

'The Day the World Took Off'; reflections on the experience of working on a television series.
by Alan Macfarlane

These are notes on the making of a C4 television series of one-hour programmes shown on Sunday evenings between 28th May and 2nd July 2000. The programmes were 'The Iron Horse (one day)', '100 Years: Wheeling and Dealing', '250 Years: Ships of Fortune', '500 Years: The Heavenly Machine', '1,000 Years: War and Peace', '10,000 Years: Animal Farm'. The series had viewing figures ranging between one and two million a week. It involved a collaboration between three 'Cambridge' academics, two others, and a television production company. The following account is based on diaries and other documents kept during the making of the series. The account is informal, done under pressure of time, and very personal. Other participants would clearly see what happened differently, and I hope to write up a fuller account taking their views into account later. It is part of the rough fieldwork diary of a collaboration which may reveal something about the relations between academics and the media.

The original meeting with David Dugan, a television producer and chairman of Windfall Films, an independent production company, took place at 2 pm. on June 8th 1998 in my room at King's. For some months he had been trying to find an 'angle' on the industrial revolution in order to bid for the one million pounds being put up by C4 to make a 6-part documentary to celebrate the Millennium. He had talked to a number of historians and they had failed to provide the way in to 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 the series 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 interchangeable names such as Cartwright and Arkright, Boulton and Watt.

He was on the point of giving up the subject when he talked to Professor Patrick O'Brien, then Director of the Institute of Historical Research. O'Brien suggested that the two people David should meet were in Cambridge, namely Simon Schaffer and myself. Simon Schaffer is Reader in the History and Philosophy of Science at the University of Cambridge 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.Rivers the early anthropologist, and is married to the anthropologist and museum curator at Cambridge, Anita Herle. So David rang 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, and it coming to nothing for funding or other reasons.

He came and we talked for a couple of hours and I remember that he was a good questioner and a listener. I think I told him about the contents of my last book, 'The Savage Wars of Peace', 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 my 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, including those he had discussed with Simon in the morning.

I think that it was during that journey that, based partly on Simon and my ideas of comparison and deconstruction, he began to see how the series could be made much broader and wider. During the next five months we met a number of times and worked out the approach and likely contents of the various programs. But it was not until the end of the year that it became certain that the program would go ahead and the filming could begin. During this period three other academics were recruited to the series, Christopher Cullen, Director of the Needham Institute for the History of Science and Civilization in China, Maxine Berg of Warwick University (an expert on eighteenth century English consumption), and Joel Mogyk of Northwestern University, author of 'The Lever of Riches'.

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 shod, ploughing and so on. I was amazed at the effects of the camera filters, which turned a lowering grey sky into a beautiful sunset of clouds and radiance. I realised how much the camera lied – and we tended to believe.

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 questions and told to improvise, or asked to talk to the craftsmen – farrier, ploughman – about anything I liked. This became the technique of 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 realise that I had never understood the main reason for the horseshoes which transformed northern agriculture. I had thought it was to stop the horse slipping. But I discovered it was to stop foot rot from the wet thick soils. This was one of a thousand things I learnt from actually participating and observing craft processes which I had only previously read about. 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 which I could never have anticipated.

The filming in the glass works later that week was fascinating and shows another benefit of working with a good company. They had assembled several of the leading British experts on various aspects of glass. The very articulate director of a firm of glass manufacturers in Scotland to make a mirror; one of the legendary glass instrument makers who had helped in many of the pioneering experiments in the laboratories of University College, from the 1940's onwards, to make a few scientific instruments; a Geordie glass-blower to illustrate the miracle of glass-blowing, and a whole cast of other characters to enact a traditional, medieval, glass-blowing scene. To spend a day in their company, asking all the questions that had developed in my mind was an enormous privilege and eye-opener. I began to realise that my previous image, which was that filmmaking was just a matter of telling to the camera what one already knew, was completely wrong. Instead, it could be a co-operative exploration in which the production company spent a large amount of time and effort in assembling the very best people, at considerable expense, to run a kind of mini-seminar around a theme.

Subsequently I filmed in Japan, Australia, Venice, Istanbul and various places in England and Scotland. One of the most interesting things which changed during this short year of filming has wide implications for anthropologists. At the start 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: seven or eight people, a small van of very heavy equipment, lights, etc. It was extremely expensive with complicated logistics and 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 cameraperson what was needed. Of course the final product was often extremely beautiful, but there was often a tension between the beautiful and the useful. Sarah filmed the entire Japanese shoot on a small digital video camera with a pullout screen. David had never seen such a camera in action and was 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 in television than good pictures. One can always improve and change and manipulate pictures; but poor sound can hardly be improved. This technical revolution had considerable 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 would have been too complicated and expensive.

The Australian filming, four scenes from which were used in the last programme, was the next stage. Almost all the filming was done by Sarah, with me talking. 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 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 cheap and miniature and high quality – they take better quality film than anything that can yet be shown. The film and other restrictions, which prevented anthropologists using their own film on television, have collapsed. The viewing public has 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', half-amateur film has given them a taste for film which 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 great expansion of the potential for ethnographic filmmaking and its use in television.

The other major event in this period was the 'Knight's Meeting' (after King Arthur and the Knights of the Round Table) 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, and 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, in the later 1970's I had run a series of seminars in King's to 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 interesting – though in black and white and not particularly tightly 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, but did not have the engaging ethnographic clutter of objects, books and scientific instruments, let alone the round table, that was needed. 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 railway track on which the camera tripod could easily be pushed round. The excellent camera-man 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.

In the event, though, it seems to have worked and those who have watched the twelve or so hours of film have found it exciting. The room looked magical. The contributors were on their best behaviour. 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 mid-night on the first day and about 5 pm. on the second. But perhaps because of the cameras, or because we had already become involved in our respective filming, the five contributors worked very well together. 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 was an intense learning experience. We were searching for answers, spontaneously and in an unscripted way. There was no time for rehearsing and with only one or two interventions to ask us 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.

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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 went down for a couple of days to watch the extraordinary process of digital editing using the sophisticated AVID suite at Windfall. All of the stages of editing also had to be constantly checked with C4. I began to be aware of the delicate and difficult balance between the Production Company and the Broadcast Company, who ultimately pay for the series and watch every move. It is something like the supervisor-supervisee relationship in the Ph.D. 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 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 gets 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 sensitive and musical background was provided by Peter Howell and a professional narrator, John Nettles, knitted the voice-overs together. The editing, which was almost always done to music, gave the editors, and particularly the crucial Paul Shepard who edited the last three programmes, their pace.

The editing and the editor were another revelation in other ways. I was very surprised when I asked David what happened to the several hundred hours of film which he had taken. He said that he handed it over to Paul, the editor, who went through it and decided to concentrate on (digitise) only a third of it. The rest was there, but would probably not be looked at again. This seemed to be giving an enormous power to someone who had not been at all involved in the construction of the scripts or any of the filming. 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 took to collect, feels under pressure to include bits because of the kindness (or menace) of certain people who were involved, or the enormous financial cost of setting up a shot. But none of this is relevant to the television audience!. They just want 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 works as television. Television is very profligate. In the Darwinian struggle for survival, something like 297 or so hours out of 300 that were taken for this series were rejected. Only three or so hours, 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 hope to use some of the materials elsewhere. But one understands why it is necessary and also understands the hours of filming of the same small scene in the hope that one perfect, unexpected, shot will be saved.

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One very brave, and I suspect unusual, symbol of the trusting and co-operative relationship that had been built up occurred near the end when David brought up the rough cuts of all the films and Simon, Christopher and I spent a day in King's watching them and discussing each one. Sarah filmed the discussions so that points raised could be incorporated. This could have been a big mistake, for if the academics had raised serious objections or reservations, or even been underwhelmed by the nearly finished versions, it could 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 the 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 seductive tendencies towards 'western triumphalism', 'technological determinism', 'ethnocentrism', 'Orientalism', 'teleology', or some other serious flaw was 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 etc. 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 most Ph.D.'s, very substantial changes in structure and significant improvements would be made. So they were placing a very rough draft, which looked on the surface like a final product, before the academics. But for whatever reason, it turned into a very helpful exercise.

Shortly after this, the book of the series arrived. This bore the new title, 'The Day the World Took Off'. Since the series was about ten thousand years and not one day, this seemed strange. Furthermore, the 'Took Off', reminding one of Rostow's cold war metaphor and the worst of teleological triumphalism and the condemnation of all preceding civilisations to stagnation was not exactly ideal. But we were told that research in the coffee room of C4 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 Broadcast Company has complete control over, there was nothing to be done.

The book brought home to me something which one could easily miss. Namely that the series is 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 the experts in the featured discipline there would be nothing new to learn. It was spreading knowledge more widely. What I found in this series, working with experts in other fields 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 taken place 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, new ways of looking at things. I know this to be so because I have shown bits to professional 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.

I have tried to guess as to why something new emerged and it seems clear that the unusual fact that academics in different fields helped to make a joint product is central to this. It is not easy to pool time, effort and knowledge, as one would do in the sciences, in the pursuit of a common problem. In this venture, that is 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 impossible to separate intellectual property rights. It became much more like a boat-crew, or an orchestra, or a football team, and hence both stimulating and produced an output which no individual could have. By changing the 'product' from a book, which, in the end, has to be single-authored, to a film, which is necessarily multi-authored, collaborative research was enabled.

Another reason why, at a more individual level, something odd happens in the process of filming 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, single-directional, time. I suggested that since clocks were developed in early monastic organisations, particularly in Benedictine foundations, we should look there to see whether a new sense of time had emerged which required mechanical clocks, or whether the mechanical clocks revolutionised time. Later we pursued this question in a visit to Pluscarden Abbey. As I 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 gain a new insight. Then I interviewed the articulate and thoughtful Father Giles 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 may 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 organisation, 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 miniaturised it down into an actual physical object which then became a mechanical clock, so this is an unmechanical, 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 in Mumford. It was the experience, the conversation, the camera, all sorts of things suddenly made one see something new –and try to say it.

A second example occurred when I was sitting on a wall in the Gurung village of Thak in the Himalayas, where I have been doing anthropological research for many years. 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 civilisations over a thousand-year period? As we climbed down through the fields to a place where I remembered that 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, 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 attached to names, 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, economic and political implications. Although they did not use the whole of what I said, there is enough in the sequence to show 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 realise 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

twentieth 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 water mills. 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. Once said, my piece is pretty obvious, yet it is actually something that seemed novel and unexpected to me. The occasion created the integration.

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Even as the first few programs were broadcast and re-actions came in, there was the usual desperate last minute effort. The last program, which would knit the series 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 cover 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 the film took shape and I went to see a nearly completed version and also to witness two extraordinary final stages.

David had early told me about the enormous difference that 'post-production' made nowadays. In the old days one shot the film, edited it, perhaps put on a sound track, and that was it. Nowadays, with digital film and very sophisticated digital editing equipment, after the film is finished it is taken to studios in Soho where some very important things are done. Firstly 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 knit 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 colours. 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 sun-tanned wonders, making reconstructions more like dreams, taking out nasty bits. Certainly the film was at least one quarter more exciting by the time he had spent six hours (at a couple of thousand pounds an hour for equipment and personnel), working on it.

Then, the last stage was to take it to the sound laboratory. Again a very sophisticated set of machinery and a fascinating process (which I 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 images, the synchronised speech which went with the interviews and seminar, the voice-over of 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. The exact levels were very finely tuned, and appropriate music added. Everyone was there – the composer, the lady from C4 to make sure that everything was done right, 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 participant in the seminar. So we spent about 40 minutes re-recording that single word and the editor then took the 'ism' from the new recording and added it on to the 'Protestant' in the original sound track.

The whole process again emphasised the counter-intuitive fact that sound is more important than picture on television. We 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, 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'.

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The rest, as they say, is history. The pleasurable first viewing and party at C4; the delighted letter from Tim Gardam, the Controller of Programs at C4, admitting that he had been wrong, that the series was a work of 'genius' and the most interesting program made for the Channel in the last year; the enthusiastic reviews by the other television critics; warm and supportive comments by friends in the Department and King's. Of course there are mistakes. The cuneiform tablet, held in the hand of a Sinologist, was the wrong way up. Some people found 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 seems the only sensible way to understand such a vast and complex an event as the industrial revolution. Yet as the work 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 which 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. On BBC 2, Peter Jay's 'Road to Riches', of which I have only seen two episodes so far, appears to lack a cohesive argument or organising device. We shall see what the series on English history that Simon Schama will be launching in the autumn is like.

A lot of what happened was luck, a lot of it obstinacy in the face of scepticism. But whether the series achieves a long term reputation or not, it may have had a deeper effect which is well stated by Polly Toynbee in her Radio Times (27 May-2 June; p.18) review. 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 answers 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 nearly impossible, and equally it was great fun.

Alan Macfarlane

- Notes: (1) Two copies of the film and book, one to view in the Department, one for loan, are available in the Rivers Laboratory of Social Anthropology, from Paul Caldwell.
(2) I would like to thank Ruth Toulson for help with the later stages of this article, and Sarah Harrison for her earlier comments.