Elements of the Recording Process

by

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Introduction

Recording sound is easy. But capturing a sound that conveys your intention, that people will want to buy (and enjoy listening to), and will promote your talents is not so easy.

With the wide range of recording equipment available at very low prices today, it is tempting to think that recording yourself or your musical ensemble is something you can do yourself with little or no preparation. Try it - chances are you'll be disappointed.

Making a recording is a process that involves at least:

- Playing to a standard others will want to hear
- Playing in an acoustic environment that complements your performance
- Minimising distractions from unwanted sound sources
- Having the time to repeat performances until they're right
- Dedicating someone to oversee the artistic aspects of recording and editing
- Having high-quality recording equipment and knowing how to use it
- Mixing and editing quickly and efficiently
- Manufacturing and distributing your finished product

None of these steps are trivial. Some are a matter for you as the musical director or solo artist. For the others, you're likely to need help and advice.

2 A Great Performance

A recording session will always be time-limited. That's obvious if it's a one-off live concert. But even if you've booked a whole day at the local village hall to record your tracks, the caretaker will always be jangling the keys before you know it.

This means that you have to be prepared to get good results in as few takes as possible. All your players must be on top form for the event. If your star player cannot make the gig, don't be

tempted to put in a 'B-team' deputy, or an equally good player who is unfamiliar with the music. A messed-up performance by a single player can wreck a complete session.

Even with location recordings, it's possible to dub in some elements afterwards. In particular, it's worth leaving lead vocals out for a later overdub - but only if the band can play properly in the absence of the soloist. Attempting to overdub a second vocal on top of a faulty live vocal is fraught with problems and will invariably stand out like a sore thumb. Bleed of sound between microphones means that in a live recording it is almost impossible to completely remove an unwanted performance from a single instrument or voice.

Two things can make or break an ensemble performance: timing and pitch. If you're thinking of stitching together multiple partial takes of a number, make sure you work from some reference metronome. And keep tuning up between takes: many instruments drift significantly in pitch as they warm up.

Striking the right balance between breaks and playing is important: a tired band will sound tired on a recording, but breaking for too long can spoil the creative flow of the session.

The most important thing to bear in mind about live performance is that your recording will document the *whole* performance - warts and all.

3 The Right Location

If you have an amateur choir, a school orchestra or a busy semi-pro jazz band, recording on location is often the only practical solution to making your recording, especially if it's for a quick demo. Budgets are always tight, and maybe concerts or gigs are the only time you can get your band together.

Modern recording technology makes it possible to produce quality recordings in a variety of everyday spaces, not just dedicated high-end recording studios.

Over the last 30 years, I have recorded local classical orchestras and ensembles, choirs, brass bands, folk groups, jazz combos and big bands. Some of these recordings have been public concert performances in school halls, churches and pubs, while others have been dedicated sessions using available spaces hired cheaply outside normal hours.

Many players, especially in the jazz field, prefer the immediacy of a performance in front of a live audience over long analytical sessions in studios.

4 Minimising Distractions

Our brains are remarkable. We can focus our attention on a single quiet voice in the midst of a cacophony of traffic noises, party sounds or industrial machinery. Part of this ability relies on our vision, which immediately identifies the speaker and sets our expectations about the nature of the extraneous sounds.

Unfortunately, things are very different when listening to a sound-only recording. In the absence of visual clues, even the smallest interfering noise can distract our minds from the music as we involuntarily try to identify the nature and source of the unwanted sound. This will inevitably detract from the enjoyment of the recording.

So when planning a recording on location, it's essential to make a reconnaissance trip beforehand, to weigh up the interfering sounds and assess whether they can be tolerated during the session.

Some sounds, even loud ones, may be acceptable if they happen infrequently: they may wreck a take or two, which will have to be repeated. Not a great situation, but tolerable.

But other sounds may be much less acceptable. The continuous rumble of traffic noise may be difficult to filter out without loss of the music that has significant low-frequency content; and near traffic junctions, engines will be revved up through multiple gear-changes. Can noisy air-conditioners be switched off temporarily? Low-powered aircraft can take several minutes to transit an area, causing long breaks in recording. Close miking may the the answer to some of these problems, but there are many times where microphones must be several feet away from a sound source to achieve a natural balance (e.g. drum overheads, and most classical performances).

Birdsong is distracting, and can make editing difficult. Spring birds may sound charming, but will sound wrong in a recording of Christmas carols. Consider posting someone on 'scarecrow' duty!

Finally, consider the instruments themselves. Some piano foot pedal / damper arrangements can be very clunky. Bass drum pedals also squeak if not properly lubricated.

Visit a variety of locations and discuss the potential interference aspects with your recording engineer before committing to a session.

5 Allowing Time

You should always plan to record more material than you need to release - and recording a pre-concert rehearsal can often be a lifesaver!

Don't expect to record a 1-hour CD of material in a single day's session unless it's a live concert.

Most recording sessions will need each piece to be performed between 3 and 5 times to ensure no faults are common to all takes - this is where the Producer's ear and experience comes in.

6 The Producer

Producing a recording seldom works well as a fully democratic arrangement, especially if time is limited. That's why it is important to nominate a single person as the artistic focal point for the recording session. That person is known as the Producer, who should have good inter-personal skills and a thorough appreciation of:

- What is being played at a detailed and structural level
- What the players are capable of
- What is acceptable in terms of technical performance

The Producer may be chosen from a variety of people, e.g.:

- The Composer
- The Musical Director (if not too busy controlling the players)
- An independent musically-aware person (but familiar with the music)
- One of the musicians (if not too busy playing)
- The recording engineer (as a last resort!)

The Producer should be listening carefully to each take in the recording 'control room' area with the engineer. Remote communications with the musical director / players should be provided.

The Producer should call for re-takes if it is apparent that performances were unacceptable or could readily be bettered. But conversely, the Producer should be prepared to call a halt if it is clear that further retakes will not improve the situation. That may involve abandoning certain musical items if they will not come up to scratch.

The Producer should represent the Musical Director, thereby reducing the need for him or her to come to the control room to hear playbacks.

The Producer will usually also work with or advise the Engineer in respect of the remix / edit sessions, but may be accompanied by others such as the Musical Director at that time.

7 The Equipment

In order to capture an instrument's sounds accurately and clearly, it is essential to place appropriate microphones at appropriate distances from the instrument. Judging what is 'the appropriate microphone' to use in any situation, and where to place it, is a major part of the Engineer's role. This task is supported by an understanding of:

- How sounds are generated by each instrument,
- Where in space the sounds from the *whole* instrument - which, in the extreme case of the Piano, is very large - will combine to produce the desired timbre,
- The behaviour (sensitivity, pattern, frequency response) of microphones,
- The effect of the room in colouring the sound,
- Potential interference from other players in an ensemble

It helps to have a wide range of microphones (mainly condenser mics, but also plenty of dynamic mics) from which to choose, and appropriate microphone stands and shock-mounts of all shapes and sizes to make sure that mics stay where they are needed.

Multi-core (snake) cables and plenty of individual microphone cables enable a control room to be established well away from the recording area.

The outputs from the microphones are amplified and digitised by a number of interface units, which feed the recorder or computer workstation with low-noise signals that retain the quality of the original sound.

Where the PC is used for recording, this will involve the use of Digital Audio Workstation (DAW) software, and there are many such products to choose from. It is important to ensure that if different DAWs are to be used for initial capture, overdubbing and mixing of the material, that they can exchange compatible audio data files.

These days, there is no reason not to record at 24-bit resolution, which exceeds CD quality, and high sample rates can be used if required.

8 Mixing and Editing

Having captured a high quality record of the sounds from the session, the real work for the Engineer and Producer starts.

For mixing and editing, whatever the capture medium, it is best to use a DAW or hardware mixing system with which the engineer is familiar, to ensure a quick and efficient mix-down session and not get in the way of the creative flow of the producer and/or artists.

Good data management, otherwise known as configuration control, is essential, with a consistent list of take and mix references used throughout.

Each take should have been noted by the Engineer during the recording, relating it to ranges of bars, verses etc. The Producer should have taken notes on a score during the session, indicating missed notes, interpretation problems etc.

An initial mix or balance is set up by the Engineer and takes trimmed to remove false starts, conversations, etc, for the Producer to evaluate the quality of individual takes, and where edits should be made.

It is advisable to allocate plenty of time for the edit decision process. A Producer may wish to listen to each take many times before selecting the best ones. This can be done with engineer on-hand, but often the Producer will prefer to go through CDs or digital files of all takes at home, identifying the edit points at leisure.

Normally the engineer can carry out the actual edits alone, given clear directions (e.g. score and bar references). It is not uncommon for a classical CD to have 100 edits in it - the challenge for the Engineer being to make each splice inaudible!

When individual songs have been edited, the actual sequence of the final CD may be auditioned and inter-track spacings tried out.

9 Preserving Digital Audio Material

It is important to understand that all editing in this workflow is non-destructive, so that the original material is always retained for safety and possible later re-edits. And, throughout the project, audio material should be backed up to separate media (hard drives, etc.) to minimise the risk of accidental data loss.

The producer or artists should arrange for long-term archival data storage (normally involving multiple redundant copies) at the end of the project, so that material may be revisited at a later date.

10 Summary of the Process

The flow-chart below summarises the recording process. The 'listening CDs' shown in the diagram have generally been replaced by electronically-distributed digital files now.

Note that not all steps may be applicable to your recording if, for example, the recording is a live 2-track stereo recording with no overdubs

It is available as a PDF document, which you may find useful to print out for reference and discussion.

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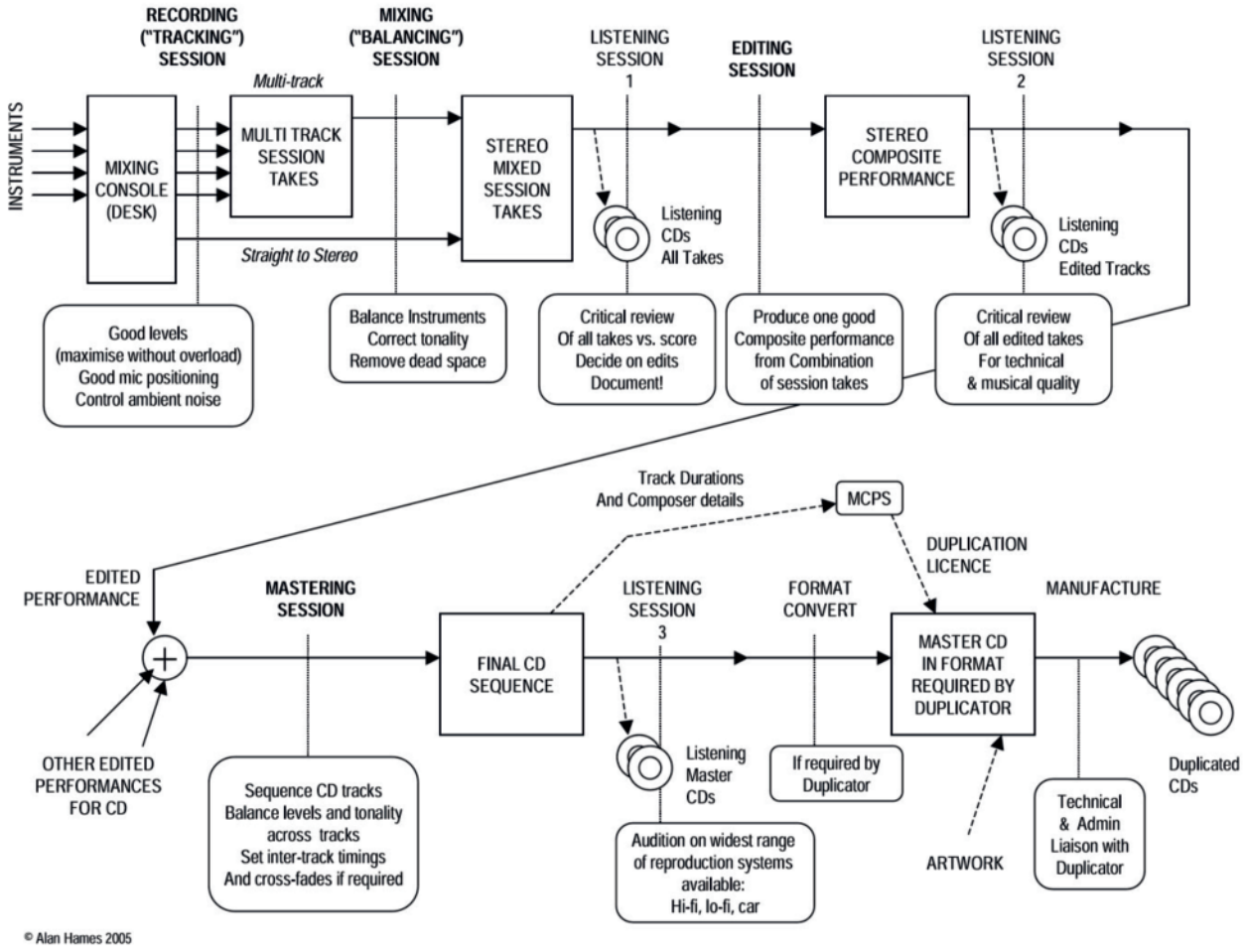

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