

the system of the cumbersome cross-reference file with the development of the McBee punch card filing system. File cards of various sizes are manufactured with separate categories represented on each card by a border of numbered holes. This allows for an almost unlimited pattern of cross referencing by clipping out the border of selected categories. Selection of a reference is accomplished by running a needle through the master card so that all the cards holding the reference you are seeking automatically drop out. This method is being used in many raw data files and is ideally suited for cross-selecting the imagery of photography, as contact prints or groups of prints can be mounted directly on the McBee punch cards.

Of course, there are variations to this ultra efficient system. With the smaller file or card that is to be used in a general multi-purpose way, single frames can be mounted on a 3-by-7 card which gives ample room for typing in all the identifying data. These cards can then be filed by some basic system of topical divisions with as many subdivisions as might be needed: farming, fishing, lumbering, millwork, forests. This variety of file offers special study opportunities. The cards can be removed for select study or shuffled into comparative categories.

Even though a considerable amount of direct research can take place on contact prints, there are many cases of complex process and detail where enlargements clarify and extend the research opportunity. A selected file of 8-by-10-in. mounted enlargements of representative material from the master file can function as a key that greatly extends our ability to read detail reliably from small contact prints.

Photographic prints should be mounted or they will curl and crack. A mounted print is infinitely easier to study. The time and expense of mounting is repaid by an efficient use of the file. Mount prints with *dry mounting tissue*. Rubber cement contains sulphur and will stain photographic material in a short time. Dry mounting, even with a household iron, is faster and considerably more permanent.

An important caution. Whenever possible store negatives in a different location from your print files—even in a separate building—so that in the case of fire you will be left with one or the other. Fire or water can destroy a photographic file in minutes.

I conclude this technical writing at the far end of the photographic process with a word of warning—the most deadly end to all our efforts is the photographic file that sits unused. Every attempt should be made to defeat this eventuality by interrelating our file in as many ways as possible with our project's verbal data. Consider that knowledge in our scientific culture is basically verbal, or at least is communicated verbally. Words are more abstract than pictures, and by their simplification more precise. Much of the photographic view is open-ended, challenging you on each inspection to reaffirm opinion. Our filing problem is to tie photography's open door to reality to the verbal abstractions of written data, whether these be the observations of the fieldworker or the words of the native. The real function of the photographic file is to keep alive the cultural moment so that we can consider written field notes with a full sense of the imagery of real circumstances and use the right visual references to vitalize the meaning of the written words.

# Film for Anthropological Research

COLLIER, JR., JOHN  
Visual anthropology: photography as a research method (HOLT, RINEHART AND WISTON)  
JAN 1967

THE ENGLISH PHOTOGRAPHER, Maybridge, demonstrating the research use of still photographs taken at controlled intervals, unquestionably laid the basis for the research use of film. His assignment in the 1870s was to study a trot for Leland Stanford, railroad millionaire and Governor of California, that as a trot all four of a horse's hooves were off the ground at the same time. This brought about the first scientific recognition that the fleeting details of motion are not stopped by the eye. In 1877 a French astronomer, Jansen, made on one plate a multiple record of the transit of Venus by using a circular daguerreotype plate detached by hand. Stimulated by both Maybridge and Jansen, the French physiologist and student of movement, Marey, perfected the first moving picture camera—first for entertainment, but strictly to study more than the eye could see.

The modern camera is closely related to this first invention which recorded an image ten or twelve times every second on a continuous spool of sensitive paper. Marey made high speed studies of the flight of pigeons and the rearing of a horse, which were reported on in his book *Le Mouvement* in 1891. (McCauley, 1955) In the three-quarters of a century since its development, the moving picture camera has been used extensively for scientific research from astronomy to zoology. In industry, film is the standard method for analyzing the technology of motion for efforts toward efficiency and industrial safety. For related reasons, sports strategists have used film extensively for play-by-play analysis. Psychologists have used film in a similar way in the study of animal and human behavior. In all of these fields it is the flow of film that is so desirable for time and motion analysis.

In anthropology, again it is Margaret Mead and Gregory Bateson who have, together and independently, made the most effective use of film for analysis of cultural behavior (Bateson and Mead, 1942; Mead and Margregor, 1938). Like Geertz's work in child development (1932; 1945) their work depends not only on the viewing of the film footage, but also on detailed examination and comparison of enlarged prints of single frames.

\*Throughout this chapter "film" means movies.

Yet, in general, film has played only a minor part in anthropological research. This is due in part, I feel, to the fact that film is even harder to impress as data than still pictures. But it is also due to the temptation, or even the pressure, to make films in the field of anthropology for reasons other than research. Great "documentary" films have been made in the field of anthropology by art film makers, and by expert anthropologists. These have generally been produced for an audience, for aesthetic experience, and for education. Film as an illustration of culture is unmatched in its ethnographic conviction. Anthropological films as teaching aids represent some of the finest resources in the anthropological library. Many of the best of these efforts are already historical: Flaherty's *Nanook of the North* (1925) and *Man of Aran* (1934), the early document *Grass* by Schoedsack and Cooper (1925), the Canadian Film Board's Indian myth *The Iron's Necklace* (1949).

In recent years anthropologists have turned to film making, producing epics like *The Hunters* by John Marshall and Robert Gardner (1956), Robert Gardner's *Dead End* (1964), and vignettes from the culture of Nepal filmed by John and Patricia Hitchcock. Stored in cans are undoubtedly many more yet unedited illustrative documents that would greatly enrich the teaching of anthropology. Also foreign films by their subject and treatment often become useful for teaching anthropology — as for example Satyajit Ray's *Apu Trilogy*.

Because film is so popular a form of entertainment, there is always an artistic and a popular temptation to distort the data to conform to more popular taste. The clinical psychologist is not so tempted to strive for artistic effect as is the student of cultures. (The clinical observer has more defined reasons for filming whereas popular commercializations have long since invaded the scene of African villages and established concepts of how an audience film on exotic life should look. So in a subtle sense when the anthropologist worries about this audience he may be departing from his goals of scientific recording.)

Can these provocative film documents be used for research? Or is there a confusion of ends, in the shooting and the cutting, that makes their use as data difficult or even impossible? There are conventional practices that have become conventions in the audience film that are at cross purposes with film data: graphic effects, editorialism in developing the story line, actions out of context, fluency of leaving and opening, and closures so important to story telling.

We have an extreme example in the document *Man of Aran*, unquestionably a great ethnic film. Flaherty's continuing effort was to express his personal vision about the mystique of the Aran Islanders. The film had to have a theme. Flaherty, with intuitive recognition, seized upon two: the struggle to create soil for crops, and the daring in harvesting an economy from the sea. Flaherty then proceeded to document a way of life that had in reality ceased to exist. His film was shot two generations after the fact, a rich and poetic reconstruction of the ethos of the Aran Islanders. It was Flaherty who supplied the authenticity, not the real environment.

The anthropological film maker must face a similar dilemma of public-gathering controlled comprehensive recordings, or creating provocative film dramas about culture. The challenge lies in deciding how both ends can be met? How can the anthropologist make footage he can use for research while at the same time gathering educational material for his student audiences?

temptation of starting the film

the dilemma research/audience

### The Challenge of Scientific Methodology in Film-Making

Anthony R. Michaels, in his invaluable handbook *Research Films*, presents the richness as well as the intense discipline that has been devoted to film in the biological sciences, including medicine and clinical psychology, where there is little debate about the value of film.

Cinematography . . . allowed the repeated evaluation of the single experiment; it recorded permanently the most complex patterns of behavior, which it would have been difficult, if not impossible, to describe in verbal terms; and on occasion it has been employed to slow down or to speed up the appearance of the experimental situation (1955:149).

But in the human behavioral sciences the use of film is still in its development phase. Michaels brilliantly sums up the oppositional problem:

A major use of scientific cinematography in anthropology, psychology, and psychiatry is the recording of data under conditions of observation, as distinct from experimentation. In order to make fullest use of such human research and record films it is essential for the scientist to be fully conversant with the sources of error and limitations in the making of these films and also with the conventions developed around the human figure by the commercial cinema, that is particularly so under the less rigidly controlled conditions of field work (1955:157).

Of all the behavioral sciences anthropology is probably the least experimental. The fieldworker in culture must work often in a highly uncontrolled and changing environment. Michaels emphasized that even under these uncontrolled circumstances "the research and record film is an invaluable aid as an instrument of observation and description and as a permanent source of data that can be re-examined at leisure" (1955:167). Film then becomes a means of mastering the culturally continuous observation by shifting the clinical analysis to the research laboratory where it can be studied at leisure and by any number of specialists.

It would be enlightening to examine the problems of control and objective authenticity from the moment we choose to photograph to the final editing, observing each phase of film-making as it might add to or subtract from the film's value for research. In film-making as in shooting still camera records, there is the constant challenge to achieve objectivity or research fidelity. I agree with Michaels that:

The moment the photographer sets up a camera in the laboratory or in the field, selects a scene in the viewfinder, and presses the starter button, his whole personality has been brought into play, and a theoretically objective technique has changed into a subjective statement (1955:167).

This covers the whole field of anthropological photography and, again, introduces the problem of scientific control to cope with this ever present challenge of objectivity.

As with still camera recording, the first scientific decision is to choose the significant target areas which when covered will offer a structured view of the research. This does not mean an inhibiting preselection of data; it simply restricts control of the roving camera sufficiently so creative spontaneous shooting and a sample of study points will contain the evidence necessary for a conclusive statement.

After the point of no return, when we face our data in the laboratory, there always develops a bare-bones model of just the evidence we *must* have to conclude our study objectively. The anticipation of these needs should be, whenever possible, the basis of sampling in the field.

Each target area of the research contains this methodological challenge. Most fieldworkers do not have two cameras to allow for hours of uninterrupted shooting. The average camera run is 30 seconds, and a 100 feet of film runs out in 2 minutes at 24 frames per second. There *must* be breaks regardless of how extravagant our film supply is. Every time we push the starter button we are sampling elements within the immediate filming circumstances. For many circumstantial reasons, sometimes a hundred feet of film must be made to cover the episode. What should our criteria be for selecting and budgeting our film?

A workman-like understanding could be arrived at by forgetting about research needs and simply considering the problem of practical documentation, when the whole record of an event is the objective. Alexander H. Leighton tells of an experience with an Eskimo on St. Lawrence Island that gives an example of thoroughly functional film selectivity. A teacher on the island (a white man) asked an Eskimo friend to take some shots of a whale hunt with the white man's amateur movie camera. Leighton saw the results and was so impressed with the film that he looked up the Eskimo, curious as to where the man had learned film-making. When Leighton asked the embarrassed Eskimo told him, "That's the only film I ever made!"

Realistically, it was probably the Eskimo's sense of the importance of technology as a part of appraisal that had prompted him to look-up directions in the instruction book for the camera, which he had seen lying by the teacher's desk. Armed with this information he had proceeded to film a complete whale hunt on one roll of film. Leighton remembers that the film was evenly exposed throughout, which means that the Eskimo had grasped the optical principle of exposure and made the necessary adjustments for changes in light. Leighton further recalls that the camera runs were neither too short nor too long, which I take to mean that he shot longer runs on important elements and shorter runs on trivia. Like the weaver in Otavalo (see Chap. 4), the Eskimo was an expert in his subject—hunting whales. His film-making was functionally sound. He *did* have target foresight; he knew what the critical elements of a whale hunt were. This professionalism went into all his filming decisions. His goal was not art, but how to kill a whale. Even with his short roll of film he held back a last precious run in case they harpooned a whale. Film in the camera was like ammunition in his rifle. Never be caught empty! They *did* harpoon a whale, so that his document was dramatically complete, with the thrashing of the whale's flukes and the swirling of blood in the sea!<sup>2</sup>

We cannot be all-in-one experts in hunting, fishing, and weaving, but we can study our processes before filming so that our selectivity is functional, and each filmed unit can be architecturally as complete as possible.

Next in order of filming is where to stand, the questions of camera angles, choice of lenses, or zooms. The multiple lens system is an answer to near and far

filming without moving the camera. Usually a revolving turret holds a wide-angle lens, a medium focal length lens, and a telephoto lens, but there must be a film break when the photographer swivels from one lens to the other. The zoom is an all-purpose multi-focal lens that allows the photographer every gradation from a wide angle view to a telephoto view with the same lens. This allows for unbroken sequences of close-up to distance filming. The goal of filming should be to see as clearly as possible what is going on. Priority in decision making should always go to clarity of view. When details are obscure, zoom in or turret to your 90 mm lens. Turret to your extreme wide-angle lens when sweeping relationships of social interaction or technology are essential to documentary clarity. Plan your shooting so camera runs will blanket comprehensive wholes. This will later offer you footage which you can use in research. Monitor your camera load so that you have an unbroken episode when you need it. And budget your total film supply so that your target areas are covered, both for your research and for audience film.

Beyond intelligent filming, research film often needs various control elements that relate the shooting to the passage of time, to the exact identification of where and when each unit was filmed, and devices for reliably interrelating the filming with other research techniques and activities.

Professional film-makers have always used slates to keep scenes in order. In both stills and films this is a basic technique of identification and control. In clinical films clocks are often present. In filming craft processes in the field time relations may be equally essential; a wide-faced clock placed in the drafting room could pace a documentation and make otherwise chaotic detail an orderly part of the record. If later cutting is essential to fluency, clocking your camera runs would be essential to assembling a research document. In the laboratory, runs of unidentifiable film are like "pieces of string too short to use." They may make artistic filler, but they would mutilate the body of an authentic data film. If you are shooting a sound film, a tape recorder is your best monitor. This will later allow you to preserve the exact sequence in splicing and cutting. Match the sound and you have complete control of the order of scenes.

Again, as with still recording, keeping a photographic log is an essential aid to authentic order. This may be a two-man job. This is not an extravagance, for film-making often is more than a one-man job. It can involve a crew of fieldworkers, professional or native. Technological and cultural elements can become so complex that they must be taken care of simultaneously to make film documents possible.

The most controversial control factor of all is the final assembling of the raw data film. Should research film be cut? Will this destroy the research authenticity? Certainly it is possible to destroy film data by scientifically insensitive cutting, but, on the other hand, there are film-making anthropologists who feel sensible cutting can enhance the data film. They feel cutting is no different from selective shooting. "Every time you push or stop pushing the button you cut." This is practically true. The other side of the controversy can also point out that cutting often does destroy the research opportunity and data film should be left just as it was shot! This instinctive caution is well founded; after all you do not edit your field

<sup>2</sup> Private communication.

Technical problem

Research film

The time

The sound

Final assembly

notebook. Possibly the problem of researching from raw data might suggest that intelligent cutting could make this job a lot easier, at least for other people. Consider the practical problem. There are strictly optical happenings in filming having nothing to do with the data. Every time you push the button on a Bell and Howell you get an empty frame; certainly these should be cut out simply to save your eyes while studying the film. There are apt to be hosts of optical failures that should also be cut out. Then there is the problem of spontaneous shooting during the filming episode. The creative photographer responds to spontaneous happenings that are neither central to the research event, nor have proper time place when the events are recorded; it may be wise to remove them, or functional to cut them into the data where they intelligently fit. Your sensitivity tells you when to shoot, and the same sensitivity tells you when to edit. It would be very limiting to inhibit this kind of selectivity. If there is a rule of thumb, let it be: Never cut data film unless there is a very functional reason to do so, and never cut so as to deface the basic temporal pattern of your evidence.

We can constructively apply to this problem the requirements of making still photographs that can be computed. It is clear that in order to read out the data it must be photographed into the records by selectivity, sampling, and adequate repetition so fluent interpretations can later be made.

If this selectivity does not take place, computing film can become so complicated as to defeat the ends of the research on an extensive film document. As an illustration, consider the problem Paul Ekman had to overcome in analyzing only a short sample of film in his Nonverbal Research Center at Langley Porter Clinic in San Francisco. Here the subjects were filmed against a grid during a structured interview so that all body motions could be related to the interview content. To research his film took twenty-four hours of study for one minute of film by the aid of the PerceptoScope.<sup>4</sup>

Compare this clinically controlled circumstance with a puberty rite in Africa and you can appreciate how exhausting the problem of using film as data can be. Or examine the challenge when anthropologists do attempt the comprehensive film document. In Samuel A. Barrett's effort to salvage passing cultures on film, his crew recorded in 1963 four major Navajo ceremonies: the Red Ant Way, a girl's puberty ceremony, the Mountain Chant, and a Yebitchai. Three of these ceremonies were recorded in their complete nine-day form. A report on this project states, "While none of the Navajo material has been released in the form of educational films, the total footage, 46,000 feet, represents the most complete record of these ceremonies" (Peri and Wharton 1963:34). Indeed it would be a staggering accomplishment to compute all the data available in this 46,000 feet of ceremonial film.

The point is the flow of film through the movie camera records such masses of imagery, that the selecting out of the responsibly readable variables becomes extremely difficult. Recently an art film maker produced an epic record of a man sleeping for eight hours. Possibly this controlled effort could be totally computed!

<sup>4</sup>The PerceptoScope is a hand-held electrical control that allows the viewer complete control over the movement of the film, forward runs, backward runs, repeats, and stops for detailed frame-for-frame inspection. Film simply cannot be thoroughly computed without such a tool.

## The Challenge of the Budget

The very practical problem of budget certainly has discouraged research films. On the commercial market films cost not less than \$1,000 a minute. Estimates for a thirty-minute educational ethnographic film range from \$15,000 minimum for a professionally-made black-and-white unsynchronized sound film, to \$5000 for a film shot by the fieldworker with relatively little cutting and minimal use of laboratory refinements such as fades and dissolves. John and Patricia Hitchcock present a detailed review of the economic variables that go into ethnographic film-making in their article in the *American Anthropologist* (1960). My own experimental film described below—a forty-five minute black-and-white silent film with no laboratory opticals, titling, or technical refinements—cost less than \$500, a budget that covers just the cost of film, developing, and printing. But even this figure is costly for many anthropologists' photographic budget when you must add to it the cost of movie equipment.

Can the average anthropological field budget afford research with film that must also be used for audience education? Is cinematography at this level possible only with lush grants? Foundations providing more than \$10,000 for a film are likely to expect a professional fulfillment which means budgeting for an experienced camera man. Unquestionably film-making is a most expensive item, and too often it carries a commitment of producing a popular film to offset the prohibitive field expense. It is here that the trails of research and audience film often part, and the anthropologist returns with a travelog instead of film cans of data.

If film is so expensive, and it certainly is time consuming, why not use a still camera instead of a movie camera? Certainly this question should be answered before you invest in a \$400 camera and several hundred dollars' worth of film. The still camera cannot do what the movie camera can do, whereas the movie camera can approximate everything the still camera can record. This means that the unwary anthropologist often uses his 16 mm movie camera at seven dollars every two minutes, as if it were a still camera, in situations where the Leica could do the same recording for 22 cents' worth of bulk load film. This may be expedient in an educational film, but it is an absurd extravagance in gathering photographic data.

Can anthropologists do significant recording with film for less than a thousand dollars? And can such a low budget avoid the technical con- p r i s e s t h a t w o u l d make it impossible to use a film for audience as well as research? If you are filming for raw data alone, cycles of research activities could be filmed adequately with \$100 worth of film. Using a 16 mm camera this would yield 25 minutes of data. On 8 mm you would get 100 minutes of research film.

The challenge is to bring back reasonable educational footage as well as research sequences. How small a budget could you have and still make this possible? Before we examine this question it would help to look at some of the needs of an educational film that would have to be considered along with our research needs in the film circumstance. A well-taken research film might never make a persuasive educational document; such footage could be lacking in the linkage between scenes essential for a flowing story-telling film.

Just as textbooks are improved with literary merit, an educational film must also be sufficiently complete and flowing so that complex aspects of culture can be grasped by the student audience. In field conditions during film-making this suggests the need for structure in designing, timing, interlocking, and a comprehensive completion so that conceptual insights can be formed by the projected film.

This could collide disastrously with documentary research aims, but if you are able to weave these needs into your frame of reference this collision of interests does not have to take place. The structural conceptions necessary for your audience film could be considered simply as a more refined order of field observation if your film goal is this comprehensive view.

### Circumstances Where Film Recording Is Invaluable

If audience film is not the goal, the movie camera would be a specialized tool used for gathering particular data that could be recorded in no other way. It is film's unbroken record that offers its distinctive research possibility and at the same time makes it prohibitively expensive. Therefore, if we do use film for research, we must recognize in advance the varieties of recordings that can be the subject of direct research analysis. As in still photography, some areas of documentation are more stably understood than others. One way to recognize these areas is to be clear about what observations can only be reliably made by film. This would allow us to simplify reading as well as outlining distinct areas where we could conceivably do research in anthropology with film.

Even though the movie camera can approximate still camera recordings, like samples of houses on the village street, analyzing data from projected movie film is exhausting. For one thing we do not have the opportunity for multiple examination or enlarged photographs for precise comparison. Film cannot be handed around and looked about like photographs, or looked at with a fine glass. We can stop the projector to examine the single frame but we cannot compare this frame directly with another except by printed enlargements made from the single frames. So when material is to be compared, record with the still camera whenever it will do the job. Where particularly saturated coverage is needed the robot camera with automatic time-sampling controls, may be a mid-point between stills and movies.

The movie camera's value in recording technology and ceremony has been refined for us by firms used in industry and engineering. Film is the tool for analysis of process where technological innovation or subtle abstraction on technological change is needed. In anthropology film is, not only the complete way of recording choreography, but also the most direct way of analyzing dance or ceremony, where so many elements are in motion together. In this situation human memory and note-book recordings become wholly inadequate and highly impressionistic. Traffic engineers face the same problem in analyzing highway bottle necks. It is the net effect of thousands of drivers that must be observed in motion. Film can become the safety engineer's vital data.

These applications lay down some guide lines for a practical research use of the ethnographer's movie camera. When you shoot do so with unbroken fluency,

plan your filming from one scene to another. Do not stop in the middle of significant action, even if this means the use of two cameras. Research unit-to-unit value lies in its continuity. The research possibilities of film drop off in direct ratio to the fractured character of the shooting. A snip here and there of cultural sequence has little value to film research.

Only the moving picture film can record the realism of time and motion, or the psychological reality of varieties of interpersonal relations. As an example, it is hard to evaluate the character of love between children and parents from still photographs, whereas film can record the family tempo, the nature of touching, how long, how often, and the way an older sister expresses fondness for a younger brother. The emotional chain is too broken in still photographs; its time slices are too far apart unless we have a camera that mechanically exposes a frame every five seconds, and even then the emotional tempo would be confused.

Communication in Three Families, by Gregory Bateson, illustrates the humanistic research value of the film. This observational training film for psychiatrists, is an unbroken record of two circumstances—giving the baby his bath and feeding the baby—in three families. Bateson selected these two episodes for saturated filming because he felt psychiatric students should be able to responsibly read the personality and psychological matrix established within families by so many processes besides the spoken word. Two movie cameras were used by two cameramen, Bateson and his assistant, in order to keep an unbroken log. Each time the camera ran out of film, the time break was indicated by cutting in the image of the next photographer. The importance of this experiment was that certain psychological aspects could be examined in the same way by any number of observers, so these aspects could be pointed out and the recognition transferred to interpretation of other psychiatric evaluations.

The circumstances suggested in the outline below are areas where the field-worker studying family culture in this country might shoot short but comprehensive sequences, scenes having fluent readable data, and, where an audience film was a commitment. Research scenes might be woven into a lengthy educational document, so that there would be both a research return and a story-telling film. Of course in another culture the circumstances and emotions attending similar function would be quite different.

#### *Shooting Script for a Day with an American Family*

A sleeping child wakes and responds to his immediate circumstances of well-being, of love or loneliness, of the familiar or unfamiliar.

Attention paid to children in the rush to get the day started, older children to school, father to his job.

Interpersonal contact during the rushed morning meal.

Proximity and emotional interchange between young children playing together, considerate, generous, rough, aggressive, cruel, emotionally together or very isolated—or perhaps all these.

Non-time meal: is it a social game? Or is it just to cram away food?

time, motion  
and  
interpersonal  
relations

Mother at work: interacts with children emotionally, or ignores them, pushes them aside.

Father at work: how he uses his tools: skillfully, with form and self-expression, lays them down with care? Or shows little skill, uses tools injuriously, drops them without affection or respect?

Father joins a social gathering for lunch with other workers: he is greeted jovially, other men show respect and signal his popularity, men listen when he talks; or crowd ignores him, greetings casual, they do not listen when he speaks.

Children respond to father when he returns from work: ignore him, cling to him, does he accept or reject their affections?

Children are a part of the adult meal, parents listen to children, respond; or children ignored, pushed aside, father only wants to talk to mother.

Time for bed. Is going to bed an affectionate game? How relaxed and happy are the children? How do they drift off to sleep: clutching each other, or relaxed? Twist and turn in bed, appear tense or resentful?

Each one of these suggested film scenes contains a complete unit of emotional and physical reality to be read and interpreted by any number of analysts. The key to the data is found in the fluency of motion by which so many attitudes of emotion and value are expressed. These behavior phenomena are often not clear in still photographs. Family studies with the still camera suggest this variety of experience, but these records remain impressionistic since the continuity of the experience is fractured. As Birdwhistell says, "One of the unexpected rewards of multiple re-examination of film is that many students for the first time get the idea that 'natives are human' (1963:58). In effect, the value of film is that it is alive and warm, while in a popular way still photographs are dead: from a purely scientific point of view this is also true.

lemme!

An Experimental Film Record: A Family's Day

Can valid data footage be made into an audience film, and through an audience continuity of record preserve scientific integrity? To test this possibility I made an experimental field film along the lines suggested above.

In conducting this experiment I had two major goals: to make as much film as possible with a budget of \$400 in a simulated field circumstance, and to shoot the film so there would be a maximum of undisturbed data creating an intelligible audience film. To attain these goals meant an experiment in production and arrangement that would require minimal cutting in the final production.

I also kept in mind the concrete field problem so methodologically the experiment would be of practical application to field anthropology. With this approach I decided to make as whole a view as possible of a family. This might be ideally filmed toward the end of an extended field study when rapport was strongest and ethnographic knowledge adequate.

Even under ideal circumstances film requires far more control and rapport than still photography. Making film cannot be compared to the still camera's unob-

trusive function, when used for orientation in the first weeks of a field expedition. Film-making, by the nature of its uninterrupted flow, is a formal procedure that requires the understanding and cooperation of a community or a family. A prestudy with the still camera could be considered an excellent introduction to filming, both in educating the actors and in researching the filming possibilities. The experimental film I am going to describe was made with this background. I was on intimate terms with the subjects. All of the family had been extensively photographed, and had been gratified with the feedback of their own images. You might say I made use of a year of my field time to achieve a relationship of this character. In fact, the whole native community had become used to my recording with cameras at social gatherings—along with good food, wine, and music.

In my simulated field situation, I had with me just 2000 feet of black-and-white 16 mm film, partly fast Tri-X and partly slow Panchromatic film. I was equipped with a Bell and Howell D. H. with three lenses (a wide angle, a medium, and a telephoto), a good movie tripod with a pan head, and a light meter. To add more scientific value I asked a collaborator to pace each scene with the Leica so that we would have both stills and film for laboratory study.

Our first task was what to sample in our native family's day: (1) What actually was going on during the filming period of two days; and (2) What the family agreed was important to present a cycle of their life. These decisions suggested only a few arranged scenes, the most important being a social gathering which had to be organized and required the second day of shooting. To have a comprehensive view it was necessary to go backward in time to pick up circumstances the family agreed were important. For example, because college was over for the summer we reviewed the routine of studying for college as our native showed us authentically where and how he studied. This pulling together of time elements can be culturally undistorting if the native directs his own role. This is a form of "socio-drama-interviewing."

native self image

The film was directed most of the time by this "acting out" technique. Our family was asked to do everything with just the same pace as they would always carry out their chores. This intent was explained clearly to the family's children, and after a few periods of tension, the family was able to relax and interact spontaneously before the camera.

tension

During the filming I constantly kept in mind long runs, and runs between actions, so that events could flow without over-cutting the film. Our whole expedition's supply of film ran through the camera in two days. While I was expending 2000 feet of film worth \$150, my planner was covering the same events with four rolls of bull-wound 35 mm film worth \$80. It should be evident that every minute of film was irreplaceable! Shooting as openly as I did for both research and screen film meant we had just one opportunity to make this document. Hence in the field circumstance we were gambling our whole film budget on one occasion, we would have no film for retakes. So we had to have control, structure, and an image of day in mind before we began to shoot. But the things that happened within certain native phases of the family day were spontaneous and uncontrived cultural phenomena. The scenes were positive samples of undisturbed reality preserving and offering genuine research opportunities.

The budget only one opportunity

I used 16 mm negative film. Ideally I urge you to use reverse film, as most television producers do, for it makes cutting your master film easier. We bought the best print we could order, a timed print that would be suitable for audience viewing. This print was cut to remove light fog from loading and a few camera failures. Rolls were simply spliced together in their proper order. The finished print was cut by about one-fifth to just under 1600 feet, about 45 minutes of film projected at 24 frames per second.

Our film was silent, but the circumstances of the film were rich with aural data. We decided to attempt to gather simultaneously at least some of this material. During the social gathering we taped conversation and singing, and for the closing we recorded putting the children to bed—a small investment of one roll of tape.

When the film was complete we borrowed a second tape-recorder and made a tape from selected parts of the master tape to go with the scenes of the social gathering and the children going to bed. This left 60 percent of the film silent. As this appeared disturbing, we filled in with guitar music that the family was fond of, plus overlaps of their own music. This was a concession to our audience, and in no way distorted the valid film content.

An anti-climax to the whole experiment was that the film was badly scratched by a faulty projector and we had to have a second print made! This meant that the mounted master negative. Friends told me this might take a week of tedious work, finally matching the negative in our cut positive, for we had not had our negative edge-numbered. Actually I cut some 1900 feet of film in 6 hours; for there was no cutting within the scenes. I matched rolls, cut out fog and technical failures, and spliced in series. This was a forceful demonstration of how little cutting actually went into this 40-minute educational film.

#### Final Figures for A Family's Day

The shooting stock, 16 mm neg.	\$150
Development of neg. @ 2¢ a foot	40
Print @ 3¢ a foot	100
Recording tape	4
Second print, 1600 ft. @ 5¢	80
Miscellaneous	26
	<hr/>
	\$400

Was there genuine research value in this footage? Two controlled tests were run—one in the Anthropology Department at Stanford University, and one at San Francisco State College—to weigh just what had been recovered by the film. To deepen this evaluation, the Leica stills of each scene were enlarged and exhibited for group study. Students wrote down as much data as they could observe from the stills. This gave rounded ethnographic insight of kinds of property, kinds of technology, costumes, and material values of the home. After this analysis the film was screened and in both experiments the students were able to extend their observations. In particular the students felt that the qualities of love, qualities of child-to-child and child-to-parent relationships, which were only implied in the stills, were clearly definable in the film. Nor could the stills tell anything about the tempo of the family's life.

Quite reasonably the film did offer these insights. This further supports our view of what film can offer anthropology—the emotional character of culture and the psychological content of human relationships.

### A Different Experimental Film: *The Sucking Doctor*

What might be the best possible research and audience film assuming the anthropologist had \$5000 to make a documentary? Would the basic problem change from the minimal budget film? The methodological challenge remains the same, to carry out an extremely demanding variety of observations within spontaneous cultural situations. If the filming effort is over-controlled and structured, we may have a film that projects the producer's image but fails to record an authentic happening. In one sense, the more impressive the operation the feather refined the research control has to be.

An experiment in the ultimate film research document developed out of Samuel A. Barrett's monolithic ethnographic film project sponsored by the National Science Research Council. Dr. Barrett's studies were not directed toward anthropological research with film, but were museological views of the last remnants of California, Northwest Coast, Plains, and Southwest Indian crafts and ceremonies. The goal was to carefully reconstruct sequences of the way Indian culture might have been before the days of massive cultural intrusion. Dr. Barrett's effort resulted in a brilliant salvage record.

Members of Barrett's staff, cinema photographer William Heck and anthropologists Robert Wharton and David Peri, were interested in carrying the record beyond Dr. Barrett's shorter documents into an embracing documentary that would offer open-ended research into all parts of a modern Indian ceremonial. Their approach sought for the contemporary Indian image in speech, habitat, clothing, and technology rather than a scholarly reproduction of classical culture that is pathetic.

Independently, with their own funds, they made an extreme effort at what is an uninterrupted documentation of a Pomo curing ceremony, in a two-hour film now called *The Sucking Doctor*. This film was the result of four years of planning a human relations within the Stewart's Point Pomo Indian community. Peri himself is part Pomo, a distant relative of a matriarchal religious leader and Indian revivalist, who was a central figure in the Stewart's Point community. In this Indian community they had filmed for Dr. Barrett various short studies, preparing acorn meal, weaving baskets, and so on, and Peri had repeatedly asked his relative for permission to film a healing ceremony. Finally the woman shaman consented, a date was set.

### Technology of the Filming and Methodological Control

Two elements were a necessity if this was to be a research film: (1) the complete ceremony must be filmed with uninterrupted sound and motion; (2) there must be controls that would allow the data to be held in authentic position for re-

research  
film

\* This report is based on conversations with Heck, Peri, and Wharton.

The finest equipment was rented, a Nagra tape recorder, an Auricon sound camera that recorded on tape as well as film, an Arriflex to be used as a "wild" camera that shot silently, and a Bell and Howell 100-foot load camera. The Auricon had a 1200-foot magazine with a 33-minute run, and the Arriflex a 400-foot magazine with a 12-minute run. Each camera had a zoom and a wide-angle lens. The Nagra tape-recorder was used as the major control of all sequence; it was wired to the Auricon so the film track had a synchronized signal that could be matched exactly with the sound flow of recorder. In turn, the continuous filming of the Auricon acted as a control over the Arriflex by optical comparison. Beyond these technologies, a minute-by-minute film log was made as well as an anthropological log, so that events not covered by the cameras could be related to the exact footage of film. Photographically, the Auricon was on a heavy tripod in a fixed position. Its only movements were modest panning, zooming in for close-ups and turreting to the wide-angle lens for a complete view. As the healing took place within a prescribed area which the film-makers could not enter, close-ups were filmed entirely with the zoom.

The Arriflex, which could be used on or off the tripod, had two functions: as a standby camera when the Auricon magazines were being changed; and as a roving camera which attempted to cover actions unobservable from the fixed position of the Auricon. Footage, principally from the Arriflex and to a limited extent from the Bell and Howell was cut into the Auricon film in the final editing whenever it was filling in for the Auricon, or when it had supplementary footage that was important to the record. The team wanted this effort to be for both audience and research, so when the footage of the stationary Auricon became visually monotonous, the other material was cut in to give the document film sense. This cutting in was in accurate time relationship. No live action was spliced in out of controlled sequence; a limited amount of static material unrelated to the action was spliced out of sequence to enhance the document for audience viewing. The master sound track of the Nagra tape-recorder was left complete and undisturbed on the final edited print.

Under William Heick's direction the dance house where the ceremony was to take place was prepared. There was no light in the house but a central wood fire. To keep the artificial light from being a distracting factor one lead wire was buried in the dirt floor and only two lights were hung: a thousand-watt flood up to the smoke hole, and a smaller filler light at one side to give detail in the shadows. Because of the limited light, the document was shot on Tri-X black-and-white film, judiciously one stop underexposed; this was compensated for by forced development in processing.

Though two nights of ceremony were filmed, the team decided they could only afford to present a finished production of one night of undisturbed ceremony, so the final film shows the activities of the second night, which they felt to be the more complete performance. In addition to the actual ceremony a small amount of footage was shot for cut-away material that might be needed in the making of a reference film. The total footage shot was 5800 feet for two nights of filming: 2600 feet for the Auricon and 1200 for the Arriflex, a ratio of 2:1 for the Auricon. The flow of the Auricon was cut as little as possible in the final version, with an editing ratio of 3:1 in favor of the Auricon. The final film is 1600 feet, which makes a

ratio of approximately 1:1 when only the second night's filming is considered. This is a most unusual accomplishment in film.

*Expenses for The Sucking Doctor*

Film and processing	ca. \$1200
Rental of equipment	150
Lights	40
Recording tape—4 rolls @ \$3.50	14
Miscellaneous	ca. 20
Fees to participants	200
Final print	278

Estimated total \$1902

Thus the total cost of *The Sucking Doctor* falls considerably below the \$5000 suggested by the Hitchcocks (1960). But Heick feels the Hitchcocks' figure was accurate for any overseas production. Also, Heick points out that many corners were cut with local economic know-how and technique beyond the skills of the average anthropological film-maker.

In final consideration, the team considered that they had made compromises to the audience film image. Robert Wharton felt it was halfway between an audience production and raw research footage. The question is: what research data might have been dulled or omitted? Conceivably breaking the monotony or cutting out and in from the second camera could have lost sequence evidence. The choice of lighting was a makeshift compromise in favor of dramatic effect. The only natural light was the fire and to make filming easier they used a high flood light as the main source of light for the ceremony. This was a modest distortion. Heick in afterthought suggested that they might have fed magnesium foil into the wood fire and used this for the major light source! Despite these compromises, *The Sucking Doctor* is an outstanding research film and probably the most complete documentary anthropological film made to date.

the dilemma

Conclusion

How is data film for research finally used? The realities of the film computing process are startling, because in effect, most research starts from the final achievement of film, back to the analysis of single frames, in much the same fashion as Muybridge analyzed animal locomotion. Gestell reduced film back to still frames (1945), and most biological film analysis tends to be a process of noting minute change from frame to frame.

Film's great asset to research is its automatic sequence control that allows for the most complete analysis of time slices. The very concept of "continuity" means ordered and unbroken sequence. When the researcher wants to analyze a process development in continuity, he must be able to control the projector, so with the Periscope (see footnote 3, Chap. 10). Another device does the same with the added advantage of sound. Ray Birdwhistell (1963:58) and Paul Ekman are among those who depend on such equipment for their research.

continuity



its photography in anthropology. In each nation, the and more than one and last, the persuasive realism, that in one name inhibits clinical study, and in another offers anthropology its most complete view of culture. The photographic impressionism that makes the scientist wary of camera records, also represents the comprehensiveness of film and still records, that allows us to respond to real experience. As anthropologists let us not lose sight of this brilliance.

Camera records can bring into the laboratory all the pitfalls of first hand observation. Let us make the most of this realism, and appreciate that the difficulty of photographic evidence is fundamentally the problem of scientific observation by any means—not some special fault of the camera record. If we want to use photography with more research acuity, let us constantly return to the instant of exposure. We may master how to read all details and relations within pictures, but the significant discovery will never be made if the vision that triggered the record is not equally careful. Film research imagery of culture can only come through enriched sensory perception.

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## social interaction

with the camera: an automatic interaction: accomplished without advance understanding  
multiple views allow to observe a patterned behavior recurring through time  
observation of microculture: spacing between people and body orientation

BYERS: "group": implies the participation by its members in shared and observable regularities of behavior. the pattern of these behaviors varies considerably but always within a range which is culturally narrow and specific and can be accounted for by factors in the context.

in general photographic notes should be handled in the same way as other field notes.

## interviewing with photographs

an invitation to come back

interview with photographs retains the same level of return in many visits: in verbal interview the level decreases.

the native is no more the subject of the interrogation: he is now the expert guide leading the fieldworker through the content of the pictures: the anthropologist is making notes about the photographs: it is easier to use a notebook or a taperecorder

methodologically the only way we can use the full record of the camera is through the projective interpretation by the native.

to avoid interpersonal tension the interviews are not made in the communities represented in the photographs: only in the case of land use and agricultural problems are natives interviewed on location.

photography can be also used for a study of inner states and value systems

: feedback of native material allows him to express his life feelings.

: the extreme experiment would be the same natives shooting their own films about their culture.

it is more difficult to lie about a photography than to lie about a verbal question, for photographing ~~scenes~~ scenes can cause violent feelings. fotos e ele t'afectada!

written field notes: no future chance of correcting

photographic observation: further interpretation more exact, any times needed

## computing and interpreting the cultural inventory

because the selection of objects and the nature of their grouping constitute nonverbal expressions of thought, need, conditions or emotions

: study of 22 houses of indians in the white city

valiò per a ocultureció de un poblet (NB en la gran ciutat: de gent / no de tornar, identificar-se...