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Anthropological Film: A Scientific and Humanistic Resource

We would be wise to visually document the disappearing varieties of patterned human behavior in the world.

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During the last decade anthropologists have become increasingly aware of the importance of film inquiry in discovering and studying the patterns and styles of human behavior which have evolved in the world. Understanding behavioral patterns and their development not only increases our understanding of human nature, but also increases our ability to improve human life, because such patterns can be related to the well-being of social organization and to human health (*1*).

The last decade has also seen a growing realization that the behavioral and organizational diversity of the human species, as it has evolved in separated regions of the earth, is now vanishing. With it, considerable information on human adaptability and potential is also vanishing.

Films that reveal the different ways of life of the world and the different ways of realizing basic human potential are of scientific interest and humanistic importance. The visual data they present reflect conditions important in cultural and behavioral evolution and reveal special expressions of the human ability to adapt, interact, and respond. To whatever degree we allow such data to vanish, we diminish our ability to understand our own species.

Our technological way of life, which has led to the accelerated worldwide culture change of today, has also created the quiet, portable filming equipment which facilitates visual inquiry in a wide variety of naturally occurring social and behavioral situations. In addition, a research film methodology has been developed which aims at maximizing the scholarly potential of the anthropological film records obtained. These developments have made it possible to use visual records as a means to discover, study, and preserve otherwise unobtainable human behavioral data from changing and vanishing ways of life.

Salient Developments in Anthropological Film

The importance of visual data in anthropological inquiry became obvious after the pivotal use of film research by Mead and her colleagues (*2*) to demonstrate culturally specific patterns of behavior on Bali. Shortly thereafter, Birdwhistell's discovery (*3*) of subtle, visible components in human communication from film records showed that film was indispensable for detailed analyses of human interaction. This was further supported by Hall's demonstration (*4*) of cultural difference in nonverbal human interaction.

During the 1960's the concept of producing anthropological film records as a permanent research resource began to take shape (*5*). Initially employed as a way to study child behavior and development in primitive cultures, the research film emerged as a way to study and retrieve data from changing cultures (*6*). By the early 1970's this development had led to visual sampling strategies geared to naturally occurring behavior and social situations (*7*).

One of the earliest extensive exploitations of such film records taken by others for the undiscovered data they possessed was made by Lomax and coworkers (*8*). Their study of patterns of human movement in dance and work, and their significance, would not have been possible without access to a growing body of anthropological films which contained retrievable data not necessarily sought or recognized by their filmers.

During the 1950's and 1960's anthropological film was also emerging as a medium through which knowledge about culturally divergent peoples could be more generally disseminated. Following Robert Flaherty [*Nanook of the North* (1922)], this movement began a period of new development after World War II with the works of Rouch (*9*), Marshall (*10*), Gardner (*11*), and Balikci *et al.* (*12*). Conceived as a means of better communicating the insights and knowledge of anthropological fieldworkers to students and the public (*13*), this movement has been further developed by Asch's extensively detailed and documented film studies of the Yanamamo Indians (*14*), and by the American Universities Field Staff's study of divergent paths to human adaptation in five modernizing cultures (*15*).

The 1960's also saw attention focused on the influence of cultural difference in the construction of film presentations. The view expressed by Ruby that "all

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motion picture footage of human beings is anthropological in that it contains information which can become data for anthropological research and teaching" (*16*) has roots in the pioneering studies of Adair and Worth (*17*) and, in more general terms, Metz (*18*). Pots do not need to be made by an archeologist to be of value to archeology; neither do films have to be made by an anthropologist to be of interest to anthropologists. Worth and Adair's study (*19*) showed that individuals in another culture reveal some of their differences in cognitive and perceptual organization in the films they construct. Such film productions are culturally marked forms of communication and may be studied as artifacts. The recent founding of the Society for the Anthropology of Visual Communication of the American Anthropological Association reflects the current interest in this line of inquiry.

Two distinct directions in scholarly inquiry are emerging from the various approaches to anthropological filmmaking which have evolved to date: (i) Films may be examined as "windows on the past," preserving information from nonrecurring events or changing conditions in the form of data which can be abstracted, organized, and reviewed. (ii) Films may also be examined as "mirrors of culture," which contain information on the cognitive organization, interests, and values of the filmmaker and reflect culturally specific communicative parameters.

The Research Film Concept

The basic research film method developed in the 1960's makes it possible to increase the permanent scholarly value of anthropological film for either of the categories of research interest outlined above. Film records meant to be sources of data on past phenomena are richer and more useful when they have been systematically prepared to maximize identifiability and interpretability. Similarly, productions that embody the cultural habits and interests of the filmmaker may be more readily interpreted when viewed in the light of the systematically preserved and annotated pre-edited film record.

What makes film such a powerful tool for inquiry into passing events is its unique ability to preserve a facsimile of visual phenomena by means of objective changes in light-sensitive chemicals. Because of this quality, film preserves information which may not have been recognized or appreciated by the filmer, including the unexamined visible context of the subject being filmed. With the still camera we can capture items, positions, and accouterments not noticed or thought worthy of consideration at the time of filming. With the motion picture camera we can obtain information revealing patterns and subtleties of process and development in human behavior and social interaction unnoticed or undetectable at the time of filming.

With such a film record we can review any event in relation to its antecedents, consequences, or context, according to changing criteria. We can explore first one and then another hypothesis until relationships emerge and present our findings visually. For example, selected frames from the film *Growing Up as a Fore* (*20*) are shown in Figs. 1 to 4.

In order for visual studies of vanishing culture and changing human organization to be sufficiently interpretable to stand as a permanent scientific resource, they must be shaped by methodological considerations which govern the investigation of nonrecurring phenomena. The basic problem is not deciding what sequences to keep, but making the full record recoverable and usable.

In contrast to making the usual type of motion picture, preparing a research film principally involves ordering and annotation. It is preferable that all episodes be kept in their original chronological order and accurately identified as to time, place, person, and subject. The filmer's objectives, interests, and incidental observations must be included in the annotation, and the filmed data should be keyed to related observations and information of other kinds. Such annotation provides the basis for indexing according to time, place, person, subject, and object, while facilitating evaluation of the subjective considerations influencing the filmer.

By taking advantage of open-ended

Fig. 1. Handling the young Fore child. Analysis of approximately 70,000 feet of research film records made of the way of life of the Fore people in the New Guinea Highlands by the author revealed the culturally specific practice of permitting infants almost continuous physical contact with the mother or one of her close associates. Infants and toddlers were not even put aside for resting or sleeping. Naps were taken as desired by the children on the laps of their caretakers, even when the caretakers were occupied with daily tasks. A youngster could cease nursing for a nap and reawake with the breast still at hand. Even after the birth of a second child, a toddler wishing to sleep, rest, or play against his mother was not put off.

indexing procedures not based on a particular taxonomic system, we can build from this base, increasing the comprehensiveness and sophistication of the index by adding to it discoveries and identifications made by subsequent scholars. Since video tape can be digitally coded, we can build visual data search systems providing automated retrieval of preselected categories of information. The hardware for such video indexing and retrieval has also been provided by our modernizing technological culture.

When hypotheses, inferences, and statements are made solely on the basis of human observations of unrepeatable events, as is usally the case in anthropological field studies, review for verification and substantiation is very difficult. Yet such validation of findings is an important part of scientific practice, and it may be repeatedly required as new hypotheses change our point of view on complex phenomena. Having to rely only on the statements of a few observers retards the development of demonstrable knowledge. Insofar as a research film provides a window, however small or incomplete, on a past event about which statements have been made, it provides a means for verificatory study and review. It provides other workers with an interpretable visual facsimile of the original situation for repeated reexamination, and allows retrospective investigation in relation to the other documents produced.

Although anthropological research films can never be "complete" records, they nevertheless facilitate validative inquiry by (i) containing undifferentiated but discoverable information related to the statements made, (ii) possessing unimpeachable information permitting substantiation of statements made, and (iii) revealing biases which may have influenced the information selection in a study, and thereby elucidating forces and influences underlying the subsequently derived ideas, data, and formal statements. Anthropological film, organized and preserved as research film, thus provides new possibilities for validative inquiry and verificatory studies of past nonrecurring events of human behavior and cultural evolution.

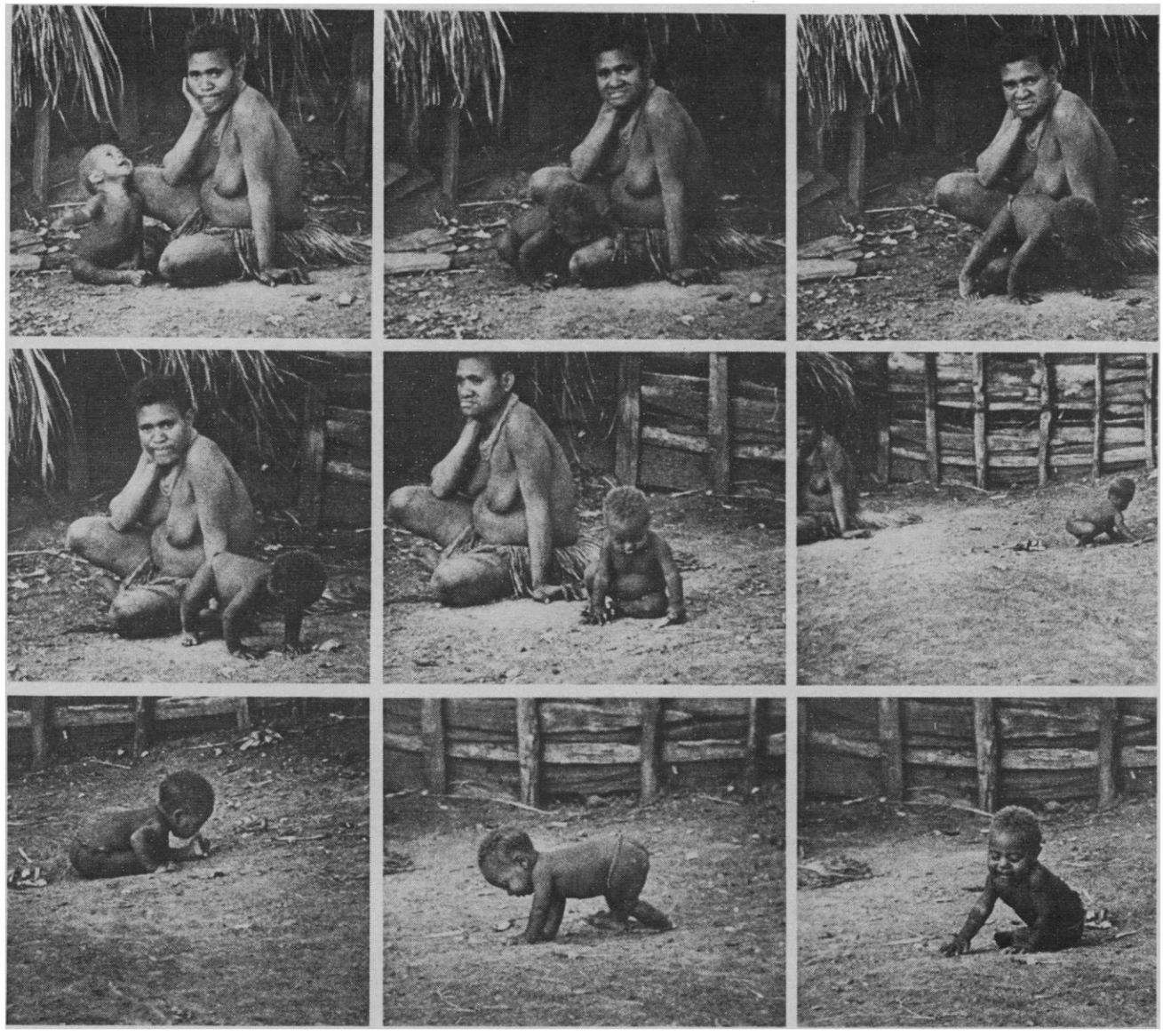

Fig. 2. Culturally specific early exploratory activity. From the research film record it was possible to isolate the characteristic Fore pattern of early exploratory activity. As their physical abilities develop, Fore toddlers begin to make brief exploratory excursions to nearby objects which have attracted their interest. At first these departures are brief, and the toddler does not go far from the accustomed sanctuary of the caretaker's body.

Value of Visual Inquiry in Contemporary Society

Visual inquiry can be a potent means of examining conditions and changes in contemporary society as well as of reexamining vanished ways of life. In all cultures (including the most modern and technological) perturbations, innovations, and strains continually occur in response to new opportunities and challenges. Frequently fading only to reemerge in new forms, these behavioral forerunners of the future often leave no record behind to help us unravel the dynamics of the social evolution they reflect. Anthropological film inquiry permits us to study in greater detail the components and patterns of human interaction and behavior characteristic of emerging social conditions; and it enables us to preserve them for sustained review of the dynamics of social and behavioral development in relation to the conditions which pattern such development.

Such information on human behavior and organization is of fundamental importance to humankind. It allows more detailed and accurate views of human response and development, and it can tell us more about ourselves and our interrelations than we could otherwise know. For example, visual records can reveal behavioral kinship—the actual, nonidealized patterned social interactions that characterize social organization and daily life. With a knowledge of behavioral kinship, we can compare the actual patterns of social behavior in a community with the idealized concept reflected by their kinship terminology. In more complex and mobile societies, this may be a more meaningful approach to the study of social organization. Similarly, film inquiry also facilitates examination of disruptive or obstructive behavioral patterns, such as those which may be associated with mental or social disorder.

Fig. 3. Body contact as refuge. The research film record also made it possible to examine the pattern of security-seeking activity typically resorted to by Fore toddlers when faced with something so unusual that they became frightened. Once the typical pattern was isolated, the film record was searched for this illustrative sequence.

Scholarly Use and Visual Credibility

Our ability to manage visual information for research and presentation is now much greater than it has ever been. With access to reliable visual resources, the new video technology can be utilized to see and understand mankind better and to communicate observations and findings. Video cassettes have lowered the cost and space required for copying and storing filmed data. With the recently developed technique of Xerox-like duplicating from library masters, virtually anyone can select bits of visual information from a more extensive film record. Scientists may search for particular categories of visual data; teachers may assemble their own educational films, or a group of their students may do so; graduate students may experiment with new methods of mixed media presentation; and scientists may inform their colleagues by using specially assembled report films. Video tapes which have been prepared can be retained as long as needed, and can then be erased and reused for other purposes.

It will only be possible to exploit this potential seriously when an appreciable supply of reliably identified, annotated visual resources revealing the phenomena of the world becomes available. When the scholar, student, teacher, and filmmaker begin to have access to large visual data banks with

flexible review, cross-indexing, copying, and editing facilities, we can begin to realize the full power of visual images of the human condition as a means of understanding and learning.

Much of the educational film seen today is dull—frequently because what is seen does not appropriately or convincingly support the spoken message, or because it is so obviously contrived to support didactic concepts as to be annoying or boring. One source of this difficulty is an insufficiency of coherent footage. Too often it is necessary to cover visual inadequacy with verbal construct. Without access to a wide range of accurately identified visual resources, it is very difficult for the low-budget educational filmmaker to escape this difficulty, but with such access he can begin to move toward the firmer visual coherence required by genuinely visual presentations. Because such visual presentation is richer in the kind of phenomenological information with which everyone has direct personal experience, a viewer can

Fig. 4. Learning the Fore skills of life. The young Fore child's approach to learning those things which will enable him to become a functioning Fore adult was determined by examining research film records. Facial expressions as well as character of interpersonal interaction are often clues to interest, aversion, cooperative intent, competitive stance, and so forth. Relying on such clues and observing children's activities at different ages made it possible to elaborate the behavioral patterns characterizing the Fore approach to child training. A Fore child enjoyed abundant opportunity to observe at close range the activities of his mother or caretaker, a consequence of the sustained physical proximity with caretakers enjoyed by the Fore young (top row). The lack of restraints placed on their exploratory behavior allowed children to pursue preference and thus gradually extend their interests, inquiries, and experiments into the larger arena of their hamlet and lands (middle row). As the children grew older, these initially exploratory impulses began to dovetail more and more with the socioeconomic objectives of their hamlet mates (bottom row).

more readily relate the insights and information being presented to his own sense of reality.

As of March 1974, *National Geographic Magazine* had a circulation of 8,489,679. This is extraordinary for a magazine sold only by membership. Obviously the curiosity to know about the rest of the world is real, and the attractiveness and power of visual display of humanity and the world is great. In part the success of *National Geographic* reflects the public belief that it is accurate, that its material is fully researched, and that misinformation is shunned. Pictorial publications which have not achieved this reputation have not been so successful. This is an important lesson. Filmmakers would be wise to work with accurately identified and annotated source materials when making films meant to be informative.

Ethnographic Film Centers

Before we can assemble visual records as a scholarly resource and make them accessible for study and use, there has to be a place to put and preserve them. Centralized accumulation and annotation of visual records according to systematized indexing and retrieval methods provides the essential quantum leap from fragmentary, hard-to-interpret, hard-to-locate films to a genuine scientific and humanistic resource. Without such facilities individual anthropologists and filmmakers have no way to make their films accessible to others as sources of visual data. Very few have a way to even temporarily store their unedited original films where they will not deteriorate, become disorganized, and disappear. Usually one or two short films edited for public presentation are all that remain to mark the earlier existence of a much richer and more extensive body of potential visual information, and even these disappear over time.

Although archives for feature films do exist, and there has even been an International Federation of Film Archives in Brussels since 1938, there are as yet no ethnographic film study centers where filming, as scholarly inquiry, can develop in concert with collection and annotation of the visible phenomena of changing and vanishing ways of life. As a result, only a fraction of the anthropological film presently being generated is being accumulated as a scholarly resource. Even valuable film documents already made are not being preserved, in spite of such commendable pioneering efforts as those of the Institut für den Wissenschaftlichen Film in Germany and the Comité international du Film ethnographique et sociologique in France.

In part this has been because the concept of film as a source of discoverable data on past events has developed only recently, and until recently, there has been a tendency to treat old anthropological films like the old ideas they were often constructed to demonstrate. De Brigard (*21*) has shown the importance of changing anthropological concepts and evolving trends in filmmaking in the movement toward realizing the potential of anthropological film as a research resource.

By overwhelming majorities in plenary session both the American Anthropological Association (1971) and the 9th International Congress of the Anthropological and Ethnological Sciences (Chicago, 1973) passed resolutions calling for urgent programs to preserve the visible data of vanishing cultures and changing ways of life. The Anthropological Film Research Institute, Washington, D.C., the International Commission on Ethnographic Film, Paris, and the Society for the Anthropology of Visual Communication are participating in an effort guided by Margaret Mead to establish and fund the needed worldwide facilities and programs.

Until these facilities and programs come into being, we will continue to lose for all time information on those few remaining isolated societies which still embody independently evolved patterns of human behavior and expressions of human adaptability and potential. And we will continue to lose information on our own evolving patters of behavior as we adapt to meet the future.

Summary

More than a scientific endeavor but not strictly one of the humanities either, anthropology stands between these basic kinds of intellectual pursuit, bridging and contributing to both. Not limited to natural history, anthropology touches art, historical process, and human values, drawing from the materials and approaches of both science and humanities. This professional interest in a broad understanding of the human condition has led anthropologists to adapt and use modern cameras and films to inquire further into the variety of ways of life of mankind and to develop method and theory to prepare anthropological film as a permanent scientific and humanistic resource.

Until quite recently the evolution of human culture and organization has diverged in the hitherto isolated regions of the world. Now this divergence has virtually ceased; we are witnessing an unprecedented period in human history —one where cultural divergence has turned to cultural convergence and where the varieties of independently evolved expressions of basic human potential are giving way to a single system of modern communications, transport, commerce, and manufacturing technology.

Before the varieties of ways of life of the world disappear, they can be preserved in facsimile in anthropological films. As primary, undifferentiated visual information, these films facilitate that early step in the creation of new knowledge which is sometimes called humanistic and without which scientific application lies dormant, lacking an idea to test. In keeping with the two scholarly faces of anthropology, humanistic and scientific, anthropological films may provide material permitting both humanistic insight and the more controlled formulations of science.

The lightweight filming equipment recently developed has been adapted by anthropologists as a tool of scholarly visual inquiry; methods of retrieving visual data from changing and vanishing ways of life have been developed; and new ways to reveal human beings to one another by using such visual resources have been explored. As a result, not only can anthropological film records permit continued reexamination of the past human conditions from which the present was shaped, but they also facilitate an ongoing public and scientific review of the dynamics of the human behavioral and social repertoire in relation to the contemporary conditions which pattern human responses and adaptation.

How man fits into and copes with the changing world is of vital interest and concern. Visual data provide otherwise unobtainable information on human potential, behavior, and social organization. Such information, fed into the public media, facilitates informed consideration of alternative possibilities. By contributing to a better informed society, such films will help make our future more human and more humane.

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Rice Breeding and World Food Production

Revised research practices and greater international cooperation will advance the green revolution.

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In this article I discuss the relation of technology to the green revolution, the role of plant breeders in inducing change in stagnant agriculture, and the tools required by production scientists to increase yields of basic food crops in developing countries.

The words "green revolution" constitute an ill-chosen term applied by the world press to certain recent changes in the culture of wheat, rice, and, to a lesser extent, other cereals. This term has unjustified overtones of magic or miracles. But, in fact, it describes the modification and application of accumulated information developed over past decades in North America, Europe, and Japan to cereal production in the developing countries.

The green revolution is dependent largely on new varieties with higher yield potential. The new rice and wheat varieties resulted from two fundamental varietal changes: (i) a drastic shortening of straw to reduce lodging and to increase the ratio of grain to straw, and (ii) a marked increase in adaptability over latitude, elevation, and a range of other environmental factors.

It is clear that the new varieties must be tied to improved husbandry. Seed alone induces little change. A complex of seeding rates, water and weed control, adequate fertilizer levels and timing, and so forth was developed for the new varieties. The combination of new seed and improved cultural practices is necessary to achieve the potential for greatly increased farm yields.

This package of varieties and husbandry contains only the potential for change. The extension of this technology alone does not automatically stimulate production, especially in the impoverished agricultural sector represented by small, subsistence farmers. Thus, the final component essential for change is effective and sustained governmental commitment and incentives for bigger harvests. This includes attractive farm prices, credit, availability of inputs, transport, drying, and storage.

What has the green revolution accomplished? In the crop year 1972–73 there were an estimated 27 million hectares in the new small grain varieties of which rice accounted for about 15 million hectares. It is difficult to estimate the yield benefit of the new varieties because they are usually grown on the better land. Discounting this factor, it appears that the new varieties contribute an average of at least an

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