Yvette Stone was secretary of the Centre for Contemporary European Studies, and the young, small research centres stuck together, worked together and did a fair amount of joint socialising! Later, when doing my economics doctorate on new product policy at Sussex in the early 1970s, I relied heavily on SPRU for insights into industrial innovation, as I did when working in companies such as Xerox and IBM. I met Chris many times, and loved his warmth and willingness to spend time with a young, naive, student. Although my career was mostly in marketing, it was only this week, while working on a project in Scandinavia that I referred to his work and that of SPRU, when asked for ideas on the voice of the customer in research and development. Plus ça change.....

Professor Merlin Stone

I was very sad to read in my FT today about Chris. He certainly deserved such a fulsome obituary. I hope the other papers will follow suit. He achieved much in his life. I was his first doctoral student and I feel I was extraordinarily lucky to have him for a supervisor. He was always extremely kind and supportive and, if I remember correctly, got me some money from the US Air Force (sounds unlikely but that's why I remember it!) to travel to Seattle where I spent 10 weeks at the Battelle Research Center

in 1969 (I can't remember how I got the Battelle scholarship but I wouldn't be surprised if he played a part). We exchanged Christmas cards, as we did for many years, at the end of last year. I have the one he sent me here now and will keep it as a memento.

Tony Golding

Chris was like an antique philosopher disguised as a monk-saint with a mission to create a new faith or science, called "economics of innovation". I had met him for the first time in 1966 November in Lancaster House, then housing the new-born SPRU. Geoff Oldham, Charles Cooper, Roy McLeod, Jackie Fuller the first and last assistant to him, and a small group of researchers occupied limited rooms in the first floor. Jackie, graciously had found a precious room for me i.e., as the first (OECD) research fellow of the SPRU. Chris advised me to read Schumpeter and some other OECD literature.

Chris, then living with Peggy in Kingston Village near the University, used to commute by foot, even in the rainy days, wearing rubber boots for deep mud. As the tank commander and Marshal Montgomery's driver in the WW2 (once he told me) Chris rejected to own even a cheap automobile, a bourgeois habit. When we visited in 1971 (with Nuşin, my wife and son) the Freemans (and C. Cooper) they were living in Kingston, there were huge geese taller than Emre, swarming the garden, he said, "these are my guardians and lawn mowers".

It was a great honour for me to be participating in an UNCTAD project and paper on the "transfer of technology" (1967) my name appearing with Chris Freeman and Geoff Oldham. On account of my great contribution (!) to this paper, Chris sent me to Paris to participate in an OECD Pilot Team Project's evaluation conference with my wife, as members of the Turkish team. In fact, he was highly interested in development of poor countries through implementation of S&T plans and policies.

My fellowship came to an end in 1967 and I had to return to my job in TÜBİTAK, but all the time missed the SPRU and friends in Sussex. Next time, I returned to the SPRU to prepare my PhD thesis in 1970, to the Mantell Building. This time Chris had a room but was not the director. The SPRU had a world-wide reputation for being the hub of S&T and innovation policies research and education. In March 1971, a military Coup that occurred in Turkey (a well established Turkish tradition) prevented my further stay in Sussex, since my passport was not extended. As a suspicious person, Chris arranged for me a paying project and a Home Office work permission, even proposed me to consider political asylum in the UK. It was a difficult decision to make and I finally returned home as a good citizen.

After this I visited UK and Sussex several times. In one of those visits I spent a very enjoyable afternoon with Chris in his house in Lewes. We dined together, talked very much on politics and women. He was recently divorced from Maggie, but they were going to remain good friends.

Last time I saw him, together with Jackie it was in November 2003. I had come to present him the Turkish translation of his famous book *Economics of Industrial Innovation* (with Luc Soete, 1997). He had written a special foreword for the Turkish edition. My translation of the book into Turkish had been published by TÜBİTAK in 2003 as *Yenilik İktisadı* which sold many impressions; a small record for a scientific book in this country.

We met in Lewes Station and strolled around by Jackie's car, (he had difficulty walking with his crutches) lunched in a Sussex Downs Pub, then visited old friends Dr. Oldham and Brenda in their country house. It was an unforgettable day for my wife and me in our life. Unfortunately, I will not be able to present my new book in Turkish, "*Science, Technology and Politics, 2009*" which was a kind of homage to my mentor, and scientific father, Prof. Chris Freeman. His death is a heavy loss for the science policy community of the World.

I will remain all the time of his loyal pupil...

Ergun Türkcan

Professor of Economics (Ret.), Ankara University