

Chapter 5

PRACTICAL SKILLS – LOCATION RECORDING AND AUDIO EDITING

Introduction

In this chapter, we look first at some of the practical aspects of location recording – at the basic technology and techniques you need to make good quality recordings. We then go on to the editing of audio material, so that you can use it effectively in the studio.

Recording on location

It was suggested earlier that there are several good reasons for recording some of your audio materials (particularly interviews) on location – i.e. out of the studio – using portable recording equipment:

- It is often more convenient for your contributors and sometimes the only way you'll get them to contribute to your audio material.
- It allows you to record in an appropriate acoustic, which adds authenticity and atmosphere to audio material (e.g. interviews), and also provides an attractive contrast to the studio acoustic normally used for presentation.
- It adds interest and variety to the sound of your audio material – varying the tone and texture of what the students hear, giving them a sense of place and a feeling of the real world, and generally making audio a more vibrant and engaging medium.

Here we look briefly at the technology and techniques of location recording – particularly for the recording of interviews. Later, we shall touch on other recording techniques, for instance in relation to drama and music.

Much of what follows will already be familiar to audio producers. However, they may find it useful as a reminder of the basic technology and techniques they will have covered in their initial production training. For others – e.g. subject specialists, planners and managers – the aim is to provide a basic non-technical account of location recording, which suggests what is possible using fairly simple

portable equipment. We look first at the technology and then at the techniques.

Basic technology

There are four essential pieces of equipment you need for recording on location:

- A portable recorder, capable of recording sound on tape or disk
- A microphone, with a lead connecting it to the recorder
- A source of power – either mains electricity or battery cells – for the recorder and sometimes for the microphone
- A supply of audio tape (or an audio disc) on which to record the sound

We shall look briefly at each of these items, concentrating on the types of equipment that are most likely to be available to you.

Portable recorders

There are four main types of portable recorders that are used for professional audio recording:

- Open-reel recorders – such as the Uher or Nagra – which make analogue recordings on quarter-inch open reel magnetic tape
- Audio cassette recorders – such as the Sony Professional or Marantz – which make analogue recordings on standard audio cassettes
- Digital audio recorders – available from a number of manufacturers – which record digitally on mini-cassettes or digital audio tape (DAT machines)
- Mini-disc recorders – e.g. Sony MZR30 or MZR40 – which record optically on to a mini (2-inch) CD (compact disc)

These are listed in the order in which they were introduced and have been used by professional broadcasters and audio producers.

- Easily portable open-reel recorders (Uhers, Nagras) were introduced in the 1960s and became the standard machines for location recording. However, compared to other portable recorders (offering comparable or better sound quality), they are now very expensive and are rarely used by professional broadcasting organisations for location recording of speech.

- Open-reel recorders were largely replaced for location recording by high quality audio cassette recorders (Sony, Marantz, etc.) in the 1970s and 1980s. These recorders give comparable sound quality at a lower price. Audio cassettes have the advantage of longer recording/playback times at lower cost. But they have the disadvantage of having to be copied on to open-reel tape for fine editing by cutting.
- Digital audio technology has been widely used for location recording since the early 1990s; and is now standard equipment for studio recording in many broadcasting organisations. Like most electronic technology, digital technology has steadily become cheaper and now offers excellent sound quality at a reasonable price. However, it has the disadvantage – for some at least – of requiring computer facilities and software (plus the necessary skills) for editing.
- Since the late 1990s, mini-disc recorders have become increasingly popular for location recording. They offer high quality sound at a reasonable price. It is possible to do rough editing (within one second) on the recorder; but for finer editing you need to copy the material onto another format (e.g. open-reel or digital tape), or use specialised computer facilities that can read the optical signals.

Microphones

Whatever type of recorder you are using, a good quality microphone is essential for good quality audio recording.

Some portable cassette recorders (e.g. the Sony TCM range) have 'built-in' condenser microphones. These should generally be avoided, since they tend to pick up the sound of the cassette motor and mechanism. They also usually operate on 'automatic level control' (ALC), which gives poor quality sound if there is a lot of background noise. It is nearly always better to use a separate microphone for location recording.

Microphones come in various shapes and sizes; are designed for different purposes; operate in different ways; and range in price from the relatively cheap to the very expensive. As a general rule, the more you pay, the better quality sound you are likely to get.

It is not possible – or necessary - to go into all the detail here. In general, since most of your recording is likely to be speech, it's best to go for a 'reporter' type of microphone, with a robust body and good (low noise) hand-holding qualities. Also, unless there are special reasons for recording in 'stereo', you should probably go for a 'mono' microphone. [The differences between stereophonic sound (stereo) and monaural sound (mono) will be explained later.] Within

this range of microphones, there are two main types you need to know about:

- **‘Directional’ microphones** – especially ‘cardioid’ – which are sensitive to sound coming from a particular direction, but are less sensitive to general ambient sound and therefore tend to screen out unwanted background noise [‘Cardioid’ means ‘heart-shaped’, which describes the area from which sound is accepted, which is shaped like an inverted heart.]
- **‘Omni-directional’ microphones** – which (as the name implies) are sensitive to sounds from all directions (‘omni-’ is derived from the Latin word for ‘all’), and which therefore pick up more of the background sounds than a cardioid microphone

Both types of microphone are widely used for location recording; and both can give good results, provided you know how to use them properly:

- Cardioid microphones are good for recording interviews in noisy places, since they tend to cut down the background sound. However, you need to be careful about how you position the microphone, and make sure that both interviewer and interviewee are within the ‘field of receptivity’ of the microphone.
- Omni-directional microphones are probably easier to use, since they accept sound from all directions. As a result, it does not matter too much where you position the microphone, provided the interviewer and interviewee are roughly the same distance from it and not too far away.

However, in most situations, and especially if there is a high level of background noise, speakers need to be closer to an omni-directional microphone than they would need to be to a cardioid microphone. (More on this below.)

Sources of power

Most portable recorders can be operated either on mains electricity or using battery cells. If you are using mains electricity, you will need the appropriate ‘mains unit’/transformer, which connects the recorder to the mains socket.

If you can use mains electricity – and the supply is reliable – it makes sense to do so. However, on many locations, you will not have access to mains electricity. Or you may want to move around, making continuous access to the mains power supply difficult. In these situations you will need to use battery cells.

There are two types of batteries which are commonly used in portable recorders:

- Rechargeable batteries – which need to be regularly recharged from the mains electricity supply – often using the mains unit referred to above
- Normal battery cells – usually long-life alkaline batteries – of an appropriate size for the particular recorder you are using

Rechargeable batteries may seem initially expensive; but they are probably more economic in the long run. However, it's important that they are recharged regularly and according to the instructions provided with them. The amount of recording time you get from one recharge will vary, depending on the type of recording equipment you're using and on the battery itself. If the battery is fairly new and fully recharged, you can usually expect at least a couple of hours. But it's important to check this for yourself.

If you are using normal battery cells, it makes sense to buy long-life alkaline batteries. They are initially more expensive, but they give you substantially more recording time. It's usually best to buy a well-known brand – e.g. Duracell, Sony, Panasonic etc. – and make sure they are in a sealed packet. Loose batteries – kept for instance in a plastic bag – can easily discharge themselves before you've had a chance to use them.

Recording tape

Quarter-inch open-reel tape is now very expensive. And at the normal professional recording speed [7.5 inches per second (ips)/19 centimetres per second (cps)] a 5-inch spool (the usual spool size for portable open-reel recorders) will only give you 16 minutes of recording time. Audio cassettes are much cheaper and also give a much longer recording time.

Audio cassettes are either Type I (Normal/Ferric) or Type II (Chrome or Metal). Type II is the better quality tape (less tape hiss) and usually costs a bit more than Type I. However, either type will give satisfactory results for speech recording.

Cassettes also vary in the reliability of their mechanism. And for this reason, it is usually worth paying a bit extra to buy cassettes from well-known manufacturer (e.g. Sony, TDK, BASF etc.).

For professional use, it is probably wise to stick to cassettes giving 60 or 90 minutes of recording time – C60s or C90s. Although C120s give you more recording time, they should probably be avoided. This is

because the tape is thinner and more likely to twist, stretch or snap in use.

If you are recording digitally or on CD, you should probably enquire locally to find out what digital audio tape or blank mini-CDs are available. However, as with tape, it's usually better to buy well-known brands. And if your organisation can buy in bulk, you'll normally get a better price.

Basic techniques

In Chapter 4, we went step-by-step through the process of planning and conducting interviews. Here we turn to some of the more practical aspects of the process. Some people who are not professionally involved in audio may feel that they do not need to concern themselves with this, since it is essentially the task of producers and technicians. In the studio this is generally true. However, for location recording, there are at least two good reasons why subject specialists and others (as well as producers and technicians) should be aware of the basic technical issues involved:

- First, it will help them to understand what is possible in terms of location recording and to work more effectively with their audio colleagues to produce good quality materials.
- Secondly, for simpler location recordings (such as interviews), there is no reason why subject specialists, tutors and others should not undertake them on their own, without technical support. This would not only expand their professional skills, but could also make possible a more efficient and effective use of audio personnel.

What follows, therefore, is intended as a basic introduction for subject specialists, tutors and others, as well as a reminder of some of the essential skills and techniques of location recording for more experienced audio producers and technical staff.

Checking the equipment

Before leaving to record audio material on location, you need to check that you have all the equipment you need and that it is in good working order. For a straightforward interview, you will usually need the following.

Equipment checklist

- **Portable recorder** – What recorder are you using? Is it in good working order? Are you confident in how to operate it?
- **Mains unit/batteries** – Does the recorder operate on mains electricity and/or batteries? Which will you use? If batteries, are they at full strength? (Always take a spare set of batteries with you!)
- **Microphone and lead** – What microphone will you use? Is it cardioid or omni-directional? Do you have the correct lead? Will it fit both the microphone and the recorder? Does the microphone need a battery? Will you need a microphone stand? If so, what type? Or will it be hand-held?
- **Recording tape** – How long will you be recording for? What type of tapes/cassettes will you be using? How many will you need? (Always take extra tape/cassettes.)
- **Headphones** – Some portable recorders have built-in monitoring loudspeakers, others don't. If your recorder doesn't have a built-in speaker, you'll need a pair of headphones to monitor the recording. Make sure the connection fits.
- **Papers** – What papers will you need – course outline, printed texts, support materials, draft questions, draft contract, notebook (and something to write with)?
- **Anything else?**

Equipment check

1. Set up the equipment ready for recording

We can't deal in detail with all the different types of equipment you might be using. However, the following general instructions will work for most portable recorders:

- Connect the microphone to the recorder.
- Insert the tape, cassette or disc.
- Set any controls that need setting – for instance:
 - type of cassette (Type I or II)
 - Dolby Noise Reduction (NR) – On for speech, Off for music
 - tape speed – (for an open-reel machine) 7.5 ips/19 cms

- automatic level control (ALC) – (usually off, except when the level of the sound is expected to vary greatly)
- attenuation – set to zero (off), unless there is very loud background noise
- monitoring loudspeaker – set volume control to zero (off)

2. Set the recording level and make a test recording

- Switch on the power.
- Set the recording level to the middle position.
- Switch on PAUSE control; press PLAY/START and RECORD, usually at the same time.
- If the microphone has an on/off switch, switch it on.
- Hold the microphone about 12 inches/30 cms from your mouth and start speaking.
- Avoid 'Testing...testing...one, two, three, four...' Speak in a normal conversational tone.
- Adjust the recording level control until the meter shows a strong signal (usually when the needle or indicator reaches '0' on the scale).
- When you are satisfied with the recording level, release the PAUSE control, and continue speaking for about 30 seconds.
- Press STOP; press REVIEW (<<) to rewind the tape/cassette to the start.

3. Play back your test recording

- If necessary, plug in headphones.
- Set the playback volume control to its middle position.
- Press the PLAY/START control to play back your test recording. Adjust the volume as required.
- Listen carefully to the quality of the sound. Is it clear and undistorted?

If you are satisfied with the sound, you are now ready to go and do your location recording. If not, check that you have set up the equipment properly, then try another test recording and playback. If you're still not happy with the results, consult the manual for the equipment (if available) or seek specialist technical advice.

Note: Time spent checking and testing equipment is never time wasted. It is much more wasteful – and irritating to all concerned – if you get to a location recording place and suddenly find that your equipment is either incomplete or not working properly!

Choosing a good acoustic

One of the advantages of recording on location is that it adds interest, variety and authenticity to your audio materials. However, this will only work if the recordings are also clear and easily audible to the listeners. This will depend in part on how well you use the recording equipment. But it also depends on the 'acoustic' – the sound environment – in which you make the recording.

Audio producers usually describe acoustics in terms of a range – from 'live' (or 'bright') acoustics to 'dead' (or 'dry') acoustics:

- A bright or live acoustic is one with a long 'reverberation' time – i.e. an acoustic in which sounds are reflected by hard regular surfaces, and therefore take a long time to die away. Typical examples are large places of worship (mosques, churches), empty lecture halls or classrooms, bare and sparsely furnished offices.
- Dead or dry acoustics have a much shorter reverberation time – i.e. sounds die away very quickly – they are not reflected, but rather absorbed within the environment. Typical examples are rooms of irregular shape, or with a number of sound-absorbing surfaces – e.g. soft furnishings like curtains, carpets, upholstered chairs and sofas. One of the deadest or driest (least reverberant) acoustics is achieved by recording in the open air.

In general, the human ear finds it easier to listen to sounds that have been recorded in fairly dead or dry acoustic – i.e. with a short reverberation time. Therefore, if you have to record indoors:

- Try to avoid large regularly shaped spaces with bare sound-reflecting surfaces – i.e. avoid sparsely furnished offices, empty classrooms and large lecture halls.
- Instead, try to record in smaller, irregularly shaped and more cluttered spaces – e.g. living rooms with furniture to break up the space and soft furnishings to absorb the sound, or in offices with desks, chairs, shelves and books, all of which will help to reduce the reverberation time.

Alternatively, you can record in the open air – for instance, in gardens or on verandas outside offices and homes. This will give you a very good acoustic and a pleasant sound. However, if you are recording outside in the open air, you need to be careful of unwanted background noise – e.g. from traffic and people – which can distract the audience from the content of the material. And sometimes you may also have to cope with the unwelcome consequences of the natural elements – wind, rain and heat.

However, on some occasions, you will positively wish to seek out particular background sounds – to add atmosphere and authenticity to your recorded material. For instance, you may want to record a scientist in his or her laboratory, an economist talking to local market traders, a farmer working in the fields, a teacher in the classroom or a health worker in the clinic. Such interviews take the student out of the more formal atmosphere of the studio and into the real world. They also enable the interviewee to describe and refer to objects and events in their own environment, which can add a vivid sense of realism to the recorded material.

In this situation, the key question is not so much seeking a particularly dead acoustic, but rather achieving an appropriate balance between the voices in the foreground – i.e. the interviewer and the person being interviewed – and the background sounds that give the recording its distinctive atmospheric quality. Judging the balance between sounds is one of the skills considered below.

Using the equipment

Once you have decided where to record, the next task is to set up the recording equipment and use it in a way that will give you a good quality, well balanced recording. This is not difficult. If you follow a few simple rules, you should obtain a good recording every time.

[It is assumed here – for simplicity's sake – that you will be recording in 'mono' ('Monaural' = sound from a single source). Recording in 'stereo' ('stereophonic' = sound distributed across a 'sound stage' between two speakers) is a bit more complicated. For good quality stereo recording, it would be sensible to seek the advice and assistance of a sound technician.]

So, assume you are recording an interview – in a fairly good acoustic, without too much unwanted background noise, in mono, and using a cardioid microphone. The basic question is how you should arrange the interviewer and the interviewee in relation to the microphone and the recorder. Start from a simple rule of thumb.

The basic position

To obtain a good quality well balanced recording, each speaker should be about 12-15 inches (30-40 cms) away from the microphone, with the microphone (held in an upright position) about 8-9 inches (20-25 cms) below an imaginary line between the mouths of the two speakers. Think of this as your starting point for recording good quality sound.

Now think in terms of three simple and commonsense variations on this basic position.

Three variations

- If one voice is much stronger (louder) than the other, move the microphone a little way in the direction of the less strong (quieter) voice.
- The louder the background noise, the closer each of the speakers needs to be to the microphone.
- If, instead of a cardioid microphone, you are using an omni-directional microphone, both of the speakers need to be a bit closer to the microphone.

You will find that these simple rules – the basic position and the three variations – will cover most situations you are likely to encounter when recording interviews on location. And if you apply them sensibly, they should give you a good recording every time.

The next question is how can you arrange the interviewer and interviewee, so that they will be properly placed in relation to the microphone, and at the same time be comfortable and relaxed, so that they can relate easily and naturally to each other. If the speakers do not feel comfortable and relaxed, with a good social distance and easy eye contact between them, you are likely to get a less good performance.

Probably the best position is to have the interviewer and interviewee sitting at right angles (90°) to each other; or side-by-side but turned towards each other. For a fairly short interview, or if the speakers need to move around during the interview, similar right-angled positions can be adopted while standing.

Three things to avoid

When recording on location, you should try to:

- Avoid placing the interviewer and interviewee directly opposite to each other. (If the speakers need to move in fairly close to the microphone, this is a socially uncomfortable and potentially embarrassing position. It's unlikely to produce a relaxed atmosphere and good communication.)

- Avoid having the interviewer and interviewee on either side of a desk or table. (Usually, this places one or both of the participants too far from the microphone and results in a poorly balanced interview.)
- Avoid conducting the interview in the presence of other people. (The presence of spectators often makes the interviewer and/or the interviewee self-conscious and nervous – which doesn't help the interview. Also, it sometimes encourages the speakers to perform for the local audience rather than the student listeners. If your recording attracts a curious crowd, explain what you are doing and politely ask them to go away. Alternatively, try to find another place to record which is free of distractions.)

For location interviews, it is usually best for the interviewer to hand-hold the microphone, rather than use a microphone stand. This gives more control over the position of the microphone. It also means that the interviewer can respond if the interviewee moves significantly during the interview.

However, microphone movement should be kept to a minimum, since it tends to produce unpleasant noises on the tape. These usually come from the connection between the lead and the microphone. One way of overcoming this problem – or at least reducing it – is to wrap the microphone lead once or twice around your hand. This stops the connection moving and usually reduces the unwanted interference.

If it is possible to have the services of an audio technician, so much the better. This means that the technician can concentrate on the recording, monitoring the output of the sound on headphones, and leaving the interviewer free to concentrate on the content of the interview, asking the questions and listening to the answers. In this situation, provided the microphone lead is long enough, you can move the recorder away from and behind the speakers, so that they are less conscious of the recording process.

However, in most institutions and projects, an audio technician will not always be available for location recording. In these circumstances, you will be expected to take responsibility, not only for the content of the interview, but also for recording it. If that's the case, what follows are some practical suggestions that you might find useful.

Setting up the equipment – some practical hints

- If you are right-handed, place the interviewee on your left-hand side, and hold the microphone in your left hand, so that you can use your right hand to operate the recorder.
- If you are left-handed, the interviewee should be on your right-hand side, with the microphone in your right hand, so that your left hand is free to operate the equipment.
- In setting up the recording situation like this, don't be afraid of organising your contributors – however distinguished they are! - so that you are confident that they are in a position that will give you a good recording.
- Whenever you appear with a portable recorder – however inexperienced you are – your contributors will look to you for professional expertise. They will expect you to organise and manage the recording situation. If you are confident, or at least convey a feeling of confidence, you will inspire confidence in your contributors and probably produce better audio materials.

Once you have decided where to conduct the interview and how to record it, there are then a set of standard steps to follow. Essentially, you follow the same procedure you used for the test recording (see above). But this time, instead of a test recording, you record the actual interview.

Checklist for recording

- Set up the equipment
- Check power – if necessary (or if in doubt), replace batteries
- Set recording level and other controls
- Make a short test recording, including both voices
- Playback – check sound quality, level and balance (between voices and between voices and background)

- If necessary, adjust recording level and microphone position
- Do a further test recording and playback
- When satisfied, start the actual recording
- Monitor content and sound quality on headphones
- Occasionally check recording level and adjust if necessary
- At the end of the recording, play back to check sound quality
- Label tape/cassette/disc and box as suggested in Chapter 3

When you have completed a recording, it's useful to play it back and review it critically, if possible with friends or colleagues. Ask yourselves the following questions.

Questions for review

- Is the quality of sound good?
- Is the recording clear and easy to listen to?
- Is it recorded at the right level?
- Is there a good balance between voices?
- Are you aware of background sounds? Do they add to or detract from the recording?
- Could the recording be improved? If so, what would you do differently?

Editing audio material for studio use

Once you have recorded audio material on location, it usually needs to be edited before you use it in a radio programme or on a cassette. As suggested in Chapter 3, there are three main reasons for editing:

- **Content** – to make sure the content is exactly what you want for your students
- **Audibility** – to improve the clarity of what your students will listen to

- **Duration** – to ensure the material fits into the time available on radio or cassette

There are also three main ways you can do the editing:

- **Dubbing** – making a recorded copy of the material which includes the content you want and excludes content you don't want
- **Cutting** – physically cutting out unwanted material (usually with a special razor blade) and joining the tape together again
- **Electronic editing** – using a computer with audio editing software to select and re-assemble electronically stored sounds

In the sections which follow we look briefly at each of these methods.

Editing by dubbing

This method can be used with all types of recorded sound – open-reel tape, cassettes etc. It is very simple. All you need is two recorders, linked by a suitable lead which allows you to play your original recording on one machine and re-record it (selectively) on the other. In this way, you can select the material you want to use and re-record it, leaving out any of the content you don't want.

Dubbing is especially useful for 'rough' editing – i.e. selecting or rejecting substantial parts of a recording – for instance, whole questions and answers from an interview, or a particular section of a discussion. However, if you're working with open-reel or cassette tapes, it is much less useful for 'fine' editing – i.e. editing which involves more precise selection of sounds – for instance, editing out particular words or phrases, removing unnecessary repetitions or unwanted background noise, while at the same time maintaining the natural rhythms of the speech.

The main reason for this is that in dubbing you are using the stop, start and record controls on the tape recorders. And this makes it difficult (particularly on cassette recorders) to be very precise in controlling exactly what you want to include and exclude on your new recording. This usually doesn't matter too much for 'rough' editing, when you are including or excluding large blocks of material. But it is clearly very important for 'fine' editing, where you are usually dealing with smaller bits of sound, which you want to include or exclude for reasons of content or clarity.

Editing by cutting

This method requires a higher level of practical skill than dubbing. But it also gives you a much higher level of precise control over the editing process. Editing by cutting can only be done on open-reel tape. So if you are using cassettes, you will need to copy them first onto open-reel tape. To do this type of editing, you will need:

- A professional or semi-professional open-reel tape recorder, with a loudspeaker or headphones, and an edit control, which allows you to move the tape manually across the playback head and listen to the tape at slowed-down speed.
- An 'editing block' – a metal block (usually about 6-8 inches [15-20 cms] long, one inch [2.5 cms] wide and 1/4 inch thick), with a 1/4-inch groove running the length of it (into which the tape fits), and up to three narrow slits cutting across the groove, usually at 45°, 60° and 90°.
- A chinagraph pencil (a special wax pencil that will write on plastic); a number of single-edge razor blades; and a supply of 'jointing-tape' – i.e. special adhesive tape which you use to join the tape together again after you have cut it.

It would also be useful to have a supply of 'leader tape'. This is quarter-inch plastic tape, like open-reel recording tape, but without the metallic recording surface. It is used to protect the ends of recording tape, and also as spacing tape, to mark and separate different taped 'inserts' (pre-recorded audio material) to be played into a radio or audio cassette recording during a studio session. Leader tape is available in several colours. Conventionally, red leader tape is used to mark the end of an insert or recorded programme tape. Other colours (especially yellow) are used to mark and protect the beginning of a recorded tape, or to mark and separate different 'bands' of an insert tape.

The process of editing by cutting is fairly straightforward; though it takes time and practice to develop the skill and to pick up speed in its application.

Editing tape by cutting – a step-by-step guide

- First, play the tape at normal speed. Listen carefully and decide exactly where you want to make your cuts. Identify the start and finish points of the edit. Make a judgement about whether it's possible to cut the tape in this way and still maintain the natural sound (flow, rhythm) of the audio material.

- Next, listen to the same piece of tape again, this time at slower speed, by moving the tape manually over the playback head with the recorder in the 'edit' mode.
- Locate the exact start and finish points of the edit and mark them with a short line (left to right, not up and down) with the chinagraph pencil.

[**Note:** You'll probably find that it's a bit difficult at first to hear the sounds clearly as you move the tape across the playback head. But with practice it soon becomes easier. And before too long you'll be able to recognise all the sounds clearly, even though they are slowed down. Then you'll find it easy to mark the start and finish points for the edit quickly, accurately and with great precision. However, in the early stages, you'll probably find it useful to work with someone who is skilled and experienced in tape editing.]

- Now press the stop control on the recorder. Gently pull the tape away from the playback head and place it in the groove of the editing block, with the first chinagraph mark (the start of the edit) directly over the 60° slot.
- Make sure the tape is firmly in the groove. Then take the razor blade and run it gently but firmly, in one smooth movement, through the 60° slot, cutting the tape at your first chinagraph mark.
- Then locate your second chinagraph mark (the end point of your edit) and cut it in the same way, and remove the unwanted tape.

[**Note:** Don't throw the unwanted tape away. Keep it safely until you have checked the edit and are satisfied that it sounds alright. If it doesn't, then at least you can replace the tape and try again, or abandon the edit.]

- Now place the two cut ends of the tape together in the groove on the editing block. Make sure that the two ends are right against each other and that there is no space between them. Also, be careful that the ends do not overlap.

- Next, cut off about one to one-and-a-half inches (about 3 cms) of jointing-tape. Press it firmly over the point where the two tape ends meet.
- Make sure (a) that the jointing tape is in the centre of the recording tape, (b) that none of the jointing tape is sticking out over the edge of the recording tape, and (c) that there is no gap between the two ends of the tape.
- Check that the edit is satisfactory by turning it over and making sure (a) that no overlapping jointing tape is visible, and (b) that there is no gap between the two ends of the tape. If any jointing tape is visible, either on the edges of the tape, or between the two ends, re-make the edit.
- When you are satisfied that the edit has been properly made, place the tape back in the playing position. Re-wind the tape for a few seconds. Then press Play/Start and listen to the results of your edit.
- Make sure that the edit **sounds** OK – i.e. that the sound flows smoothly, that the pace and rhythm (e.g. of speech) sounds natural, that the edit can't be detected.
- If you are happy with the result, go on to the next edit. If not, either (a) replace the piece of tape you have taken out and try again, or (b) replace the tape and abandon the edit.
- Once you've had some practice, you'll find that you can edit quickly and confidently. You'll find you can judge whether an edit is possible, hear the slowed-down sounds clearly when you move the tape by hand, locate your edits easily and mark them accurately. You will then have acquired a skill that will give you a high degree of control over your audio materials and allow you to improve their quality substantially.

Electronic editing

Electronic editing is used for editing digital audio tape (DAT). To record sound digitally – as opposed to the analogue systems used by open-reel and normal cassette recorders – you need a DAT recorder and digital audio tape. The editing of DAT recordings is done on a computer equipped with sound facilities and audio editing software. Using this system, it is possible to do sophisticated 'fine' editing of

audio material, and also to mix and modify sounds from a number of different sources.

[The specific techniques of editing digital audio tape will depend on the particular computer software you are using. If you are planning to use this technology, we suggest you seek initial advice and training on the types of software available and how to use it from someone who has expertise and experience in this area – e.g. an audio technician or engineer in your institution or a local radio station.]

Combining methods

Probably the most common pattern – particularly in developing countries – is for institutions and projects to do their location recordings on audio cassette recorders, and then to transfer the results to open-reel tape for fine editing and use in the studio.

This makes possible a two-stage process of tape editing:

- First, the material on audio cassette can be rough edited as it is being copied on to open-reel tape – i.e. you only copy material that is likely to be used in the final radio or audio cassette presentation.
- Secondly, any fine editing that is required is done on the open-reel tape, so that the material recorded on location is ready for use in the final studio recording.

This method is both economic and efficient. It relies mainly on relatively inexpensive and reusable audio cassette tape for location recording. It uses the dubbing/copying method for rough editing; and is economic in its use of the more expensive open-reel tape which is necessary for fine editing.

In the longer term, it is likely that most of our recording and editing will be done digitally. However, in the meantime, especially in poorer countries, it is likely that the older audio technologies will continue to be used – and will continue to produce acceptable results if used imaginatively and well.

Outcomes

The main outcome of the editing process is:

- A series of fine-edited location recordings
- Arranged in order – preferably on a single tape spool – for use in the studio recording of a radio programme or audio cassette presentation

Checklist on editing

- Could your audio material be improved by editing – in terms of duration, content or clarity?
- Does the material need 'rough' editing, 'fine' editing – or both?
- How will you do the editing – by dubbing, by cutting, electronically, or using a combination of methods?
- Do you have access to the equipment you need for editing? If not, can you obtain such access?
- Do you have the skills to undertake the editing on your own? Or will you need professional assistance? Where is this available?
- How are you planning to use the material once it's been edited? Does it need to be prepared in a particular form – e.g. as part of a banded insert tape?