THE SELECTION OF RECORDING EQUIPMENT FOR FIELD USE

Alan P. Merriam

Although recording devices have been used by anthropologists for a good many years, it is only within fairly recent times that developments in electronic recording have made these instruments practicable for almost all field work. Recording finds a place in many fields of anthropological endeavor; in music, linguistics, folklore, personality studies (as a projective technique), and general ethnography, among others, it serves as a most useful research tool. At present, then, the ethnographer is not so much interested in whether a recorder should be used, as in what type of recorder will give the best results. Those not directly concerned with the field of comparative, or ethnomusicology, in which recording bulks as a major part of the field operation, are often at a loss when choice of proper recording equipment for field work must be made. There are, however, a number of simple criteria by which recorders may be accurately judged even though the field worker has no detailed knowledge of recording devices. It is this selection of the recorder of best general service to the ethnographer which will concern us here.

Historically, recorders have developed from cylinder to disc to wire to tape; from heavy to light, from large to small, from an acoustic to an electronic basis. First in the field was the acoustic cylinder machine which gave results that could be interpreted only with considerable difficulty; such equipment is, of course, obsolete today. The choice among disc, wire and tape machines, however, still faces the ethnographer. Disc recorders seem to have almost no special advantages; the equipment is expensive, heavy, bulky and difficult to handle properly under mobile field conditions. Further, it is often complex in operation and mistakes are permanent since discs cannot be erased; blank records are also bulky and must be kept free from dust, dirt and scratches, often a difficult assignment in the field. Disc recorders of an embossing type are also available, but while light and relatively easy to handle, they are not built for anything approaching high fidelity recording. It is conceivable that they might be used for conversation between ethnographer and informant, but they are by no means sufficiently versatile to serve general needs. Although disc recorders have been used successfully on many occasions in the field, much more suitable and versatile equipment is presently available at considerably lower cost.

The wire recorder has distinct advantages over the disc machine; the equipment itself is light and portable, while the spools are much easier to handle than discs. Again, with wire an uninterrupted hour of recording may be made as opposed to the maximum of approximately five minutes with discs. On the other hand, the wire recorder in most cases gives lower fidelity than discs and music is often rather badly distorted. Wire snarls easily, causing destruction of part or all of a spool. Many wire recorders do not have a high speed forward wind thus making it impossible to play the last two minutes of the spool without listening through the preceding selections. While wire recorders present many features which

make them more satisfactory than disc recorders, their usefulness is limited in general to the recording of conversation between ethnographer and informant; for any more exact work, wire produces too high a degree of distortion. It should be noted that these remarks do not cover the most expensive wire recorders, some of which give excellent reproduction; such machines are certainly too expensive for general use.

This leaves only the tape recorder which, for all purposes, is unquestionably most effective in the field. Superior in fidelity to both wire and portable disc machines, it is at the same time portable, easy to operate and highly versatile. In addition, tape is easily spliced, and recordings may be edited to produce smooth performances. The range of styles, models and prices in the tape recorder field is both enormous and confusing to the layman, but while it is neither possible nor desirable to list all types of machines there still remain a number of basic points on which a decision can be reached; minimum requirements, at least, are not difficult to list.

Care should be taken initially in securing the best possible balance between portability and durability; both machine and case should be light in weight but sturdily built. It is, of course, sound practice to test the models before buying, and to ask advice of persons who have had field experience with a particular recorder. Simplicity of operation is also an essential point, for considerable differences are to be found among the various models. Some, for example, require extra time in threading the tape around the capstans or drive wheels, while others may be threaded in a single, simple operation. For general purposes, the fewer dials necessary to operate the machine, the better; essential are, however, at least a master switch and volume control, as well as a level indicator and controls for the reel movements. Various kinds of level indicators may be encountered, including a light of varying intensity, a " magic eye" arrangement, or a needle arm; the latter is most successful.

Hand in hand with simplicity of operation goes simplicity of setting up the machine; in some cases speed is essential, and thus a single case which includes both machine and microphone might have definite advantages.

Of basic importance is the rate of speed at which the tape is fed through the machine; with present models a tape speed of 7 1/2 inches per second produces genenally good results. Many machines currently feature a tape speed of 3 3/4 inches per second on the basis of tape saving, but this speed is not satisfactory for musical recordings although it may be used for talking. Again, many recorders—and these are usually the better models—may be adjusted to feed the tape at 15 inches per second; while this gives high fidelity recording it has the obvious disadvantage of high tape cunsumption. At present, then, the standard rate of 7 1/2 inches per second gives results which are satisfactory, at least, in all forms of recording.

A high-speed rewind is an essential; very few machines lack this feature. At the same time, the high-speed forward wind is equally essential

and is not found on a few of the current models; this point should be closely checked by the prospective purchaser.

Erasing devices may also be troublesome if a poor machine is selected. While all machines have this feature, which, of course, allows the tape to be used, erased, and reused endlessly, the erasing device should be so arranged that the tape cannot be wiped out accidentally. Further, a check should be made to be sure the eraser does its job thoroughly; a tape which has been poorly erased carries a hum, at least, if not the actual sounds of the previous recording.

The use of any recorder obviously presupposes available sources of electric power. All machines operate on alternating current at 110 volts, 60 cycles, unless of foreign make or specially made in this country; if reliable outlets for this type of current are present there is, of course, no problem. If, however, electricity must be supplied by the ethnographer, as is often the case, two possible courses are open—the use of a generator or of a car battery and converter.

An electric generator has both advantages and disadvantages. In the first place it is usually heavy and bulky, with a weight of perhaps 80 pounds or more. It is also noisy and must be placed downwind and at a considerable distance from the microphone; breakdowns, too, can cause embarrassment. Again, with a generator, some means of checking on the power supply must be available—a volt meter is essential in this respect, and a frequency meter a good idea. On the other hand, a generator provides a steady source of power which is usually constantly reliable; the generator can also provide light for night work, or electricity for any other instruments which require it. Good generators will charge wet cell car batteries while running. In general, a generator seems excellent providing the ethnographer is in a permanent or semi-permanent installation; the present author used a generator with excellent results in Africa while constantly on the move.

The second alternative is the use of a regular car battery; since six volts of direct current are produced, a converter must also be used to step it up to 110 volts and to convert to alternating current. Under these conditions the normal car battery may be expected to last from three to eight hours without recharging which means, of course, that the ethnographer must be near an establishment which has a charger. Again, if the recorder is used steadily two batteries may be required so that one may be used while the other is being recharged. If an automobile is available a certain amount of recharging may be accomplished by running the engine; this may even be done while recording is taking place. Most converters are simply handled and require little time to put into operation; at the same time they are relatively light and portable. The choice, then between a generator and battery-converter setup must be left up to the individual; if the location is more or less permanant, the generator seems best, but if the ethnographer is moving constantly, the battery-converter is perhaps more practical since it is the less expensive and somewhat more portable of the two.

Mention may be made here of the various miniature tape recorders which are operated by a combination spring and dry cell battery mechanism and which may be carried as easily as a portable radio. These machines will run at several speeds so that recording time varies; the principle advantage is portability. While such machines are perfectly acceptable for speech recording, fidelity tends to drop sharply with more demanding tasks unless exceptionally high quality microphones are used; the machine must be wound frequently, and tapes must often be exchanged. Generally speaking, no playback is possible, so that the tape must be transferred to another machine in order to be audible to any but the operator who can monitor with earphones. Replacement of the special batteries must also be considered.

Two kinds of tape are available, paper- and plastic-backed; the former is more economical and gives reasonably successful results, but the latter is recommended because of its more uniform reproduction due to smaller variation in thickness. The usual roll of tape is 1/4 inch wide, the usual spool contains 1,200 feet of tape; at 7 1/2 inches per second a single roll gives slightly more than half an hour of recording. Some machines record on the edge of the tape rather than the back; in this case, the tape may be turned over after the first half hour and re-run through the machine, thus giving an hour of reproduction. It should be noted that edge-recorded tape cannot be edited since two different recordings are present on the same tape.

Tapes should be stored in a cool, dry place whenever possible; over long periods of time dampness and heat may possibly cause the backing of the tape to separate from the body. Tape will also stretch if improperly handled, producing distortion if unevenly stretched, or lowering of pitch if evenly stretched. As far as can be determined at present, deterioration of reproduction over a period of time is negligible; as a matter of fact, tape seems almost indestructible under any but the most exceptional conditions.

Microphones are usually included in the purchase of a tape machine. These are generally satisfactory if properly handled, although they are not normally successful in recording very high or very low frequencies required for high fidelity; special microphones for this purpose must be purchased separately. Earphones for monitoring purposes are also often included in the price of the machine.

It is well to carry certain extras in case of emergency in the field. Fifty feet of shielded cable gives microphone maneuverability, and power cable may also prove useful in reaching a standard electrical outlet. Connections and extra tubes of all types required by the recorder should be available; a package of extra fuses for the converter is essential since fuses sometimes burn out under accidental overload. Scissors and scotch tape should be carried for splicing purposes. Finally, a kit of small tools for radio repair is essential; the number of repairs which the layman can make is often surprising, although care must be exercised, of course.

Some further general points on recording technique may be briefly noted here. Tapes should be marked, not only on the box and reel, but also in the recording by a code number announced by the ethnographer; this can save considerable confusion later. A tuning fork or pitch pipe A at the beginning of each song guarantees proper pitch on later playback. Microphone placement is a problem which must be met according to the siutation; in general, the informant should be kept at least 12 inches away from the microphone if singing alone, and at much greater distances in group singing. Except in special situations, the microphone should be kept off the ground and away from excessive heat and moisture. The problem of when and where to record is again one which must be met as the situation dictates; in some cases recording in the informant's most familiar surroundings will produce the best results, since he may remain at ease; in other instances, certain songs of a sacred or personal nature, for example, may best be recorded outside the familiar environment and away from other members of the informant's culture.

Prices of recorders and accessories can only be given sketchily. Good disc recorders are expensive, running in the neighborhood of $500-$1,000 and up, while wire recorders may be purchased for approximately $100-$150, although prices range up to at least $800. The least expensive tape recorder, which cannot be expected to stand up indefinitely under the demands of field work, and which does not give particularly high fidelity, falls in a price range equal to that of the less expensive wire recorders; a tape machine of average capability costs approximately $200-$300. For the specialist in music tape machines may be bought at prices ranging up to $4,000; in this case microphones must be purchased separately, the combination, however, giving the best possible results. Generators cost in the neighborhood of $250-$400, a converter which may be used with an automobile battery costs approximately $60. A good car battery should be purchased in order to obtain most satisfactory results in terms of functioning time without recharging. Plastic-backed tape retails at $5.50 per roll; paper-backed tape is considerably less expensive. In all cases, prices quoted above may be reduced through the discounts ordinarily given to educational institutions.

For the ethnographer, then, who wishes to use a recorder to obtain average or better than average results in all phases of general inquiry, the following basic equipment is probably indicated: a tape recorder in the middle-priced field, with a car battery and converter if standard electrical outlets are not available, to be used with plastic-backed tape. For more or less exacting recording, other equipment suggested in the preceding paragraphs may be used. In any case, in making a purchase it is well to keep in mind the points noted above if satisfactory results in field recording are to be obtained.