



## The Cambridge Experimental Videodisc Project

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cynicism, with idiosyncrasy, with humour, who dreams of physical comforts while flippantly musing about his girlfriend: 'Too bad that E.R.M. does not dance in my style. *Adage*: "Those who dances well together won't live in harmony"' [15.11.17]. It is not, as Firth fears, that here I can find ready ammunition for exploding the myth of Malinowski. It is that the diary makes Malinowski real for me. I do not kid myself, of course, that here is *the* real or essential Malinowski; I accept, as Leonard Woolf noted in the preface to his wife's posthumous journals, that however seemingly unexpurgated, the portrait offered by a diary is the biased account of a diarist in the habit of writing probably only when in a certain mood; and however seemingly disorganized and non-hierarchical with regard to subject-matter, vocabulary *et al.* in comparison with other writings, a diary is far more consciously stylized than stream of consciousness.

Nevertheless, here is someone with whom I can more easily enter into dialogue. I can sympathize with Malinowski's disliking of fieldwork, his overcoming the chasm of empty days by ticking each one off in the diary; I can disagree with his witnessing of an extreme rigidity of native habit 'going back to the age of polished stone' [12.11.14]; I can share in his appreciative reading of Stevenson, Swinburne, Shaw, Charlotte Bronte, Maupassant, Macchiavelli, Hardy, H.G. Wells, Conrad, Kipling, Conan Doyle, and so on. Of course, when he injects himself with cocaine, arsenic, and morphine, having diagnosed certain obtrusive bodily humours, and then complains about days of lethargy and numbness which follow, he comes to sound more like a Conan Doyle character himself than an admirer of them, and when he talks about meeting 'Mrs Henderson', 'Miss H.U.', 'Baldie' and 'Capt Hope' for supper or 11- o'clock tea and conversation about natives, planters, missionaries and the latest mail, it is as if he has stepped out of a scene from Somerset Maugham. As

with those telling mundanities in Ralph Josselin's 17th century journals (v. Macfarlane, 1976), Malinowski's diary situates him historically and culturally: an individual constructing experiences comparable to mine in some respects and largely incomparable in others.

In sum, as it stands, unfashionable stylistic foibles and all, the diary offers revealing glimpses to link the person who in 1918 wrote of 'the revolution' he wanted to wreak in social anthropology [5.6.18] to what Strathern has described as the revolutionary style of ethnographic reportage in the 1920s for which those efforts have come to stand (1987: 258); as such it is an important building block in the intellectual history of the discipline. As it stands, I should place the diary beside *Argonauts* or *Coral Gardens* on any pre-fieldwork seminar reading list (while regretting the impossibility of further comparison with his English and Kiriwinian field diaries). Only one with another do we gain a better appreciation not only of what Malinowski meant to say — however his words have been more broadly adopted — but also how he came to say what he did. As a heuristic tool for illustrating fieldwork moods, for uncovering relations between happenstance and hypothesis, for exhibiting the gulf between notebook jottings — 'I had a drink with Everett; he spoke about *kula* and maintained that Misima was not in the *kula*' [17.11.17] — and classic (or merely completed) monographs, between initial ideas — 'should observe savages more on the spot, should speak their language' [27.9.14] — and the myths they ultimately spawn, and for raising doubts about how those gulfs were and continue to be spanned, the diary is indispensable.

In a most level-headed review (1980), Coy suggested that 'if Malinowski's diary had not been revealed by a public-spirited second wife we should almost have had to have invented it.' Surely the least we can now do is not to disclaim it.

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# The Cambridge Experimental Videodisc Project

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## ALAN MACFARLANE

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Largely inspired by the films and photographs of Professor Christoph von Fürer-Haimendorf, we decided in April 1985 to make an experimental videodisc about the Naga peoples of the Assam Burma border.<sup>1</sup>

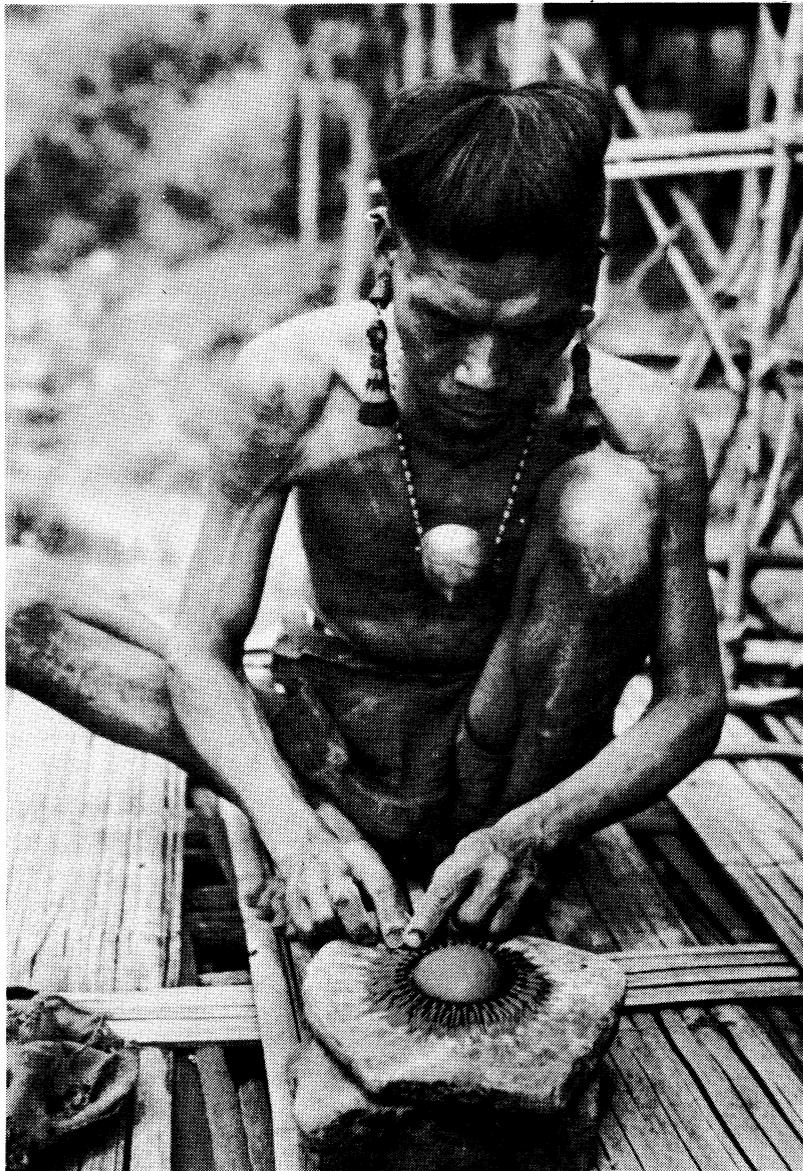
The Nagas seemed a good choice for such an experiment. The precipitous terrain and forest, as well as the warlike head-hunting reputation of the peoples, deterred outsiders from entering the area until very late. The period of contact, starting effectively in the 1840s, was unusually gradual, lasting over a century until Indian Independence in 1947. The relative lateness of the contact meant that the second fifty years of documentation were within the era of easily portable cameras and the last fifty years within that of moving film. But how well was this process documented, and what remained?

Good fortune brought to the Naga Hills a series of very gifted observers. These men and women became so involved with the Nagas that they assembled large collections of material in very difficult circumstances. The chief collections we were given access to were

those of R.G. Woodthorpe, J.H. Hutton, J.P. Mills, C. von Fürer-Haimendorf, Ursula Graham Bower and W.G. Archer. Between them, they collected over 5,000 artefacts, took over 7,000 black-and-white photographs, made a number of sound recordings and made over six hours of moving film. They also kept extensive diaries and collected pages of field-notes as well as publishing eight books and many articles on the Nagas. There was clearly no shortage of material. But how was this to be formed into a usable and distributable archive?

### Making a videodisc

A videodisc or optical disc is a silver object which looks like a gramophone record. Information is engraved on its surface which is then coated with plastic. The information is read off each separate track by a laser beam, using a standard videodisc player. This produces a virtually indestructible storage format which is not damaged by dust, normal changes of temperature, electric currents, damp, insects, etc.



Wangpo, a Konyak Naga, making a clay mould for a brass armlet. This photograph, taken by Christoph von Fürer-Haimendorf in 1936-37, is one of several thousand black-and-white photographs included in the Naga videodisc described in Alan Macfarlane's article. It may be accessed not only by means of structured queries, relating for instance to dates or an individual's name, but also by means of 'free text queries'. In this case, 'brass', 'casting', 'metal' and 'technology' would lead to the record (no. R59998).

A videodisc can hold a very large quantity of information. A standard disc can play moving film for 36 minutes per side in interactive mode or hold 54,000 separate pictures per side, or a combination of these. It can store at least 300 megabytes of information per side (the entire *Encyclopaedia Britannica*, with pictures, takes about 200 megabytes of store).

A videodisc can hold copies of almost all kinds of recordable information: photographs, slides, moving films, x-rays, sound recordings, graphics. The discs are double-sided and once a master has been created copies can be made relatively cheaply.

This sounded an ideal medium for our pictorial materials. But how does one make a master? Here there was almost no guidance. These were early days and no videodisc of the kind we were attempting had been made in Europe. With the cooperation of the Audio Visual Aids Unit at Cambridge and the Open University Production Unit at Milton Keynes, we therefore invented the methods as we went along. How this was done is documented elsewhere but can be summarized as follows.

We photographed about 1,200 Naga artefacts as colour slides and transferred these by tele-cine to the one inch master tape from which a videodisc is made. We re-photographed some 7,000 black-and-white negatives with a half-frame camera and 'Illumitrans' and transferred the strips of films onto one inch tape. We con-

structed and photographed some 200 maps. We extracted 150 moving sequences of film and 1,000 still frames from moving films. We re-recorded a number of sound recordings from early wax cylinders to recent missionary songs. After three years' work we had a master disc and 100 copies.

#### Dealing with texts

For a variety of reasons, including the need to update and change textual data and the far greater cost of a machine that could (as with the BBC Domesday disc) read digital data, we decided to keep the textual materials separately. We decided therefore to keep these materials on a computer.

The main categories of material were as follows. There were the equivalent of about 500 pages of manuscript fieldnotes. There were manuscript field diaries, from the earliest in 1872, through the field diaries of Christoph von Fürer-Haimendorf, up to the diary of Mildred Archer in 1847; approximately 1,000 printed pages or equivalent in all. Over 100 official tour diaries by J.H. Hutton, manuscript letters, and other typed and manuscript materials were also available. All these were typed into the computer.

The other main way of getting materials in was through optical character recognition, where the published book can be directly scanned into the computer. We did this with the eight monographs, which saves a great deal of labour, though it still leaves a good deal of cleaning up of the material to be done by hand.

This data input proceeded alongside the making of the disc. It will result finally in the production of a 40 megabyte database of materials which provide the context for the visual and sound materials. It is obvious that pictures and text reinforce and enrich each other.

#### Principles of selection

Elsewhere we have described at greater length the principles we used in selecting visual and textual materials. Very briefly, they were as follows. We reduced the six hours of moving film to 30 minutes by trying to include the material that was most intellectually and academically interesting, and, all else being equal, rejecting those sequences that were out of focus, badly composed, unsteady, from too great a distance, damaged, the colour fading, and so on.

There are likely to be over 15,000 Naga objects in European museums and private collections, of which we photographed a little over 1,200. We decided to confine ourselves to British collections. We then sought a representative selection, in terms of the types and functions of objects and their origins in different groups. We tried to use Naga criteria of significance rather than our own. We chose well documented pieces and those that fitted in with other materials on the disc.

Only a few hundred of the roughly 7,000 black-and-white photographs we discovered have been omitted. These were left out on the following grounds: they were duplicates of, or very similar to, other images; their quality was poor; they were outside the delimited geographical area; they were outside our time span; or they fell on the side of 'private experience' as opposed to 'public experience'. We did not censor photographs because their content was embarrassing or shocking in any way, or might do damage to the reputation of individuals, the British, anthropology as a discipline, or for any other reasons. As far as textual materials are concerned, we limited ourselves mainly to materials written before 1947 and in English. If the material was likely to cause personal offence or political embarrassment to

living persons, or was repetitive or trivial and of only personal interest, we omitted it. In all, this meant omitting at the most half a dozen paragraphs as compared to the twenty thousand we included.

### Retrieval Systems

From very early on we were aware that the possibilities of the new media, a combination of computer and optical disc storage, would mean that we would have very large sets of data which it would be difficult to manage. The materials on the videodisc comprised about 10,000 'items' (maps, photographs, artefacts, films, etc.). The 40 megabytes equivalent of text represented about 20,000 paragraphs of writing. Supposing one wanted to search this, finding all the information in visual and textual materials relating to a specific person, place, date or subject, how could this be done? To search through 1,000 photographs or 1,000 pages of manuscript can be a long business. Recording materials of this diversity and scale, the disc would be unusable without an appropriate information retrieval system.

None of the database management systems which had been developed for commercial or academic applications seemed appropriate for this project, so we developed our own. We worked in partnership with Dr Martin Porter to adapt his MUSCAT (Museum Cataloguing System) for these purposes. This system had been developed for use on mainframe and 'midi' computers and seemed ideal for our use. Among its advantages were the following.

It combines 'free text' with structured (boolean) searching technique. The majority of current databases are based on 'boolean' retrieval (and/or/not). Though suitable for some purposes, boolean retrieval suffers from major limitations: the number of answers is usually too large or too small; users often require or expect to compose boolean expressions; the retrieved set of answers is not ranked in any way and so it is necessary to inspect the entire list in the search for relevance. The MUSCAT system incorporates boolean retrieval, but overcomes these weaknesses by adding 'probabilistic' retrieval, where answers are ranked in order of their probable usefulness. Terms are weighted according to formulae derived from probability theory.

In effect, this means that it is very easy to put in a natural language query such as 'show me all the photographs of women wearing back-strap looms' or whatever. The 'best' answer will be given, then the next best, and so on, in decreasing order of probability of matching the query.

The added features of 'relevance feedback' and 'query expansion' turns this into a semi-intelligent system with considerable heuristic power. If an 'answer' is 'relevant' (the kind of thing one was looking for) then it is 'marked'. All the marked records can then be examined by the machine. The computer provides a list of terms in order of their probable statistically significant correlation with the marked answer. Any of these terms can then be added to the query so that it becomes 'expanded', that is to say more powerful. This is a creative alternative to a synonym list. It is also a way of using computer and human together — combining the mathematical power of the machine with the intuitive knowledge of the human.

For our data, the MUSCAT system had a number of other advantages. It is very flexible, both in terms of size and structure. The system will deal with data sets of any size. It is possible to hold as many datasets as are needed. The number of records per dataset is unlimited. The number of fields per record and of charac-

ters per field is unlimited, within the one restriction that no single record must exceed 64,000 characters (about 20 printed pages).

There is no need for pre-coding and the data structure in a record can mirror the material one is dealing with. Hence we were able to adapt it easily to deal with the varied structures of records describing artefacts, photographs, maps, sketches, films, sound, manuscripts and printed texts.

Our aim was as follows. We wanted to adapt the very general 'Muscat' system so that it would be useful for historians, anthropologists, museums, etc. To do this it was necessary to bring it down from a mainframe to a micro. This has been done and it works on all IBM XT/AT compatibles, running in less than 300k of free RAM. It needed a friendly icon-driven screen system, which it now has. It needed special programs to deal with the kinds of data which anthropologists produce. And it needed simple documentation on how to use and set up such a system. All this has been done and the system, re-named the 'Cambridge Database System', is now completed in a prototype version.

It has exceeded our expectations. To take just the question of speed. Using a normal IBM-PC compatible microcomputer, a search of the 20,000 records which we currently have will take from one to five seconds. A structured (boolean) query for a place name, for instance, retrieved the first 1,000 answers out of 1,775 in two seconds. A 'free text' search on three terms, occurring respectively 148, 263 and 48 times in the database, assembled the several hundred answers, in decreasing order of probability of interest to the user, in just over a second.

It is possible, using the Naga materials as a test bed, to find the information about any person, any place, any date (day/month/year), any archive, any medium (e.g. photograph) or any ethnic group, or a combination of these (combined with any subject) more or less instantaneously. For instance, if one asks to see all the photographs taken by a certain photographer in a certain month in a certain village, which concerns carved village gates, the photographs will be presented almost immediately.

Of course, the retrieval will depend very heavily on the care and accuracy of the descriptions of the visual and textual items. These are based on the ethnographic and other texts and our accumulating knowledge of the materials. If the ethnographer appears to have made a mistake, this is indicated. Since it is possible to modify the descriptions within the database, this can be an 'open' system which reflects the growing knowledge of the compilers.

### Work still to be done

The main task remaining is how to make the methods and materials available to a more general public. Here we can only outline what we hope to do.

The videodisc will be used in a special exhibition on the Nagas in the Andrews Gallery of the Museum of Archaeology and Anthropology when the whole anthropology galleries re-open in Spring 1990. A re-constructed Naga long-house (*morung*) will hold a videodisc and computer, so that visitors can look at films and photographs and listen to sounds as a background to the exhibition. It will also be used in teaching at all levels. For instance, it is being used to give undergraduates a simulation of how to ask questions of anthropological data in a 'practical' exercise in their first year. In the second year, it is linked to courses in 'Visual Anthropology'. At postgraduate level, it is being used to show

1. We would like to acknowledge the support of the following: the Economic and Social Research Council, the Nuffield Foundation, the Leverhulme Trust, Trinity and King's Colleges, Cambridge, the University of Cambridge and the Department of Social Anthropology, Cambridge. The major members of the team are Sarah Harrison, Julian Jacobs; the computer advisers are Michael Bryant and Dr Martin Porter; the co-director is Martin Gienke.
  2. Macfarlane, Alan and Martin Gienke. 1989. The Principles Used in Selecting, Editing and Transferring Materials for an Archival Videodisc. *Journal of Educational Television*, Vol. 15, No. 3, 131-141.
- For further information

please contact: Dr Alan Macfarlane, Rivers Video Project, Department of Social Anthropology, Cambridge University, Free School Lane, Cambridge, CB2 3RF.

how information retrieval works on anthropological materials.

The videodisc is being used to help prepare a large book with about 500 photographs and analytic text which will accompany the exhibition.

The videodisc itself, as well as the texts and computer discs, are to be marketed. Any profits from this or

other parts of the project will go back into a university fund for future research on anthropology. Likewise the Cambridge Database System software will be marketed both for use with optical discs (videodiscs and compact disc) and also as an advanced database system on micros.

# Report on RAI questionnaire

In October 1989 the RAI sent out a questionnaire to four British universities for completion by students just beginning anthropology degrees. The aim of the questionnaire was to ascertain how students had first learned about and become interested in the subject. The forms were sent to four anthropology departments (Edinburgh, Durham, Cambridge, School of Oriental and African

Studies) over a wide geographical area for distribution to their new students. There were 256 replies, more than half of which (150) came from Edinburgh, which had by far the largest number of students. The response rate appears to have been quite good.<sup>1</sup>

The vast majority of those who replied were studying anthropology in conjunction with one or often two other subjects (90%), with only 9% studying the subject as a single honours degree.<sup>2</sup> Women considerably outnumbered men among those represented<sup>3</sup> and 70% were aged under twenty, with only 8% aged over thirty. 94% were permanently resident in Great Britain, with 5% coming from overseas specifically to study here.

The most common means of making contact with anthropology appeared to be through talking to friends and relatives, which was the response of 27% of those questioned, although almost as many (25%) did so via films or television. Books took third place, but some way behind, with 18%. These were by some way the most common means of making contact with the subject, although advice given by teachers, careers advisors and at academic fairs did amount to some 13%. Only two students first learned about anthropology from ANTHROPOLOGY TODAY, although this was two more than did so from any other anthropological journal! A notable number (4%) did, however, learn about it through the quality press (*The Guardian* and *The Independent*) and other journals (the now defunct *New Society*, *National Geographic*, *Earth Matters*, *New Internationalist*, *Resurgence*).

Three anthropologists in particular were found to be popular: Claude Lévi-Strauss, Edmund Leach and Nigel Barley, who were each found interesting by 11% of the students who indicated a preference.<sup>4</sup> Mary Douglas was extraordinarily popular with Cambridge students, among whom no less than eight placed her on their lists, although none of the students at the other three colleges did so. Richard Leakey was next in popularity, found interesting by seven students (7%), while Colin Turnbull and I.M. Lewis had been found interesting by five students. The classic figures of British social anthropology did not fare particularly well, with only four people interested in Evans-Pritchard, three in Malinowski, one in Gluckman, and none at all in Radcliffe-Brown. There was, however, one favourable mention of Frazer.

As far as specific regions were concerned, interest in Africa was notably higher than elsewhere, with 23% interested in that continent. Interest in the Americas, Asia and the Pacific/Australasia was very similar (respectively 16%, 15% and 17%). Nineteen percent evinced a general interest in anthropology, but it was notable that a significant number (9%) were interested in Europe, which seems to suggest some movement away from anthropology's traditional concern with areas of the Third

## Summary of questionnaires returned by first-year students of anthropology

1. studying anthropology with other subjects	230	90%
full-time students of anthropology	23	9%
part-time students of anthropology	3	1%
2. female	169	67%
male	87	33%
3. under 20 years of age	177	70%
20-29	60	22%
over 30	19	8%
4. permanently resident in UK	240	94%
permanently resident overseas, studying in UK	13	5%
neither of the above	3	1%
5. first contact with anthropology (not limited to one reply):		
talking with friends or relatives	121	27%
seeing films or TV programmes	111	25%
reading books	81	18%
advice from schoolteacher	36	9%
Academic Fair	25	6%
any journal other than A.T.	16	4%
radio	13	3%
A. T.	2	
careers advice centre	1	
other *	37	9%

\* 'Other' included: university prospectus (15)

6. anthropologists named as interesting (not limited to one reply):		
Claude Lévi-Strauss	11	11%
Edmund Leach	11	11%
Nigel Barley	11	11%
Mary Douglas	8	8%
Richard Leakey	7	7%
Colin Turnbull	5	5%
I.M. Lewis	5	5%
Napoleon Chagnon	4	4%
E.E. Evans-Pritchard	4	4%
Margaret Mead	4	4%

Anthropologists with less than 4 mentions are not listed here.

103 replies received

7. interest in anthropology (not limited to one reply):		
Africa	105	23%
general interest in anthropology	88	19%
Pacific/Australasia	79	17%
Americas	73	16%
Asia	69	15%
Europe	42	9%