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DISCUSSION

''The Day the World Took Off'': Reflections on Working on a Television Series

Alan Macfarlane

A shortened version of this article appeared in 2001 in *Cambridge Anthropology*. At that time and to that audience, some of the detail was not relevant. Nor was it possible to link the article to an Internet version of the actual films. We can now open up what is, in effect, a diary of a filming project to a different audience. This is the ethnographic account of the various stages of the making of the Channel 4 millenium television series, *The Day the World Took Off*.

PREPARATIONS: THE BACKGROUND TO THE SERIES

The original meeting with David Dugan, a television producer and chairman of Windfall Films, a small production company, took place at 2 p.m. on June 8, 1998, in my room at King's. The meeting, which I had expected to last an hour or so, could not have gone on more than two hours. It was a chancy and fortuitous event. For some months David had been trying to find an ''angle'' on the Industrial Revolution in order to bid for the one million pounds being put up by Channel 4 to make a six-part documentary to celebrate the Millennium. He had already talked to a number of historians and they had failed to suggest a way into the subject that he needed. They had, I gather, explained that there was no such thing as an ''industrial revolution''; it had been deconstructed away into a gradual growth of GNP over a number of centuries. Or, if it had occurred, then they suggested that all attempts to explain why it had happened in England, why it had happened then, and why it had happened at all, had not come to any firm conclusions: it was still a mystery. Furthermore, there was the problem of how one could possibly make it stretch out to six programs? People with memories of ''O-level'' history were hardly likely to be riveted by six hours of spinning jennies and steam engines and well-worn names such as Cartwright and Arkwright and Boulton and Watt and Darby.

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David Dugan was on the point of giving up on the subject when he talked to Professor Patrick O'Brien, then Director of the Institute of Historical Research. He suggested that the two people David Dugan should meet were both in Cambridge, namely Simon Schaffer and myself. Simon Schaffer is Reader in the History and Philosophy of Science at the University and an expert, among other things, on Robert Boyle and the air pump. He has long been interested in anthropology, having written on W. H. R. Rivers, the early Cambridge anthropologist, and being married to an anthropologist and museum curator at Cambridge, Anita Herle. So David rang up and asked for a meeting. I am pretty sure I was fairly reluctant to spend time on this, since previous experience, like that of many academics, was of giving advice, time and effort, only to see it come to nothing for funding or other reasons. But he obviously persuaded me against my better judgement and I may well also have had a desire for a diversion.

David (we were quickly on a first-name basis) came after lunch and on first meeting I was not enormously impressed—which may have been mutual. Casually dressed, balding, quiet, a dry sense of humor, and not very charismatic, I probably thought. But he had already been excited by a morning with Simon, who had tried to persuade him that he could base his series around the history of the fridge—an approach that was later transferred to the steam engine with great success.

We talked for a couple of hours and I remember that he was a good questioner and a good listener. I think I told him about the contents of my last book, *The Savage Wars of Peace* [1997], of tea, excrement, mixed bathing and other things, and also perhaps about the manuscript of my current book, *The Riddle of the World*, on great thinkers. I also told him about Sarah my wife and joint anthropological fieldwork in the Himalayas, and other aspects of our work together. I'm not sure that he had ever met a historical anthropologist before and he was clearly intrigued. He later told me that he had driven back to his home south of Oxford with his head buzzing with ideas. As David writes at the start of the Acknowledgments in the book which accompanies the television series:

> The inspiration for this project came from a meeting with two remarkable Cambridge scholars, Alan Macfarlane and Simon Schaffer . . . . [they and the other three historians involved] . . . generated many of the ideas on which the television series and this accompanying book are based.

I think that it was during that journey that, based partly on Simon's and my ideas of comparison and deconstruction, he foresaw how the series could be made much broader and wider. It was through this conversation and his analytical ability that he began to see how one could make the programs by starting with one event (the journey of the Rocket on September 15, 1830) and work backwards in time and outwards in space. This concept of inverting history was the one that I had employed in *The Origins of English Individualism* [1978], working from the known to the unknown, and it fitted with interests I had developed in the analytic method used in detective fiction (Sherlock Holmes, etc.) and the philosophy of history of the great French social historian, Marc Bloch.

Anyway, David was sufficiently excited to ring on Saturday, June 13. My personal diary records under that date (hereafter all quotes are from that diary)

''David Dugan rang again: he is very enthusiastic about making a 6-part series, partly around my ideas.'' I was obviously flattered, and maybe pleased that he already hinted on a collaboration in which he would take a number of my ideas and would also base some of the series around my experiences of fieldwork in Nepal. I think it was quite early on also that I told him of a seminar I had been running for two years in King's College (funded by the Research Centre there and by my co-worker, Gerry Martin), whose third meeting was going to take place a few weeks after his visit. This seminar was on the central theme of comparing the two ends of Eurasia and trying to understand why the industrial and scientific revolutions had occurred for the first time at one end and not the other. Each seminar was informal and involved about eight experts on Japan, China, Europe and in the history and philosophy of science. It was out of this seminar that many of the themes we covered in the series emerged, and I think it was this which gave David one of his central organizing devices, that is, the idea of a team of scholars who gathered at King's round a table and tried to solve the puzzle or riddle of the origins of the modern world.

It was clear that if it were going to be done properly there would have to be some location shooting, with members of the small group of investigators. These included the above four (Alan, Simon, Maxine, Christopher) and also Professor Joel Mokyr of Northwestern University, whose name I had suggested largely because his *Lever of Riches* [1990], a history of technology, had been the text for my lectures on the history of technical change. David had also been to talk to Jared Diamond (who thought he might be involved in a series about his book) and Marshall Sahlins, whom I had recommended, but who said he had moved on a long way beyond *Stone Age Economics* [1974], which was the area he might have covered.

In relation to location shooting there were several fixed points. Simon was on study-leave and trying to finish a book, so his time was particularly precious, and so he said that he could only film in England (and in France if visiting there). Maxine could go to Germany. Joel would cover America, though his time was also extremely constrained and he was reluctant to leave Chicago. At the start it was only a possibility that I would film outside Britain. We very much hoped we might be able to film in the Himalayan village where I had been doing fieldwork for thirty years, and this did happen. Japan was an extra, made possible by combining it with our return from a visit to family in Australia. Later we decided to spend a short holiday in Venice with Gerry and his wife—and David and Carlo (his assistant producer) came as well, with a small digital camera. Jim Burge, who was the producer for the second and third films, arranged for a lightning visit to Istanbul—delayed because of the earthquake. I also went to the northern tip of Scotland (by way of an old print works in southern Scotland) to film in the northernmost (and oldest) Benedictine Abbey in Britain. The rest of the filming was done in England.

One of the most difficult problems was how the material was to be presented. Would there be a presenter or presenters, voice-over, or what? The whole series nearly foundered on this one point. The commissioning editor, Sara Ramsden, at Channel 4, as well as the Director of Programmes, Tim Gardam, had strong views on the subject. David, who had met us, seemed to have a hunch from the very

start that Simon and I would be reasonable as presenters. So he arranged very early on, as noted above, for a camera person to take some sample footage. Unfortunately, as far as I was concerned, it was at the end of a long day when I was tired, when I had had no preparation or warm-up as to the questions that would be asked, and I think that the performance was mediocre. The people at Channel 4 reputedly decided that what I said was interesting but there was no way in which I should appear on the screen.

David then retreated for a while and wondered whether someone else could present and perhaps occasionally interview me. That was when a former student, Mark Turin, was temporarily brought in. He was flown in from Amsterdam on September 4, and the following day,

> wet and dark. Nevertheless, we persevered and filmed in teahouse and in King's. Shot about 4 hours of film on glass, clocks, universities, science, etc. with Mark asking questions and me answering. Also went and filmed in Lode Mill—fascinating to be shown around the workings and learnt a great deal from the day as a whole and made me think on my feet. They seemed happy with it and we'll see if it does the trick. [Diary]

I thought that was better, but in the event I think Channel 4 felt the Holmes (Macfarlane) and Watson (Turin) approach did not solve the problems. So there was talk of getting in someone like Michael Frayn as a presenter (who turned it down because he felt he had not a deep enough knowledge of the background). So the question of the presenter was left hanging, which enabled David, notwithstanding Guidelines which expressly said no voice to camera, to smuggle me (and Simon and the rest) back in, until Channel 4 were either gradually seduced, or realized it was too late to do anything else about it. The major concession was that I should see a charming voice therapist in Hampstead for a morning to have breathing exercises and learn to project my voice better. She was most re-assuring and I learnt a good deal from this about calming the nerves and voice control.

The weeks and months passed as David tried to get a firm commitment from Channel 4 and tried to keep up the interest and confidence of those like myself who had expressed an interest. On October 17, ''. . . heard today that the Windfall film series is still possible.'' On the 31st ''talked to D.D. about the C4 film series, which seems to be going ahead.'' On November 12, ''went to London early as had a meeting with DD in the morning . . .'' On November 14, ''. . . a talk to DD about the C4 series, now probably called 'The Riddle of the World'.'' On December 7 we had a day's meeting in King's with Simon, David, Carlo, Jim Burge and others. The diary records, ''Seems like a brain dump session for Alan and Simon feeding the filmmakers. Alan a little frustrated afterwards.'' On December 30 we looked back over things: ''Watched the 3 hours of interviews done by DD in the summer. Although technical quality of films was pretty bad, the content interesting and it might be worth editing down at some point.''

My impression was that there was no formal contractual moment, but just that one drifted into a trusting assumption that it was happening, the balance of probability that it would come off slowly changing, presumably as a result of lots of careful work by David. I think the definite realization that it would go ahead came in January 1999, leaving only about a year for all the filming to be done

for 6 hours of television. Compared to the time-scale and budget of the other ''Millennium'' projects (e.g., ''Millenium,'' funded by Ted Turner at one million dollars per episode, or Peter Jay's ''Road to Riches'' which Jay claims took some three years), it was a very tight budget and schedule. Especially as our plan, to cover the whole planet over 10,000 years, was pretty ambitious.

Films which illustrate the account given above can be found at: http://www.alanmacfarlane.com/global/roots_preparations.htm. They consist of the following:

- Alan Macfarlane and Mark Turin, on glass
- Alan Macfarlane and Mark Turin, on watermills
- Alan Macfarlane and Mark Turin, in conversation
- Mark Elvin and Gerry Martin, in conversation
- A small seminar in King's College, on the history of the world
- History of Windfall Films, part I
- History of Windfall Films, part II

NARRATIONS: AN OUTLINE OF THE STRUCTURE OF THE SIX PROGRAMS AND THE THEME

What was needed now was an outline ''treatment'' or proposal to convince the Channel 4 executives to risk their million pounds with a small TV company and a bunch of academics. We all worked on this and the details can be reconstructed. For example, on Saturday, June 20 I wrote, ''Spent much of the day planning a potential set of 6 TV films for C4 with David Dugan on the history of the West.'' I remember in particular that the idea of the *first program*, using diaries and quotations from Humphrey Jennings' ''Pandemonium'' to bring alive the journey of the Rocket, was already well formed when I met David. The *second program*, we worked out, would be about the Industrial Revolution period; but there was only so much one could do with coal, cotton and so on. So what new angles could one have? I think that in an early meeting Simon must have sold them the idea of automata, for example Vaucanson's duck, mechanization and Arkwright, and looking at France. I suggested that they dealt with the peculiar English institutions of civil society, the club and the trust, upon which I was working then. The other main theme—pottery, Wedgwood, Meissen and so on—may have come from discussions with the 18th-century historian of consumption, Maxine Berg.

The *third program*, as it emerged took the coverage out to Islam, North America and northwestern Europe, mainly through the story of trade, discovery and science. The early two themes which we worked out, especially in a meeting with Simon on December 7, 1998, were exploration and collecting (of sundry objects in museums, zoos, botanical gardens, and so on). In the event the second of these was nearly forgotten, though given a late and partial reprieve thanks to an intervention of my wife, Sarah, at a ''viewing'' meeting in March 2000, when she suggested that Simon film with some of the Cook collections in the Museum of Archaeology and Anthropology. I don't know who put in the Hudson Bay story, which involved hiring a replica of the ''Half Moon'' and sailing it past Manhattan (at some expense), or who thought of the tulip mania and banking

in relation to Holland. The story of longitude and Captain Cook in the Pacific came out of what I shall call the ''Knight's Meeting,'' which earned its name from the round table and the idea of a quest, or search for the Holy Grail; it was filmed in Cambridge in July 1999. This third program was the one into which I put the least ideas, just thinking of it as the period of science and exploration. In the event, I ended up making a contribution in relation to Islamic civilization, since I was the only person free to visit Istanbul and there talk about the Ottomans.

The *fourth program*, now covering all of Asia and a period of five hundred years back to 1350, was one which David and I mapped out in the little Japanese tea-house at my home in Lode on Wednesday, July 15, 1998. My wife wrote in our diary, ''David D. came to see Alan again and they spent the day discussing the possible programs. I think he remains optimistic—at least he's putting quite a bit of effort into it.'' We had also been discussing the general structure a few weeks earlier, when the diary records:

> D.D. and a camera woman came earlier to film Alan and stayed on to talk a little with Gerry Martin. They then went off to film Simon, but came back in the middle of the afternoon. They witnessed Gerry and Mark Elvin discussing the European and Chinese technological developments. Alan thought David found it hard to leave—who knows if the proposed programs will ever get made? [Diary]

Gerry Martin, a long-time friend and benefactor, had helped to conjure up the whole project by supporting ''The Achievement Project'' which, directed by Simon and some others, had brought together Patrick O'Brien, myself, Simon and others in a number of seminars and conferences around the same theme of the long-term development of artifactual progress. Gerry had been one of those most central to the King's seminars, and Mark Elvin, a distinguished expert on China then resident in Australia, came to the seminars each summer.

Anyway, we decided that we needed to limit ourselves in the five-hundred-year program to two technologies. After some discussion we decided that one of them would be glass, about which I was and still am writing a book. We played around with printing, gunpowder and other technologies, but decided they could wait to the thousand-year program, and thus fastened on mechanical clocks. This became in some ways the most interesting program for me, although in the outcome Simon did quite a lot of the work on clocks, and Chinese time was done by Christopher Cullen. Christopher had worked with Windfall before, in a film on explosives called *Kaboom*, and he was also a member of the on-going King's seminar. As director of the famed Needham Institute for the History of Science and Civilization in China, he covered parts of that impressive history.

It should also be said that the choice of glass and clocks, stemming from an earlier fascination with the work of Lewis Mumford in *Technics and Civilization* [1934], was also directly related to my undergraduate teaching in Cambridge. From Lent Term 1990 onwards, for nine years, I lectured on ''Technological and Social Change,'' and many of the themes in those lectures became incorporated in the series. More generally, I think that the experience of lecturing to a very

bright undergraduate audience, of explaining complex ideas simply from the part I level upwards, was an enormous help to me in working in television as a sort of presenter. It is not easy to synthesize many ideas off the top of one's head, and twenty-five years experience of doing this, often on topics that I was only just starting to understand, and trying to keep an audience interested with just talk and chalk for an hour, paid dividends.

The *fifth program*, a thousand years and the whole of Eurasia, including some attention now to the middle part (e.g., Nepal and India), was again largely worked out by David and myself. The theme of grain and mills came from my undergraduate lectures and other writings. The theme of war and canon was another theme that I had talked about in my lectures, and which led directly up to the steam engine.

In the *sixth program* the idea of then, rashly, going back to 8000 B.C.E. and treating the whole world was mine. I had been intrigued by Jared Diamond's book on *Guns, Germs and Steel* [1998] and the rather similar long-term account by Tim Flannery, *The Future Eaters* [2002]. As an anthropologist who taught introductory courses on the long-term evolution of societies from hunter-gatherers onwards, and with a particular interest in tribal societies and their transformation into urban, literate civilizations, it seemed a pity to overlook that dimension. The themes we decided to pursue were the domestication and use of animals and the various communication revolutions from writing, through printing, to computers.

The final films can be seen at: http://www.alanmacfarlane.com/global/roots_narrations.htm [see also Table 1].

THE BOOK OF THE SERIES

A day before we left for Australia the book of the series arrived. It bore the new title, *The Day the World Took Off* [Dugan and Dugan 2000]. Since the series was about ten thousand years and not a day, this seemed a strange title. Furthermore, the ''Took Off,'' reminding one of W. Rostow's cold-war metaphor and the worst of teleological triumphalism and the condemnation of all preceding civilizations to stagnation, was not exactly ideal. But we were told that research in the coffee room of Channel 4 (around Christmas) had established that my title (taken from Alexander Pope, ''The glory, jest and riddle of the world''), namely ''The Riddle of the Modern World'' had elicited cries of ''What riddle?'' etc. And since the title was the one thing that the Broadcasting Company has complete control over, there was nothing to be done. At least the subtitle of the book was the more informative: ''The Roots of the Industrial Revolution.''

The book was mainly written by David's wife, Sally Dugan, who had been a journalist, was a teacher, and had already written a book for another series. David helped with some of the chapters. It was in itself, for an academic who takes on average three years to research and write a book to the point of sending it to a publisher, a pretty extraordinary performance. They had about three months in which to do the research and writing, in the autumn of 1999, as well as the picture research. The result, I think, is excellent. From the first they again

TABLE 1 The Day the World Took Off: Six Episodes

One day: The Iron Horse
Sunday, May 28, 2000, 8 p.m.
Director: Ian Duncan
Editor: Ian Meller

100 Years: Wheeling and Dealing
Sunday, June 4, 8:30 p.m.
Director: Jim Burge
Editor: Tim Cawston

250 Years: Ships of Fortune
Sunday, June 11, 8 p.m.
Director: Jim Burge
Editor: Tim Cawston

500 Years: The Heavenly Machine
Sunday, June 18, 8 p.m.
Director: David Dugan
Editor: Paul Shepard

1,000 Years: War and Peace
Sunday, June 25, 8 p.m.
Director: David Dugan
Editor: Paul Shepard

10,000 Years: Animal Farm
Sunday, July 2, 8 p.m.
Director: David Dugan
Editor: Paul Shepard

Narrator: John Nettles
Music: Peter Howell
Photography: Mike Coles, Chris Morphet, Robin Probyn, Jon Wood
Assistant Producers: Rob Hartel, Gerald Lorenz, Carlo Massarella
Production Manager: Marisa Verazzo
Series Producer: David Dugan

A Windfall Films Production for Channel 4 Television

consulted me with various drafts of the chapters, some of them brought to Nepal or sent to Australia. Although there were certain advantages—for example the transcript of early film interviews and the Knight's meeting were available and were carefully woven into the text—it was still an extraordinarily sensitive and intelligent effort. The text and pictures work very well together. The book is thoughtful and economical, and stands up in its own right. The last three chapters, in particular, are fascinating. If anyone wishes to know how difficult it is to do this, they can compare the relation between book and television series made in the much larger BBC 2 Millennium series, ''The Road to Riches,'' in which Peter Jay wrote the book and was the presenter.

EXPLORATIONS: FILMING AROUND THE WORLD

Early Filming in England

Anyway, we started planning seriously in early January. The following couple of months I looked at some of the provisional ''treatments'' of individual programs. Some were markedly better than others. The filming of a reconstruction of the Rocket was done about this time and went very well, becoming the icon of the series. I heard stories of the lengths they had gone to—for example hiring a crane to lift the Rocket off the lines so that the wheels could be filmed properly, darkening the tunnels, and so on. My own first experience of filming occurred in later March near Birmingham and was not very glamorous. I remember standing in various muddy yards and fields, the snow falling, watching beautiful old shire horses being shoed, plowing and so on. I was amazed at the effects of the filters, which turned a lowering grey sky into a beautiful sunset of clouds and radiance. I realized, as so many times before and since, how much the camera lied—and we tended to believe [Young 1975: 66].

I didn't feel too nervous as I recall, though I was surprised that there seemed to be no set script or definite things I had to say. I was just asked rough questions and asked to improvise, or asked to talk to the craftsmen—the farrier, or plowman—about anything I liked. This became the technique for the whole series. As Simon was later to put it graphically, it gave us academics ''a chance to visit our footnotes.'' I had often written and lectured about the impact of horseshoes on civilization, but never seen shoeing being done. And talking to the farrier I came to realize that I had never understood the main reason for the shoeing that had transformed northern agriculture. I had thought it was to stop the horse slipping. But I discovered it was to stop the hoof from fragmenting and getting damaged in the wet thick soils. This was one of a thousand things I picked up from actually participating and observing craft processes that I had only previously read about, and it was probably one of the two or three things that I gained most from the project. What David wanted to film was this learning process—the actual, unscripted moment of connecting and understanding, the flashes of illumination. This would give the film its authenticity and freshness, and it provided me with a range of experience that I could never have anticipated.

The icy day at the heritage farm, and later in the week in the last glassworks with a vaguely working ''cone,'' also near Birmingham, made it essential to cover up, so I wore a black hat. This became the first of a series of hats for all seasons and countries that became a hallmark of my own ''persona,'' and which earned ribald and amused comment from friends. The filming in the glassworks was absolutely fascinating, and shows another benefit of working with a good company. They had assembled several leading British experts on various aspects of glass. The very articulate and charming head of the Glass-making Association and director of a firm of glass manufacturers in Scotland came to make a mirror; one of the legendary glass instrument-makers who had helped in many of the pioneering experiments using glass in the laboratories of University College, London, from the 1940s onwards, demonstrated making a few scientific

instruments; a delightful Geordie glass-blower came to illustrate the miracle of glass-blowers; and a whole cast of other characters assembled to reconstruct and enact a traditional medieval glass-blowing scene. To spend a day in their company, asking all the questions that came to mind as I started writing a book about glass, was an enormous privilege and eye-opener. I began to realize that my previous image, that filmmaking was just a matter of telling to the camera what one already knew, was completely wrong. Instead it was a co-operative exploration in which the production company spent a vast amount of time and effort in assembling the very best people, at considerable expense, to run a kind of mini-seminar around a theme. Again and again, and particularly in Japan, we had this experience. I would never have met such people without huge efforts, and yet here they were, all excited and involved because of the magic of television. A real combined research effort: really fascinating, and my first taste of just how much I would learn from the series, actually watching people making things and talking to experts. It was icy cold, but Sarah enjoyed it as well. That was all the filming I did before we went off to Australia, and began to think of the ten days of filming that we would do in Japan on the way back.

Filming through Japan

The Japan filming was the most exciting and hectic of all that I did: ten days from Nagasaki in the south and ending up in Kyoto: covering so many things, and taking Sarah and me to see a host of things we might never have experienced. A fascinating and new insight into a Japan that I had already visited on three previous occasions, including three months of teaching in Tokyo. It was especially interesting to learn more about the great Japanese philosopher Fukuzawa, to visit a school and test my theories on myopia, and so on. I also began to realize, as I had in the glass factory, that a good deal of the film we were shooting was not just of entertainment and educational importance but also of archival value. I had never realized, until we met practically the last traditional glass-blower in England, practically the last traditional paper-maker in Japan, the last, partly working, climbing pottery kiln with its Living Treasure potter, and so on, that a whole world of traditional skills was sinking into oblivion. The five thousand years of technologies since the development of city civilizations, and encompassing the first industrial revolution, are rapidly vanishing—so we were filming not disappearing tribes in the jungle but disappearing crafts and experts.

Another feature of this trip was that with two different film crews and several different ''fixers'' (local facilitators), and dozens of different shooting conditions and themes, I was getting a crash course in filmmaking: I learnt an enormous amount about sound, vision and the dynamics of creating good pictures. And above all I got to know David and Carlo very well in a mutual adventure that stood us in good stead over the months ahead. Sarah not only kept all practical matters on a steady course but also kept a detailed diary of what happened, took many photographs, and filmed the filmmaking itself. So, since this had never happened to David before, we were able to do a sort of mini-ethnography of the filmmaking expedition, which again will be useful for future historians of television.

High points in the adventure for me included being shown round (and filming) the extraordinary 19th-century replica of a British club in the heart of Tokyo, set up by Fukuzawa, by the charming Chairman of Seiko watches; then going on to lecture (the first non-Keio University graduate ever to be allowed to do so) in the ''Speech Hall'' set up by Fukuzawa in the 1870s to teach Japanese the art of public speaking. Also a marvellously thoughtful and spiritual interview with a Zen Buddhist monk in a beautiful Kyoto temple, taking tea from an elegant tea-mistress in a garden tea-house, visiting a middle school to find the appalling rates of myopia among the bright little students, filming in an elegant traditional (ladies') toilet attached to the house that had acted as the main vehicle for Western learning in Osaka. All this fitted very well with writing on Japan that I have been engaged in for ten years. By the time this experience was over I was really hooked. I could see how filming gave one an access normally denied to academics and helped to focus attention. It was also a very collaborative, team-based activity, which is always enormous fun, especially seen as an antidote to the normal rather hermit-like existence of writing and research.

Filming in England, Venice, Istanbul and Scotland

In the following few months there was a lot more filming. For me this included a series of interviews in a rather murky London Club (Black's) on the values of co-operative associations; in one of the last preserved 19th-century hand-print works in southern Scotland; in a wonderful Benedictine Abbey in northern Scotland, that included a deeply involving talk to Father Giles about the essence of monasticism and its relation with capitalism, time, etc.; visits to Venice, Istanbul, and so on. Each was fascinating. For instance, the visit to Istanbul forced me into a crash course on Islamic civilization, about which I had previously known little. I read Marshall Hodgson's complete works, including the stupendous three-volume *The Venture of Islam* [1974]; and this, combined with a first visit to the great city and being forced to talk about the strengths and weaknesses of the Ottoman Turks, opened up an area completely new to me.

Filming in Nepal

The final, and equally fascinating, expedition came at the start of my sabbatical leave. Sarah and I were going to make our annual fieldwork trip to the Himalayan village of Thak, in central Nepal. So David and Carlo, now very happy to use a lightweight digital camera that produced really good pictures, came to Nepal for a week. They spent three days on the way to Thak and in the village, and three days in Kathmandu. Again, this was a great delight. Partly this was because of the new experiences in Kathmandu, where we visited monasteries, an extraordinarily preserved old village, and many other nooks and crannies I had not seen on many previous visits (through the help of my ex-Cambridge student, Tek Gurung and his wife Anita, who were our local ''fixers''). But above all it was the pleasure of seeing the involvement of David, Carlo and David's son Christopher in village life, where they were clearly

intrigued and moved by the experience, sowing the seeds for possible future filming using some of the hundred or more hours of video footage that I have shot over the last fourteen years.

Filming in Australia, and the Evolution of Film Methods

After Nepal, Sarah and I went on to Australia. I had suggested to David that, particularly for the last program, which dealt with the problem of why the rise of literate civilizations of a certain kind had only occurred originally in Eurasia, it would be useful to have some film from a continent other than Eurasia or North America. There was not enough time or money to go to Africa or South America, and the budget would not stretch for a film crew to go to Australia; but since we were going for three weeks to see our family, why not take the camera with us and see what happened? This, in fact, emerges from one of the other things we learnt on the way. At the start (for example in the muddy field near Birmingham) a shoot would include the director, assistant director, camera person, sound person, a couple of production assistants, the ''talent'' (as we were called), and whoever we were interviewing, etc.; thus seven or eight people, a small van of very heavy equipment, lights, etc.—extremely expensive, complicated logistics, very rigid. This is what we trailed through Japan. It took an hour or so to set up a good shot, and the director was often frustrated as he tried to explain to the camera person what was needed. Of course the final product was often extremely beautiful, but there was a tension between the beautiful and the useful. Sarah filmed the entire Japanese shoot on a very small digital video camera with a pullout screen. David had never seen such a camera in action and was very impressed. So when we went to Venice he just brought a slightly bigger (three chip) digital camera with radio mikes. These mikes, I discovered, were really important, since good sound is almost more important on television than good pictures. One can always improve and change and manipulate pictures; but poor sound cannot be tinkered with except at the margins. This revolution had enormous effects. It meant that the filming in Istanbul, where Jim Burge acted as director, assistant director, camera person and sound recordist all in one, could take place; hiring a film crew and equipment would have been too complicated and expensive.

The Australian filming, where we were very constrained because the radio mikes only arrived a day before we were leaving, but managed to film about nine scenes, four of which were finally used in the last program, was the next stage on. Almost all the filming was done by Sarah, with me talking, etc. And then, at the end, the final reduction (based on the memories of Benedict Allen wandering alone through the Gobi desert filming himself) took place as I sat on a log in the wooded glade below our house and talked to the camera at the other end of the log. I found it a very stress-free experience and suspect that a number of anthropologists will do this in the future. What in fact has happened, is a triple revolution. The cameras have become wonderfully cheap and miniature and high-quality—they take better quality than anything that could yet be shown, the film is very cheap, and so on. Secondly, the hold of the film and other unions, which have prevented anthropologists from using their own film on television, has collapsed. Thirdly, the viewing

public have become more sophisticated. They are no longer obsessed with the superficial, technical quality of the film but more interested in spontaneity, authenticity and the content. Masses of ''candid camera,'' ''video diary'' and similar near-amateur film have given them a taste for film that is much nearer to what the human eye sees—in other words wobbly, interrupted, not too much clever play with light, etc. These three revolutions could lead to a vast expansion of the potential for ethnographic filmmaking and its use in television.

The film that was taken on these various shoots can be found at: http://www.alanmacfarlane.com/global/roots_explorations.htm. They consisted of the following:

EXPLORATIONS: Filming around the World

Additional films, most of which were not used in the television series, listed under the themes covered by the six programs:

1. *The Iron Horse*
   Tea and Cities
   Steam, Railways and Wheels
2. *Wheeling and Dealing*
   Iron and Coal
   Weaving and Spinning
   Warships and Wood-working
   Clubs
   Consumer Society
3. *Ships of Fortune*
   America
   Holland
   Venice
   Istanbul
   Slavery
4. *The Heavenly Machine*
   Glass
   Clocks
   Religion
   Japanese Culture and Civilization
5. *War and Peace*
   Agriculture
   In Britain
   In Nepal
   Warfare
   Chinese Culture and Civilization
6. *Animal Farm*
   Printing and Writing
   The Long History of Mankind
   In Nepal

In Japan
In Australia
The Future

DISCUSSIONS: THE ROUND TABLE DISCUSSION

The other major event in this period was the ''Knight's Meeting'' or seminar, held in King's College in July 1999. All of us were rather worried about this. It is all very well for a group of academics to meet and talk about large issues when they do not have an audience. They can disagree, score points, use jargon, or play games. But what would happen when a camera was on them? Wouldn't the language and contents be far too esoteric for the general public, and might not the whole thing be boring or fragmented? The only precedent I had was when I had run a series of seminars at King's in the later 1970s, in which I had invited leading figures—Godelier, Leach, Goody, Bloch, Sahlins and others—to talk about history and anthropology. This had been filmed, and the film was an interesting one–though in black and white and not too grippingly filmed. But only a few other academics had ever seen this. Now there might be up to 2 million ''general'' viewers. Could it work at all?

Even finding a nice-looking room was a problem. Most rooms in King's Gibbs building were elegant yet did not have the engaging ethnographic clutter of objects, books and scientific instruments, let alone the round table, that was called for. So the whole thing was carefully set up in Gibbs G.3, using the shell of the room and paintings, hiring a table, setting up a mini-rubber rail track on which the camera tripod could easily be pushed round. The excellent cameraman Chris Morphet was engaged to film the non-stop conversation over two days, a crane was hired to take shots of the knights on the grass, through the masonry, in through the window, and other tricks.

In the event, though, it seems to have worked, and those who have watched the six or so hours of film have found it exciting. The room looked marvellous. The books borrowed from John Dunn and others were authentic; the contributors were on their best behavior. Only very light chairing by King Arthur (myself) was needed to introduce each session, which roughly paralleled the six films. It was certainly exhausting, lasting until midnight on the first day and about 5 p.m. on the second; but perhaps because of the cameras, or because we had already become involved in respective filming, the five contributors worked very well together, and Simon was in particularly sparkling form. The first session, which could only deal with generalities since there was not much to say about one day, was the least satisfactory, but things gathered momentum and there was very little that is below a good standard. Again, while I had implicitly expected that it would just be a matter of saying what we already knew, and I didn't expect to learn much, in fact it turned out to be an amazingly intense learning experience. We really were searching for answers, spontaneously and in an unscripted way. There was no time for rehearsing, and with only one or two interventions to cover something we had missed, we were given our heads. Perhaps another day to go over a few things would have been good, but the

spontaneity of the field filming was replicated here. And what was particularly extraordinary was the way in which what was said round the table echoed and was echoed by what was said when we were in Chicago, China, Japan or elsewhere.

The full seminars can be found at: http://www.alanmacfarlane.com/global/roots_conversations.htm. They covered these areas:

- One day—The Rocket
- 100 years—Northwestern Europe
- 250 years—Europe and America
- 500 years—Europe and Asia
- 1,000 years—Europe and Asia
- 10,000 years—the World

CREATIONS: FILMING, EDITING AND POST-PRODUCTION

So by the end of 1999 most of the film had been shot and the serious editing was under way. Even by November I was being shown rough-cuts of programs 2 and 3. Over Christmas we watched more film and in early January did another day's filming in my barn and teahouse, talking about tea, wheels and so on for the first program, which was directed by Ian Duncan. A unique piece of ''heritage'' filming was also done by Simon in Faraday's Laboratory at the Royal Institution, a piece of footage that alone justified much of the expense of the series.

Since, as most people know, the editing is as important a stage as the original planning and filming, I wanted to see how this was done, and so went for a couple of days to watch the extraordinary process of digital editing, using the sophisticated AVID suite at Windfall. At this stage also I was encouraged to be fully involved. My comments on the various rough-cuts were welcomed, and I was particularly asked to look at the film on glass and clocks to see what I thought. All of the stages of editing also had to be constantly checked with Charles Furneaux at Channel 4 (who had taken over from Sara Ramsden). I began to be aware of the delicate and difficult balance between the production company and the broadcasting company, who ultimately pay for the series and so watch every move. It is something like the supervisor-supervisee relationship in the Ph.D. process and it can be very difficult.

Another late task was to go to a recording studio off the Tottenham Court Road to do the voice-overs for all three producers. I did not find this easy, since while sitting in a little cubicle it is difficult to project the normal cadences or animated speech and yet retain absolutely clear elocution. And as soon as one has fluffed a piece several times it tends to get worse and worse. But the stage was interesting because even here one was making some very basic changes. For example, the portrayal of a whole civilization such as Islam or Buddhist religion could be altered by taking out one single word and putting in another. It is extremely delicate work, balancing picture, wild sound, voice-over and music. The music, it also became apparent, was crucial. Watching bits of edited text without music, it often went dead. What appears to me a very sensitive and good musical background was provided by Peter Howell and a professional narrator, John Nettles,

who knitted the voice-overs together. The importance of the rhythm of the films came to me as I watched the editing, which was almost always done to music, and this gave the editors, particularly the crucial Paul Shepard who edited the last three programs, their pace.

The editing and the editor were a revelation in other ways. I was very surprised when I asked David what happened to the several hundred hours of film that he had taken. He said that he handed it over to Paul, the editor, who went through it and decided to concentrate on (digitize) only a third or so of it. The rest was there, but would probably not be looked at again. This seemed to be leaving in the hands of someone who had not been at all involved in the construction of the scripts or any of the filming an enormous power. But I gradually learnt how sensible this was. Like any fieldwork anthropologist or writer, one loses objectivity as one collects material. One fills in the background from the memories of the experience, values certain pieces because of the enormous effort they had taken to collect, feels under pressure to include bits because of the kindness (or menace) of certain people who were involved, or the huge financial cost of setting up a shot. But none of this is relevant to the television audience. They just want to see the shots that work and tell the story. The experienced but dispassionate eye of the editor looks at the material unsentimentally and brutally, and saves what will work as television. This explained to me how it is that I have found that when I give over-long drafts of my books to Sarah she so helpfully cuts them down to size, without apparently losing anything. One recent book was reduced from 240,000 words to 160,000 words without my being able to detect any serious diminution—even though I mourned (temporarily) the loss of hard-gained results.

Television is very profligate. In the Darwinian struggle for survival, something like 297 or so hours out of 300 that was taken for this series was ultimately rejected. Only three hours or so, and some additional materials from other sources, were used. Something similar, of course, happens between fieldwork and the thesis or book. It seems terribly wasteful, and I do indeed hope to use some of the materials elsewhere. But one understands why it is necessary, and also the hours of filming the same small scene, in the hope that one perfect, unexpected, shot will be saved.

One very brave and, I suspect, unusual symbol of the trusting and co-operative relationship that had been built up came near the end when David, Ian and Carlo brought up the rough-cuts of all the films and Simon, Christopher and I (with Gerry and Sarah) spent a whole day in King's, from 9 a.m. to 9 p.m., watching them and discussing each one. Sarah filmed the discussions so that points raised could be incorporated if necessary. This could have been a big mistake, for if the academics had raised serious objections or reservations, or even been seriously underwhelmed by the nearly finished versions, it might have had serious negative effects on the final stages. It is very easy to be critical, or to feel one has been misrepresented, ignored, or that very complex theoretical points were being distorted. Furthermore, since everything is political, it could well be that seeing the whole series through might show that those hated tendencies toward ''Western triumphalism,'' ''technological determinism,'' ''ethnocentrism,'' ''Orientalism,'' ''teleology'' or some other serious flaw were present. Both filmmakers and

academics are at risk in this process. The dangers were greater for the filmmakers because they knew that the academics could not fully comprehend emotionally, even if they understood intellectually, the constraints of mass-audience television, attention spans, pressure from commissioning editors, and so on. Nor would they really understand how very much better the film would look after it had been through ''post-production'' cleaning of sound and pictures. Or even that right up to the last moment, like with most Ph.Ds, very substantial changes in structure would be made and significant improvements made. So they were placing a very rough draft, which looked on the surface like a final draft, before the academics.

But for whatever reason, it turned into a quite helpful exercise. The films were universally good and interesting, the academics made only constructive suggestions, which helped resolve some of the problems of the filmmakers, and the trust was deepened. The film taken by Sarah was used by them as a record of the meeting and will be useful in future archival studies of how the film developed.

Even as the first few programs were broadcast and reactions came in, there was the usual desperate last-minute effort. The last program, which would knit it all together and either leave patient viewers perplexed, disappointed, enraged, frustrated or illuminated, was only in a very rough form just three weeks before it was to be transmitted. We had several further discussions about this, for it was extremely difficult to see how one could keep a balance. How to fit in ten thousand years of human history without trivializing? How to show what happened after the event without making it seem inevitable. How to avoid triumphalism? How to bring it up to the present? Gradually it took shape and I went to see a nearly completed version, and also to witness two extraordinary final stages.

David had early on told me about the enormous difference that ''post-production'' made nowadays. In the old days one took the film, edited the film, perhaps put on a sound track, and that was it. Nowadays, with digital film and a very sophisticated digital editing suite, after the film is finished it is taken to studios in Soho where some very important things are done. First, the final film needed to be assembled. The editor, Paul, had been working ''off line.'' He had basically assembled a computer program or set of in-and-out points. This program was taken to a very much more powerful edit suite where the program was run against all of the necessary original tapes, so that the pieces were copied and knitted together from the masters. Then I spent one day watching someone who is credited on the film as a ''colourist'' at work. In a dark room: in front of a bank of keypads, he went through the last program changing almost all the textures and colors. For example, in the final scene of the last film, David felt that the sky behind the Himalayas was not blue enough, so it was washed with brighter blue. From tiny changes to one bit of light, to enriching golds and reds, it was as if a Rembrandt was at work, turning boring backgrounds or presenters into animated and suntanned wonders, making reconstructions more like dreams; and taking out nasty bits. We were told that Aidan was the best colorist in London, an extraordinary genius. Certainly the film was at least one-quarter more exciting by the time he had spent six hours working on it (at a couple of thousand pounds an hour for equipment and personnel).

Then the last stage was to take it to the sound laboratory. Again a very sophisticated set of machines and a fascinating process (which I partially filmed), where with a large bank of controls and computers a young man followed the instructions and put the sound together. Basically he had to knit together five things: the visual films; the synchronized speech, which went with the interviews and Knights' Meeting; the voiceover of either the academics or the narrator, other wild sound, and the music. The other wild sound, for example, crickets or the lowing of cattle, or sound of traffic or trains, was all tinkered with. There were too many loud crickets in the Himalayas, so they were quietened. The cows did not moo enough in Australia, so from a large bank of sounds, which he had in the computer, he added some appropriate moos. The train approaching as Joel Mokyr talked in Chicago gave an engaging hoot, which had not been there at the time. We could even have changed the signals from red to green, but desisted. The exact levels were very finely tuned, and appropriate music added. Everyone was there—the composer, the lady from Channel 4 to make sure that everything was done right, the director and assistant director. It was lucky I was there too, because they discovered the last syllable of ''Protestantism,'' the ''-ism,'' had been drowned out by another person in the seminar. So we spent about 40 minutes re-recording that single word and the editor actually taking the ''ism'' from the new recording and adding it on to the ''Protestant'' said previously. The whole process again emphasized the counter-intuitive fact that sound is more important than picture on television. People can stand bad pictures, but if the sound goes, or even, as we found as we watched the last, brilliantly edited, seven minutes on genetic engineering and the discovery of a new species of human being, if the music is missing, the whole thing goes dead. A magical art indeed, largely intuitive and impressionistic. It has little to do with ''reality'' in the normal sense, but nor is it entirely false. Just like photographs in Susan Sontag's famous phrase, it all trades on the tension between genres—''clouds of fantasy and pellets of information.''

The series was originally scheduled to start on April 9, 2000, when Sarah and I would be in Australia, but fortunately was delayed to May 14. Channel 4 claimed that the reason for doing this was to give it more publicity since increasingly they had confidence that it would not be a disaster, and might even bring them kudos. They even talked of ''bill-boarding'' the series, though this never happened.

Examples of all the filming and editing can be found at: http://www.alanmacfarlane.com/global/roots_creations.htm. This consists of the following:

Creations: Filming, Editing and Post-Production

- Film plan for first program
- Shooting script for sixth program
- Transcript of Alan Macfarlane's filming in Australia
- Transcript of Simon Schaffer's filming in the Sanger Centre, Cambridge
- Editing the film series [film]
- Editing the sound [film]

- Film sequences:
  1. Filming in the Kojunsha Club and Keio Speech Hall, Tokyo
  2. Filming in the Kojunsha Club, Tokyo
  3. Fukuzawa at Keio university
  4. Filming in a Buddhist temple, Kyoto
  5. Filming in the bullet train
  6. Filming on Desima Island, Nagasaki
  7. Filming *geisha* and *maiko*, Kyoto
  8. Filming the crew at a meal in Japan
  9. Filming in a school of Dutch learning, Osaka
  10. Filming in a Japanese toilet
  11. Filming eye tests for myopia in a Japanese school
  12. Filming a bamboo craftsman
  13. Filming bamboo cutting and a bamboo factory
  14. Filming a Japanese pottery, Shigaraki
  15. Filming at a tea garden in Kyoto
  16. Filming in Osaka Castle
  17. Filming in Venice
  18. Filming in Istanbul

REFLECTIONS: THOUGHTS ON MAKING THE SERIES

In fact the book brought home to me something that one might easily miss: namely that the series is actually intellectually exciting, even for academics. I had imagined that the best documentary series on television could only rise to a level where a group of experts in one field, say in archaeology or medicine, could help inform the general public or others about recent findings in that field; for such experts there would be nothing new to learn. It was spreading knowledge more widely. What I found in this series, working with experts on Chinese science and technology, historians of philosophy and science, experts on consumerism and American technology, was that the sum of the parts was greater than the parts. In other words, a kind of chemical re-action had taken place, so that actual high-level research had occurred in a sort of thought experiment. This means that in what looks like a coffee-table book, or mass-broadcast television series, there are new ideas occurring, new ways of looking at things, which have never existed before. I know this to be so because I have shown bits to very knowledgeable anthropologists and historians and they have said, even in areas where they have a general competence, that they had never thought of what was being suggested before—and how it illuminated a problem, or opened up a new area. For instance, when the veteran anthropologist Adrian Mayer watched a short cut on the contrast between wheat and rice economies, he was intrigued as to the effects, particularly in relation to India where he has spent much of his life.

I have tried to guess as to why something new emerged: the very unusual fact that academics in different fields helped to make a joint product is central to this. As Gerry Martin, who with his engineering background has often pointed it out

to me, non-science academics are very odd in that they still persist in trying to solve immensely complex problems single-handedly. It is what Keith Thomas many years ago called the ''prima donna tradition'' in history and other fields. Yet when we try to collaborate, in seminars, co-authored books, edited collections, the results are usually patchy. It is very difficult indeed to pool time, effort and knowledge, as one would do in the sciences, in the pursuit of a common problem. Yet in this venture, that is indeed what happened. Constructing a film is a joint enterprise on the part of the filmmakers, and some of this seeped through to the academics. We jointly ''wrote'' the series as one would write a book, but it is usually impossible to separate intellectual property rights. We became much more like a boat-crew, or an orchestra, or a football team, and hence both stimulated and produced an output which no one person could have done. It may well be that this will prove a model for a new way of doing research. I had learned about this in previous projects I had been involved with over the years, in particular making the Earls Colne Website, making the Naga Videodisc, or making the BBC Domesday Disc. But previous film involvement had not allowed me to see that this could also occur nowadays (depending entirely, of course, on the special talents of the people at the film company and the chanciness of the academics) in filmmaking. By changing the ''product'' from a book which, in the end, has to be single-authored, to a film, which is necessarily multi-authored, the fusion of ''self-love and social love,'' as the 18th-century moral philosophers would have put it, is encouraged. It is all hands to the wheel.

Another reason why, at a more individual level, something odd happens in the process of filming like this can be shown by two examples. One part of program 4 was on the origins of time. In the seminar I had put the well-known problem of whether mechanical clocks produced, or were produced by, a changing sense of uniform, repetitive, unidirectional time. I suggested that since clocks were developed in early monastic organizations, particularly in Benedictine foundations, we should look there to see whether a new sense of time had emerged that required mechanical clocks, or whether the mechanical clocks revolutionized time. Later we pursued this question during a visit to Pluscarden Abbey. As I actually watched a Benedictine Abbey at work, for the first time in my life, and heard the bells, watched the regular movement of the robed figures, I began to absorb a new insight. Then I interviewed the very articulate and thoughtful Father Giles (who had once read anthropology, among other things) on the subject of time. As I talked, our conversation, memories of Landes and Mumford and others on time, the experience of being in the monastery, all came together and there seemed to flash into my mind a new idea, a vision of what might have happened. What I said was as follows: ''What the Benedictines did was to enclose space and time physically in their architecture, socially in their social organization, and then divide it all up into tiny bits, so in a sense they were a living clock, a kind of physical social clock in their order.'' Father Giles then commented, ''Yes, in the sense that at such and such a time they would be in the rectory or at this time they would be in the chapel . . . ''. I then continued. ''That's right, so they were all little bits of a clock, each one of them was a little bit, and all that happened was that they miniaturized it down into an actual physical object

which then became a mechanical clock, so this is an un-mechanical, this is an organic clock, which was later turned into a mechanical clock . . .'' (to which Father Giles added further interesting thoughts on architecture and theology). Now, as far as I know, I had never had this thought before, and had not read it in that form anywhere, though bits may be found in Mumford. It was the experience, the conversation, the camera, all sorts of things that suddenly made one see something new—and try to say it.

A second example occurred when I was sitting on a wall in Thak. David and I had agreed that one of the central themes in the fifth program would be the difference of crops at the two ends of Eurasia, of rice and wheat in particular. What differences did this make in the growing divergence of civilizations over a thousand-year period? As we climbed down through the fields to a place where I remembered there was millet on one side (a grain that has to be manured and milled, representing what I called the ''hard grains'' of the West) and wet rice on the other side, I prepared to talk about the differences. All sorts of ideas that I had lectured about, read about, talked to experts about came into my mind, some explicitly related to experts, some not. I knew that the interview, to be usable, must not last more than two or three minutes at the most; that I must avoid jargon, references to specific academics, etc. So I decided to string out the narrative as a history of the two-grain systems side by side and the social, political and other implications. Although they did not use the whole of what I said, there is enough in the sequence to show many of the main ideas. Bits and pieces of these are familiar to anthropologists, others to historians. But I had never attempted to weave them together and to explain to an interested observer what we mean when we say that the two great grain systems of the world have had such different effects. Looking back on what I said, I realize that what I did was knit together ideas from, among others, Geertz on agricultural involution in Java, Francesca Bray on ''Rice Economies and Grain Economies,'' King on ''Farmers of Forty Centuries,'' a classic on Chinese and American agriculture at the start of the 20th century, of the Japanese economic historian and demographer Akira Hayami on the fundamental difference between ''industrial'' and ''industrious'' revolutions, and of Marc Bloch on the impact of medieval watermills. But added to this was my experience of filming and observing a Himalayan community over thirty years, actually experiencing what producing different grains is like. Very few of the above authors or others had spent that sort of time living with farmers, and so each one only caught a part of the dynamic. Once said, my piece is pretty obvious, yet it is actually something that seemed novel and unexpected to me then. The occasion created the integration, and this experience happened a number of times during the various visits we made.

I also reflected on some of the practical things I had learnt about filmmaking during the series and jotted these down as follows.

Some First Thoughts on Filming with Windfall Films (Heathrow Airport, March 22, 2000)

In no particular order, these are some of the things I have learnt.

- The importance of surprise and spontaneity in filmmaking. David took great trouble to make sure that the ''talent'' had not over-rehearsed their answers. For example, he preferred the first shock of entering a new building, or meeting a new person (as in myopia) to be recorded on camera. The mind and body at work absorbing the new was important.
- The importance of filming the same interview several times, however well it had gone the first time, and from different distances, angles and so on. Each time, in my case, the answer came out differently and often the second or third version was much better than the first. The first response was thinking aloud as to a plausible answer. Then it was polished; and after about three times it came off. Very like lectures, in fact: rough the first year, then good for a couple of years, then deteriorating as they get stale.
- The importance of relaxing (for example doing breathing exercises and stretching) before filming: breath control is extremely important since the sound of the voice, often used over other pictures, is crucial.
- I became aware of how difficult it must have been when anthropologists were accompanied by a film crew for a couple of weeks to make a ''Disappearing World'' type of film. When the film crew came to Nepal with us we were immediately involved in a complex ritual and social occasion. Watching the film afterwards, it became obvious that despite some suggestions as we went along by ourselves as to what to film, what would happen, etc., the cameraman (David) did not know what to film. Obviously he knew nothing about the culture and in that respect was filming in the dark. This was also a fault behind some of the filming of the technical processes, where the most important bits were missed by a team who did not really understand (for obvious reasons) what was going on.
- The deeply collaborative nature of filmmaking. Unlike a book, which can be created by one person (and now, with the Internet, easily published by one person too), a television film requires a set of connected skills. This is the source of both its frustrations (in communication, etc.) and its pleasure when it works.
- The importance of the post-production stages when sound, graphics, coloring and so on are done and turn a reasonable film into something special. An enormous attention to detail is possible nowadays at this stage, using digital equipment.
- I found that although I was nervous at first, with practice it became moderately easy to talk to the camera, especially if there was someone standing just beside it to whom one could address one's remarks. David and Carlo and others were very good at providing a face to talk to.
- That it is easier to talk to the camera in answer to a specific question, rather than just to launch out. If the question is put with real curiosity in the voice, then it almost becomes like a conversation and is that much easier.
- That it is easier to talk if one is in a relaxed, informal position, rather than standing up facing the camera. For example, sitting on a wall, leaning on a parapet, relaxing in a chair, the informality takes away from the rather artificial feeling when one stands declaiming to the empty air.
- That the process of editing the film after it has been shot is both terribly important—making or breaking the film—and also far more arbitrary, inspirational and intuitive than I had realized. Furthermore, that the shape of the film

continues to change extensively right up to the last moment. It is like a painting, where just altering one detail can affect the whole and so require much reworking.
- On a personal note, I found that my best filming time was between nine and midday in the morning (as it is for writing). After lunch was pretty hopeless.
- That the filming itself is not very difficult. Although there is obviously a highly skilled side to getting wonderful pictures, usable footage (such as that which Sarah shot in Australia) can be generated by any averagely competent person.
- That the general narrative or story behind a program, that is, the ''treatment,'' which is worked out roughly on paper first, is the key to the whole enterprise.
- That production companies vary enormously. Usually, from my experience, they want the academic to answer one or two set questions in a set way, which will be slotted into a structure over which the speaker has no control. This is the first time in which I have been encouraged to play a major role at all stages of the production, in a sort of partnership.
- That the quality of the sound is more important in many ways than the pictures; and in particular the value of radio microphones.
- That it is important to get some very close-up cut-away pictures during a production.
- That lights, tripods and special filters are hardly ever used nowadays.
- That if one is doing a reconstruction of a historical scene, one should aim at a simple and suggestive portrayal with few people, etc. (The TV screen is much smaller than the cinema one.)
- That filmmakers hardly ever zoom or pan. If possible, they come up close rather than use a zoom. (No visual information is carried during a zoom.)
- That very interesting work can be done using an 8 mm. camera with black-and-white film, if one wants to create a feeling of old film.

LAUNCH AND FINAL REFLECTIONS

The pleasurable first viewing and party at Channel 4 to launch the series was only marred by the fact that as I walked out of the studio within a few seconds I became deaf in one ear—the gods warning me against pride, I suppose. There was a delighted letter from Tim Gardam at Channel 4 admitting that he had been wrong to worry; that it was a work of genius and the most interesting program made for the Channel in the past year; the enormously enthusiastic reviews by Polly Toynbee and all the other television critics; then there were warm and supportive comments from friends in the Department and King's.

Of course there were mistakes and missed opportunities, some of which we mulled over in a kind of post-mortem in David Dugan's house with many of those involved, as the first program went on air.

The cuneiform tablet, held in the hand of a Sinologist, was the wrong way up. And some people found the film in the first episode too jerky. Many would have liked to see more of the discussion and more disagreement. On the whole, however it seems to have worked. Having done so, it might be thought that such an enterprise is relatively easy. In hindsight what David and his colleagues did even seems the obvious way to do it. Yet as it proceeded, nothing seemed obvious. It

was a journey in which the destination was never known until the last few weeks—as much writing is, though students are never told this. The difficulty is shown by looking at the other series that have been and are being shown on television. BBC 1 showed the huge series based on Felipe Fernandez-Armesto's ''Millennium.'' Ten episodes and ten million dollars later very little of intellectual substance was added. Peter Jay's ''Road to Riches,'' of which I have only seen two episodes so far, appears to lack a cohesive argument. We later saw what the huge series on English history that Simon Schama was like (and the superbly illustrated three-volume book that went with it [2000–2001]).

A lot of our filmmaking was luck, a lot of it obstinacy in the face of scepticism. But whether it lasts or not, it may have had a deeper effect, well stated by Polly Toynbee in her *Radio Times* review (May 27–June 2: 18). She asked, ''What can TV do with hard history, with ideas, analysis, cause and effect, great movements that don't revolve around single charismatic characters?'' She answered that this series shows that something can be done; TV can be both education and entertainment. ''This is the best, most serious history I have seen on TV for ages and is what Channel 4 is for, though these days it has mainly forgotten its early brave remit to do the nearly impossible.'' Certainly it was fun.

For the Record . . . Some Reactions and Follow up (From My Diary)

Sat. 22 April. The Windfall people had heard from C4 Director of Programmes, Tim Gardam, who had watched the 1st and 5th episode. Carlo writes that he is 'a big man who knows his history' and 'usually he writes to you with a long appendix of criticisms and changes. We were slightly taken aback with his letter which reads . . . ''You have achieved something very original. I think it will be one of the defining programmes of the year—proof that television still has the intellectual ambition to get to the heart of things. I will ensure that it gets all the recognition it deserves.'' ' Sounds good. Publicity people starting to work and already have an interview (on tea) lined up with the *Times*.

Mon. 8 May. Alan interviewed for Radio Shropshire this afternoon at the BBC local radio studio in Cambridge—a 25 minute slot on the Windfall programme . . .

Wed. 10 May. Alan broadcast on Radio Cambridge with Sally Dugan in Oxford.

Sat. 27 May. The viewing at C4 of the first program in London was very encouraging—though ever since I have been deaf in one ear. On Wednesday a radio interview for series. Greatly encouraged mid-week by a superb review/pre-view by Polly Toynbee. And another (in general) very enthusiastic response on the Critics Program ('Night Waves') this evening on Radio 4. It will obviously cause much discussion and argument—especially my crazy ideas, which is all to the good.

Sun. 28 May. First episode of 'The Day . . . ' Slightly anti-climactic after all the wait and excitement—esp. as we'd seen it on large screen on Monday. But looked ok. and Gabriel Horn rang to say how much he and Prill had enjoyed it. Quite a thoughtful and moving picture which captured the two sides of Victorian Britain. Not triumphalist at least.

Tues. 30 May. Alan found splendid reviews in the *Telegraph* and *Mail* and did yet another interview this evening. Stephen, Ken Moody, Peter Jones, Gil & Paul all liked it.

Thurs. 1 June. Gerry very pleased with 'The Day . . . ' Nice letter from my uncle Richard about it too.

Sat. 3 June. Also lots of positive feed-back about the first film of C4 series—a number of King's Fellows and others saying how much they had enjoyed it.

Sun. 4 June. Watched second episode. Very intriguing, even though we had seen it half a dozen times—some new touches and on the whole very interesting. Gerry left a message to say he thought it excellent.

Fri. 9 June. Went up to London . . . David had met head of programs (Gardam) at C4, who had said he thought the programmes were the best series since 'The Ascent of Man' by Bronowski. Gardam also wrote to say how he admitted he'd made a mistake early on and David's vision and enthusiasm of 'genius' we proved right—and would we all like to come to dinner!

Sat. 17 June. Watched the fourth episode of 'The Day . . . ' on clocks and glass. Suddenly, having been a small player in series, I became probably the leading person—or perhaps equal with Simon. They had done it very well and it all flowed beautifully. Strangely evocative of all our trips around the globe. Just a few seconds brought back a whole trip—like Venice. Some lovely stuff and very rich in original ideas. Really made one think—and the visual and spoken word worked very well indeed together.

Sun. 2 July. Drove to David Dugan's house south of London, where we were warmly treated to barbecue, etc. and then watched the last programme together. It was very nice to share those moments and I even managed to film two hours of a discussion of the history of Windfall, etc.

The film of some of the reflections by those involved can be seen at: http://www.alanmacfarlane.com/global/roots_reflections.htm

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REFERENCES

Diamond, Jared
1998 *Guns, Germs and Steel*. New York: Vintage.
Dugan, Sally, and David Dugan
2000 *The Day the World Took Off: The Roots of the Industrial Revolution*. London: Channel 4 Books.
Flannery, Tim
2002 *The Future Eaters*. New York: Grove Press.
Hodgson, Marshall G. S.
1974 *The Venture of Islam: Conscience and History in a World Civilization*. Chicago: University of Chicago Press.
Macfarlane, Alan
1997 *The Savage Wars of Peace*. Oxford: Blackwells.
Mokyr, Joel
1990 *The Lever of Riches: Technological Creativity and Economic Progress*. New York: Oxford University Press.
Mumford, Lewis
1934 *Technics and Civilization*. London: Routledge.
Sahlins, Marshall
1974 *Stone Age Economics*. London: Tavistock.
Schama, Simon
2000–02 *A History of Britain*. 3 vols. New York: Hyperion.
Young, Colin
1975 Observational Cinema. In *Principles of Visual Anthropology*. Paul Hockings, ed. Pp. 65–79. The Hague: Mouton Publishers (reprinted 1995, 2003).