

RECORDING AND PRODUCTION

WORKBOOK 5

CHAPTER 1 STUDIO RECORDING EQUIPMENT

- P6 What is it?
- P6 Why do I need to know about this?

P7 Project

Notes and guidance

- P11 Recording studio overview
- P13 A typical recording session will consist of
- P14 Recording formats
- P16 Capturing the source
- P18 Recording vocals
- P19 Recording acoustic guitars
- P20 Recording electric guitars
- P21 Recording bass guitars
- P22 Recording drums
- P26 Recording keyboards
- P27 Recording DJs
- P27 Recording ensembles
- P28 Mixing & effects
- P30 Effects and dynamics
- P32 The master

Want to know more?

- P34 More information
- P36 More tasks

CHAPTER 2 MUSIC TECHNOLOGY EQUIPMENT & SOFTWARE

- P40 What is it?
- P40 Why do I need to know about this?

P41 Project

Notes and guidance

- P46 The hardware
- P47 What computer do I need?
- P48 MIDI
- P48 The choice of Mac
- P49 The choice of PC
- P49 The other choice
- P50 The sound card
- P51 Other hardware
- P51 Hardware controllers
- P52 DSP cards
- P52 How does it connect together?
- P54 Software
- P60 Audio editor
- P61 Software instruments and samplers
- P62 Plug-in effects
- P64 Working with technology

Want to know more?

- P68 More information
- P70 More tasks

CHAPTER 3
PRODUCTION



P74	What is it?
P74	Why do I need to know about this?
P75	Project
	Notes and guidance
P79	What is a record producer?
P79	Why do we need producers?
P80	What does a producer do?
P80	What differences are there with modern producers?
P81	Who does a producer work with?
P82	What else does a producer need to know about?
P83	How do I become a record producer?
P83	What personal qualities will I need?
P84	Pre–production
P85	The recording process
P87	Final mix, post-production and mastering
P88	Producing for different genres
	Want to know more?
P90	More information
P92	More tasks

CHAPTER 4
MANUFACTURE



P96	What is it?
P96	Why do I need to know about this?
P97	Project
	Notes and guidance
P101	What will you do with your recording?
P102	Packaging
P104	CD duplication
P109	DVD and surround sound
P110	MP3 and internet audio
	Want to know more?
P112	More information
P114	More tasks

CHAPTER 5
LIVE SOUND



P118	What is it?
P118	Why do I need to know about this?
P119	Project
	Notes and guidance
P123	What is a PA system?
P124	What are the component parts of a PA system?
P128	Types of speakers
P130	Monitoring (on stage sound)
P131	Buying second hand
P132	Setting it all up
P138	Getting the right mix
P139	Health & safety
	Want to know more?
P140	More information
P142	More tasks

- Chapters that are essential to this workbook.
- Chapters that are optional to this workbook.

Please note

Any details or photographs of equipment, software, manufacturers or suppliers do not constitute a recommendation or endorsement by DWP, but are intended to provide typical reference examples only.

PRODUCTION

WHAT IS IT?

Production is the process of getting a sound recording made. This chapter gives you an introduction to production, including the role of a producer and an insight into different production styles.

WHY DO I NEED TO KNOW ABOUT THIS?

Music production is a critical part of the music industry. Understanding some of the processes by which sound recordings are produced is useful for all musicians and DJs.

Read the TASKS below.
Then read the NOTES AND GUIDANCE section
Carry out the TASKS

To write the songs True False

6 Which route towards being a producer would be your choice? Outline the steps you would need to take and set goals in the order you need to achieve them. Find out the names of nearby recording studios large enough to take on staff, this may influence your choice of route!

7 Mark yourself next to this following list of attributes and skills. How can you make improvements where you score badly? Do you think you need all of the abilities listed here to be a producer?

Attribute or Skill	Mark yourself /10	How can you make improvements?
Ability to spot a good tune		
Ability to organise		
Communication skills		
Knowledge of what instruments do		
Knowledge of recording studios		
Calmness under pressure		
Understanding of different genres		
Musicianship		
Knowledge of favourite genre		

8 Write down a producer who works in each of the following genres. Also choose features that are important in the production for each genre.

Genre	Producer	Important Elements
Rock		
Urban Hip-Hop RnB		
Jazz Country Blues		
Film		

9 Think about the production of your own material by considering these questions.

- How many tracks do you want to produce?
- How much time do you need to prepare (for example, rehearsal or pre-production)?
- Identify a studio and cost up the studio and engineer time.

10 Produce your own demo or a demo for a local act. Try to work with at least one other musician. Write down some of the important decisions you made and why.

- Did you have to change anything in the process?
Get feedback from the people you worked with about your input and how you helped them through the recording process.
- What can you learn for next time?

WHAT IS A RECORD PRODUCER?

A producer is the person who gets the record or CD made! They are responsible for delivering the final sound recording to the client

They bring together the creative, technical and organisational talents needed to get the final master recording. They will have to deal with all the people and problems along the way.

The producer will have the “vision” of how the end result should sound and know how to achieve it, even who will need to be brought in to help. The musical direction and target audience will be clear in the producer’s mind before recording starts.

Whatever the musical genre, the producer’s role is the same. They have to capture a mood and a performance and deliver the songs to the listener in the best way.

If you want to be involved in creating music whilst working with others, but not being in the limelight, then producing could be for you!



WHY DO WE NEED PRODUCERS?

A producer might have a particular area of expertise that will be useful during the recording process, for example, knowing the genre of music inside out.

They may be talented with string arrangements or just give respected, valued opinion in the many decisions that will affect the music.

A producer with a good reputation or proven track record could help an artist to get a deal, secure radio play or even sell more CD’s. There are many instances of a producer having a “purple patch” where everyone wants to work with them and all the releases they are involved with become hits.



WHAT DOES
A PRODUCER
DO?

A producer helps get the songs, instrumentation and arrangement right before going to the studio, (this is known as pre-production), then directs and encourages the musicians through the recording process. He/she may employ additional musicians.

He/she will help to choose sounds that fit together and suit the project.

He/she will take care of the technical requirements of the recording or work with an engineer to do this.

He/she will oversee the final mix and mastering stage up to delivery of finished product.

It is the producer’s responsibility to make this happen within the budget and to meet the deadline set by the record company, or whoever is paying the bill.

The 5th Beatle. George Martin’s work in the studio with the Beatles often had him referred to as the fifth band member. Such is the close relationship between some bands and their producers.



WHAT DIFFERENCES
ARE THERE WITH
MODERN PRODUCERS?

The main thing to change in recent times is that the producer will take on a lot of jobs themselves rather than overseeing others. Nowadays it is common for the writer to be the artist, engineer, programmer and producer. This will all often happen in their own “bedroom” studio.

Traditionally a producer would take care of every track on an album, but recently, especially with pop acts, several producers can work on the same project.

A traditional producer would take what the artist has and enhance it, whereas many of today’s breed of producers will imprint their own sound onto the act.



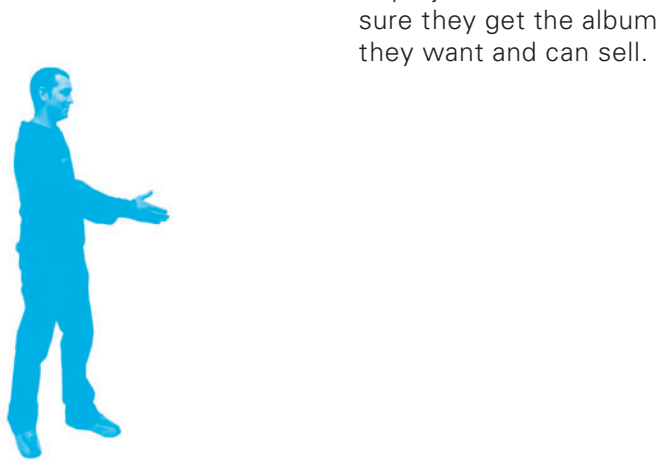
WHO DOES
A PRODUCER
WORK WITH?

Firstly, the producer will work with the act. This can be a solo singer or a band of musicians. In some cases the artist will produce themselves, if they have written the material and know their market, but they do need professional production skills.

The producer is often appointed by a record company to ensure smooth running of what can be an expensive process. Also, the record company want to make sure they get the album they want and can sell, so a producer will liaise with the A&R department.

ACT

Can be a solo singer or a band of musicians.

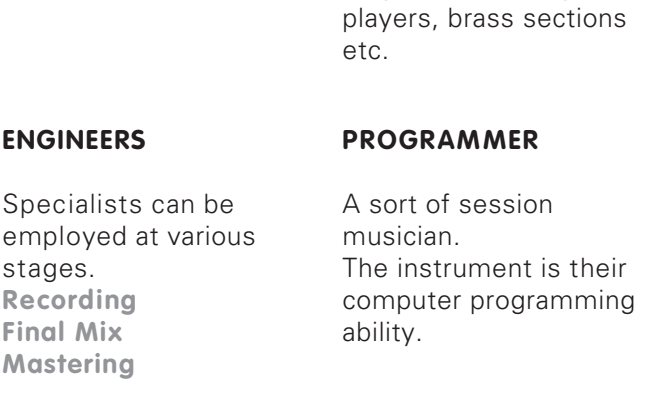


LABEL A&R

Wants producer to ensure smooth running of project and make sure they get the album they want and can sell.

MANAGER

Producer will need to keep the band's manager happy and agree on direction.



SESSION MUSICIANS

Booked to add something special to certain tracks. These can be extra backing singers, real string players, brass sections etc.

ENGINEERS

Specialists can be employed at various stages.
Recording
Final Mix
Mastering

PROGRAMMER

A sort of session musician. The instrument is their computer programming ability.

WHAT ELSE DOES
A PRODUCER NEED
TO KNOW ABOUT?

A producer need not be a musician, but should understand what different instruments do and how they interact, in order to give guidance to musicians.

Similarly, a producer need not be an engineer, but should understand the recording studio well.

The producer will also need to be aware of budgets.

A producer could be a talent spotter or A&R person. They often discover an act and help them become successful.

SEPARATE COMMENT:

Production Companies
Successful producers will put together a team of writers, engineers, programmers and producers. They can then put out a large volume of work all carrying the hallmark of the key hit maker. They will cultivate or simply manufacture their own acts, which will be licensed to a label. In addition, they could be manager and label too. Such organisations will have a “song bank” ready for the latest pop sensation that approaches them. The Scandinavian 90’s pop production houses were good examples of this, and Stock Aitken and Waterman in the 80’s. Well before this, Phil Spector used the same formula for Motown.
Who are the latest hit Production Companies? Find out!

HOW DO I
BECOME A
RECORD PRODUCER?

There are three obvious routes into being a record producer. The first way is to be taken on as an apprentice in an existing studio. This is called being a “tape op”, literally a tape operator. Cleaning up, making tea and running errands would all be part of the job. Whilst doing this they would gradually learn how things in the studio work, then practise when there were no sessions booked in and eventually be given the chance to engineer or produce themselves. This position still exists in many commercial studios. The job can be boring and the hours long, but if you are bright and enthusiastic you can progress after serving your apprenticeship.

The second option, which is becoming more and more common, is to buy your own small studio set up and gradually build this up, producing your own material and that of friends to gain experience. The price of computer based studio equipment means this is now an achievable goal. You can teach yourself programming, engineering and production skills.
It is also possible for someone to drift towards being a producer through working within a band or the industry and gaining enough knowledge to take up the task. This is an obvious career move for older musicians.

WHAT
PERSONAL QUALITIES
WILL I NEED?

- Able to work long hours in a studio environment, whilst remaining positive and focused.
- Good communication skills to stay in tune with the variety of people around you and in contact by phone.
- You must be a calming influence. Recording studios can cost a lot of money. You need to be the one to take the pressure out of the situation.
- A producer needs to inspire and motivate, in order to get the best from the musicians.
- You will need to be tactful where suggestions you make might not be too well received!
- Having “good ears” to know what sounds right and be able to spot good “takes”.

➤ WORKBOOK 3 – CREATING – CHAPTER 3



PRE – PRODUCTION

Pre-production is the process by which you get a song ready to go into the studio.

The producer will make suggestions about song choices, overall direction, arrangements and things to be added or left out. They will also highlight the key elements or hooks and plan how to bring them out in the final mix.

Possible problems can also be spotted early and worked on.

As with remixing, it is useful to have reference CDs and sound library to help keep the target audience in mind.

THE RECORDING PROCESS

Whether recording takes place in a home studio or in a large live room, it is the producer who sets the tone throughout. The producer will dictate the mood and atmosphere and most good albums are made in a positive environment.

This is also the time where an engineer is on board to get the sounds needed and to help with the more technical side of things. Unless, of course, YOU are the engineer as well.

If budget allows you will have selected a studio that is helpful to the vibe you wish to create and capable of giving the sound you expect.

Some producers carry a rack of favourite gear with them wherever they work, they know it inside out and can use it to quickly obtain good results.



Record drums, bass and rhythm guitars in a studio with a good live room; try to record complete takes to get a live feel. Then do the more time consuming instruments, such as vocals and other guitars, using your own set up. This way you can benefit from the flexibility of hard disk recording and get the best of both worlds.

It is usual to approach recording the rhythm part first. Due to the fact that a drum kit takes so long to set up, with a good sound, the producer will often record the drums and bass for every track on the album before moving on.

The groove and sound of the rhythm track, in any style of music, are enough to identify the genre, therefore they need to be spot on from the start. Once the foundation is in place we move on to guitars, keyboards, strings, samples and the other instruments used to build up the tracks.

Plan ahead to achieve the following:

Sounds that suit the chosen genre.
e.g. Indie guitars - jangly. Metal guitars - heavy and distorted.

Lead lines that stand out from the rhythm track.

Clarity and definition, not mush.

A spread across the frequency spectrum we hear, not feeling top or bass heavy.

Making one sound more rounded or dull will make it easier to make the next one sound bright.

Quote:

“With singers you need to ‘paint the sky blue for them’, make them feel that everything is going to be just fine. Don’t say ‘that take wasn’t good enough’, say ‘great, but I’m sure you can do even better.’”

Where performances are required, it is the producer’s job to get the best from the musicians. It is no use to anyone having an expensive mic in front of a singer if the delivery of the song is shabby.

FINAL MIX, POST-PRODUCTION AND MASTERING

If we look at getting the best from the vocalist in particular, then the same principles can be applied to other band members. Take away the pressure and maintain a relaxed approach. and make them comfortable. Often the first takes are the best, so don't miss them.



Don't erase the guide vocal. It may well have something special, because the singer didn't get "red light fever".

Cycle round tricky sections until you're sure you have them.

Have a copy of the lyrics and tick off each section of the song when you have a good take.

Get four to six takes and edit the best parts together to give a whole pass. This can be done with multi-tracks too, it is called a composite vocal and is achieved by running the several takes and un-muting the best parts as they are "bounced" to another track.

If things aren't going well, leave it and come back later. Avoid ruining the performer's confidence with repeat failures.

Don't leave all the vocal recordings to the end of the project.

Novice singers sing sharp when given headphones. Wearing only one ear of the "cans" will help correct this, but remember to pan the backing track to the enclosed ear to avoid "spillage" on the mic.

Always be aware that sometimes musicians will sing or play TOO MUCH! Try to limit them to what is necessary!

SEPARATE COMMENT:

Bring guitarists into the control room with a long lead to their amp. They will feel less isolated and you can interact more with them.

Freddie Mercury and **Bernard Sumner (New Order)** sang many of their vocals in the control room, without headphones!

Clever phase reversal was used to achieve this: Record the vocal with the mic central between the speakers. Record the signal from the mic with just backing track playing. Reverse phase of second take and play against vocal take, hopefully the backing tracks will cancel out.

Once all the raw material has been collected from the contributing musicians, it all needs editing and getting ready for the mix engineer.

It is essential to be organised and label everything clearly, especially on computer hard drives, where erasing a month's drum takes is all too easy and could prove very costly.

If someone else is going to complete the mix, they have to be able to follow what you have recorded and carry on from there.

If you are going to do the mix yourself, it would be advisable to take some time away before starting so you can be fresh to the work. A mix engineer would generally look at mixing a track a day.

Work that takes place after final mix is sometimes called "Post - Production".

On album projects a running order needs to be settled on. Having a solid opening track, which sets the scene for what is to come, is normal procedure. Also, leave the listener with something enigmatic at the end of the album.

Occasionally you may want to edit one or more of the finished tracks, perhaps they are too long or need an extra chorus or maybe a fade out is needed.

Mastering can be done on your home computer if you are making cds yourself. Where budget permits, or if vinyl is needed, a visit to a mastering suite is a necessity. See Chapter 1 in this workbook for more information.

Quote:

"I'm always relieved when I deliver the album, it means I've managed to get through another project without the band realising how little I really knew and that I'm still just getting away with it!"

Quote:

"Engineer and a producer is like football coach and manager. The coach looks after the technical side of things like passing, movement and practicing set pieces. Whereas the manager motivates the players, picks the team and decides how they'll play."

PRODUCING FOR DIFFERENT GENRES

ROCK

Most rock producers now embrace new technology, and the majority of traditional sounding rock albums have been made using expensive Pro-Tools systems. The advantages of multiple takes, easy editing, portability and ever improving software processing will make this a continuing trend.

The rock genre covers many styles, but BIG sounding drums and guitars are usually sought after. The aim is to make stadium sized power leap from the speakers, with the listener imagining a wall of Marshall Amplifiers. Complex studio techniques are employed to achieve this. For example, a part we hear as one powerful guitar may in fact be a composite of many playing the same thing.

The “Amp-Farm” plug-in effect is one advancement used heavily. Dozens of guitar amp and speaker combinations can be called up and manipulated for a huge range of convincing sounds.

URBAN/HIP-HOP/RnB

Typically the artist will be singers or rappers working with a producer. The producer will normally take at least part of the songwriting, programming and engineering roles, including final mix. Most of the musical content will be programmed, though occasionally session musicians will be brought in. A sampled motif is often used as the musical hook.

For Hip-Hop, the drums will be heavier and dirtier than for RnB. The vocals will often take the form of a rap. The rap ingredient means that recognisable chord progressions are rare, choruses are less prominent and verses are longer. The overall sound will be grittier and tougher than RnB.

RnB often relies heavily on lavish vocal productions with many backing vocals evident. Snippets of vocal are sampled and dropped into the rhythm track or repeated to give little hooks. To help the vocal melody, RnB will tend to be more musical than Hip-Hop and less reliant on a single repeated sample.

DANCE

In dance music genres we find almost exclusively the writer/producer single person set up. A singer will be hired to front the project where necessary, but are interchangeable in most cases.

The producer should have a good knowledge of club culture and what works for DJs.

Different factions come and go very quickly and having your finger on the pulse to stay ahead of the game is important.

POP

Pop music is generally seen to be a watered down version of any of the above genres. This makes them more accessible to a bigger audience and less offensive to radio stations, who wish to keep advertisers happy.

Occasionally surprising chart entries make us re-think our pop music definition. After all it is literally “music that is popular”.

JAZZ

The jazz music producer may want to capture the close, intimate atmosphere of a small club, where you sense the emotion and personal connection with the musicians and vocalist.

The essence of this kind of production is capturing the performances and setting the tone. Getting the musicians to play as a unit and interact with each other helps to achieve this.

FILM/GAME/TV

Again, the producer will be writer, engineer and producer. They may have their own studio of a high standard, equipped with costly sample cds to create lush string sections or other “real” instruments.

They will create the soundtrack in line with images on screen, the brief given and the budget allowed to finish the work. Big budget film scores invariably have orchestral sections, whereas computer games tend to have limited budgets and resources for music.

CLASSICAL

There are no overdubs used in classical recordings. Therefore the producer must seek out the suitable auditorium and work primarily with mic placement.

The producer must recreate the experience of being sat in the venue listening to the orchestra play through the work.

WANT TO KNOW MORE?

LINKS

New Deal for Musicians has no responsibility for or control of the following sites. The inclusion of any site does not necessarily imply New Deal for Musicians approval of the site. To access any of the sites please type in the address into a browser or search using keywords from the name of the link.
www.dfes.gov.uk/ukonlinecentres Find Internet access that's close to you.

WEB LINKS

- ☐ **www.futuremusic.co.uk**
Essentially about equipment, but some interviews with artists and producers
- ☐ **www.soundonsound.com**
Absolutely tons of interviews with producers, where they talk about their work. Also tips and techniques and equipment reviews. Use the search engine.
- ☐ **www.recordproduction.com**
Video interviews with producers.
- ☐ **www.music-recording.com/production.html**
Interviews and short articles on production and studio techniques. Many adverts to avoid!
- ☐ **www.remixmag.com**
On line magazine specialising in urban and “electronic” styles. Articles on producers, artists and equipment.
- ☐ **http://emusician.com**
Articles about the recording process, but more from an engineering perspective.
- ☐ **http://mixonline.com**
More articles and interviews.
- ☐ **www.digitalprosound.com**
Plenty of tips and gear reviews. Got to the “features” and “techniques” menus.
- ☐ **http://audacity.sourceforge.net/about.php**
Free software for audio manipulation, including basic editing and mastering processes.
- ☐ **www.tonyvisconti.com**
Articles about production from an expert. Has insider knowledge about the production of many famous albums.
- ☐ **www.mixthis.com**
This dreadful looking site is the work of rock producer Bob Clearmountain. Well worth a visit for the studio tour though.
- ☐ **www.bbc.co.uk/music/parents/careersguide/production_engin.shtml**
Basic overview of what a producer does, includes an interview with Steve Levine.
- ☐ **www.bbc.co.uk**
Use the search engine to find articles about producers.
- ☐ **www.bbc.co.uk/radio1/onemusic/**

BOOKS & MAGAZINES

- ☐ **Behind The Glass**
Howard Massey
Publisher : Backbeat UK
ISBN : 0879306149
“Behind the Glass” referring to the window separating the live room from the control room. Many top producers discuss techniques used on the big names.
- ☐ **Good Vibrations: History of Record Production**
Mark Cunningham
Publisher : Sanctuary Publishing
ISBN : 1860742424
Tracks the evolution of recording through the years. Features artists’ and producer’s anecdotes.
- ☐ **Insidetracks : A First-Hand History of Popular Music from the World's Greatest Record Producers and Engineers**
Richard Buskin
Publisher : Quill
ISBN : 0380807459
A collection of interviews with producers and engineers, gives behind the scenes insight.
- ☐ **Recording and Production Techniques**
Paul White
Publisher : Sanctuary Publishing
ISBN : 1860744435
Contains everything from microphone placement to final mix. Easy to drop into to and use as a reference during your work.
- ☐ **The Art of Music Production**
Richard Burgess
Publisher : Omnibus Press
ISBN : 0711990107
Recently updated to include more modern technology.
- ☐ **How to Become a Record Producer**
David Mellor
Publisher : PC Publishing
ISBN : 1870775481
Works through many aspects of the producer’s world.
- ☐ **Sound On Sound**
Essentially full of recording equipment reviews, but always has a couple of features on techniques used and interviews with producers.
- ☐ **Future Music**
Concentrates more on the computer driven music maker. Equipment reviews, tips and interviews.

MORE TASKS

- 1 Write down what you understand by the terms “well produced”, “over produced” and “big production”.
- 2 Describe how a producer’s role is different from that of an “engineer”, “programmer” and “remixer”.
- 3 For an exercise in post-production, pick an album from your music collection. Try a different running order to the one you are used to. How does it affect your enjoyment of the album? If possible try an edit on one or more of the tracks. Also try altering the gaps between tracks or using fade outs, even fade ins! Experiment with a range of compression, EQ and other mastering tools using computer software.
- 4 Make a list of differences between how an album would have been produced in the 60’s or 70’s to how an album is usually made today.