Chapter 2 – Active listening

In my time as a music producer, there is one skill that surpasses all others in terms of its use to accelerate your development as a musician. If you're an experienced music producer, you may do it already – however, if you're just getting started, then this, in my opinion, is the most important skill you could acquire as a music producer. It's called **active listening**.

We all listen to music, often while doing work, sitting on the train or cooking food. However, this music often simply provides a background noise to the activity we're doing. I would call this passive listening.

Active listening, on the other hand, is a different beast. To actively listen is to listen to music and hear nothing but the music, concentrating on nothing but the music you're listening to, dissecting and reverse-engineering every layer of the music you're hearing in order to unlock its secrets.

It's a skill that, once practiced, will stay with you forever as a producer. It also goes hand-in-hand with your journey of development as a music producer, in that as you gain experience in music production techniques, you will better spot the techniques that other producers have used.

It is also a skill that becomes easier with practice – it might feel difficult the first time you do it, but with enough attempts you will find yourself applying elements of active listening every time you hear music.

Active listening is an essential skill for this book. I'm sure you've heard basslines in music that you'd define as "deep", "heavy" or "dirty" – this book aims to start you on your journey to knowing what those attributes translate to in the reality of synthesizer programming.

This chapter will conclude with an exercise – an active listening exercise! Even if you're used to actively listening, you should undertake this exercise, as it's always good to refresh your skills in this area.

Exercises – Practice

1) Find a song you want to actively listen to. This could be your favourite song, or one you admire for its sound.
2) Sit comfortably, wearing good-quality headphones or using studio monitors.
3) Eliminate all distractions around you. Turn off your computer monitor, turn your phone over – turn your lights off and close your eyes if possible.
4) Find the best-quality sound source you can – be it vinyl, CD or FLAC/WAV file.

5) Play the song. Instead of enjoying it for what it is, listen to it as a set of different layers. Break them down - listen to each instrument at a time. Are you aware of all the instrument layers in the track? You may discover layers you were previously unaware were of in the track!

6) Play the song again. Does the song change its narrative tone at any point? If so, how is this accomplished?

7) What texture does the song have? Does the texture change at any point in the track?

I hope you enjoyed your active listening session, whether it was your first or one of many! In the next chapter, I'm going to delve into the process of synthesis – what it is, and how it works.

Chapter 3 – What is synthesis?

In order to understand a synthesizer, it's important to understand the difference between a synthesizer and a more traditional musical instrument. As discussed in Chapter 1, sound is a vibration that travels through the air.

All non-electronic musical instruments physically create controlled vibrations in order to produce their tone. A guitar string produces a musical note when it's plucked by vibrating at a frequency defined by the length of the string, which is why a guitar's fret board allows the player to vary the length of a string. The sound of a flute is a column of air within the flute vibrating -and covering the holes of the flute varies the size of this column. Even a human voice singing a fixed tone is a product of the vocal cords vibrating at a fixed length and tension, driven by air pressure from the lungs.

Subtractive synthesizers, as musical instruments, also produce vibrations at specific frequencies. However, the mechanism is different. A hardware synthesizer uses a device called an oscillator. An oscillator generates an electronic vibration, according to a set waveform, at a set frequency. This vibration, once it's worked its way through the processing circuitry inside the synthesizer (all of which we'll cover in later chapters), gets picked up by the synthesizer's amplifier, which increases the volume of the signals. Once these signals are connected to an audio speaker (such as hi-fi speakers or a pair of headphones), the speakers output the signals as an audio sound by vibrating to match the signals coming out of the amplifier.

There are two ways modern synthesizers create their sound – hardware and software. A hardware synthesizer is one that generates and processes its sound using electronic circuitry, whereas a software synthesizer simulates the workings of a hardware synthesizer using computer code. There are some synthesizers that use physical pots and buttons, but simulate their inner workings with an on-board computer chip.

Because synthesis is a unique way to create sound, synthesizers possess their own particular sound palette. This varies from synthesizer to synthesizer and is a product of their circuitry and components (on a physical synthesizer) or a product of their code (on a computerised synthesizer). There is a chapter later in this book dedicated entirely to the perceived character of different synthesizers.

All sound design using synthesizers is through a two-part process:

1) The creation of sound
2) The manipulation of the sound created

Each synthesizer possesses common features, and you will learn how to effectively harness them in this book.

A note of caution - this book will teach you about traditional synthesizers, i.e. a synthesizer that creates and manipulates waveforms. How do you know if a synthesizer is traditional? It should have selectable waveforms and areas such as the ones you'll discover in this book. If a synthesizer has a bunch of presets for tuba, piano, choir and drums, it's sample-based. This means that tone generation is done through playing small recordings of sounds rather than through oscillators.

That's not to say that this book won't provide value if you primarily use a sample-based synthesizer, as sample-based synthesizers possess many features in common with traditional synthesizers, however this book is geared to those who wish to program synthesizers in a traditional sense, for example Moog and Roland's synthesizers, or the virtual synthesizers that come with software like Logic and Reason.

Exercises – Q&A

1) What does an oscillator do?
2) How does the signal from the oscillator become audible sound?
3) What is the two-part process of sound design on a synthesizer?