
David Earl

Chapter No. 7
"Getting It All Stacked Up"
In this package, you will find:
A Biography of the author of the book
A preview chapter from the book, Chapter NO.7 "Getting It All Stacked Up"
A synopsis of the book’s content
Information on where to buy this book

About the Author

David Earl is a music composer, producer, and performer living in the San Francisco Bay Area. His music has been heard in film, television, audio branding, and video games. David has worked for clients such as Brown Paper Bag, Summit Pictures, Double Fine, Activision, THQ, Lila Rose, Artemis, Sony, Pyramind, Ripesound, and the Juno Company.

David has been balancing a life of intense creativity with a deep desire to teach. For the past 10 years, he has helped to develop various curricula for Pyramind in San Francisco. He is an Apple Certified Logic Instructor, and also teaches Modular Synthesis using Reaktor.

As a purely innocent and altruistic endeavor, David started posting tutorial videos to YouTube as 'sflogicninja' in 2007, as an attempt to help fellow producers. He now has a following of over 25,000 subscribers worldwide. He has since started creating tutorials for MacProVideo, and creates additional video material for Pyramind Online—the online counterpart to their brick and mortar training center.

David has collaborated with other writers in his field, but LMMS: A Complete Guide to Dance Music Production is his first official effort.

For More Information:
I would like to thank my wife for putting up with my late night writing sessions. I also give deep thanks and gratitude to Artemis Robison, without whose efforts this book, quite possibly, would not have happened.

I would also like to thank all of the mentors that I've had over the years. Mentors such as David Occhino, Mike Dana of Fresno City College, Andy Newell of Ripesound, Steve Schick at Fresno State, Jordan Rudess of Dream Theater, Mark Bacciarini, Lance Freeman, and Fresno State's entire music department. Without learning from these teachers, there is not a chance I could have been doing what I do today, and it is because of them and others, who I may not have listed here, that I feel compelled to pass my knowledge on to those willing to learn.

For More Information:
Welcome to LMMS: The Complete Guide to Dance Music Production! This book has everything you need to get started making electronic music. Not only does this book help you understand the inner workings of LMMS—a great music production program—it also guides the reader down the path of creating a song from the beginning to the end. Some history of dance music is explored along the way, as well as making your own noises and becoming a part of the music community at large.

What This Book Covers

Chapter 1, Gearing Up: A Preflight Checklist, explores settings, parameters, and preferences we need to get LMMS off the ground. We'll also explore creating sound libraries of samples without fear of getting sued. Before we make music, we need to get our studio in order!

Chapter 2, Getting Our Feet Wet: Exploring LMMS, explores the LMMS layout. LMMS has six main editors, and we'll explore the function of each, and how they will contribute to our process. We will also explore the way these editors work with each other.

Chapter 3, Getting Our Hands Dirty: Creating in LMMS, starts making music! Dance music is based on patterns, and in this chapter we will explore pattern-based music. We will take a close look at the different instruments used in electronic music production and their use in popular dance music patterns. We'll also make some basic patterns that are representative of some of the most popular dance music styles.

Chapter 4, Expanding the Beat: Digging Deeper into the Art of Beatmaking, starts exploring basic sound creation techniques using some of the instruments built into LMMS. In this chapter, we'll also start making sense of our music by creating a good, basic arrangement of our music. We'll also explore changing parameters of LMMS over time with automation.

Chapter 5, Making Spaces: Creating the Emotional Landscape, explores creating atmosphere and texture in our arrangement using ambience, reverb, and other techniques. In this chapter, we'll get familiar with artists that used ambience effectively in dance music. We will also explore controlling effects so that they change over time, creating dynamic movement in our music.

For More Information:
Chapter 6, *Finding and Creating New Noises*, explores some basic recording techniques, and where to put noises once we have them. Sampling is a technique of recording sounds in the real world and incorporating them in an instrument that can play them back musically. We will also explore playing samples in the Song Editor as well as the AudioFile Processor.

Chapter 7, *Getting It All Stacked Up*, explores the technique of loop stacking. In dance music, there is a process known as "subtractive arranging". We are going to take the first step in making our dance music arrangement by creating a very dense loop of music, and explore how the different elements of the loop fit together.

Chapter 8, *Spreading Out the Arrangement*, extends the loop that we created in Chapter 7, Getting it All Stacked Up, to create an arrangement. We will add additional content to our already dense loop, and explore the art of subtractive mixing.

Chapter 9, *Gluing the Arrangement Together*, explores the art of transitions and automation. Our arrangement works well at this point, but we need to still add life and movement to our music. Altering parameters over time to create builds and transitions is key to a dynamic piece of electronic music.

Chapter 10, *Getting the Mix Together*, explores mixing, which has to do with balancing the volume of all of our parts so that they all have a place in our sonic space. Now that everything has been put in place, we need to balance all of the elements of our song.

Chapter 11, *Getting into Instruments*, explores making awesome sounds and how to apply these sounds to a song. Now that we have been through all of the stages of production, it's time to explore the details of the instruments built into LMMS. LMMS has some powerful instruments under the hood. In this chapter we'll become musical mechanics.

Chapter 12, *Where to Go from Here*, explores the various guilds, unions, and such we need to know about to participate in the music industry at large. Making music is one thing. Getting it into the world is something else! We will also explore some of the newer methods of distribution of music that have come about recently and even how to share music with social networks.

Appendix, *Pop Quiz Answers*, contains the answers to all the pop quiz questions for all the chapters.

For More Information:
We’re going to be exploring a technique that’s really popular in dance music called subtractive arranging. It doesn’t quite have the same charm as the techniques with more colorful names like chopped and screwed, or glitch, but it is a main staple of the dance music diet.

Now that we know how to make all of the main ingredients for our electronic music stew, it’s time to start putting them all together and building the foundation of our song.

The idea is to create a loop, just like we did before, that has all of our basic ingredients, and then layering more and more parts on top of it, until our loop sounds too busy. When we reach this point, we will simply mute the elements that we just created, and build even more parts on the loop. Once we’re done, we are going to have all of the parts that we need for the entire song. Later, in Chapter 8, Spreading Out the Arrangement, we will be discussing how to lay these parts out so that we create a compelling story for the listener.

For now, though, let’s get our stack together!

In this chapter, we will:

- Create a looped pattern in the Beat+Bassline Editor
- Add the pattern from the Beat+Bassline Editor to the Song Editor
- Add more elements to the Song Editor to flesh out the looped pattern
- Mute and unmute elements in the Song Editor to get ideas for arranging new patterns

For More Information:
Get your loop set

To get started, let’s get our loop length set. The common length of a looped pattern is 32 beats or eight bars of time. We’ll be using the Song Editor and Beat+Bassline Editor to get our initial patterns together, and start layering from there.

Time for action – setting up the loops

In Chapter 4, Expanding the Beat: Digging Deeper into the Art of Beatmaking, we created loops in the Beat+Bassline Editor. Now we are going to show how these patterns will be used along with other instruments in the Song Editor.

1. Open a new session in LMMS and save the session as Main Loop Start; then open the Beat+Bassline Editor.

2. Delete the default instrument that shows in the Beat+Bassline Editor:

3. Open the side bar and import a kick, snare, clap, and hihat into the Beat+Bassline Editor (as we explored before, they are located in My Samples):

For More Information:

4. Now extend the patterns out to 64 beats (right-click on each pattern) and zoom out a bit. This is a very long drum pattern, but it's going to be the basis for all of our pattern versions. Let's make a basic beat to start from, as shown in the following screenshot:

5. Before we continue, let's set our loop in the Song Editor. Right-click on bar nine of the Song Editor. You'll see the green, bow tie icon snap to bar nine, as shown in the following screenshot:

6. Turn the looped section on by clicking the button shown in the following screenshot:

7. Once it is selected, the looped area will be activated along with the loop markers, as shown in the following screenshot:

8. Now that we have our looped area, we need to start using elements. In the Song Editor, click next to where the Beat/Bassline 0 track is, as shown in the following screenshot. You will see the element pop up in the Song Editor:

For More Information:
9. Now click in the **Song Editor** next to that element. Another element will show up right next to the first one we created:

![Song Editor](image)

10. Now press the Space bar to hear the pattern repeat in the **Song Editor**. Have a listen.

11. Now we can create a new **Beat+Bassline** based on the first pattern. Click on the **Track Actions** menu, and select **Clone Track**.

Now we see a new **Beat+Bassline** track called **Clone of Beat/Bassline 0**:

![Clone Track](image)

12. This pattern will now show in our **Beat+Bassline Editor**. Open the **Beat+Bassline Editor** and select the disclosure triangle next to the pattern's name:

![Beat+Bassline Editor](image)

13. Now you can select between patterns. To rename the **Clone of Beat/Bassline 0**, right-click on the track in the **Song Editor**:

![Rename Track](image)

14. Let's name it **Beat Variation 1**. The name will show in both the **Song Editor** and the **Beat + Bassline Editor**, as shown in the following screenshots:

![Beat Variation 1](image)

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**For More Information:**

15. Change **Beat Variation 1** so that it is slightly different from **Beat/Bassline 0**:

![Beat Variation 1](image)

Remember that the scroll wheel will alter the volume on individual notes. This is why there are darker green colors in this variation.

16. Now play the **Beat+Bassline Editor**, and switch back and forth between **Beat/Bassline 0** and **Beat Variation 1**. You can do this freely while the patterns are playing in the **Beat+Bassline Editor**. Have a listen to how well they play together.

17. In the **Song Editor**, on the second element in **Beat/Bassline 0**, right-click and choose **Delete (middle mousebutton)** as shown in the following screenshot:

![Delete (middle mousebutton)](image)

The middle mouse button is only available on some mouse devices. On Windows computers, the middle mouse button is often simulated by simultaneously pressing the right and left buttons at the same time.

For More Information:
18. Now delete the first element in Beat Variation 1:

![Element Diagram](image1)

19. Now press Space bar and listen to the Song Editor. The first element should play seamlessly into the second element.

20. Now let's mute elements instead of deleting them. Create elements for our Beat/Baseline 0 and Beat Variation 1 again, as shown in the following screenshot:

![Element Diagram](image2)

21. Now mute these elements by either right-clicking and choosing from the menu, or use the keyboard shortcut Ctrl and press the middle mouse button. Now the elements are still there, but not playing. Alternatively, we can solo individual elements by using the solo button in the Song Editor, which automatically mutes all of the other elements, as shown in the following screenshot:

![Element Diagram](image3)

**What just happened?**

We've successfully created a pattern, variation, and element in the Song Editor. We've also created our loop area for constructing the main loop that we will be using in the song.

Elements in the Song Editor are going to provide us with the building blocks necessary in our song. Elements can represent a Beat+Bassline pattern, a sample, or an instrument. Elements can be deleted by right-clicking on them, or you can actually mute the element so it will not play back. We are going to use the latter method until we get to arranging the patterns.

For More Information:

Adding instruments

Ok, we’ve got our main drum pattern now. Time to start putting the other pieces together. We are going to start by getting an instrument for our bassline. Then, we’re going to use the Piano-Roll editor to create a bassline and variation.

Time for action – making our basses

We need to start adding elements to our song editor to cover our bassline for the song. Instead of using the Beat+Bassline Editor, we’re going to use the Piano-Roll:

1. Go to the side bar, and open up the instruments. We’re going to use the LB302 as shown in the following screenshot:

   ![Instrument plugins]

   Drag an instrument into either the Song-Editor, the Beat+Bassline Editor or into an existing instrument track.

   - AudioFileProcessor
   - BitInvader
   - Kicker
   - LB302Incomplete monophonic imitation
   - tb303

2. Click on the LB302 and drag it to the Song Editor, as shown in the following screenshot:

   ![Default preset]

3. Now click next to the track to get a new element for this instrument, as shown in the following screenshot:

   ![Default preset]

For More Information:

4. Double-click on that element to give us the **Piano-Roll** editor. We will write a basic bassline to compliment our beat.

5. In the **Song Editor**, set the loop area to four bars. Right-click on bar five as shown in the following screenshot:

![Screenshot of Piano-Roll editor with bars highlighted](image)

6. Press the Space bar to hear the four bar loop.

7. Leave the **Song Editor** playing as we create our bassline.

8. Now open the element next to our **LB302**, and write the following notes in the **Piano-Roll**:

![Piano-Roll editor with notes](image)

Listen to the beat playing along with this new bassline.

For More Information:
9. Go back to the Song Editor. You'll notice that the element is now four bars long, as shown in the following screenshot. The element automatically expanded to fit the notes we put inside:

![Song Editor screenshot](image)

10. Now hold Ctrl and click on the element. You'll see an element that looks like the + sign. Drop this element next to the other one, as shown in the following screenshot:

![Default preset screenshot](image)

11. Now let's change the last bar of the second element. Double-click on the element and make this adjustment in the Piano-Roll, as shown in the following screenshot:

![Piano-Roll screenshot](image)
Remember that you can’t trim the front of the note. Hover over the right-hand side of the note with the pencil tool, to adjust the length of the note. Drag the note to adjust where it starts by clicking anywhere in the middle of the note with the pencil and dragging it.

Now we have a pattern in the bassline that repeats, but has a different ending on the second element.

**What just happened?**

We were able to create an instrument track, and then create two elements for the bassline. Using the **Piano-Roll** editor, we were able to listen to the **Song Editor** in the background as we made our new bassline. We also copied and pasted the elements using right-click, and created a variation on a simple bass pattern.

When creating the parts using the **Piano-Roll** editor, it’s good to hear how these parts sound in context with the instrument track. Keeping the **Song Editor** playing while writing in the **Piano-Roll** editor gives context to the parts we’re creating.

**Making that break dirty**

Sometimes, to create variation in an instrument part, we can rely of effects to change the nature of the sound as it’s playing along. The idea is something similar to our bass player, when all of a sudden, the beat vanishes for a second, and then drops back in along with our bass player.

**Time for action – dirty bass**

Let’s try this out using the bass line we just made:

1. In the **Song Editor**, use track actions to duplicate the bass line as shown in the following screenshot:

![Clone this track](image)

For More Information:

2. Now mute the other tracks by de-selecting the button directly next to the action button, as shown in the following screenshot:

3. With the other tracks muted, hit the Space bar to playback the bassline. It should sound exactly the same.

4. Now open up the LB302 by selecting Default Preset option.

5. Go to the FX tab. Turn the EFFECTS CHAIN on by selecting the button to the left-hand side of EFFECTS CHAIN. It will light up as shown in the following screenshot:

6. Now click on Add Effect at the bottom of the FX section, and from the list choose LADSPA DJ EQ.
7. The controls for the DJ EQ will pop up. Set the knobs as shown in the following screenshot:

8. Now press play and listen to the bass.

9. We need another additional layer to this sound. Go to Add Effect and choose the LADSPA C* Cabinet | Loudspeaker cabinet emulation. Use the settings shown in the following screenshot:

10. Now hit play again. The bass should sound significantly thinner and dirtier.

11. Now go back to the Song Editor and turn the other tracks on.

12. Mute the unaffected bass to hear what our new bass sounds like, and vice versa.

For More Information:  
13. Now right-click on our new bass track, and choose to rename it AM Radio Bass, as shown in the following screenshot:

![Rename... AM Radio Bass]

14. Go to the first bassline that we created and name that track Original Bass.

**What just happened?**

We've created an alternate bass that we can use as an alternate for our arrangement. When the music is playing, if the bass suddenly changes character, the thin bass can be used to create tension in the song. We might use automation to change the bass over time, but cutting between the dirty bass and the clean bass will sound good as well. We'll be exploring this in *Chapter 8, Spreading Out the Arrangement*. 

**Send that sound out to get effected**

Now that we have an alternate bass reality, let's see how we can dedicate an effects channel to creating one set of effects that all other instruments (which we add) and tracks (which we clone) can use.

**Time for action – sending clones through effects**

When we have a Beat+Bassline Editor, it can be time consuming to go to each instrument and choose the set of effects we like, then go to the next audiofile processor of the drum pattern, and go through the same process of opening the effects and assigning the settings. So we’re going to explore using a dedicated FX bus to give us alternate drum pattern effects:

1. Now let's visit our drum patterns and create clones for each drum pattern.
   
   The following screenshot shows what will come up at the bottom of the track list:
2. We need to reorder this list so that the clones are next to their parent tracks. Use the textured area to the left-hand side of the action menu on the track, to move the track vertically. The textured area looks similar to the following screenshot:

![Textured Area](image1.png)

Now our tracks should be named to reflect what they sound like, as shown in the following screenshot:

![Track Names](image2.png)

3. Open up the Beat+Bassline Editor and choose Main Beat FX 1.

4. On each AudioFileProcessor in the editor, change its FX Channel to 1, as shown in the following screenshot:

![FX Channel](image3.png)
5. This is going to send all of the patterns in this Beat+Bassline Editor to the FX Mixer. Press play, and open up the FX Mixer, FX1, which should be showing the Beat+Bassline Editor running through it, as shown in the following screenshot:

6. Now select FX1 in the FX Mixer, turn the EFFECTS CHAIN button on, and stack the following plugins on:

For More Information:
7. Season these plugins to taste, by adjusting their controls until you feel you have an interesting sound. Keep in mind that not only drums but many other things can be assigned to this **EFFECTS CHAIN**.

**What just happened?**

We just created a set of plugins that any part of our project can access. Right now we have a drum pattern bussed to this FX chain, but we could send all of the other instruments and any new instruments we have through this FX chain as well.

When you want the whole song to suddenly sound like it's been sent into a radio or delay, using FX channels is a really easy way to have the effect ready and waiting for any elements, new or old. Of course, we have the ability to pick and choose which elements will be sent to these particular FX channels as well.

**Adding in the smooth**

Smoothing elements or ambient elements should be stacked now that we have a drum pattern and bass line. We are going to create two kinds of ambient elements, which we can switch off in between.

**Time for action – adding the ambient elements**

We’re going to add some ambient elements, which we can choose from, in this exploration. Later on, we can use these parts to establish the mood.

1. Mute the **Main Beat FX** and **Beat Variation FX** tracks.

2. From **My Presets** in the side bar, choose the **Triple Oscillator** folder, and double-click on the **Lovely Dream.xpf** preset.

3. Now let's create an instrument element next to **Lovely Dream** in the **Song Editor**. Double-click on the element to pop open the **Piano-Roll**. Now write this melody:

For More Information:

4. Now add the following line to counter the line we just wrote:

For More Information:
5. Now we have a glittering little background pad. We should bury it in volume. Go to the track volume and set it to -20 dBV.

Let's clone this track and create our alternate track of the same sound. Here's a different instrument line we can have:

6. Now play this line against the bass. It's sparse and glittery, but it works.

7. Now unmute the other line that we wrote. Press play and listen to what these two parts sound like together.

**What just happened?**

The two lines that we wrote were complimentary to each other, which means that they play well together as well as make a statement individually. The more interlocking parts we have, the more interesting our song becomes. We have the ability to thin out this idea easily, by muting the elements on either of the tracks when we build this arrangement out in the next chapter.
Have a go hero

So now we have explored making a drum pattern, drum pattern with effects, bass line, alternate bass line, and interlocking keyboard parts. It's time to try this yourself:

1. Create a main drum pattern that all of your drum patterns from here on will reference. Make the pattern 32 beats long.
2. Create clones for these drum patterns and make variations of the drum patterns in the Beat+Bassline Editor.
3. Create a bass line in the Song Editor using the Piano-Roll.
4. Clone the bass line, and add effects to the bass.
5. Mute the parts that are doubled as you go along. Just keep the main beat playing while you get your interlocking parts together.
6. Create a keyboard part with two lines playing off each other.
7. Clone this track and move the notes around so that you have two keyboard parts with interlocking harmonies.
8. Save as you go! This can be the song that you revisit for the arranging part of our voyage.

Using samples in the Song Editor

When you first open LMMS, there is a Sample Track. It is different from the audiofile processors that we usually use. On these tracks, we can place an audio file directly on the track, and it will show up as an element. For our requirement, we are going to find some strange sounds on the Internet that are royalty free (see Chapter 6, Finding and Creating New Noises).

I like to leave my looped song running in the background, while I browse sites such as ccMixter for a sample that I can use. In this case, we've landed on a sample called Itty-bitty-tiger-ditty.

Time for action – adding a sample track

LMMS uses most standard audio files, although for uncompressed files I choose WAV files and for compressed files I use OGG VORBIS. I find these files a bit more cooperative. Let's find a sample from the Internet and add it to our session as a sample track element:

1. Go to http://ccmixter.org/view/media/samples/browse.

For More Information:
2. Using the browser, select a_minor as a way to whittle our choices down, as shown in the following screenshot:

3. Right-click on the downward arrow next to the itty-bitty-tiger-ditty guitar part, and choose to Save File As... to your desktop.

4. Open Audacity. Choose File->Open... and navigate to the file on your desktop.

5. When the file is open, select an area to use from within the audio file, as shown in the following screenshot:
6. Now choose **File | Export Selection**.

7. Select **Ogg Vorbis** from the menu at the bottom of the screen, as shown in the following screenshot:

8. Now go back to **LMMS**.

9. Double-click in the area to the right of the sample track, to open up a window as shown in the following screenshot:

   For More Information:
**Getting It All Stacked Up**

10. Now press the Space bar, and listen to the sample play along with the song. The following screenshot gives an idea of this:

![Sample track screenshot](image)

11. Adjust the volume to taste.

**What just happened?**

Using [ccMixter.org](http://ccmixter.org) and Audacity, we were able to find an audio file to use in the **Song Editor** of LMMS. Using the sample track, we can now listen to the audio file play along with the track.

The heavy lifting, when it comes to audio editing, can be handled by Audacity, but we can also adjust the length of the audio using the right-hand side of the sample track element. We can also copy and paste the element, and if we create a new blank element on the sampler track, we can load another audio file into it as well, and place it anywhere within the track. Have moving bass lines, static bass lines, quirky bass lines, and simple bass lines. Make these bass lines work with the main beat by themselves, but also be sure that if they are layered, they can work together as well. Do this with all of the elements, to create a rich set of materials to work from.

**Have a go hero**

Listening homework:

I'd like to ask you to check out the music video for Daft Punk's iconic music video *Around the World*. Listen to all of the elements that are being used in there. Can you hear them repeating? Hear the stacks? Hear the interlocking parts?

Study how the bass and drums work together, and how the simple little melody talks to the bass. This song is a great way to deconstruct dance music and understand how all of these simple little parts work together with a visual reference!

Enjoy:

http://www.youtube.com/watch?v=s9Ms2VE7aR4

Time to test your brains with a pop quiz...

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For More Information:

Pop quiz

1. There are 3 kinds of elements that can be used in the Song Editor; what are they?
   a. FX channel, Sample, Instrument
   b. Instrument, Sample, Beat+Bassline
   c. Piano Roll, Sample, Beat+Bassline
   d. Piano Roll, Automation Track, Sample

2. How do you mute an element?
   a. Right-click and choose mute, or use the middle mouse button on a three button mouse.
   b. Click and choose mute.
   c. Use an Automation Track to turn down the volume.
   d. Just turn down the volume on the volume knob.

3. How do you create a shared FX track that can be used by any element of the song?
   a. FX tracks can't be shared. A single FX track must be created for each element.
   b. Go to the file menu and choose create FX track.
   c. On the instrument that is playing the sound, choose an effect channel on the front panel. The sound will then be routed to the FX mixer, where an effect chain can be applied to the FX channel.
   d. Right-click on an instrument and choose Send to FX.

4. What's a good website to find copyright-free samples?
   a. All samples are copyright-free if you notify the artist or label that you are using the sample.
   b. Any website that uses Creative Commons sample licenses, such as ccMixter.org
   c. Samples are never copyright-free; you can only use a sample when you know who made it and you've notified them that you are using it.
   d. Since SOPA and PIPA were passed, all sampling has been made illegal.

For More Information:
Summary

We created a loop in Beat+Bassline Editor and added more instruments with the help of Piano-Roll and Song Editor. We also used the Sample Track feature. The plan is to stack the elements here as deep as possible. In the next chapter, we will be spreading all of these elements out to tell a story, so be sure that you have all of the great characters to tell it. Spend some time making interesting bass lines, melodies, and textures to tell the story. At this stage, bass lines can be stacked deep.
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