CHAPTER 5

Recording Inside

You might be surprised to hear that I am a champion Bible reader. That's right, when I was growing up, I routinely won the Junior Eisteddfod Bible reading competition in my hometown of Ipswich. As a result of my status as the town's best junior Bible reader, I was invited to read at our local church on Sundays. It was here that I learned my first lessons in acoustics. Churches that predate amplification are purpose-built acoustic spaces. You say something at the front of the church and it rolls down to the back. Then, unfortunately, it comes back. The only way to be understood in this environment is to leave long pauses between your sentences. Priests don't just pause during their sermons so you can reflect on your eternal damnation; there's also acoustics at play. Many people are able to recognize the sound of a voice in a stone church, whether or not they are a champion Bible reader. In fact, most people will be able to hear a lot of information about any space in which they hear a sound. This chapter is primarily about *acoustics*, so we'll be thinking about the qualities of a room that determine how sounds develop in that space. You'll be able to use this information to find good acoustic spaces in which to record your podcast.

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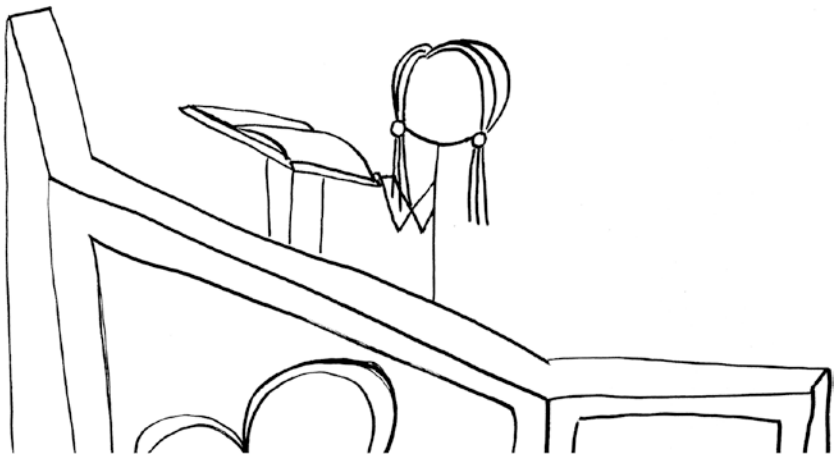

Figure 5-1. *When I was reading for the congregation, I had to consider the acoustics of the church. You will have to consider acoustics when choosing a space in which to record your podcast*

Some or all of your podcast will most likely be recorded inside. This might be in a studio, in your home, or you might be visiting some other indoor space. In Australia, there are a few cost-effective options for recording inside including library facilities and community radio stations. International readers might find similar recording spaces in their local communities. If you choose to record at home, it will require an investment in gear and some knowledge of acoustics.

Recording in a Studio

Before you make an investment in a whole lot of audio gear, you should consider recording in a professional studio.

There are many advantages to recording in a professional recording studio. A professional studio offers high-quality equipment in an acoustically treated space. The cost of hiring a studio ranges from cheap to more expensive, but it is often more economical than investing in

equipment for your own home. The audio that you record in a professional studio will generally sound much better than audio that is recorded at home.

You need to be on the lookout for quality. It has come to my attention that some businesses market themselves as podcasting studios, but do not offer the level of service that you would expect from a professional recording studio. There's a lot more to setting up a recording studio than buying some consumer-grade audio equipment and putting it in a room. Luckily, you don't have to be an expert in sound engineering to work out the difference. A recording studio should be quiet, due to the soundproofing. If you can hear outside noises such as the train or the traffic inside the space where you will be recording, then give that studio a miss. Good soundproofing is expensive, but not really flashy, so it's a good sign if the owners of a recording studio have made it a priority.

If you do choose to hire a studio, consider the following affordable options.

Public Libraries and Community Spaces

You might find that a community organization has set up a recording studio in your local area that is available to hire. In Australia, for example, a number of suburban councils and libraries have recording studios available to hire for a very reasonable price. If you can find such a facility, I would highly recommend using it, because this will give you the best value for money. The council or library generally provides training for the use of their equipment. Look for something similar in your local area.

Radio Stations

Consider hiring a studio at your local radio station. There are numerous small radio stations dotted around the world, serving small sections of the community. They often hire out their studios with or without an engineer as an alternative income stream. This is a reasonably affordable option for

those making a podcast. You can find your nearest radio station using the **World Radio Map**.

Radio stations have a lot to offer podcasters. The equipment in a radio station will be optimized for recording voice, and the space will be acoustically treated.

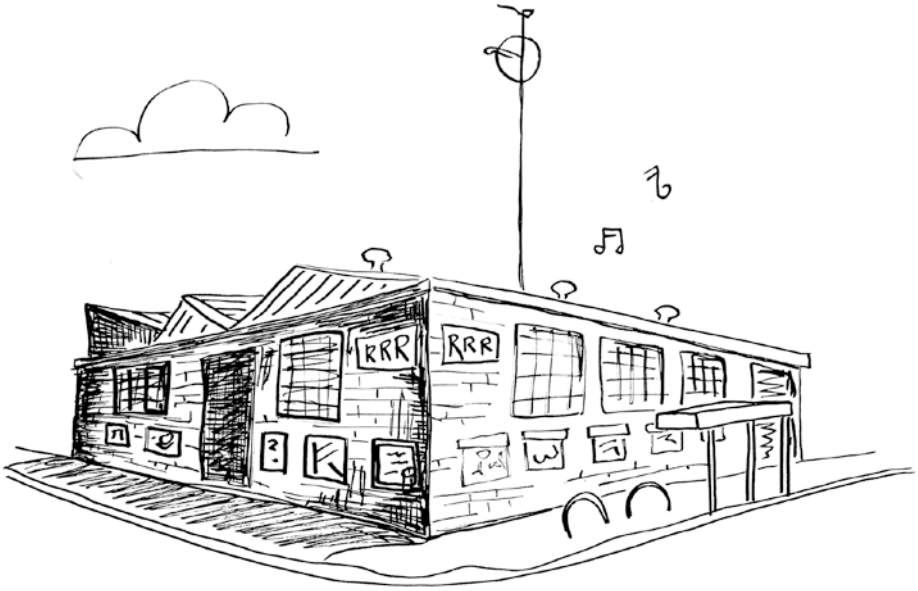

Figure 5-2. *Radio stations are a great place for podcasters to make a recording*

Recording at Home

Recording at home offers a lot of flexibility, but requires a greater investment in equipment. You can make a pretty good recording at home, but it probably won't be as polished as a recording made in a studio.

If you're recording at home, it's worth spending some time finding the best space. The principal issues to consider are background noise and the overall sound of the space. I believe that with the right equipment, you

should be able to greatly reduce your recording of background noise. This will enable you to concentrate on finding an area that's comfortable and that sounds good. For further information on equipment, see Chapter 2, "Gear Part 1" and Chapter 3, "Gear Part 2".

Reducing Background Noise

I live in an apartment in the inner suburbs of a capital city. My days begin with the screech of wattle birds. Traffic hum is constant. Conversations drift up through my window. Although I've never met the girl downstairs, I can say with a great deal of certainty that her favorite movie is *The Sound of Music* and that she aspires to be a musician. I can tell you that she will undoubtedly achieve that ambition because she's dedicated to practicing at all hours. Does this situation find me huddled in my closet recording voice-over? Not necessarily.

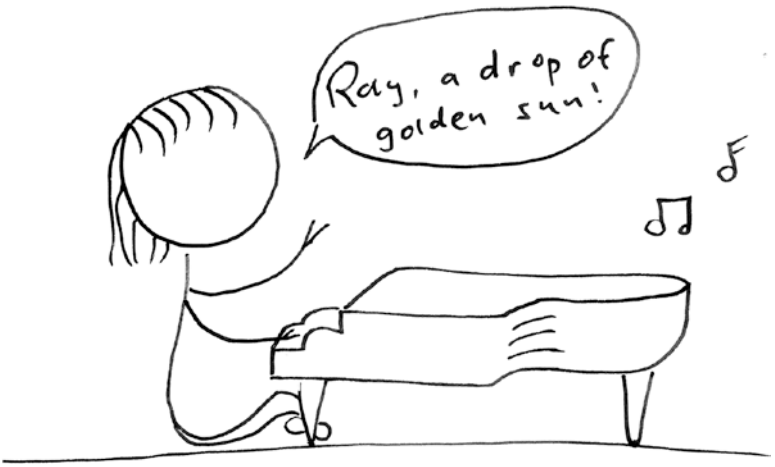

Figure 5-3. *The musical ambitions of my neighbor don't clash with my desire to make recordings*

When you're recording in a studio, the inside of the room should be quiet due to the soundproofing. When you're recording at home, you'll need a basic understanding of how sound travels through walls to help you minimize the amount of background noise. Imagine that you're walking down the street toward a pub to see your favorite band. The first thing you hear as you approach the pub is the *thump*, *thump*, *thump* of the bass guitar and the kick drum. As you draw closer, you start to hear the muffled roar of electric guitars. When you open the door, it's like the music has suddenly come into focus and you're enveloped in sound. This scenario demonstrates that different sounds travel through the walls of a pub differently. Sounds that are of a low frequency such as bass instruments can easily travel through walls and other heavy objects. Sounds in the middle frequencies such as guitars and voice meet considerable resistance from the wall. Even when they make it through the wall, they sound muffled, because the higher-frequency parts of these sounds are missing. You might hear the singer, but you can't make out the words because you're missing the consonants. This tells you that high-frequency sounds are easily blocked by a wall.

If you stand outside the pub having a chat, you'll notice that every time the door opens, the music is considerably louder and clearer. This is because sound travels a bit like heat – it will use any air gap to escape.

When I'm recording at home, I take these properties of sound into consideration to reduce background noise without too much trouble or expense. I use a microphone that prioritizes the frequencies of human speech and so rejects really low frequencies. As such, I don't worry if small amounts of traffic rumble or other really low-frequency sounds are coming into the room. I concentrate my efforts on dampening sounds in those higher frequencies that really clash with human speech, such as birds. Sounds in these higher frequencies are much easier to deal with. To reduce these sounds, I act as though it's a cold day and I want to keep the room warm. I close the doors, the windows, and the curtains, and I might go so far as to block out the gap underneath the door. In this minimalistic way,

I can make a pretty good recording of human speech at home without too much expense or effort.

Once you have taken steps to reduce the recording of outside sounds, you can start to consider how well the inside of your room works for recording.

What's in a Studio?

It's worth looking at the design of a recording studio so you can apply some of these principles to finding a place to record in your own home. When you hire a studio, you're paying for the sound of the room as much as you're paying for the fancy gear and the expertise of the engineers. This is because when you're recording a sound, you're not just recording the direct sound, you're also recording repeats of that sound that have bounced off the surfaces around it. These repeats of the sound are known as *reflections*. Collectively, they are known as a *reverberation*, or *reverb* to sound engineers, who love shortening words almost as much as they love dressing in black denim. A reverberation gives a listener information about the size and shape of the room and the textures of the surfaces within it.

If you were building the hypothetical worst recording studio, it would be a small, bare room with hard, symmetrical walls, ceilings, and floors (see Figure 5-4). Recording in a space like this guarantees poor-quality sound. Think about how you might sound if you were singing in the toilet.

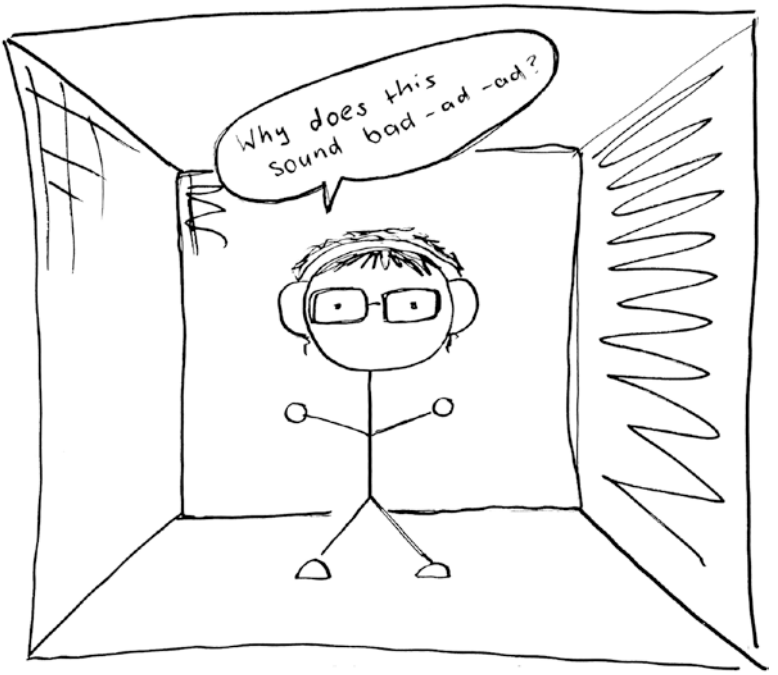

Figure 5-4. *Hypothetical worst studio*

A good studio is basically the opposite of this. Here's what to look for in a studio or in your own home.

Look for Asymmetrical Surfaces to Randomize Reflections

Some people will recommend the toilet as a good place to record at home because it's quiet, but it sounds bad partly because of the echo, but also for another reason.

The symmetrical walls of the toilet are causing sound waves to bounce back on themselves evenly. This causes certain frequencies of the sound to cancel out and others to be accentuated, which sounds unnatural. The more symmetrical a room, the worse this effect is. Audio 5-1 is a recording I made in my toilet to demonstrate.

Audio 5-1 Recording in my toilet

Really good studios have asymmetrical walls, which cause sound to bounce around randomly. If there are symmetrical walls, then they are often broken up with *diffusers* (Figure 5-5). A diffuser is a wall panel with hard uneven surfaces that are designed to disperse sound waves.

Figure 5-5. *A section of a diffuser*

Not only do you want to avoid recording in a room with a lot of flat, symmetrical surfaces, but you also want to mix up the type of surfaces.

Consider the Surfaces of the Walls, Floor, and Ceiling

Recording studios usually contain a mixture of hard surfaces such as wood and soft surfaces such as carpet. The mix of hard and soft surfaces will create a balance between the room sounding too *live* and too *dead*.

A sound wave traveling through a soft surface encounters resistance and so loses energy more quickly than a sound wave bouncing off a hard surface.

If you make a sound in a room with lots of hard surfaces, like the toilet, the sound wave barely encounters any resistance. Too many reflections come back and you hear an echo. You would say that the room is too *live*.

A studio generally contains a certain amount of soft surfaces like carpet to reduce echo and to ameliorate problem frequencies. A studio might have foam panels on the wall or in the corners to attenuate specific frequencies that are a problem in that space.

Recording studios are not completely padded rooms, because that would sound too *dead*. If you make a sound in a *dead* room, then insufficient room reflections come back. Another popular piece of advice for podcasters is that they should record in their closet because, like the toilet, the closet is quiet. If the toilet has too many hard surfaces, then the closet has too many soft surfaces in the form of your clothes. These soft surfaces absorb too much of the high-frequency sounds, making speech sound muffled or dead. Audio 5-2 is a recording I made in my closet to demonstrate how this environment can affect your voice.

Audio 5-2 Recording in my closet

You might sometimes see pictures of people recording in heavily padded vocal booths. These rooms sound dead, but in this case, the sound engineer will add reverb later.

If you want to appreciate the effect of hard surfaces on your voice, then consider how amazing you sound singing in the shower. The hard surfaces of the shower unit reflect your singing back at you making you sound like a superstar. As a shower unit is not a completely symmetrical, enclosed box like a toilet, it doesn't tend to suffer from the same problems. However, it would probably be wrong for recording your podcast as, like the church, it's a pretty distinctive-sounding acoustic space.

It's not just the shape and the surfaces; the size of a room also affects the room reverberation.

Consider the Size of Your Room

Good studios tend to have fairly large rooms, which gives sounds a feeling of space and clarity. In a small room, reflections follow on from the initial sound very quickly, whereas in a large room, there's a longer gap between the initial sound and the first repeat of it. Consider how a musician might sound in a concert hall next to how they might sound in a typical classroom.

The small size of the toilet and closet is another reason to avoid recording in these spaces. A recording made in a small room can sound claustrophobic.

Acoustics is not the only issue you will face when recording in your toilet and closet; there are also practical considerations. These spaces are not at all comfortable, and they're not an appropriate place to bring a guest. While it's good to find somewhere reasonably quiet to record, it doesn't have to be your primary consideration if you're using appropriate equipment.

Figure 5-6. *Recording in a closet is quite impractical*

The size, shape, and textures of a room affect the way that sound waves reverberate. You want some reflections but not too many. You want them to come back to you but not too quickly. You want them dispersed randomly. Now that you know what to look for, it should not be difficult to find a suitable place to record at home.

Finding a Place to Record at Home

Think back to the idea of the hypothetical worst studio – the small room with hard, symmetrical walls, ceiling, and floors. When recording at home, try to find a space that is the opposite of that.

Look for a fairly large room. If you have an asymmetrical room available, this might be a good choice. If not, then keep in mind that furniture helps to break up symmetrical surfaces and so randomize the way that sound bounces around. Smaller objects will tend to randomize the reverberation further. So a bookshelf is good, and a bookshelf full of books is better. It's good to record in a room that has a variety of surfaces, such as carpet, plaster, wood, and windows to find a balance between a live and dead sounding space.

You probably don't have soundproofing in your home, but look for a quiet room. Sounds that are in a really low frequency range such as traffic rumble will be less of a problem than sounds that are in the same frequency range as human speech, such as birds.

When I record at home, I record in my living room, which is not acoustically treated. Listen to Audio 5-3 to hear how my voice sounds in my living room.

Audio 5-3 Recording in my living room

My living room is a fairly large room. It is a symmetrical box, but it is full of furniture and other objects. You will know from your own experience that an empty room has a different sound to a room with furniture and belongings in it. Some might say that my living room is full of clutter, but I think of it as acoustic treatment.

My living room contains some hard surfaces such as plaster walls and windows and some soft surfaces such as carpeting, so it is a good mixture between live and dead.

Not only does my living room sound good, it's also a comfortable place to work and a suitable location to conduct an interview.

Unfortunately, my living room isn't particularly quiet. Usually it's fine, but sometimes when the noise becomes too loud, I use my bedroom instead. My bedroom has smaller windows which let in less noise.

Now that you know what to look for, you can find the ideal area in your home. Furthermore, you can use this knowledge to find a place to make a field recording inside any building.

Listening to the Space

Understanding acoustic principles will help you narrow down a few likely places to record, but the real test is how these places sound. Once you have found a likely space, set up your equipment and have a listen. Pay attention to background noises and listen to the way your voice sounds in the space.

You might think that a room is quiet, but when you listen through recording equipment, tiny noises can become apparent. When I put on my headphones and listen through my setup, I notice that the traffic rumble reduces, but the clock starts yelling at me, "TICK, TICK, TICK." My microphone is designed to accentuate vocals, which is why it also accentuates the ticking of my clock. The ticking sound is very much like a consonant – a "T" or a "K." The solution is to move my clock to another room when I'm recording.

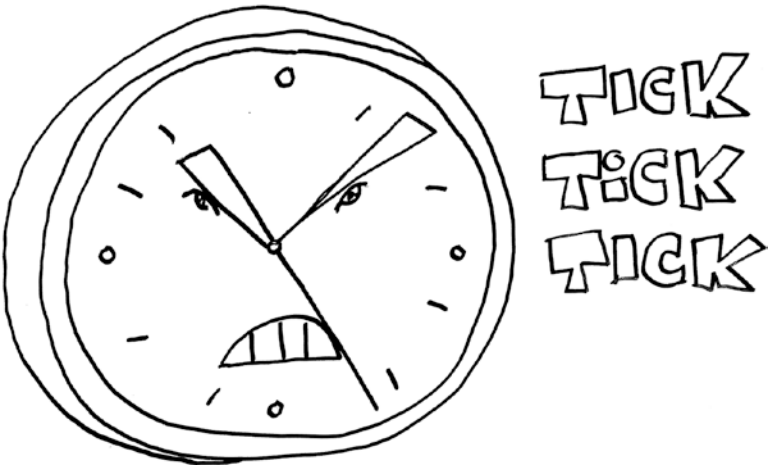

Figure 5-7. *You might find that your recording equipment accentuates little sounds such as the ticking of a clock*

When you've found an area that sounds good, make a recording and listen to how your voice sounds in the space. If you're comparing a few spaces, you should note that your voice will sound louder or softer in different rooms. Make sure to adjust the volume of your recordings to make a fair comparison.

Using your ears and some basic acoustic principles, you can find the best place in your home to record a podcast.

Summary

A professional recording studio will give you the highest-quality recording and could be cheaper than investing in your own equipment.

If you're recording from home, you should consider the acoustics of the room that you're recording in. When looking for a space to record in your home, you should find a medium to large room with multiple types of surfaces such as carpet and wood and with lots of furniture and other

objects within it. Imagine the worst hypothetical studio – the small, empty cube with bare walls – then find the opposite of that.

A room with less background noise is better, but you don't have to record in your closet. You should consider your comfort and that you might want to invite other people around to conduct an interview. Use equipment that doesn't pick up too much background noise. Dampen outside noises the same way that you would keep heat in a room.

Set up your equipment, make a recording, and listen to how you sound in a few different places.

Your ears and your knowledge of acoustics will help you find suitable places to record indoors.