choose high-quality tapes (rather than no-name products) and to avoid tapes longer than 60 minutes; longer tapes tend to be of lower quality.

In summary, we cannot recommend DAT or analog machines as primary recording devices. If you must use them, you need to be aware of the additional steps this creates in your workflow, and we urgently recommend that you transfer all recordings to hard disk as soon as possible. We do not recommend MiniDisc either unless there is no other option. An exception might be made for the Hi-MD version, since it is capable of high-quality PCM recordings that (at least in theory) can be transferred digitally to computer. However, before using this device in the field it should be checked that the resulting files are in an open, editable format.

MP3 and other low-end solid-state recorders (e.g. 'dictaphones', mobile phones, and PDAs) may well have their place in a field kit as long as they are not the main recording device. If you use them, be aware that the recorder's default compression setting is not necessarily the best of which it is capable, so check the settings and choose best recording quality rather than maximal duration.

## 1.2.2.2 Microphones

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Microphone technology is a large and complex topic. There are innumerable variables in both internal design and external form. What follows is related principally to field recordings of speech events as opposed to, say, music performances or other semi-formal scenarios where aspects other than intelligibility of speech might be important (see Barwick, Chapter 7 below on methods for recording music).

## (i) General comments and recommendations

It is best not to rely on built-in microphones. For one thing, there is the risk of recording motor and other internal noise with video tape cameras and other mechanical recorders. This is not a \$\frac{1}{2}\$ problem with true solid-state recorders which do not have tape motors or hard drives—but remember that cameras of this kind may still have zoom and focus motors. Also, internal microphones have historically not been of equal quality to dedicated external ones. This is less the case today. Indeed, many recent audio recorders, such as the 'Zoom' range, clearly have very carefully designed internal microphones. Regardless, external microphones simply provide more flexibility and potentially better performance than inbuilt ones, especially if they can be used remotely.

Since we recommend external microphones, we need to introduce the topic of 'balanced audio'. <sup>14</sup> This method of connecting devices provides protection against noise created by electrical interference, for example when using long cables between microphone and recorder (as you do when filming). Professional microphones tend to be of the balanced type. There is nothing inherently wrong with a microphone that is not balanced and therefore connects with conventional cable (typically with TRS mini jacks), but in this case long cable runs greatly increase the likelihood of static crackle. The longer the cable, the more crackle. Balanced microphones (typically with XLR connectors) avoid this, but unfortunately the cables required are rather bulky.

While it might seem obvious to take advantage of stereo or surround sound capabilities in a recording device, it is seldom the case with linguistic recordings that this kind of fidelity is required. Certainly a single speaker usually requires only a mono recording. Making mono recordings can be helpful in situations where it might be difficult to determine an optimum recording level (or where there is no time to make the usual pre-recording checks): it is often possible to feed the input of one microphone into both channels and to set each channel to slightly different levels. This gives one the opportunity later to choose the recording that gave the best result in terms of signal distortion.