

## Comprehension of Transitional Editing Conventions by African Tribal Villagers

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*In a naturalistic field experiment, 40 subjects from the Pokot tribe of western Kenya participated in a study to determine the comprehensibility of two film and television editing conventions. Information about how to dip cattle to kill parasites was presented in four ways: (1) in narrative format with live storyteller and forward chronology; (2) in narrative format with live storyteller in reverse, flashback chronology; (3) in video format in forward chronology; and (4) in video format in reverse, flashback chronology. The substantive content was identical in all four treatment conditions. Subjects in all four treatment groups were equally skilled in understanding the basic elements of the narrative, including the ability to comprehend information that was presented nonsequentially.*

Many people have heard anecdotes about what happens when people who have never seen film or television encounter it for the first time. Forsdale and Forsdale (1966) recount the experience of John Wilson, a British filmmaker who made a film about malaria to be shown to people who had never experienced film before. Although the film focused on the efforts of a sanitation worker to remove standing water from local areas to reduce the breeding areas for mosquitoes, the viewers claimed that the only thing they had seen in the film was a chicken. The authors suggest that perhaps the chicken in the corner of the screen was the only familiar object for the viewers.

In another familiar anecdote, the filmmaker John Humphrey found that "if you showed a fly . . . in close-up, and it filled the screen . . . [the

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*In F. Korzenny & S. Tins Toomey (Eds) Mass media effects across cultures. Beverly Hills: Sage, 1991 (pp. 110-129).*

audience would comment] 'We don't have flies that big' " (Forsdale & Forsdale, 1966, p. 612).

Although these anecdotes are provocative and amusing, they provide little insight on how people with no prior experience with the media of film or television make sense of what they have seen. If broadcasting is to be used to communicate about nutrition, health care, sanitation, and development, systematic efforts to examine the comprehension skills of television-naïve viewers are essential.

Aggarwala (1978) explains why broadcast development news can be so useful in bridging the enormous gulf between the First World and the Third World: at the very least, such information serves as an agent of change by motivating individuals to seek out additional information. As a tool of technological modernization, broadcasting brings its own agenda, with its specific techniques of editing, particularly in the way narrative is structured, the manipulation of time and space, and the use of image-sound relationships to develop associations between ideas. The information provided by television has its own particular form and structure, and the extent to which this structure presents barriers to access is examined here.

Viewers process television images and sounds with the same cognitive apparatus they use in making sense of the rest of the world. Although traditional theorists of "media literacy" have noted that the skill of decoding film and television messages is a sophisticated one, most recognize that mental processing of these messages does not require formal training (Pearl, Bouthilet, & Lazar, 1982). Research with young children has suggested that some combination of developmental age and experience with the medium is necessary to successfully decode the complex array of cuts, zooms, pans, music, and other techniques commonly used in film and television editing (Abelman, 1990; Anderson, Lorch, Field, & Sanders, 1981; Lesser, 1974; Salomon, 1979).

The impact of such characteristics of the media of film and television, however, has been subject to much speculation (with considerably less empirical evidence), from the early psychologists at the turn of the century (Munsterberg, 1970) to communication theorist Marshall McLuhan (1964) to cognitive psychologist and communication scholars of the present day (Messaris, 1987; Salomon, 1979; Worth & Adair, 1972). The theoretical justification for the systematic empirical study of editing conventions and other formal characteristics of the media is its potential, over time, for shaping the cognitive and perceptual skills of the users (Salomon, 1979).

Recent research has attempted to examine the comprehensibility of different editing conventions by examining the reactions of adults who

have never seen it before (Hobbs, Frost, Davis, & Stauffer, 1988). Previously, empirical studies of the comprehension of editing conventions or "formal features" of film and television have relied on the use of young children as subjects (Rice, Huston, & Wright, 1982; Salomon, 1979). Not surprisingly, young children fail to understand many common editing conventions, but researchers attribute the lack of skill in decoding both to the combination of children's developmental level and their lack of experience with the medium.

The use of adult subjects new to the experience of watching film or television allows researchers to separate the variables of developmental age from experience with the medium, a problem not possible to examine directly in the United States, where young children are routinely exposed to large amounts of viewing at a young age. Television-naïve adults are a rare and rapidly diminishing group of people in a world where the rapid modernization of telecommunications technology brings video images to people in remote areas of the world. Such information could be useful in the design of televised messages for particular populations, including young children and people from Third-World nations who are receiving televised information for the first time. In addition, a better understanding of the natural strategies for processing audiovisual information could provide a valuable arena for further systematic exploration of visual-cognitive skills in general. Such evidence may help explain the communicative and persuasive power of the medium of television as it compares with other communication tools.

This chapter reports on a naturalistic field experiment conducted with a small sample of Pokot villagers in northwest Kenya with no experience with film or television. We compare the comprehension of a development message, presented within a familiar context, in both video and live storyteller formats. Because of the unique nature of the population (from a remote section of western Kenya) and the small sample size, this research is an exploratory examination of the comprehensibility of different presentational formats commonly used to edit television programming.

### COMPREHENDING THE STRUCTURE OF FILM AND TELEVISION

What types of intellectual activities are involved when viewers process audiovisual messages? There are at least three critical processes to the task of decoding televised messages. In examining the comprehen-

sion skills of people who have never before seen film or television, we must consider the intellectual demands involved in processing such information, which may pose challenges for the naïve viewer. First, the visual and auditory information must be recognized as representations of actual objects and events. When we consider this skill from the point of view of traditional people of Africa, the people and events which appear as two-dimensional images on the face of a small rectangular box must be interpreted as representations of actual living persons and physical objects. Developmental evidence with children shows that American babies as young as 9 months will watch television in a way that suggests they recognize the people and events displayed (see Lesser, 1974, for review).

However, people from cultures that do not engage in two-dimensional representation (painting, photographs, representational drawing) frequently lack skills of pictorial representation as measured by conventional psychological tests (Deregowski, 1968a, 1968b). Although this skill is not universal, the recognition of two-dimensional images as representations of actual events that appear on a black-and-white television screen does not appear to be an obstacle to the Pokot villagers from the region under study, even though this cultural group does not engage in pictorial representation (Hobbs et al., 1988).

Film and television require a second level of processing that involves the decoding of symbols displayed on television that are non media-specific, symbols that are commonly understood by members of the culture, like language and gestures. The use of language, in particular, is a non media-specific code that must be decoded by viewers in order to understand the televised message (Rice et al., 1982). But when an off-camera narrator is used, where the viewer hears the voice of an authority without seeing the individual who is speaking, the skill of decoding and interpretation may become potentially more challenging. Other commonly used codes are non media-specific, particularly pictographic and gestural codes. Gestural codes are especially important on television due to the importance of physical action in many televised messages.

Some of these non media-specific codes have been found to dramatically influence children's attention and comprehension, with action, physical activity, changes in characters, and unusual sounds and music being the types of non media-specific codes that rank high in perceptual salience among young children, and even among adults (Anderson, 1981; Rice et al., 1982).

Research with adults with no experience with television has not yet determined whether the nonmedia specific codes used in televised messages are effectively comprehended, and whether or how nonmedia specific elements of the visual display are used as cues. However, in a study of the comprehensibility of point-of-view editing techniques it was found that most of the message was comprehensible to naive viewers (Hobbs et al., 1988). This may be a result of the relative ease in decoding the non media-specific codes, which included gestures, facial expressions, language, and action.

The third crucial process involves the ability to decode the symbols that are unique to film and television editing, the media-specific symbolic codes that are used to manipulate point-of-view, location in space, temporal sequence and order, pacing and rhythm, and specific visual effects including fades, dissolves, and wipes. These complex codes, which form the basic aesthetic building blocks of the media of film and television, are practically invisible to habitual viewers and have fascinated film and communication scholars for years (see Andrew, 1976, for review).

In examining the range of media-specific film and television editing conventions, it is valuable to identify a number of significant techniques, including point-of-view editing conventions, transitional editing conventions, and analogical editing. Point-of-view editing conventions are used to display different images within a single scene; shifts in camera position are used to bring the viewer into the scene by simulating the act of moving to a new position (Hobbs et al., 1988). For example, many film and television formats show in rapid succession a long shot, a medium shot, a close-up, a reaction shot, and other types of shots that manipulate perspective.

Transitional editing conventions are used for more complex manipulations of space and time, sometimes within a scene, but more frequently to make a transition from one scene to another (Messaris, 1982). For example, transitional editing can be used to show an inferred action, where the beginning and end of an action are shown visually, but some intervening action is edited out to compress time. A transitional edit can also be used to shift location, or to shift time (either forward or backward). Today, viewers of typical Western film and television programs are expected to infer from the message content whether a simple cut merely changes the physical location of the action, the time in which the action takes place, or both time and space.

Turim (1989) has examined the transitional film convention of the flashback and reviewed the extensive psychological and historical

explorations of this technique in European, Japanese, and American filmmakers. Although the subject of discussion by film scholars, it is unclear whether such transitional editing conventions need to be "learned" by viewers or if they are immediately comprehensible by individuals who have never seen film or television. The research reported here attempts to address this issue.

Neilsen and Messaris (1989) have explored the comprehensibility of non-narrative editing conventions commonly found in television advertising. They found that American viewers were not particularly skilled in interpreting "analogical" editing techniques, editing that juxtaposes a product with an image where an analogy is implied between the product and the image. Viewers with television production backgrounds were more skilled in verbally describing the implied visual analogy, suggesting perhaps that some combination of experience and education is necessary to explicitly recognize the communicative meaning of analogical editing techniques.

Bellman and Jules-Rosette (1977) used informant-made video and film as a tool to examine cross-cultural differences in the production of mediated messages. As a contribution to image-based ethnography, their work found particular differences in how people in African tribal communities organized and structured their own video messages, their use of framing and composition, and their manipulation of time and space.

Bellman and Jules-Rosette found so many important differences in how Africans structured their own video messages compared with Western Hollywood production styles, they recommended that "if videotapes or films are to be used, a presentational format can be developed that has communication effectiveness for the particular cultural group" (p. 25).

## COMPREHENSION AND PERCEPTUAL EXPERIENCE

Scholars have hypothesized that the comprehensibility of specific audiovisual techniques may be explained by examining their relationship to naturally occurring perceptual skills (Hobbs et al., 1988; Messaris, 1982, 1987; Munsterberg, 1970). Those editing conventions that bear an analogous relationship to normal perceptual processes may be easier to comprehend than those that are arbitrary conventions. "The extent to which the interpretation of any particular kind of editing requires a

special set of skills . . . must depend on how much that kind of editing departs from everyday visual experience" (Messaris, 1982).

Visual inspection of the most common types of point-of-view editing techniques suggests that they appear to be similar to normal perceptual skills. The brain is well used to integrating multiple fragments of visual information to form a coherent scene; this is the essential work of visual information processing (National Conference on Visual Information Processing, 1974). The comprehension of point-of-view editing techniques may mirror the natural process of perceptual experience, so that viewers with no experience with audiovisual media are able to decode televised messages that fragment and manipulate point-of-view.

Previous research has found that naive television viewers were able to decode a video treatment using point-of-view editing as easily as a control group who viewed an unedited version with identical content (Hobbs et al., 1988). This finding may be due to the analogous relationship that exists between point-of-view editing techniques and naturally occurring perceptual skills. Point-of-view editing conventions simply provide multiple perspectives of a visual scene; when the camera shifts perspective, the visual effect resembles the act of physical movement to gain a different view. When the camera shifts to enlarge an image (as in a close-up), the visual effect resembles the process of paying attention, a naturally occurring perceptual skill.

But not all film and television editing conventions may be analogues of perceptual experience. Unlike point-of-view editing, transitional editing techniques may not be linked to basic perceptual skills, because the manipulation of time and space involves a rather complex array of inferences, which are highly dependent on the viewer's ability to interpret the message content and context. Transitional editing conventions frequently compress time, so that some events are not directly portrayed in front of the camera, forcing the viewer to make an inference from the visual information provided about actions or events that took place in the interim. Transitional editing conventions may also compress time in reverse by presenting the order of temporal sequence as in a flashback, using a visual representation of "memory" to show events in a reverse chronological order.

The value of examining the comprehension of transitional editing conventions by viewers who have never seen film or television may be examined as we consider the relationship between particular editing conventions and perceptual processes. Communication scholars have long noted that some film editing conventions appear to be similar to

perceptual processes, visually resembling some natural, visual cognitive skills (Munsterberg, 1970; Salomon, 1977, 1979). Other editing conventions seem like arbitrary symbols, without any resemblance to perceptual experience. Arbitrary editing conventions, then, would demand that viewers learn the appropriate interpretation of the code through repeated experience with the medium.

If transitional editing techniques are arbitrary conventions then, as a result, they will not be easily comprehended by naive viewers, because they would need to be learned. We hypothesize that the transitional editing technique of sequential time manipulation may be more easily understood than the technique of reverse (flashback) chronology, because the former requires only the single cognitive skill of inference making, and the latter requires two decoding skills—that of inference making and the skill of reordering the visual information into a chronological sequence. It is important to examine the unique problems of conducting cross-cultural research to investigate such theoretical issues of the comprehensibility of film and television editing conventions.

#### **CULTURAL ISSUES IN NATURALISTIC FIELD EXPERIMENTS**

Because of the ubiquitous nature of film and television in the lives of most people from Western cultures, cross-cultural studies of the comprehensibility of film and television are necessary to examine the role of experience in our comprehension of the medium. It would be virtually impossible to obtain a sample of Western people who had never been exposed to film or television messages in order to examine their ability to decode commonly used editing conventions. As a result, cross-cultural methodology, despite its unique strengths and limitations as a research tool, is the only viable approach to permit the examination of the role of experience with the media as it relates to the skills of effective comprehension of the symbol systems of film and television.

Cross-cultural studies of communication skills, particularly in the field of print literacy, have been conducted to explore the complex relationships between culture and cognition (Bellman & Jules-Rosette, 1977; Scribner & Cole, 1981). As with the 100-year history of experimental psychology, of course, one of the most important difficulties in the design of such research has been in the construction of appropriate measures of intellectual functioning. Scribner and Cole point out some

of the inherent weaknesses in using experimental methods with people from non-Western cultures, particularly the use of standardized tests and questionnaires, because problems of validity are magnified when the research is conducted in a culture that is alien to the investigators.

Anthropological research methods are occasionally employed in order to minimize the difficulties of measurement, by using less structured and directed measures, adapted to the individual, frequently employing open-ended questions. These methods are useful in overcoming the cultural differences that might be evident with more structured testing, but such methods may be faulted for the difficulty in generalizing beyond the specific case. Scribner and Cole recommend that some combination of both methods of measuring performance provides a check and balance on the individual deficiencies of each.

In the present study, we attempted to use more structured measures of comprehension and learning, because open-ended measures of performance had previously been successfully used to measure comprehension for a smaller sample of African tribal villagers (Hobbs et al., 1988) and we expected that more structured measures of performance would yield even better data quality.

### THE SAMPLE

Subjects were drawn from the Pokot of northwest Kenya. They were selected for study because they have been particularly isolated from any Western cultural influence. The nomadic, pastoral Pokot herd goats and sheep and are nonliterate. Only a small number of individuals have ever seen film or television, and they have no experience with formal education.

The Pokot use storytelling as an important form of cultural expression. Nearly everyone participates in the art, either as a storyteller or listener. Older children tell younger children stories that often involve animals. Sitting around the campfire at night, elders and warriors tell hunting tales of great bravery and daring. The Pokot have an intense rivalry with the Turkana tribe, who often invade Pokot territory to steal their cattle. Children listen with glee to hear of Turkana raids and the inevitable retaliation by the Pokot.

The Pokot do not use representational drawing in their decorations, preferring instead geometrical shapes and lines for body decoration and jewelry.

### OVERVIEW OF RESEARCH METHODOLOGY

Experimental research in the field is a daunting task, both for the complexity of the administration, the challenging physical conditions in a remote field setting, and the design and measurement problems that are unique to the setting and population. Conditions at the testing site were dry, dusty, and hot. The experiment was carried out during Kenya's dry season and temperatures during the middle of the day reached 90 degrees or more. The testing apparatus, including a color television monitor, generated by power from portable batteries, was set up in the shade of some trees near a watering hole where the Pokot brought their cattle.

Subjects were recruited near the watering hole after our field contact consulted with the elders in the community and offered them money and supplies. A translator worked with our field contact, translating from Pokot to English. Details of the construction of the treatment materials and the administration of measures are described below.

We examined two treatment variables and two medium variables to create a  $2 \times 2$  factorial design for the experiment, which involved the presentation of a development message about the usefulness of using a cattle dip as a means to prevent the spread of disease and to ensure the health of the animals. We examined the impact of medium by using the conditions of videotape and live storytelling as the methods of presentation; we examined the presentational format by using either a sequential or reverse chronological (flashback) approach to presenting the story.

In each treatment condition, subjects were exposed to the stimulus in small groups of ten. Each group was composed of equal numbers of men and women. Specifically, in the live sequential condition, ten subjects listened to a storyteller present to them a story about a man who had problems with cattle and successfully used a cattle dip to improve the health of his herd. In the live flashback condition, ten subjects listened to the storyteller present the identical story, in reverse chronological order, beginning with the healthy herd and moving backward in time to learn of how the cows and herdsman came to such good fortune.

In both the video sequential and video flashback conditions, videotapes of the story of how cattle are dipped were created at the testing site using the Pokot people themselves for actors. Both videotaped versions used a combination of medium shots, close-ups, and long-shots to compress time and space. In the flashback version, fade-outs to black

were used to suggest recall of events in the past. Dialogue was in the Pokot language and both videotapes were about four minutes in length and identical in verbal content to both storytelling (live) conditions.

It is worthwhile to note some of the technical difficulties of preparing such video materials in a remote field setting such as in Pokot country, hundreds of miles away from electricity, running water, or roads. Only a 1/2-inch VHS video camera and a 19-inch color monitor could be brought to the site, powered by a portable generator. As a result, both video presentations were created using in-camera editing, a procedure that is necessary when video editing equipment is unavailable. In-camera editing demands that each shot of the presentation is created in the order of the final sequence. For example, the first image to appear is shot first, then the next. This method is extremely time consuming and laborious, but it results in a videotape that appears to have been edited in a studio. Sixteen hours with camera, actors, sound testing, translators, and researchers resulted in two 3-minute videotapes, which served as two of the four treatment conditions.

### RESEARCH PROCEDURE AND MEASURES

Forty subjects from among the 220,000 nomadic Pokot tribe were asked to participate in the study, the subjects evenly divided between genders. Subjects were asked some questions about their exposure to media and other demographic information, and completed Part A of the Raven Colored Progressive Matrices. We used this general nonverbal measure of intelligence to determine whether variations in intellectual ability were related to first-time comprehension of television. Part A of Raven's Matrices consists of 12 colored, multiple choice items. Each item consists of a pattern from which a piece is missing. Below the pattern are six choices, only one of which belongs in the pattern. This nonverbal test of intelligence is specifically designed to reduce dependence on acquired knowledge and keep cultural content to a minimum while calling upon reasoning skills. According to Jensen (1980), the Raven test is

generally regarded as one of the most "culture-reduced" tests, being wholly nonverbal and expressly designed to reduce item dependence on acquired knowledge and cultural and scholastic content while getting at basic processes of intellectual ability. (p. 570)

Subjects assigned to the two live storyteller treatments simply listened to the storyteller in small groups. Subjects assigned to the two video treatments viewed the video presentations on a 12-inch television monitor.

After exposure to one of the four treatments, each subject was questioned individually to determine comprehension by responding to a series of seven questions involving the comprehension of the story elements, facts which were related to the action, dialogue, and narrative. For example, these questions inquired about subjects' ability to describe people and animals portrayed visually, to determine the chronological order of events, and to restate the verbally presented information about ticks, disease, and the cattle-dipping procedure. A question about the chronological order of events was used to determine whether subjects in the flashback conditions could appreciate the reversed presentation structure of the information. Specifically, three of the comprehension questions concerned information that was presented only verbally; three additional questions concerned information that was presented verbally with accompanying matched visual presentation of the message content (in the two video conditions); and one question required the identification and reordering of temporal sequence. Comprehension questions were designed so that it would be equally possible to answer them in all four treatment groups but required careful attention to elements of narrative structure, plot, characterization, and actions. Performance on these questions was used as the measure of comprehension.

Villagers were asked to report information about themselves, including their age and social status. Pokot men are differentiated into three status groups (elders, warriors, and headmen) that reflect their roles within the social group. Pokot women are differentiated by their marital status only. In addition, information about their exposure to elements of Western culture was also gathered, including their experience with radio, newspapers, photographs, and film.

To compensate the villagers for their participation in the study, the community was provided with the chemical liquid needed to create a cattle dip. In addition, small amounts of money were paid to those who participated in the experiment, including the elders, the participating subjects, the storyteller, and the actors who performed for the videotape presentation. But because this research was concerned primarily with examining the comprehensibility of editing conventions, no systematic measures of the value of the development message were undertaken.

TABLE 8.1 Mean Comprehension Scores by Medium and Treatment Conditions

<i>Medium and Treatment</i>	<i>Comprehension</i>	<i>N</i>
Storyteller sequential	6.6	10
Storyteller flashback	6.8	10
Video sequential	6.7	10
Video flashback	6.5	10
Treatment effect	$F(1,34) = 0.06, p = .80$ NS	
Medium effect	$F(1,34) = 0.21, p = .65$ NS	
Interaction medium and treatment	$F(1,34) = 1.16, p = .29$ NS	

## RESEARCH RESULTS

When we examined the comprehension scores from the four treatment groups, we found no significant differences across the four treatment groups. As shown in Table 8.1, comprehension for all treatment groups was high, with no significant differences between those exposed to video treatments compared with those exposed to live storytellers. In addition, there were no significant differences between those who were presented information in a sequential order compared with those who were presented information in flashback temporal order.

Neither age, intelligence, nor social status was significantly related to scores on the learning and comprehension tests. We found that some of the variation in the learning and comprehension scores could be explained by differences in social status. Multiple regression analysis was used to determine the contribution of status to the learning and comprehension variables. Approximately 20% of the variance in the learning scores was explained by differences in status among the villagers (multiple  $r = .44, r^2 = .194$ ). Similarly, about 16% of the variance in the comprehension scores is explained by differences in status (multiple  $r = .39, r^2 = .152$ ).

In addition, differences in social status also explained some of the variance in the intelligence scores. About 19% of the variance in the intelligence quotient scores was explained by social status (multiple  $r = .43, r^2 = .185$ ). Elders clearly outperformed warriors, headmen, and married and unmarried women in both learning, comprehension, and intelligence.

We found that the recency of exposure to radio and film was correlated with lower comprehension scores. Only 35% of the sample had

any exposure to film, and in all cases, this was a single experience with a development film made by the Kenyan government and shown to a group in a nearby village. In contrast, 80% of the subjects had exposure to radio (also run by the government), with most claiming that on at least one occasion in their lifetime they had heard news programming, even though this programming is not spoken in the Pokot language. Correlations between exposure to radio and performance measures show that Pokot villagers who had more recent exposure to radio tended to have lower comprehension scores ( $r = -.24, P > .10$ ). Subjects with more recent exposure to film tended to have lower comprehension scores ( $r = -.34, P < .05$ ). This evidence suggests that the novelty of viewing television may have caused those subjects with less experience with the new medium to be more diligent and motivated than those who had seen a film or had heard radio recently.

## DISCUSSION

In this study, we sought to examine the comprehension and learning skills of a small sample of African tribal people who had no prior exposure to the medium of television. In particular, we were interested in viewers' ability to decode messages presented through two different transitional editing conventions as compared with their ability to decode messages presented in two different traditional oral narrative forms.

The Pokot villagers showed high levels of ability in comprehending the basic elements of the televised narrative, including recall of information presented through verbal channels only, and information presented both verbally and visually. Most important, they demonstrated the ability to reconstruct the temporal order of a sequence of events that was presented in reverse chronological (flashback) order. We comment on both methodological and theoretical issues relevant to this study below.

### *Methodological Issues*

The use of structured instead of open-ended measures of comprehension permitted us to compare subjects in four different treatment groups but may not have captured subtleties in the knowledge that the Pokot villagers possessed. Both structured and open-ended measures should be included in future research investigations of comprehension in cross-cultural settings. Because of the need to translate from Pokot to English,

structured questions serve a valuable purpose by simplifying the work of the translator and minimizing interpretations based on translated data. With open-ended questions the translator has the challenging job of repeating back exactly what the subject speaks, but in structured questions, the translator and the researcher are aware that the only relevant issue is whether the subject's response was correct or incorrect. This expectation may increase generalizability of the accuracy of the data but may cause both the translator and researcher to overlook subtle elements of a subject's response that illuminate the quality of comprehension. Although relying on translation is a built-in weakness of this type of cross-cultural research, and although responses to open-ended comprehension questions suffer from lack of generalizability, it seems preferable to collect the closest representation of the subjects' responses by coding their direct responses to open-ended questions.

Design of the message to be communicated needs to include the Pokot elders themselves in a far more intimate fashion to ensure that the message is relevant and truly informative. We had expected that the message content of cattle dipping would be more intellectually challenging than a non-development message. Our field contact suggested the message content would be new information to the Pokot. Yet the Pokot proved to be familiar with the process of cattle dipping, even though none had actually observed the procedure.

We heed the advice of anthropologists on the practical difficulties of experimental fieldwork in Africa, as Scribner and Cole (1981) note the myriad of difficulties, from lack of roads, to lack of cooperation from the subjects, to lack of privacy in administering surveys—always unanticipated and unexpected problems that profoundly affect the research project. Beyond these practical problems, however, the most difficult to remove is the problem of the Western researcher's expectations and bias. Only a sustained length of time in the field, living with the population under study, can alter that critical obstacle.

Finally, there is a need to ensure that the measurement of intellectual functioning be more directly relevant to the skills and environment that are found within the culture. In particular, we found that the use of Raven's Progressive Matrices did not provide a useful measure of intelligence for the Pokot villagers in our sample. When observing the villagers' response to our questions, it was apparent through their nonverbal behavior that they felt quite competent in answering comprehension questions about the content of the televised message; in contrast, they seemed tentative and anxious in responding to the Raven's

Matrices. Cross-cultural psychologists have long suspected that the actual physical materials of commonly used Western measures of psychological functioning might bias the performance of non-Western peoples. For example, when Price-Williams (1962) used photographs of familiar animals for his study of the sorting and classification skills of children in Africa, he found higher levels of functioning for this task than when children were asked to sort abstract shapes like triangles, squares, and circles. Development of performance measures that integrate the basic elements of Pokot life will be an important goal for our future research.

### *Theoretical Issues*

Despite the obstacles in conducting cross-cultural communication research, it is clear that even the rather complex structure of transitional editing conventions, with its reverse chronological order, presented no major difficulty to the comprehension skills of naive viewers. Subjects in all four treatment conditions were able to comprehend the basic elements of plot and action to gain information with a high level of competence, even though almost 70% of the subjects had never before seen film or television.

As we continue to see that naive viewers are able to decode editing conventions without any prior experience with the media of film or television, we have found that even with no experience, the existing cognitive and perceptual skills of the adult viewer are adequate for the task of extracting information from television programming that relies on transitional editing conventions to structure changes in time and space.

One future goal will be to determine which, if any, editing conventions are not easily comprehended by naive viewers, including the use of the blurry lens to convey dream states or the use of the subjective camera to suggest internal mental states, as when a shaky camera represents the perspective of a man with a hangover. In addition, there are a range of sound editing techniques that need to be explored for their comprehensibility to naive viewers, including the use of music to convey the mood states of characters and differences between the voice over of the unseen narrator as compared with on-screen authorities.

Based on the research conducted thus far, we believe that the content of the message serves as an aid to comprehension of different editing conventions. Perhaps viewers are able to use the familiarity of the



message content as an aid to "leapfrog" past the more complex task of interpreting the editing conventions. For example, viewers may use the familiar sounds and images in the decoding process to interpret the meaning of a particular cut that alters the time and space of the setting. Future research should vary the familiarity of the message content presented to naive viewers. What happens to comprehension and learning skills when the images that appear on the screen are not familiar representations of events and activities in their normal environment? It may be useful to explore the impact of the familiarity of message content as it affects the ability to extract information from televised messages.

Using a cognitive information-processing model of comprehension, we can speculate on the role of villagers' experience with information presented in narrative story formats. Because storytelling is such a vital part of their culture, it is likely that the Pokot possess strong mental schema for the comprehension of narrative. Neilsen and Messaris (1989) found that the comprehension of non-narrative editing techniques was more challenging, therefore it is important to assess the extent to which familiarity with the narrative format interacts with the comprehension of different editing techniques.

## CONCLUSION

Although the concept of media "literacy" has been a long-standing theme in the field of media studies, this research suggests that the process of decoding the audiovisual information that flickers across the screen bears little resemblance to the process of learning to read a printed text. Indeed, the very power of film and television to communicate to mass audiences comes from the fact that these media call upon ordinary and pre-existing perceptual and cognitive skills. Unlike print, viewers do not need to learn how to decode the messages. No experience with the medium is required.

Communication scholars might productively examine the non-Western editing conventions of film and television that are invented or discovered when Third-World people use film and video cameras for the first time, following in Worth's (1981) path to uncover the relationship between editing techniques, perceptual skills, and cultural values.

Hugo Munsterberg (1970), one of the first experimental psychologists at Harvard, posed a provocative question more than 75 years ago

when he saw the new medium of film become such a central part of American culture in the first decade of the 20th century. Why do film images hold us and engross us in their world of imagination? Why do they seem so real? Could the study of film enlighten us about human perceptual processes? Munsterberg never states explicitly that film editing techniques like the close-up or the use of transitional editing are conventions that were created by a creative artist upon reflective examination of his own thought processes. But we marvel at the communicative power of the "language" of editing conventions, invented by Western filmmakers nearly 100 years ago, which are easily comprehensible by people halfway around the world who have never before apprehended the technology of communication. It is no wonder that McLuhan (1964) suggested that television would create a "global village," through the use of a communication tool that demands no special skills or knowledge to comprehend.

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