BBC Domesday:
The Social Construction of Britain on Videodisc[1]

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In the 1980's the two media, television and computing, aided by lasers, became unified into a new medium, interactive videodisc. This article will describe the most ambitious project in this field up to the present, namely the two 'Domesday' videodiscs made by the British Broadcasting Corporation in the years 1984-1986. This project used the latest techniques in information retrieval and data storage to lay down, in electronic form, a portrait of British society in the 1980's. The scheme cost several million pounds and involved more than a million 'authors'. By examining from the inside how it was made, we can learn something about the potentials and limitations of a medium which, either in the form of videodisc or compact disc, is likely to be the most important technological development for visual anthropology of the next few years.

Precedents

Nine hundred years ago the Domesday Survey attempted to describe in two volumes the landholding system of most of England. It is nearly all concerned with property relations. The present survey by the British Broadcasting Corporation is not limited to what would now be classified as one section of 'The Economy'. The BBC has attempted to cover a much wider area, including the Environment, Society and Culture. Perhaps the closest precedent, which combined visual and textual materials and attempted to give a portrait of a society, was a series of beautifully illustrated books produced by Collins in the 1940s, collectively known as 'Britain in Pictures'. Yet this series, as well as other anticipations, such as Tom Harrison's 'Mass Observation' project, only provide weak precedents for the BBC Domesday Videodisc Project.

A New Medium and a New Message

It is conventional when describing videodisc to single out its central feature as the marriage in the early 1980s of two technologies. On the one side the development of television, combined with advances in laser techniques, made it possible for the first time to inscribe and store pictures in a new way. It is now possible, on a disc the size of a gramophone record, to store up to 108,000 still, visual images. There are also two tracks available to store sound or digitally encoded information. A little more than 300 megabytes of information (the equivalent of over one thousand normal floppy discs) can be held on each of the two sides of the disc. Put in the startling sales talk of the industry, this would mean that the text and illustrations of the *Encyclopedia Britannica* could be stored three times over on one videodisc. It is estimated that the whole of the Library of Congress, if stored in this form, would fit into a large sitting room. The medium will hold still photographs, moving films, graphics, texts, statistics and sound recordings.

This large quantity of material would be virtually unusable without a second development, namely in computing. There have been hardware advances which have led to a range of cheap and powerful micro-computers which can be linked to the videodisc. These are made particularly useful by the new information retrieval systems which have emerged from work on database systems and artificial intelligence The Domesday Discs make available to a much wider public a combined system which has the storage and searching power of a large mainframe computer, but are filled with data which no conventional computer could hold, sound and pictures, as well as statistics and texts.

That we are stepping away from previous media is indicated by attempts to speculate on what a videodisc really is. Peter Armstrong, the inspiration and general editor of the BBC Discs, goes through the possibilities. It is a sort of electronic book, and yet it is not really a book because one has random access to it. We might add that it is also different from a book both in scale and because the link to a microcomputer makes it possible to manipulate data in a new way. An interactive book is a new kind of book. Is it then an encyclopedia? Up to a point, but not entirely because it is not split into fixed 'articles', nor is it attempting encyclopedic coverage. Is it a database with pictures and sound? It is indeed this, but this makes it different from all previous computerized databases. Armstrong argues that it is

most helpful to think of the Discs as a kind of 'electronic exhibition'. He writes that this exhibition 'tries to reflect many aspects of life today in just the same way that...the Great Exhibition of 1851 or the 1951 Festival of Britain did for their times...the visitor to the electronic exhibition can wander around freely, focusing on those elements that catch the eye.'[2]

It would be fashionable, and to a limited extent helpful, to liken the Domesday Discs to other powerful images of our time, the mysterious secret library in Umberto Eco's *The Name of the Rose*, or the labyrinths which Borges has constructed. Indeed, to those familiar with the description of the finite yet infinite library described in Borges' account of 'The Library of Babel', the Domesday Discs seem to be playing with the same paradox. It has been estimated that for someone working through it for forty hours a week, fifty weeks a year, sequentially, 'it would take you about seven years to call up and examine all the material on the two discs.'[3] Yet this is a limited way to search. Once one starts to compare, investigate, go down the diverging tracks, re-examine material, the library, archive or exhibition is endless.

An Open Audience

It has been a characteristic of previous types of communication that they have to be aimed at a certain audience in time and space. For instance a book could be written for children living in the 1980s, or, more precisely, for upper middle-class, educated, English children. Even exhibitions have to be planned with a fairly delimited set of viewers in mind. Because of the strange nature of this medium, it can claim to address the world, present and future. Armstrong argues that the advantage of an electronic exhibition is that it can claim to be for everyone.[4] Although the promotional literature may turn out to be over-ambitious, it is worth noting the sort of audiences envisaged for the Discs. It will be of use in 'Schools and Colleges', 'Libraries', 'Commercial organizations', 'Tourism and travel organizations', 'Land and estate agents', 'Courier and distribution services', 'Local and national government offices', to 'Writers and journalists', 'Film and television companies' and 'Regional Development agencies'. It is difficult to think of any book, film or even exhibition which could be addressed to such a diverse potential audience. There is also the later possibility of private use. It is not only directed to different interest groups, but different ages. Parts of the discs assume a reading age of only eight or nine, other parts assume full maturity and university education. One can go into them at almost any level.

It is open in another way in that it is consciously designed not only for the present, but also for the future. In origin, and largely in execution, the discs were 'primarily intended as historical records', 'it was this idea of the creation of a multimedia record of our times for use in the future that was the primary motivation in the creation of the Domesday Discs...'. Thus 'if the exhibition stands the test of time, it can equally be visited in the coming centuries by those who want to look back at what we thought, how we looked, what we did in the 1980s, and also - for what we decided to include in the exhibition - what we thought important.'[5] It is not yet clear how long a disc will last; some say many centuries, others only a few years. If the optimists are right, then the discs may in the future be a major source for twentieth century British history. My chief role on the editorial board was as an historian; it was my job to imagine what people in the future would like to know about and to make sure that at least some of the subjects were recorded and recoverable.

The Contents of an Electronic Exhibition

There are two discs. One is the 'Community Disc', which is based on a geographical classification, the other the 'National Disc' which is principally organized by topic. The 'Community Disc' is meant to be a view from below, largely compiled by more than a million citizens of Great Britain; the 'National Disc' is preponderantly compiled from official statistics and national sources. On the 'Community Disc' the country was divided into 23,000 three by four kilometer squares. These were assigned to schools and other groups. They were asked to write a twenty page essay, to supply three photographs, and to undertake a land use survey and amenities count in the assigned square. In the event, some 9,000 squares were covered, constituting the majority of the more densely populated parts of Britain, but large areas of moorland were not described. More than 20,000 photographs and 200,000 screen pages of information have been produced, which can be combined with the surveys and with a complete set of the latest Ordnance Survey maps at four levels, down to the 1:10,000 scale. The country is split onto the two sides of the Disc, as North and South. A unified gazetteer with 250,000 names allows one to find any place.

The schools and other groups were deliberately not told what to write about beyond suggesting that it should be a portrait of an area, 'what people do there, what kind of environment it is. What do people there currently talk and think about? What are their hopes and fears?'[6] Consequently the photographs and texts are very varied. The headings for one rural parish (Dent in Cumbria) can be given as an example of what is covered. We have short pieces on the Town of Dent, farming, a typical child's day in 1985, the primary school, employment, inns, shops, arts and crafts, cobbled streets, Adam Sedgwick, the river Dee, flowers, sporting events, St. Andrew's Church, housing, changes during living memory, needs for the future. An example of what is written can be taken from a day in the life of a twelve year old boy in a suburb of Newcastle who starts

'I get up at 6:15 a.m. to do my paper round. My dad has been unemployed now for two years, so I am the only wage earner in the family...(after school)...I'm off down to the woods with my friends. We have a secret den down there but it won't be secret any more now that I've told you! Sometimes we go chasing rabbits with dogs...'

The National Disc is divided in two. One side contains some 60 minutes of moving film, consisting of about 120 short clips arranged into montages for each of the years between 1980 and 1986. Almost all of these are news or sporting events. For instance, for 1983, the subjects included are: the Waldorf shooting, the launch of breakfast T.V., the Scotland vs. Wales rugger match, the People's march for jobs, Sebastian Coe winning a race, the Conservative landslide election victory, the hottest July for three hundred years, the Maze prison break-out, Kinnock elected leader of the Labour Party, Cecil Parkinson resigning, the arrival of Cruise missiles, Torvill and Dean ice skating, three shot in Armagh Chapel and the I.R.A. bomb at Harrods. At present it is only possible to select a year and then watch it through, in continuous play.

On the other side of the disc there are several sets of data. There are some 22,000 photographs divided into 512 picture sets. These include thirty portfolios by leading British photographers, about 5,000 photographs selected from entries in a national competition run by the BBC under headings such as 'Work', 'Leisure', 'Home Life', and the rest chosen from photo archives and specialist collections. These cover 'all those aspects of life in Britain in the 1980s that were felt to be essentially visual: contemporary art, street fashion and wildlife are obvious examples.'[7] There are also nine sets of several hundred photographs taken by moving through a house or landscape and snapping every few feet in various directions. These 'surrogate walks', round a council flat, a stone cottage, Brecon town centre and a Scottish pine forest, are an experiment to simulate moving through an area in any direction. Thus it is hoped that a future historian might be able to prowl round a number of houses, occasionally going up very close to examine the contents of a drawer or the ornaments on a shelf.

A second major data set consists of extended texts. There are 45 specially commissioned and signed essays. For instance, I was asked to cover 'Customs and Traditions in the 1980s' in about two thousand words. At a more specific level, there are about two thousand articles from newspapers, journals, Government reports, press hand-outs, the ephemeral sheets of small organizations and other sources. Their inclusion is to cover two needs, in some cases to provide useful information, for instance on how the magistrate's courts work, in others to show a lively debate in progress, for instance over nuclear disarmament.

A third set of materials consists of some six thousand data sets, 'each containing up to ten thousand cell values.' This material was drawn from government reports and surveys and from the 1981 Census and General Household Survey, from specialist archives, from Universities. For instance, it has made available many of the most interesting data sets at the ESRC Survey Archive, at Birbeck College, and at the Centre for Urban and Regional Development Studies at Newcastle. There are two major types of statistical data, mappable and tabular. As instances of the former, one can plot onto national, regional, county or even smaller areas certain types of mortality statistics, the distribution of types of footwear and clothing, the consumption of alcoholic drinks and the number of women in penal institutions. The 3,600 tabular data sets include topics such as attitude surveys, criminal sentencing patterns in 1983, the readership of daily morning papers over a ten year period, the natural radioactivity in diet. Some 340 of the data sets have been specially prepared from material which was not machine-readable. Many of the data sets can now be compared because the project has reprocessed the raw statistics down to a common square kilometer standard.

Finding and Examining Exhibits

There are several different ways to find one's way around this exhibition. One is the 'gallery' concept which follows the idea of the electronic exhibition further, building on earlier work at the Massachusetts Institute of Technology. A simulated three-dimensional gallery has been created on the National Disc, again echoing Eco and Borges with a flavor of Lewis Carroll. This provides access to the visual materials on the disc, and some of the more general texts. One moves into a room, say 'Popular Arts and Crafts' and finds iconic pictures on the wall, doorways apparently leading out into towns and houses, large signs with 'Defence' or 'Health' written on them. Using the cursor, one can go up to one of these and by pointing go 'through' the icon, door or label into the set of pictures, an essay or surrogate walk.

A second way is to search down through hierarchical indexes. There are two main kinds. There is a geographical index whereby one can start at the whole of Britain, and then proceed by pointing to a specific area and go on down and down through layers of maps, sometimes ending at the street or even individual building level. When the right map is found it is possible to examine it in various ways, for instance find the exact grid reference of places on it, measure distances, or draw lines round an area and compute the surface area in the appropriate unit of miles, kilometers, yards or meters.

The other hierarchical index, on the National Disc, is by subject rather than by place. All the data sets are stored in a five-level hierarchy. Thus one might start by choosing one of the four top level categories, say 'Culture' rather than 'The Economy', 'Environment' or 'Society'. This would give a list of twelve second-level headings, for instance 'Arts and Enter-

tainment', 'Beliefs and Attitudes', 'Consumption', 'Language' and so on. Each of these is further divided into a list of particular data sets, indicating pictures, films, maps and tables. This branching process enables a user to narrow down a general interest, or to group together material in a general field. The concepts of branching hierarchies, of a sort of segmentary system, based on computer notions of trees and nodes, is an important part of the conceptual system that the discs will teach.

The third searching system is through a keyword retrieval method. This is largely based on information retrieval experiments in Cambridge in the 1970s. A user is asked what topic or subject he or she is interested in and can type in a single word or string of words. One could type in a broad category such as 'Crime' and obtain several hundred data sets, or narrow it down by something more specific such as 'Magistrates' when one will be presented with a few. A string of words may be typed in, either in the grammatical form 'The use of trawlers in North Sea fishing', or as a string of key words 'Fishing North Sea Trawlers'. Both of these are treated in the same way. All words are reduced to their stems. Thus queries for fishing, fishes, fish, fisheries, will produce the same list. Very common and general words with little meaning are ignored; thus, 'the', 'use', 'of', 'in' would be stripped out in the query above. The computer program then looks through for matches, starting with 'perfect' matches, where all the terms occur in a data set title. These are presented at the top of a list, which then goes on through the data-set titles presenting them in order of decreasing similarity. Thus if only one term out of four is missing, that title is listed next and so on. There is a good deal of flexibility and serendipity in the system and lower down a list a user may well find an unexpectedly apposite data set. One often finds some very odd inclusions because of the multiple meanings of words combined with the stripping to stems. On the 'National Disc', the system is searching the titles of the thousands of data sets. On the 'Community Discs', the schools were asked to provide four keywords or key phrases for each page of text. These were to be of a fairly general kind such as 'traffic', historic houses', 'vandalism' or 'fishing'. Each photograph on the 'Community Disc' was also captioned with key words. These keywords and captions can be accessed through the search program.

The main refinement in the analysis of material, apart from the mapping programs already mentioned, is the use of the power of the micro-computer to present statistical data in a variety of graphical forms. The displays that are drawn on the screen are not merely pre-arranged patterns like the graphs or maps one might find produced in a book or exhibition. 'The basic philosophy of Domesday is to give you access to the raw data you need to construct your own displays of the data and enable you to draw your own conclusions about its meaning. Therefore, the data on the disc is stored as raw values and there are ways to display these actual numbers.'[8] Suppose one is

interested in a mappable data set, one can control the maps produced from the raw values in various ways. One can select the area to be covered, for instance the population in institutions, for the whole country, for a specific county, or for other delimited areas. On the map one can alter the interpretation by altering the scale on which the data is plotted, large blocks or very tiny squares, one can change the class intervals of the data, one can change the colouring and meaning of colours. Through the manipulation of these and other techniques one can work out correlation coefficients between different maps. Perhaps it was hardly surprising to find a correlation for England of 0.948 between maps of ethnic minority households and a map of all foreign born households. But more adventurous associations could be attempted. It is also possible to overlay maps onto a background to show visually to what extent values overlap, where both the variables are present in one place, and where they occur independently.

The analysis of tabular data sets gives the user other tools. The data is first presented as a graph with two axes, for instance the number of members of different religions in Britain on the vertical scale, the type of group plotted along the horizontal scale, Anglican, Roman Catholic, Spiritualist, Muslim, Sikh and so on. This is first presented as a bar chart. By pointing at the relevant bar we can discover that over the three census points, 1975, 1980 and 1985, there were a total of, for instance, 162,000 members of spiritualist churches, 256,000 Jehovah's Witnesses. In this particular case, the variable of year can be changed and the computer can re-plot the data of any or all of these years. From this, for instance, we find that Anglican membership declined from 2,272,000 in 1975 to 2,508,000 in 1985, while Muslim membership increased in the same period from 400,000 to 900,000, and Mormons similarly increased from 80,000 to 102,000. Naturally, it is necessary to look at the text which is provided to see what is meant by 'Membership', 'Spiritualist churches', the source of the surveys and so on. This is a relatively simple table, though the possibilities of manipulating it, for instance putting together several religious groups and re-plotting, or of altering the vertical axis to bring out more detail, are already considerable. Furthermore, the display may more conveniently be looked at as a bar chart, a pie chart, a back-to-back bar chart, as a line graph, or as a loop bar. The last of these runs through the data by a certain variable, for instance displaying religious membership in 1975 for ten seconds, then moving through each year in turn and so back to the beginning. This helps the eye detect trends. In other tables one can change a string of variables and sub-select small populations. For instance, if one were examining the 'informal economy' and its effects on morality one might look at the table on the numbers of those who confessed to fiddling their expenses at work. This can be re-plotted for five year age groups, for marital status, for each of ten standard regions of England and for the age at

completing full time education.

As a result of the assembly and access systems, it is 'worth bearing in mind as you build a Domesday data map that you are accomplishing in a few minutes what would take a professional cartographer or statistician perhaps weeks of work by conventional means. In fact, you will often be producing data displays which have never been seen before, simply because of the prohibitive amount of work required.'[9] The Disc contains general and specific warnings about the danger of mistaken inferences by those who do not understand basic statistics, and a useful short introduction in the Guide to statistical techniques.

If one has found or created an interesting data map or table, what can one do with it? There are three options. The 'bookmark' system allows one to save all the workings and outcome of those workings to date and then to do another calculation on a different data set, returning after this to the first at exactly the point at which one left off. This is not merely a matter of taking a photograph of the scholar's desk and presenting him with the papers in the same place on the desk when he returns. The computer makes it possible to store all the stages, all the manipulated information up to that point in time, so that one can proceed from exactly where one left off. This is important when comparing two data sets. The second option makes it possible to save these or other sub-sets of the statistical or textual data by writing them to floppy discs. There are naturally copyright constraints on what is downloaded in this way, but it will make it possible to manipulate data sets using computers and programs that are not in the present system. It is also possible with certain micro-computers and a suitable printer to make a hard copy of the graphs and maps that have been constructed.

Learning to use the BBC Domesday discs, to understand the nature of the material it contains and its omissions, to master the access and data manipulation systems and the practical matters of pointers, of menu-bars, of levels of information, of icons and other matters, is not easy. It is likened in the accompanying Guide to learning to drive a car. That seems about the right analogy. It is possible to step into the system and immediately to find some interesting things, one's village, a photograph set, a moving film. Yet it requires many new skills to be able to move with assurance and to interrogate the material in a novel and interesting way. It would take several hours a day, spread over a number of weeks, to be able to master it properly. This is not time wasted, however, because the Domesday disc not only provides access to a very large amount of information, but learning to use the system provides a crash course in elementary statistics, in theories of information retrieval using computers, in graphics, in geographical grid systems, in the phrasing of meaningful questions. Hence it is important not merely for what it contains but also for the methods used to interrogate the data.

Finite Resources for an Infinite Task

Borges never discussed who made his infinite library, how long they had, how much money they spent, what political pressures they were under or what classification schemes they had in mind. A future historian or contemporary user who wishes to understand the value and limitations of the material on the Discs, or to examine them as a social construction made by and of a society, needs to know all these things. We need to know as much as possible about the constraints and pressures on the making of the discs and how these affected the choices that had to be made.[10]

One over-riding pressure was shortage of time. The original idea for the project was developed into a proposal by Peter Armstrong in a week in May 1984. Conventional videodiscs were already being published by that date, but Armstrong saw that the BBC celebration of the 900th anniversary of Domesday could be widened using this new medium in a new way. By the time funding was assured and a team assembled, there were just two years to complete the project. The anniversary of Domesday could not be moved back; the drawbridge on data collection, on the development of software and hardware, had to be drawn up earlier than one would have liked. But Parkinson's Law undoubtedly operated and the deadline concentrated the mind and smoothed over difficulties. There was a sense of euphoria and of a struggle against impossible odds, throughout the project.

Shortage of time was complicated by financial constraints. The initial sum raised, a million pounds from BBC Enterprises, half a million from the ministry of Education and a million from Philips Electronics, may sound a large amount. Given the scale of the operation, which included seven man-years of computer programming, the development of a new computer and videodisc player, as well as the data gathering and processing, it was not enough. Only some supplementary funding from E.S.P.R.I.T. made it possible to complete the task properly, and this was in doubt until very near the end. The financial and time difficulties were affected by much wider market forces. An example of this was the changing partnership with Acorn computers. Originally as manufacturers of the BBC micro, Acorn were to produce not only the new hardware, but also to write the software. Early in the project Acorn collapsed and was only saved by Olivetti. It was necessary to start much of the software development over again with a new software team, 'Logica'. One day the full story of the relationship between Philips, Acorn and the BBC will need to be told for it has had profound consequences on the project and in particular on the cost of the system. Originally it was envisaged that the whole system would cost under £1,500, and that it might be cheaper for schools which already had the 'Model B' micro. As the project proceeded the system became tied to a new BBC micro, the 'Master' series, and to a

much more expensive player. The result is that even for schools, who obtain large discounts, the price is about £3,000 for the full system, for others it is nearer £4,000. This puts it out of the reach of many buyers.

Another constraint was the need both to invent the medium and the message. In producing an encyclopedia or a television series, one can concentrate on the content and presentation. In this case it was never certain until the last minute that the project, and in particular the ability to produce laser discs which contained both pictorial and digital information, could be done at all, let alone in time. Even a month before the final launch in November 1986, there were still very grave technical problems.

The fact that this was a new medium posed another problem which set limits to what could be done; this was the question of copyright. Copyright law is currently in the middle of complete revision in order to cope with the new problems caused by photocopying, computers and television. Here was a medium which incorporated all those problems and many others as well. Where did the copyright in the thousands of data sets lie and how could it be cleared and protected? This legal nightmare became more apparent as the project proceeded. Indeed it was only half way through that copyright clearance was obtained for many of the central datasets. Two small examples of the problems can be given. In the case of the many thousands of schools it became necessary to obtain the consent and signatures of hundred of thousands of pupils, their parents or guardians, before the material could be used. In the case of moving films it was impossible to include excerpts from drama, music, advertisements and other important classes of television held in the BBC archives because of the copyright problems. Thus it is restricted to 'news'. Although most organizations, for instance the Ordnance Survey, the Office of Population Census and Statistics, and many companies and institutions were very generous in providing material, there is no doubt that the time and difficulty of obtaining permission limited what could be assembled.

Another background pressure caused by the nature of the medium was the question of censorship. With a film or book one can take risks in including borderline material for two reasons. Firstly, if it is aimed at a limited audience, for instance middle aged men in mackintoshes, explicit pictures can be included which would not be suitable for nine year old schoolchildren. The discs were aimed at everyone, and hence had to avoid affronting anyone. This difficulty was compounded by a second. If a film is made it is submitted to the Board of Film Censors and they need only see it through to decide if there are difficulties. The cutting of the final film can be done quite quickly. To submit the two videodiscs to this process is another matter. If they take seven years to read through, and if any change means extended changes in indexes and classification, there would be no chance of meeting the Anniversary date. It

was therefore necessary to avoid anything that could be considered to be on the borderline, whether libellous, possible pornographic, inciting to racial hatred, or giving classified information. Since a user could go straight to a photograph, statistical set, or page of text, while ignoring the context, caption or source, it was particularly necessary to be vigilant.

A final background pressure was political. One of the avowed aims of the project was to contribute to public awareness and information. Peter Armstrong makes this point forcefully. The previous Domesday Book was gathered by the center to give it greater control and to lay the foundation for the growing power of the Normans in England. 'With the new Domesday, by contrast, the intention is not to affirm a centralizing power by the centralization of information. Instead our hope is that it will help to democratize information. The people help provide and the people can call up information; and, crucially, the people can themselves see whatever patterns in British life become visible when disparate fragments are brought together.' In a more personal way Armstrong says the same by dedicating the discs to the memory of his father, William, Lord Armstrong of Sanderstead. 'It is from his lifelong work in the Civil Service that I have learned whatever insight I have brought to the Domesday Project about the importance for our national life of information that is detailed, impartial and freely available.'[11]

Thus one of the most important innovations of the project was that it put into the hands of the general public a mass of data which had hitherto, to all intents and purposes, been inaccessible. All the material had, in theory, been in the public domain and there is no 'secret' information included. Yet the difficulty of finding and then of making sense of much of this material had inhibited most of the population from even making the attempt.

I must admit that there were paranoid moments when I expected to hear that copyright permission would not be given for large sets of data, that other material was drying up, or that the whole project had quietly been shelved for one reason or another. This was avoided in a number of ways. By keeping Members of Parliament, the House of Lords, the Queen and the Prime minister informed of what was going on, while not actively involving them in a way that could lead to pressure, the project walked the tightrope between collusion and opposition with some success. It was fortunate to have the negotiating skills of one of its Board members, Sir John Boreham, the retiring head of the Central Statistical Office, to help in this. Yet the project could at any time have turned sour, especially towards the end which coincided with difficulties between the BBC and the government in power over questions of bias and objectivity.

The final self-portrait of Britain has many strengths, but also many weaknesses. Yet it cannot be accused of being as systematically biased as some other attempts to provide a self-

portrait of a civilization. When NASA decided to leave 118 pictures in a space capsule on the Voyager interstellar project in order to give extra-terrrestrials some idea of what our planet and its inhabitants were like, much discussion took place as to what should be included. In the end the pictures included such things as the Sydney Opera House, a factory production line, some pictures from 'The Family of Man' and the *National Geographic*. The interested extra-terrestrials could only be given a diagram of a nude man and pregnant woman because NASA 'had vetoed the photograph of them taken from a medical text, which might have aroused an adverse public reaction.' They would have seen a picture of a string-quartet, but not have been aware of certain other matters because the NASA authority 'reached a consensus that we shouldn't present war, disease, crime and poverty.'[12] Self-censorship has undoubtedly been exercised on the Domesday Discs, but hardly on this grand scale.

Making History

We have seen that the initial and primary aim of the Domesday Project was to lay down a time capsule for future historians to be used alongside other historical sources. A second aim was to provide as accurate and rich a portrait of Britain as possible for contemporary citizens. A third aim was to democratize information, to be as open and explicit as possible. All these aims overlap and they all reinforce the need to document as openly and explicitly as possible how the discs were compiled. A future historian or a present user will benefit much more from the discs if he can gain a picture of how it was made and in particular the criteria for the selection and exclusion of material.

This need for self-documentation was recognized by the project and led to a number of decisions to provide information for present and future users. Tamsin Willcocks, a doctoral student, supervised by a member of the Board, was present as an observer at seven or eight meetings and intends to write a sociological analysis of the making of the discs. A full list of credits gives the names of all those who were involved in the numerous committees, the sources of the data sets are carefully recorded.

Although these topics may be covered in a projected book by the general editor Peter Armstrong and a major data coordinator and member of the Board, Professor Howard Newby, as yet a number of other suggestions made at editorial Boards to document the editorial process have not been followed up. The minutes of the Editorial Board (February 1986) note that it was suggested "that the minutes of the Editorial Board, and a profile of Board Members and senior members of the Domesday team should also be included on the disk—this will be needed by historians to interpret material on the disk." This does not seem to have been done.[13] To have done so would have been

evidence of both great confidence and a demonstration of that openness that the project was attempting to promote. This essay is partly an attempt to redress this omission. It is also an attempt to make a start on another task that was minuted at the same meeting. "The Editorial Board should consider producing a document 'In Retrospect'. This would highlight problems in the collection and dissemination of data—especially problems of access to data that does not exist, and more importantly, the lack of data in some areas."

This can only be a personal view, and it comes from a particular vantage point. The making of the discs was a very large project and decisions were arrived at by individuals and by a number of Committees, the Education Committee, Software Committee, Technical Liaison Committee, Marketing Committee, Consultative Committee and so on. But, as Armstrong describes it, "The Central Committee (choosing my phrase carefully) was the Editorial Board... The Board met monthly in order to resolve the policy issue of what should be put on the discs and how this could best be achieved."[14] Membership of the Editorial Board gave a circumscribed yet privileged view of some of the background to the making of the discs.[15]

A clear statement of 'Editorial Policy' is made by Peter Armstrong. 'It was clear to all of us that balance and objectivity of the kind the BBC demands of its programmes would be equally important for the discs. It could not be a picture of the UK from a single viewpoint.' Yet it 'was equally clear that this was going to be very difficult to achieve. Although there was room for a mass of material, everything still had to be selected by someone.'[16] The Editorial Board was to act as an enabling, guiding, body, but 'not a centralized operation by a group of people with strong ideas about British life and how it should be reflected. Our role has been rather to gather and shape all the material...'[17] The word 'shape', however, highlights the ambiguity and responsibility facing both the Editorial Board and all others involved in the Project. How can one combine objectivity with the need to select, how distance oneself and obtain some overview of such a vast subject?

The explicit aim of the board to avoid foisting their own prejudices onto the material conflicted head on with the need for some criteria by which the seamless web of material could be broken up, some being included, the rest excluded. Any anthropologist knows that he must have some theories, some frame of questions, otherwise he will be drowned. As the huge scale of the project began to become apparent to those who had to select statistical data sets, this problem emerged at an explicit level on the Editorial Board. It seemed clear that the National Disc could not be merely 'data-driven', for there was too much material. One solution, falling back on academic experience, was to take themes, problem areas, or as they were called 'storylines', which would guide the selection process.

Some members of the Editorial Board suggested that one

solution would be to take certain themes which could be used as a means of organizing and selecting the data. These would for the most part remain implicit rather than explicit, an agenda for choice. But they would formalize what would otherwise be a very *ad hoc* and unsystematic, not to say unprincipled, choice of materials. The sort of "storyline" that might be considered would be 'the economic restructuring of Britain in the 1980's', the 'Changing Urban and Regional System', 'The Changing World of Women', 'Structured Social Inequality'. Other themes to do with the North-South divide etc. were also considered. This would also have the advantage of overcoming some of that timeless, synchronous approach which has already been noted.

On the other hand, it put much more power into the hands of the data providers, and as was evident from the storylines chosen, could well be interpreted as being a particular and possibly slanted view of what was important. Others might be interested in other things, like 'The Changing World of Children', or 'Ethnic Restructuring', which might thus be partially excluded. It was decided (March 1985) not to adopt this approach, but rather that data supply 'should be index driven, although this may result in large volumes of data, which would be pruned at a later stage'. Re-affirming this later, 'the meeting decided not to work to fixed storylines at this stage, or to include these on disk', although 'striking, contrasted storylines, reflecting the personal views of their authors, would be provided at a later stage on paper or floppy disk and would build upon data already on the video disk rather than drive its selection'. Thus the principle of a very loose direction from the center was maintained.

Another version of a similar pressure towards implicit or explicit themes was resisted in April 1985 when considering the relations of the Videodisc project to the television series on England since Domesday. As with all television series', this had to have a thematic-*cum*-narrative approach and there was a discussion as to whether the Domesday Discs should try to organize itself along similar themes. The Board decided that "it must be the case that the disk drives the series, and also that data must be seen to be neutral, and not to be structured specifically towards the series". Consequently there was no formal overlap in approach.

An Index Driven Approach

What then did the Board mean by 'index-driven' as an alternative to 'theme' driven? It meant that what was to be created was a very long list of topics that should be covered if possible. This list was created from numerous different sources, from United Nations publications on cultural data, for example, from dictionaries, from *Notes and Queries on Anthropology*, from Benn's *Press Directory of Periodicals*, from guides and handbooks, from the expertise of subject specialists, and from

the obvious and available data. As the lists of topics grew longer, there were attempts by individuals and the various committees to see what was missing and what overlapped. Although the result is perhaps less elegant and internally consistent than a more intellectual, centralized, planned approach, it is clear that this piecemeal, cumulative, common-sense and somewhat random approach has ended up with a more interesting, diverse, and less biased set of data than a directed arrangement. So many cooks have made this broth with so many ingredients that no single recipe or viewpoint could dominate. Quirkiness, the unexpected, the original have been allowed space.

The dual pressures towards balance and openness are shown if we examine some of the major categories of material collected. The guidance for the schools, as we have seen, was very open. They were asked to give 'an informative and revealing portrait of your area: what people do there, what kind of environment it is. What do people there currently talk and think about? What are their hopes and fears?' It must not be either too local, nor too general, the guiding principle being whether it would interest someone in another part of the country or in a hundred years time. It should be about the present rather than the past. There should be a rough overview of the whole block on the first page, and then 'What goes on the second and subsequent pages is up to the group'. They should select some titles and write round these. Negatively, 'there should be little need to get too much involved with deeply controversial matters or to include personal details of individuals. In particular, personal names must not be included in your group's entry, except in reference to public officers or well-known personalities. Comments of a personal nature should also be avoided.' Further guidance was given on how to create keywords, but here again no specific topics or approaches were suggested. It was only in the land-cover survey and amenities survey that the schools were given a list of things to look out for. It is difficult to envisage a more open approach.

In relation to photographs there was the same open invitation. The schools photographs were left up to the schools; they were to send in four on any subject, taken by themselves or others they could obtain, and three would be chosen. Photographic sets on major themes were to be collected in an attempt to fill in as many of the major topics suggested by the general index as possible. But to prevent this becoming exclusively the product of professional photographers, a national competition was organized. Some guidance was needed here since it is unlikely that a competition merely saying 'Send your best snaps' would have produced interesting results. But the themes chosen were wide: 'in the 80's', they were 'Street life', 'Country life', 'Faces', 'Leisure', 'Work', 'Home'. This produced five thousand very interesting photographs for the National Disc, about half of those submitted being chosen.

An area where the open index-driven approach is most clearly shown is in the choice of texts. The first idea was to commission several hundred experts in various fields to give an overview/state of the art summary of the position in the 1980's. This approach remained at the more general level essays such as Peter Townsend on 'Social Welfare', Gerald Priestland on 'Religion', Alan Tomlinson on 'Sport and Games', or William Brass on 'Population'. The instructions given writers of these 2,500 word essays indicate the approach. As to the audience, 'We can think of the typical reader of this essay as someone who comes into a public library (either in this century or the next) wanting to know something about this topic. We can assume interest, but no particular knowledge...Perhaps the level of the popular encyclopedia or Sunday Colour supplement is what we should aim for.' As for 'Style', the directions are revealing. 'The essay should be factual rather than theoretical or hortatory. We are looking for a balanced overview rather than a statement of personal opinion. Of course, many issues will be controversial, but our aim here should be to report all sides rather than point to a particular conclusion....Accurate and lively writing should be the aim.' The same point was restated again under the heading "BBC Balance." Contributors were told: 'You will appreciate that, as with all BBC Publications, Domesday Discs should reflect all shades of opinion in this country without leaning overall either to the right or to the left. Clearly, total objectivity is a chimaera, but our aim should be to achieve a reasonable overall balance.' In the discussions at the Editorial Board as to who should be selected to write the 45 essays, a conscious attempt was made to choose people who represented various shades of opinion.

Such essays give an overview. But they are rather equivalent to asking the referee to describe the game. For future historians in particular, as well as for current users, just to fill the videodisc up with hundreds of academic assessments seemed a missed opportunity. It seemed that it would be interesting to supplement this by collecting together a wide range of 'ephemera' of the 1980's, which had been written by the players, in the heat of the game, rather than by the referee looking back over it. It was agreed (July 1986) to do this, and the result in the shape of more than two thousand articles, is on the disc. There is at least the chance of local, unusual, from-the-bottom upwards, flavor.

Opening the medium out to include articles in papers, journals, speeches, fly-sheets and so on is, of course, a risky process. Apart from the original selection, editorial control is being delegated away from the centre. This is explicitly recognized by Armstrong and the Board. Thus in the *User Guide*, Armstrong writes: 'These articles do not represent any one person's views, they are from all points on the political and ideological spectrum. On a controversial topic we have tried to include contrasted pieces on the same theme. Nor are these articles offered with any guarantee of accuracy. The source is

carefully recorded and it is up to you to accord to them whatever credibility you choose'.[18] Or again, 'Do not assume that any one piece of text carries our imprimatur—each is a fragment of how this society wrote about itself.'[19] The inclusion of such material will certainly heighten the historic value of the compilation.

As to how the two thousand pieces were selected, there was still a considerable problem. Having stated the need for balance as between sides in an argument, the need to provide a 'colourful mixture on the major topics of our time', and a list of areas of particular interest given by the index of subjects (which had already emerged at this stage) there was still an enormous sea of publications out of which only a few could be selected: '...it is out of the question to include more than a tiny fraction of the mass of material that is published in Britain even in a single week'. Only a certain amount could be used since everything had to have copyright clearance, be re-typed and checked. With the assistance of subject specialists and under the scrutiny of the Board, the 'text editor (Madeleine Kingsley) has tried...to produce a varied and readable, as well as authorative collection of text that reflects most of the issues in the forefront of our concern in the 1980s.' Only very careful research will identify any serious omissions. Some natural but unnecessary obsessions were noted by the Board; for instance dozens of articles about the weather and climate have been cut out, but each of us is likely to find something we consider important either passed over or treated in a way which will make us argue.

Drawing Boundaries

Nowhere on the videodisc is it explained in any explicit way how the general boundaries were drawn round the data. Three self-imposed limits are worth noting. The first is in time. It appears that the project as originally envisaged was intended to be much more historical, one of the seven major sections was 'History'. By a decision (March 1985) the seven sections were reduced to five; 'History' was one of those that disappeared. It was explicitly decided to take the years 1985-86 as the period to concentrate on, and move outwards from that. Materials for all of the 1980's would be treated as relevant, and as minuted (September 1985) 'most material will be from the 1980's with 1970's material included only for comparisons'. This means that while texts and statistics often refer back a few years the concentration is on the present. The view is simply expressed in the *Survey Guide* which was prepared for teachers and children writing accounts of their areas. They were reminded that they were writing for future historians 'the guiding principle is to bear the general reader in mind at all times asking the question, 'would someone in a different part of the country or a hundred years in the future be interested in reading this?'', but they were not to do so by writing the history of their area. 'We

all need to bear in mind that the information we are compiling concerns life today, in the 1980's, rather than history. We find it tempting to describe our areas in terms of the past, but that is not the idea of Domesday.'[20] Thus memories and ideas of change are to be found, but not antiquarian local history.

It is a defensible decision in view of the size of the material, but it is important to recognize that it leads to a certain distortion. Taken by itself, the discs would tend to give a rather timeless and fore-shortened view of Britain. Traces of the history of the country are present in every photograph and every essay, but it is only through subtle work that a future observer will be able to discern some of the side effects of long-term, structural, changes.

A second boundary is in geographical space. Through satelite imagery, Domesday goes high into the sky, but it resolutely refuses to follow most of the many webs that lead out from Britain. One day there may be a European or even global Domesday. This particular first attempt is much more circum-scribed. The Editorial Board discussed the question of how much material from outside Britain, or about Britain's links with the Commonwealth and rest of the world should be included. This discussion was summed up in the decision at the September 1985 Board that "Britain will also be viewed as an island: there will be no information relating Britain to other countries, or on other countries' views of Britain unless it is very relevant." This may seem very isolationist, exemplifying a 'Little Britain' attitude which should make any self-respecting anthropologist blush. The problem is, of course, that once one relaxes this boundary to accommodate reality, almost every-thing in the world becomes relevant, from Hong Kong, the Falklands, British tourism throughout the world, British in-vestments throughout the world, the views of the British throughout the world and so on. We all know that we live in a world system, and that this is particularly true of an old imperial nation like Britain. Yet it is also clear that the Discs recognized a shift in power and perception during the last twenty years. The Great Exhibition of 1851, or even 'Britain in Pictures' devoted much space to 'Britain and her Empire'. Here we were deliberately concentrating on an artificial boundary. This was symbolically expressed by the maps. The widest level map on the discs is that of Great Britain. There is no map of Europe as a whole, let alone the world. It is 'this island now'.

This does not mean that there is nothing to be found about the relations of the British and the rest of the world. In the texts, in the discussions of language, in the many tables on countries of origin and ethnic groups, in the photographs of life-styles, in the economic data on trade and investment, there is a wealth of material for a future historian to estimate how deeply involved the country is with America, Europe and the rest of the world. Yet is it also important for such an observer to know that a decision was taken only to include material from abroad if it was

'very relevant'. Again we have the problem of the bounded anthropological community, the Pacific island or Himalayan valley, artificially disembodied in order to make it comprehen-sible.

A third boundary is more difficult to specify, but it might be said to be that between 'information' and 'knowledge'. We have already seen that it was early recognized that it would neither be possible nor advisable to produce an 'Encyclopedia'. For instance, it is stated that 'The Domesday Discs are em-phatically not encyclopedias and make no claim to systematic coverage of human knowledge...Domesday is an exhibition of life as it was lived in the 1980's—what we did, how we looked, what we owned and so on'.[21] The distinction can be shown quite simply if we take the first two entries in the famous eleventh edition of the *Encyclopedia Britannica* which deal with subjects in the field of theoretical knowledge. These are the letter 'A' and its derivation 'Abatement', 'Abbey', 'Abbre-viation', 'Abduction', 'Abdication', 'Aberration', 'Abeyance', 'Abhidhanna' (a Buddhist term), 'Abhorrers'. None of these would appear except very accidentally, on the Domesday Discs. One might learn how many Hindus or Muslims there were, but little about what they believed, one could learn about science policy or funding, but not the principles of chemistry or biol-ogy; one would have examples of recent poetry and prose, but nothing on recent developments in literary criticism and so on. In other words the material and external manifestations of thought are documented, but the contents are largely omitted.

Such a decision was not lightly taken. For a long time there were five sections, not the present four. The fifth was called 'Science and Technology' and it was envisaged that under 'Science' might be included scientific knowledge. Thus one might commission essays on recent and important develop-ments in astronomy, particle physics, molecular biology or other interesting fields. Finally this idea was rejected and the section disappeared (June 1985). It became clear that to make a useful contribution even within biology, chemistry or physics would mean that the discs would have to take on a very large educational role, teaching basics, whole disciplines, before the specialized articles could be understood at all. It was also asked why 'science' should be privileged in this way. If there were articles on the natural sciences, why not on medical knowledge, on economics, on archaeology, on history, on literature, on anthropology and so on? This would have turned the discs into something very different and stretched the budget and time, not to mention the competence, of the makers well beyond the agreed limits. There is thus some evidence about abstract thought here, but a future historian would have to be aware that the main contents of specialist thought and belief, the special preserve of academic life, is largely missing. It does not provide the equivalent of Open University degree information, though it will no doubt provide much useful material.

Censorship and the Underside of Life

A confrontation that faces every artist in constructing a picture of life is that between honesty, accuracy and detail on the one hand, and the desire not to wound, give offence or end up in prison, on the other. This was obviously writ large in such an enormous undertaking. We were particularly keen that as honest an account as possible be given. Just as we treasure the few revealing insights into the Elizabethan, Georgian or Victorian underworld given in the works of pamphleteers, artists like Hogarth, or certain diaries, so the future will want to know about what life was *really* like in the 1980's. Yet it would also be unbalanced to concentrate merely on problems—AIDS, Violence, Unemployment—without remembering that much of life is humdrum and fairly cosy.

How far is it possible to create an electronic exhibition that allows people, now and in the future, to see below the surface, to turn over the stones? If we regard the Discs as a vast electronic exhibition we have available a medium where we can wander around, ask questions, get out exhibits we want to look at and make the associations we wish to make. We can go back to the stores and look in the storage boxes, rather than being confined to the pre-arranged thematic arrangements of a curator's or author's mind. But we are still left with the question of how much has been deliberately omitted from the boxes.

These omissions can be sub-divided into various kinds. Firstly there is the omission of very extreme and subversive material; a statement of the aims of the I.R.A., of the Animal Liberation Front, or the National Front, made by the organizations themselves, are not on the Disc. All three will be dealt with indirectly through texts, statistics and photographs. But without much formal discussion, it was decided implicitly that the disc could not become a platform for 'extremist' groups. This is a loss to historians, but the question of how far intolerance can be tolerated is very prominent when a medium which will be used in schools is being devised. Thus political 'extremism' is circumscribed.

Another circumscription is in criminal matters. Of course there is a vast amount on crime on the disc; there are extraordinary statistics illustrating everything from levels of fear of assault and the incidence of punishment, to petty thieving. But honest and direct accounts of criminal networks, of how massive fraud is organized in big companies, of the inside workings of the arms trade, of the dimensions of drug dealing, could not, of course, be included. Historians will have to allow for this. There is a tendency towards the law-abiding, even though the photographs and statistics also show another side. In particular, the large area of twilight activity, the 'informal' or 'black economy', where the stated rules of morality are subverted under economic pressures can only be approached indirectly. Again there are some clues for a future historical detective.

A third circumscription is linked to this in the borderlines between crime and immorality. The huge industry linked to prostitution, pornography, drugs, is of course visible in various ways through the disc. But again it is difficult to give future historians much idea of this. Inside accounts of these topics by the practitioners, explicit films and photographs which are, of course, circulating through the bedrooms and playgrounds of Britain, have to be ignored.

A final limitation is in relation to what are considered to be 'secrets of State'. The Discs were made in a period of particular nervousness over state secrets and, in particular, information about the very large defence establishment in Britain. A belief that the enemy know very little and might welcome information from the disc to plot military or other installations is widespread. A disgorging of official statistics, a million schoolchildren tramping about the countryside asking questions and taking photographs, all this could well have disclosed something that the Government felt should not be in the public domain. A tacit agreement not to encourage this to happen, in return for an unprecedented access to government-held information, seems to have been part of the Faustian compact which the disc makers have made. Future historians also need to know this.[22]

These guidelines were in a sense so obvious and so unassailable that they were not openly discussed, except in asides and hints, for the most part at the Editorial Board level. They were furthermore largely self-imposed. There was no government or other committee or Board through which the material had to be filtered. In only one area did the project formally set up a sort of censorship and this was in relation to the community surveys. In that case, having warned the schools to avoid personal and libellous material, it was openly stated that 'Your group's material will be reviewed prior to recording it on the Domesday Discs...'[23] It was reported that in order to retain spontaneity and local flavor' 'contributions were not edited, except for legal considerations. Even spelling was not corrected...' and that 'over-all' the quality of the contributions was a 'tribute to the British educational system'.[24]

The Manipulation of Statistics

The attempt to be open, within limits, in the collection of texts and photographs so that present and future users could see a portrait that was largely the product of the population of Britain, not the construct of an Editorial Board and a few BBC committees, is also evident in the way in which the statistical datasets have been handled. We have already seen that what is held on the discs is not a set of graphs and maps prepared from the original figures, but rather the 'raw' values themselves, held in as disaggregated a form as possible. It is then up to the user to manipulate these and to test hypotheses and draw inferences. It was apparent that a combination of very large sets of 'raw'

data from many different sources, with some quite sophisticated statistical programs, put into the hands of the general public an exciting, but potentially explosive tool. It was minuted (January 1986) that 'Those meeting were concerned that users should not be allowed to draw spurious correlations from the data on the discs. Measures will be taken to prevent this although it cannot be stopped entirely. These included a note on the album cover, a warning included in the picture essay on Domesday, and also in the manual...' No warning was included on the cover, indeed there is nothing at all on either cover. But the warnings in the other two places are worth noting, since they again illustrate the mixture of caution and innovation that characterised the construction of the discs.

In the *User Guide*, the public is warned that the statistical data as sets of data is patchy, that there are 'imbalances and gaps'. 'For example, there is a very large number of statistics on employment from the currently intense activity by government and researchers in this area. A similar depth of statistical area, such as natural history, is harder to achieve.'[25] In relation to specific datasets, users are advised to read the text which can be called up in relation to each dataset before drawing any conclusions because 'All surveys have anomalies, as well as particular methods and aims'. A brief but helpful summary of some principles of statistical analysis is then given in two pages, warning of 'skewness in data' and so on.[26] Under 'Some Statistical Warnings' in the Domesday essay, users are warned against 'the possibility of wrong-headed conclusions, if users are not aware of the limitations of some of these techniques'. 'In particular we would wish to warn you about three possible traps. First, subdividing a data-set may produce such a small sample that no wide-ranging conclusion would be drawn from it. Second, when using rates, ratios or percentages, you must ensure that the numerator is genuinely a sub-set of the denominator. Third, ratios calculated and mapped for a geographical area may not be true for any part of the area. These warnings are explained in detail in the text accompanying the relevant data sets.' The tension between wanting to provide people with access to information and the possibility of finding out something new, and yet wanting to prevent abuse of such information which we found in each category of information is here too. The passage ends by warning that 'Some of our critics have expressed fears about making raw data and statistical software available to untrained members of the public. So our message must be— enjoy experimenting with the data on the disc, but be cautious in the conclusions you draw from it.'[27]

Fact, Truth, Inference and Error

We have seen that in each case the Board has taken a calculated risk. It has put its general authority behind a category of data, from schools, essays, statistics, maps. But in each case

it warns the users that they cannot necessarily assume that the data is 'true', it is merely one way of looking at things. This raises one of the most interesting questions in relation to the disc, the relation between fact and fantasy. Susan Sontag's observations on photography are also true of this new medium, it 'trades simultaneously on the prestige of art and the magic of the real', the videodiscs contain 'clouds of fantasy and pellets of information.'[28]

It is essential that users should realize this, yet it is not something that is self-evident or widely understood. The videodisc is simultaneously providing a huge amount of reputable information, 'teaching', and at the same time warning people to be wary. The pictures in the exhibition are often two-way mirrors, they have surface and latent messages, they are distorting.

Now most of us most of the time do not exercise such a wary attitude. While accepting, if formally asked, that the media may deceive, it is probably the case that people believe much of what they 'read' in papers, television, radio and in books. In particular, they believe what the BBC has to say. One reaction to the community disk that I have already encountered is an incredulous, and slightly hurt one, by people who are able to compare their own knowledge and perception of a local area with the very brief account by some schoolchildren. They do not usually find gross errors, but a sense that this is a very partial and perhaps one-sided coverage from a point of view that is very different from their own. Yet the account seems to come with the full backing of the BBC and the power of the 'truthful' medium, the TV screen. The idea that one must distinguish between lies and omissions, that one can be 'economical' with the truth and yet not lie, that one can tell the truth, but not the whole truth and nothing but the truth, that there are a variety of truths and none absolutely right, all these very relativistic messages, familiar to anthropologists, are being brought home by the videodiscs. In essence the discs bring home to a wider public the loss of innocence, the end of positivism, which, for instance was one of the central messages of the Renaissance and was later incorporated, into what Collingwood called the Copernican revolution in history, 'the discovery that so far from relying on an authority other than himself, to whose statements his thought must conform, the historian is his own authority and his thought autonomous, self-authorizing, possessed of a criterion to which his so-called authorities must conform and by reference to which they are criticized'.[29] Again and again in the *Guide* and elsewhere the user is advised to think for himself, to be his own authority, not to accept the statement on the disc as authoritative.

In general this is one of the most genuinely educational and innovative parts of the videodisc. If it can help many people to see that the borderline between fact and opinion, between 'hard' data and inference, is a very thin one, that statistics, photographs

and even factual descriptions can be manipulated, this will be to all our advantages. Yet we need to be aware that the disc is treading on dangerous ground. It is simultaneously using the powerful authority of the BBC, of powerful communications techniques, of illustrious authors etc., and at the same time teaching people to question authority. In this respect it has faith in an open and unhierarchical world. But this faith is unlikely to go unchallenged.

A separate but related question is that of palpable error. With such a huge amount of data being processed in complex ways in such a short time, there are clearly likely to be problems of error. These may be at three levels. Firstly, the original data may be wrong. Clearly it was beyond the resources of the project to check every piece of information, every one of the 9,000 local accounts, the 2,000 texts from magazines, the thousands of maps and so on, in any detail. Obvious slips and internal inconsistencies might be noted. But even if they were, it was questionable as to whether they should be corrected. Indeed it is the case that, as with the decision not to correct spelling, it was the policy not to correct data. This was part of the point of the warning that people had to be wary of the factual accuracy; this was a disc about what people said and wrote about Britain, their representations, rather than an attempt at including only verifiable and verified facts.

The next level at which errors might creep in was in the often complex set of stages of transfer from the original through re-typing and computerized sorting, into the final product. Such errors have little heuristic value for historians, except those interested in typing skills, and were to be kept to a minimum.

The third possible source of error lay in the difficulties of making a multi-media and multi-data presentation. Basically, it was necessary to be able to set millions of cross-links between maps, photographs, texts, statistics. One mis-numbering or false link and very gross errors would be shown to the user. For instance, if the alignment between maps and their overlays was not correct, the whole sophisticated mapping routines would be useless.

The steps taken to check the data need to be specified in detail and placed in the archive. As they were reported to the Board in November 1986, three weeks before the final launch, they were as follows. 'All maps had been checked and the relationship of pictures and text to maps on the Community Disc. On the National Disc pictures and captions had been thoroughly checked, as had film and text. Not every word of text had been re-read and corrected, but first and last pages against the title. The Gallery and software had received thorough checking. All this enormous amount of work seems in order.

The real problem lay in the tabular and mappable data. It will be remembered that there are some 6,000 data sets, some

of them very large. Unlike texts and maps and photographs, the figures are in themselves meaningless. It only needs the slip of a typewriter key, or a small bug in the software, to produce garbage figures which would be difficult to locate. We need to know more clearly how much error there is likely to be, not in the original figures which no doubt have errors built into them, but extra errors created during the re-processing into new formats and placing the materials on the disc. At an Editorial Board (November 1985) it was minuted that 'CURDS are concerned about the errors in the data: they will check a sample of data before it is supplied to the project, but would prefer that all data is checked once it is on the disk. Newcastle and Birkbeck are to consider how the data, once on the disk, should be checked.' In the light of this premonition the report to the Board that in this area 'checking had been much more selective...Birkbeck had also done some checking of data' needs to be amplified. The implications of the report that 'the thesaurus and index had been checked selectively, at about 10% in extent' also needs further elaboration. What error rate is likely?

We were aware that there were likely to be errors at all these levels and it was minuted that 'the Board suggested that at the Launch it was made clear that checking was an enormous task and that further errors should be reported back to the Domesday office'. It will be interesting to see the file of *addenda* and *corrigenda* for such a large-scale project.

Classification, Keywording and the Attempt at Neutrality

As an unusual map of how a group of people in the 1980's classified and named their social world, the Domesday discs will be of considerable interest. Future historians, for instance, will examine what was grouped with what, the boundaries between topics, the taboos, ambiguities, mental boundaries, common assumptions, obsessions and prejudices will become clearer. It should therefore be noted that many of the Editorial Board meetings were taken up with detailed discussions of the classification schemes which were constantly being altered. These many discussions are not recorded in detail except in the large files of papers documenting month by month the growing thesaurus.

One example of a set of decisions, in relation to 'Culture' at the meeting in September 1985, will show the sort of additions and re-arranging that was taking place throughout the project. It was noted that the following new categories were to be added: 'Under consumption, shopping and toys. Under arts and entertainment, festivals. Under leisure and recreation, leisure policy. Under mass communication, media issues.' 'The categories Jargon, and Slang, have been amalgamated'. 'The Category Literature and Poetry, under arts and Entertainment, is to be extended to include popular publishing'. 'Under

Consumption, Furniture is to be included within Durable Household Goods'. Then there was some discussion on the topics within the category Beliefs and Attitudes. It was suggested that attitudes to work, and to old age are included. Also that gender roles and sexuality are combined, and morality added as a separate class. 'Depending on the topic of opinion poll data available, some reclassification may be necessary.' Earlier that year it had been decided to make the following changes (April 1985): 'Local history has been dropped. Religion and Ethnicity has been changed to Religion and Philosophy, and Race and Ethnicity. Social Welfare has been divided into Social Welfare and Health'. In re-drawing such classificatory maps we change the data we collect and how it is perceived and found by users.

The real problem, of course, is that there is no unique and satisfactory classification of the real world. It is all imposed and merely more or less satisfactory. No pre-existing Linnean Classification of the whole of Society, Economy, Culture and Environment for an advanced industrial nation was available. Library and museum classification schemes were not appropriate as a whole, though parts of them could be used. So, along with everything else, the Boards, subject specialists, and particularly David Lee the expert on indexing, were working out a comprehensive classification scheme and thesaurus. It is possible to short-circuit this by direct searches which avoid moving down through the hierarchy. Yet the way in which the final classification was made does necessarily impose limits on the data. As we have seen, data collection was to be 'index driven'; thus, to a certain extent, what was observed to be relevant was the result of the classifying principles of those involved. The net they wove inevitably affected the fish they caught. Only careful research will reveal some of the ways in which this classification scheme is less than satisfactory.

Once a set of material had been located as worth including another problem had to be faced, that was the question of labelling. There were two aspects to this problem. One was the implications for data retrieval by keyword. The way in which a text or photograph was keyworded would determine whether it was ever found by a searcher, with what else it was grouped by computer searches, and so on. Explicit instructions on this was given to the schools who were asked to keyword their contributions so that users could make a 'subject' search. It was pointed out that 'unfamiliar keywords will actually hide information from eventual users', for instance a user looking for 'cars' or 'traffic' would not find it if it had been indexed under 'vehicular transport'. Information would also be hidden if the keywords were too specific. A stately home would only be found, if given by name, by those who already knew that the place exists. The guidance given was that 'in all cases the keyword should be one step more general than the specific topic written about. The important question to ask is, "I've written

about..., but what is it an example of?" In the case of schools, some uniformity was imposed by asking that one of the four keywords per page was chosen from the list of 36 general terms such as 'Armed Forces', 'Arts and Crafts', 'Attitudes' etc. The other three were to be chosen by the schools.[30] One assumes that similar principles were used with the national datasets, but it would be helpful for historians to have a description of the method included with the documentation of the project in the archives.

The choice of keywords is a subjective matter. For instance, with what more general class is the particular to be joined? What indeed, is it an example of? Again future historians will look at the relationship between the contents and the keywords and learn a good deal about patterns of thought in the 1980's. They will do this with the local disc, and also the national disc. They will wonder to what extent the constructers of keywords were self-consciously aware of the choices they were making. The answer is that although it was clearly impossible to tread a neutral path in all cases, keyworders were aware that labelling is a very tricky business and that the most innocent decision can have considerable implication.

Just as in classification, the decision to put 'AIDS' under 'Medicine', 'Morals' or 'Sex' would have obvious implications, so the way a dataset is termed can show bias. As Armstrong observed, 'In fact the keywords themselves often turned out to be more sensitive than the things they referred to. An article about inner city violence, for example, might be balanced in itself, but should it be referred to as 'riots', with all that that implies, or 'social deprivation', with its alternative view?' Sometimes it was impossible to avoid making a choice. If possible, however, the aim was to be as neutral and objective in the keywording as possible. Just as in level, one went from the particular to the general, so in partisanship, one went from the committed to the even-handed. A few serious blunders here might mean that the whole project was dismissed by one extreme or the other as partisan and worthless. There were many discussions of these matters, but only a few are minuted. One of these rare instances occurred at the meeting in January 1986. 'The meeting was concerned about the handling of certain sensitive subjects—riots, Northern Ireland, ethnicity and colour etc. Ideally these should be put into classes as generalised as possible, but as the system tends towards specificity, this is not really possible. Extensive use of cross referencing and careful choice of keywords should minimize the problem. The meeting then discussed the possibly inflamatory nature of keywording and their use by readers of the Domesday discs.' This gives a clue to future historians as to what were perceived by the makers as the areas of particular sensitivity, their strategy for minimizing the difficulties, but their realization that there is no complete solution.

Choices had to be made, however, and one example of a set

of re-labelling decision in relation to 'Society' will give a flavour of what was happening. At a Board meeting in September 1985 'Legislature is to be renamed Parliament. Political Development is to be renamed Political Issues...News Events is to be renamed News Stories. Inventions is to be renamed Innovations'. In the absence of a tape recorder it would be difficult to recall the detailed argument put forward for each of these changes, or for changing 'Ecology' to 'Wildlife', 'Industry' to 'Extractive Industry' and 'Landscape' to 'Land Use and Landscape' at the same meeting. An unusually long and fierce argument, whose details completely escape me, led in July 1985 to the decision to divide 'Sports, Leisure and Recreation' into 'Sports and Culture', 'Leisure and Recreation'.

Future Developments and Lessons from the Project

In looking back it is often helpful to look forward. One of the frustrations of any piece of work, even on this scale, is that one knows that there is always more material and more interesting ways of using it, if only one had more time and money. What could be and should be done in the future and what has one learnt from this project?

One area for likely future improvements is in the searching software. What is on the discs is a very great advance beyond what has ever been attempted or done before on videodisc or elsewhere, but it is clear that it is still at an early stage. We have seen that the material can be retrieved through an hierarchical search, through keyword matching, and through an iconic gallery. Other modern types of search could not be developed in time. Boolean searching which would enable a user to be much more precise, is not supported. The system of likelihood searching with 'full relevance feedback' pioneered by Dr. Martin Porter, which would allow much more interaction between the database and the user, is not present. In general, the whole field of 'intelligent systems', causing such a stir in the computing world, could contribute a great deal here. This is one of the areas where the BBC has earmarked funds to do further research.

A useful area for software development will be in enabling the user to manipulate the data-sets more flexibly. The *Guide* for instance envisages customized discs, using Basic, which will enable a user to re-arrange picture sets, add titles and captions, make their own programs from the data, using it as a kind of archive. 'We also plan to release software which will allow you to read a sequence of video-disc moves onto a floppy disc. This can be played subsequently and will control the video-disc player just as if someone were operating it. A synchronized commentary can be recorded on an audio cassette".[32] The 'storylines' which before were excluded for fear of distorting data collection can now be re-introduced, but only as an explicit, added, layer. Thus one would know that one was

being taken round Ken Livingstone's London, or Edwina Currie's Health Service. More sophisticated packages to allow the user to unload data from the disc and examine it are promised, and other software to enable a user to add his won data-sets to the archive, held on computer storage. Thus 'we anticipate a cottage industry growing up around Domesday as more and more applications are developed for the mass of material which they contain'.[33]

A second and related area lies in questions as to how such huge datasets will be held in the future. Two thoughts may be mentioned here. The first assumes that personalized, distributed, archives of this kind will become more common as stand-alone systems. If they are to do so, and particularly if they are not to become stranded in a few institutions, they must become cheaper. The discs themselves, £200 for the pair, are within many people's reach and given what is on them, amazing value. But we have seen that the system has inexorably grown in price, fulfilling the law of most building, defence and other projects that the final product will cost at least twice the amount that the makers originally promised. This law has one major exception nowadays, and that is in computing and video technology. Ingenuity and competition should bring the price down.

One way in which this may happen is through separating off the pictorial and the textual/statistical aspects of the disc. Basically, to have a player that will read both digital and visual information is, at present, very expensive, though who knows how soon other firms, particularly in Japan, will bring out cheaper players. If they do, well and good. In the meantime, as the problem became obvious to the Board, there was much discussion of a long-term alternative. This was to store pictures on a picture disc, which could be played on an ordinary, relatively cheap, player, and to store the data on another medium. For smallish data-sets this could be on a computer hard-disc, but with over 300 megabytes, the solution appeared to be CD-ROM and, hopefully, one day CD-RAM (and very soon CDI). Once again, this is not a straightforward matter and one only had glimpses on the Editorial Board of some of the difficulties. Among these was the fact that the technology was changing very fast, but international standards were not agreed, and the fact that one of the partners, Philips, having invested a good deal in a certain system would be rather unhappy at a simultaneous launch of an alternative, much cheaper, system. But the subject was kept alive throughout the last year of the project during which this new possibility emerged. In November 1985, the Board were told that 'Philips have increased the price of the video disk player to such an extent that it is now felt to be out the range of the markets at which it was originally aimed: it is presently estimated at about £2,500 for schools, and £3,500 for home users. In view of this, the project has decided to publish not only on LV Rom, as originally planned, but also to publish the data on CD Rom. This will mean that conven-

tional video and compact disk players can be used in combination, at a cost of c. £1,500. In using CD Rom technology, there may be problems with transparent overlays, also the project will not be able to utilize other advantages such as the greater storage capacity (600 mb) and the possibilities for use of sound, in order to maintain compatability with the LV Rom version. However, the meeting approved this development.'

Having approved the development what became of it? At the next meeting we were told that 'Philips have agreed in principle to the use of CD Rom technology in the Project but the BBC are investigating costs to see whether it is justified or not.' In January, 'the use of compact disc in the system is being actively explored'. In February 'The CD Rom approach is still being investigated at a probable cost of c. £1,500'. At the next meeting, in May, it was reported that 'The CD Rom option for assessing (sic) the digital material on the disk only has yet to be agreed: we await agreement on CD Rom formats internationally.' That was the last time that CD Rom was explicitly mentioned. A possible reason for its disappearance may be seen at the minute at the last meeting of the Board where it was 'reported that the possibility of a disc with access to a limited amount of material on Domesday was still being considered, and technical requirements were being examined...there was some feeling in Enterprises that sales of the first product should not be hindered by reference to a cheaper, if less useful, alternative.' But the matter needs further thought now, for it had clearly been understood that the CD Rom option (and it is not clear that this minute refers to that) would be decidedly cheaper, but not necessarily less useful, and that in the light of the worrying increase in costs, both the Board and Philips had agreed to pursue this. This is something for the future.

As regards the technological side, a further area for reflection lies in the more general question of whether such large data-sets are best stored in this form. There can be little doubt that for historical purposes, to give a finite, encapsulated and storable image of Britain, the decision was right. This is the ultimate time-capsule and it will be widely distributed, and not 'updatable or erasable', by future groups wishing to re-write history. Armstrong believes that they were produced in this way 'because they are primarily intended as historical records', 'as a historical record, they are designed to be laid down like wine, gaining value with age'.[35] On the other hand, if they are seen as principally giant databases for use by organizations, whether private or public, then this may not be the way things will go. 'The giant databases of the future will probably have to be held centrally, with all the problems and costs of on-line access which that implies'. There will also be other problems. Armstrong thinks that 'the biggest problem in achieving the Encyclopedia Galactica will... not be technical, but a legal one —copyright'. An equally grave one in a system that has the virtue of being updatable is that it will be much easier to erase,

and alter the record. The Orwellian nightmare of a present that is constantly re-writing the past, based on Stalin's Russia, is much easier to envisage when most of the information on a society is held at the centre and one small computer programme can delete a year, a movement, a point of view.

This may seem a trivial problem, but it is already present in a small way with this Disc. It is well known to historians that it is the victors who tend to write history, and it should be equally obvious that the process of selection which the Domesday team have exercised has already in a subtle way rewritten the past. To take a tiny example. I asked myself and some colleagues what they remembered of national significance for the year 1983. They were unable, though intelligent and with good memories, to remember correctly a single event in that year. You might try the test yourself. I then told them of the twelve events included as film extracts on the Domesday Disc. They remember them well when reminded, and the Disc reinforced their memory. I myself, having watched '1983' several times, could reel off twelve things that happened in that year, even the months in which they occurred. They are, of course what the editors chose as representative of that year. If the disc was widely successful, hundreds of thousands of citizens would share those few images, and find it difficult, without consulting diaries and newspapers in libraries, to remember anything else. Supposing the disc was on a medium to which data could be added and erased, it is not difficult to see how easy it would be to persuade a whole population about a certain selection of events in their recent past. As anthropologists know, the borderline between myth and history is confused and permeable. Future databanks may well provide the ideal tool to weave changing myths of the past with which to guide and control the present. It may then seem a bitter irony that the Domesday Disc was conceived in 1984.

Apart from the software and technical aspects, other ideas have been put forward to make discs on other themes. These implicitly show how the medium is perceived to be useful. One limitation, as we have seen, is in the cramped national boundaries. Other countries were reported to be interested in undertaking their own Domesday surveys to commemorate anniversaries, for instance the discovery by the west of Australia (1988) or the French Revolution (1989), though I do not know if anything has come of these. One assumes that the Japanese and Americans may wish to do something. In January 1986 possible future discs were discussed: these included a second pressing of the Domesday discs in Autumn 1987, to incorporate corrections but no new data. A 1990 edition of the Domesday disc 'not called Domesday but a home information system about Britain'. A global disc, provisionally entitled 'The Blue Planet', and a number of more specialized discs. For instance a disc based around the Kenneth Clark series *Civilization*, with additional stills and walks, an Ecology disk and so on. All these

plans were dependent for funding on the success of the first Domesday project.

The mention of a 'home information system' brings us to a last point. The strength and the weakness of the first Domesday disc was that it was trying to do everything. Its software had to be very general, and hence while good at most things was not excellent in any particular area. Its audience was of all ages and backgrounds and this led to various compromises and decisions as has already been explained. It was initiated as a project of an historical kind, and retained this flavour. Yet its commercial success depended very much on it being of use to the present. It was an educational venture, originally targetted at schools and drawing very heavily on the enthusiastic participation of schoolchildren and teachers. Yet it was made at a time when the combination of the most serious teacher's strike in modern times, uncertainties over educational funding, the rising cost of the system and a refusal to commit funds to its widespread use in schools began to make it look as if its main market would not be in schools. It was pulled towards many users—government, business, and so on, as well as the educational and historical. It is to its credit that it never abandoned its first educational and historical aims. But it is important that historians should know that the project was always looking over its shoulder, not only in order to avoid being accused of being biased or partisan, but also because the future of individual makers and of the whole approach would to a large extent be tested by the market. This was not a philanthropic, government-funded, or academic project which could proceed without considering the political and financial implications of decisions. Although the editorial Board took its decisions largely free from direct pressures, they were always there, and future historians will soon detect them as they unravel the complex garment that has been made to clothe a nation.

Notes

1. This paper is intended to provide the factual background which is necessary in order to understand the BBC Domesday Videodisc project. It does not consider the parallel series of films presented by Michael Wood. I am most grateful to Sarah Harrison and Julian Jacobs for their comments on earlier drafts.
2. Peter Armstrong and Mike Tibbetts, *Domesday Video Disc User Guide* (BBC Publications, 1986), 16. Hereafter cited as Armstrong, *Guide*.
3. Armstrong, *Guide*, 17.
4. Armstrong, *Guide*, 16.
5. Peter Armstrong, 'The Domesday Project: An Overview of the Production of the Domesday Discs', on Side A of the 'National Disc', 42 (hereafter Armstrong, 'Domesday'); Armstrong, *Guide*, 16.
6. *The Domesday Project Survey Guide* (1985), 11.
7. Armstrong, *Guide*, 131.
8. Armstrong, *Guide*, 169.
9. Armstrong, *Guide*, 175.

10. Limited to a few thousand words, I can only make a brief start on this large and important topic.
11. Armstrong, 'Domesday', 44-5.
12. Cited and quoted in Halla Beloff, *Camera Culture* (Blackwell, 1985), 21.
13. It is true that this was merely a suggestion and not further discussed. But if there had been reasons for not following up the suggestion because it was impracticable or impossible, we were not informed of them. Probably it was just forgotton. Dates in brackets refer to Editorial Boards held on those months.
14. Armstrong, 'Domesday', 13-14.
15. For the record, the Editorial Board first met in October 1984 and there were twenty meetings in all. I was present on the Board from June 1985 to November 1986, attending eleven of the twelve Board meetings during that time.
16. Armstrong, 'Domesday', 15.
17. Armstrong, 'Domesday', 8.
18. Armstrong, *Guide*, 141.
19. Armstrong 'Domesday', 30.
20. *The Domesday Survey Guide* (1085), 12 (hereafter cited as *Survey*).
21. Armstrong, *Guide*, 116.
22. I am not in a position to know whether the government departments held back on any of their materials because of their sensitivity. We would need a report from those who assembled the data sets at Essex, Birkbeck, Newcastle to find out about this. For instance. they could perhaps throw light on the report at the December 1985 Editorial Board that 'OPCS are also able to supply a tape containing vital statistics, but not including statistics on ethnicity, marriage, divorce or migration as these are not readily available'.
23. *Survey*, 13
24. *Survey*, 18,19. It was agreed (September 1985) that 'the guidelines as to what has had to be edited are to be included on the local disk'. This has not yet been done and should be included as the next edition of the disc as it would increase the historical value of the material.
25. Armstrong, *Guide*, 163.
26. Armstrong, Guide, 197-8.
27. Armstrong, 'Domesday', 35.
28. Susan Sontag, *On Photography* (Penguin, 1979) 69.
29. R.G. Collingwood, *The Idea of History* (Oxford, 1961), 236.
30. *Survey*, 15-16
31. Armstrong, 'Domesday', 12.
32. Armstrong, *Guide*, 239-241
33. Armstrong, *Guide*, 239.
34. Armstrong, 'Domesday', 42; Armstrong, *Guide*, 241.
35. Armstrong, 'Domesday', 42.

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