
CONTENTS

PREFACE

Welcome To The Audio Mixing Bootcamp.....	xi
---	----

CHAPTER 1

MONITORING	1
The Listening Environment	1
Determining The Listening Position	2
Standing Waves.....	2
Acoustic Quick Fixes	3
<i>Exercise Pod - Improving The Listening Environment</i>	4
Basic Monitor Setup	4
<i>Exercise Pod - Speaker Placement</i>	6
How To Listen	7
Basic Listening Technique	7
<i>Exercise Pod - What To Listen For</i>	8
How Loud (Or Soft) Should I Listen?	8
<i>Exercise Pod - Listening Levels</i>	9
Listening On Several Speaker Systems.....	9
<i>Exercise Pod - Listening On Multiple Monitors</i>	10
Listening In Mono	10
Phase Coherency.....	10
Balances	10
<i>Exercise Pod - Listening In Mono</i>	11

CHAPTER 2

SESSION SETUP	13
Prepping Your Mix	13
Make A Session File Copy.....	13
Arrange Your Tracks.....	14
Delete Empty Tracks.....	14
Deactivate And Hide Unused Tracks.....	14
Reorder Your Tracks.....	14
Color-Code The Tracks.....	15
Correctly Label The Tracks.....	15
Insert Section Markers.....	15
Set Up Subgroups.....	15
Set Up Your Effects.....	15
Assign The Channels.....	16
Insert Compressors And Limiters.....	16
<i>Exercise Pod - Prepping Your Mix</i>	17
Prepping Yourself	17
Play Something You Know.....	17
Take Notes.....	17
Make Yourself Comfortable.....	18
<i>Exercise Pod - Prepping Yourself</i>	18

CHAPTER 3

MIXING BASICS	19
A Brief History	19
<i>Exercise Pod - Identifying Different Recording Techniques And Eras</i>	20
What Are You Trying To Accomplish?	21
Developing The Groove.....	21
<i>Exercise Pod - Identifying The Groove</i>	21
Emphasizing The Most Important Elements.....	22
<i>Exercise Pod - Identifying The Most Important Song Element</i>	22
Putting The Performers In An Environment.....	22
<i>Exercise Pod - Identifying The Tall, Deep And Wide Dimensions</i>	23
What Does An Amateur Mix Sound Like?.....	23
The 6 Elements Of A Mix	24
<i>Exercise Pod - The Elements Of A Mix</i>	25

CHAPTER 4

BALANCE	27
Visualize Your Mix	27
<i>Exercise Pod - Visualize Your Mix</i>	28
The Musical Elements Of An Arrangement	29
“Born This Way” by Lady Gaga.....	30
“Power” by Kanye West.....	30
“Grenade” by Bruno Mars.....	31
<i>Exercise Pod - Identifying Arrangement Elements</i>	31
Building The Mix	31
The Drums.....	32

Setting The Levels.....	33
<i>Exercise Pod - Balancing The Drums</i>	33
Checking The Drum Phase	34
<i>Exercise Pod - Checking The Drum Phase</i>	35
Assigning The Drums To A Group Or Subgroup	35
<i>Exercise Pod - Assigning The Drum Channels To A Subgroup</i>	35
The Bass.....	36
<i>Exercise Pod - Balancing The Bass And Drums</i>	36
The Vocals.....	36
Background Vocals	37
<i>Exercise Pod - Balancing The Lead And Background Vocals</i>	37
Guitars	38
<i>Exercise Pod - Balancing Guitars</i>	38
Keyboards	39
Piano	39
Electric Piano.....	40
Organ	40
Synthesizers	40
<i>Exercise Pod - Balancing The Keyboards</i>	40
Loops.....	41
<i>Exercise Pod - Balancing Loops</i>	41
Mixing By Muting	41
Automation	42

CHAPTER 5

PANNING	43
The Three Main Panning Areas	43
Low Frequencies In The Center	44
Panning The Drums	45
<i>Exercise Pod - Panning The Drums</i>	45
Panning The Bass	46
<i>Exercise Pod - Panning The Bass</i>	46
Panning Guitars	46
<i>Exercise Pod - Panning Guitars</i>	46
Stereo Instruments	46
Panning Keyboards	47
<i>Exercise Pod - Panning The Keyboards</i>	47
Pseudo-Stereo.....	47
<i>Exercise Pod - Pseudo-Stereo Panning</i>	48
Panning Vocals	48
<i>Exercise Pod - Panning The Lead Vocals</i>	48
<i>Exercise Pod - Panning The Background Vocals</i>	49

CHAPTER 6

COMPRESSION	51
Compression Basics	51
Compressor Controls.....	52
Ratio	52

Threshold Or Input	52
Attack And Release	53
Gain, Make-Up Gain or Output	53
Gain Reduction Meter	53
The Side Chain	54
Bypass Or In	54
Compressor Operation	54
Setting The Compressor	54
How Much Compression Do I Need?	55
Compression As An Effect.....	55
Limiting.....	55
Compressing The Various Instruments.....	56
Compressing The Drums	56
<i>Exercise Pod - Compressing The Drums.....</i>	<i>56</i>
Parallel Compression	59
Compressing The Bass.....	60
<i>Exercise Pod - Compressing The Bass</i>	<i>60</i>
Compressing Guitars.....	61
<i>Exercise Pod - Compressing Electric Guitars.....</i>	<i>62</i>
<i>Exercise Pod - Compressing The Acoustic Guitar</i>	<i>62</i>
Compressing Keyboards.....	62
<i>Exercise Pod - Compressing Keyboards</i>	<i>63</i>
Compressing Vocals.....	63
<i>Exercise Pod - Compressing The Lead Vocal</i>	<i>63</i>
Compressing Other Instruments.....	64
Compressing Loops	64
<i>Exercise Pod - Compressing Loops</i>	<i>64</i>
De-essers.....	64
<i>Exercise Pod - Using The De-esser</i>	<i>65</i>
Gates	65
<i>Exercise Pod - Using A Gate</i>	<i>66</i>

CHAPTER 7

USING THE EQ.....	67
Equalization Basics.....	67
EQ Parameters	68
A Description Of The Audio Bands.....	68
Using The Equalizer.....	70
Subtractive Equalization	70
Juggling Frequencies.....	71
The Magic High-Pass Filter.....	71
EQing Various Instruments.....	72
Equalizing The Drums.....	73
<i>Exercise Pod - EQing The Drums</i>	<i>73</i>
Equalizing The Bass	76
<i>Exercise Pod - EQing The Bass.....</i>	<i>76</i>
Equalizing The Vocal.....	77
<i>Exercise Pod - EQing The Vocal.....</i>	<i>77</i>
<i>Exercise Pod - EQing the Background Vocals.....</i>	<i>78</i>

Equalizing The Electric Guitar	79
<i>Exercise Pod - EQing The Electric Guitar</i>	79
Equalizing The Acoustic Guitar	80
<i>Exercise Pod - EQing The Acoustic Guitar</i>	80
Equalizing The Piano	81
<i>Exercise Pod - EQing The Piano</i>	81
Equalizing The Organ	81
<i>Exercise Pod - EQing The Organ</i>	82
Equalizing Strings	82
<i>Exercise Pod - EQing The String Section</i>	82
Equalizing Horns	82
<i>Exercise Pod - EQing Horns</i>	82
Equalizing Percussion.....	82
<i>Exercise Pod - EQing Bongos And Congas</i>	83
<i>Exercise Pod - EQing Shakers And Triangle</i>	83

CHAPTER 8

ADDING REVERB	85
Reverb Basics	85
Typical Reverb Parameters	86
The Major Parameter Controls	86
Timing A Reverb To The Track	88
Timing The Decay	88
<i>Exercise Pod - Timing Reverb Decay</i>	88
Timing The Pre-delay	88
<i>Exercise Pod - Timing Reverb Pre-Delay</i>	89
Reverb Setup	89
The Two-Reverb Quick-Setup Method	89
The Three-Reverb Full-Setup Method.....	90
Adding Reverb To Instruments	90
Adding Reverb To The Drum Kit.....	91
<i>Exercise Pod - Adding Reverb To The Drum Kit</i>	91
Adding Reverb To The Bass	95
<i>Exercise Pod - Adding Reverb To The Bass</i>	95
Adding Reverb To The Vocal.....	95
<i>Exercise Pod - Adding Reverb To The Lead Vocal</i>	96
<i>Exercise Pod - Adding Reverb To The Background Vocals</i>	96
Adding Reverb To Guitars	97
<i>Exercise Pod - Adding Reverb To The Guitar</i>	97
Adding Reverb To Keyboards	97
<i>Exercise Pod - Adding Reverb To The Piano</i>	98
<i>Exercise Pod - Adding Reverb To The Organ</i>	98
<i>Exercise Pod - Adding Reverb To Synthesizers</i>	98
Adding Reverb To Strings.....	98
<i>Exercise Pod - Adding Reverb To The String Section</i>	98
Adding Reverb To Horns	98
<i>Exercise Pod - Adding Reverb To Horns</i>	98
Adding Reverb To Percussion.....	98
<i>Exercise Pod - Adding Reverb To Bongos And Congas</i>	99

<i>Exercise Pod - Adding Reverb To Shakers And Triangles</i>	99
Layering The Mix	99
<i>Exercise Pod - Layering The Mix</i>	100

CHAPTER 9

ADDING DELAY	101
Delay Basics	101
Typical Delay Parameters	102
The Haas Effect	102
Timing The Delay To The Track.....	103
Other Note Divisions.....	103
<i>Exercise Pod - Timing The Delay</i>	104
Delay Setup	105
The Single-Delay Quick-Setup Method	105
The Three-Delay Full-Setup Method	106
Adding Delay To Instruments	106
Adding Delay To The Vocals	107
<i>Exercise Pod - Adding Delay To The Vocals</i>	107
Adding Delay To The Guitar.....	108
<i>Exercise Pod - Adding Delay To The Guitar</i>	108
Adding Delay To Keyboards.....	108
<i>Exercise Pod - Adding Delay To Keyboards</i>	108
Adding Delay To The Drum Kit.....	108
<i>Exercise Pod - Adding Delay To The Drum Kit</i>	108
Adding Delay To Other Instruments	109

CHAPTER 10

MODULATION EFFECTS	111
Modulation Basics	111
Types Of Modulation	111
Flangers And Phasers	112
Chorus.....	113
Tremolo And Vibrato.....	113
Parameter Settings	114
Tremolo/Vibrato	114
Modulation Setup.....	114
Modulation On Instruments	115
Modulation On Guitars.....	115
<i>Exercise Pod - Modulation On Guitars</i>	115
Modulation On Keyboards.....	116
<i>Exercise Pod - Modulation Of Keyboards</i>	116
Modulation On Vocals.....	116
<i>Exercise Pod - Modulation On Lead Vocal</i>	117
<i>Exercise Pod - Modulation On Background Vocals</i>	117
Modulation On Strings.....	118
<i>Exercise Pod - Modulation On Strings</i>	118
Modulation On Other Instruments	119
<i>Exercise Pod - Modulation On Drums</i>	119

CHAPTER 11	
INTEREST	121
Developing The Groove	121
Finding The Groove	121
<i>Exercise Pod - Finding The Groove</i>	122
Establishing The Groove	122
<i>Exercise Pod - Establishing The Groove</i>	122
Emphasizing The Most Important Element	123
Finding The Most Important Element	123
<i>Exercise Pod - Finding The Most Important Element</i>	123
Emphasizing The Most Important Element	123
<i>Exercise Pod - Emphasizing The Most Important Element</i>	123
Making A Mix Element Interesting	124
<i>Exercise Pod - Making An Element Interesting</i>	124
CHAPTER 12	
THE MASTER MIX	127
Mixing With Subgroups	127
<i>Exercise Pod - Mixing With Subgroups</i>	128
The Master Level Meters	128
Types Of Meters	128
The VU Meter.....	129
The Peak Meter	129
Mix Bus Levels	130
<i>Exercise Pod - Setting The Mix-Bus Levels</i>	130
Mix-Bus Compression	130
Mix-Bus Compressor Settings.....	130
<i>Exercise Pod - Setting Up the Mix-Bus Compressor</i>	131
Stay Away From Hypercompression!.....	132
<i>Exercise Pod - The Evils Of Hypercompression</i>	133
How Long Should My Mix Take?	133
How To Know When Your Mix Is Finished	133
<i>Exercise Pod - Am I Finished Yet?</i>	134
CHAPTER 13	
THE FINAL MIX	135
GLOSSARY	141
BIBLIOGRAPHY	141
INDEX	145

Color-Code The Tracks

Once again this isn't absolutely necessary, but it sure does make things easier to find if your DAW app has this ability. For instance, all the drums might be red, guitars blue, the vocals yellow, and so on.

Correctly Label The Tracks

Many workstation apps automatically assign a name to any new track that has been recorded, but unfortunately they usually don't relate to the instrument. It's really easy to mistake one track for another and turn a fader or parameter knob up and up and wonder why nothing is happening, only to find that you're tweaking the wrong track. That's why it's important to clearly label each track. You'll be happy with yourself later if you re-label a track with a name like "gt166," to something like "guitar" or "gtr."

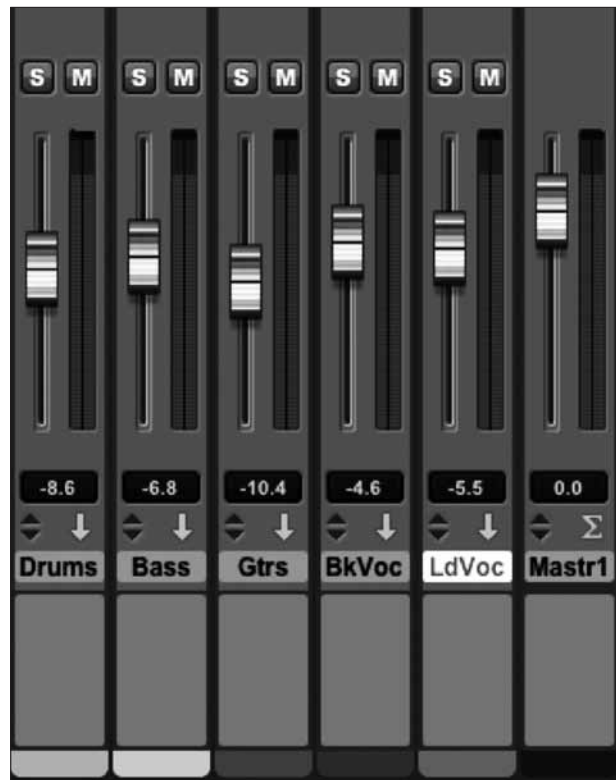


Figure 2.2: Setting Up Subgroups

Insert Section Markers

Markers are truly one of the big time savers in any DAW, and if you haven't done so already, now is the time to do it. Most veteran mixers insert a marker a bar or two before each new section, and also make sure that other points like drum fills, accents or even the half-way point in a section are marked as well.

Set Up Subgroups

Sub-groups are extremely useful during mixing because they allow you to group similar elements of the mix so you can make adjustment by instrument sections, rather than individually (see Figure 2.2). Your mix will go a lot faster if your set up the subgroups and assign the particular channels to them ahead of time.

Typical groups might be drums, guitars (if there's more than one or they're in stereo), lead vocals (if there's a double), background vocals, horns, strings and synths.

Set Up Your Effects

Most mixers have a standard set of effects that they set up before they mix. We'll cover this more in Chapters 8 and 9, but one setup that works well even for tracking and overdubs is:

Electric Piano

The electric piano seems made for the pad element since it's very mellow sounding, easily blends in with the track, and is capable of playing long sustaining chords. You may find it used as other elements as well, but not nearly as often as the pad.

Organ

The organ is the perfect pad element since it's capable of infinite sustaining chords. A Hammond organ is often used as the glue to a track, placed back in the mix where it's barely heard.

Synthesizers

Synths are another instrument that can also serve as any arrangement element. They can be very percussive and serve as a foundation element, or can simulate strings for a great pad.

Exercise Pod - Balancing The Keyboards

E4.27: Listen to the piano in the example.

- A) Does it belong to the rhythm section, is it a pad or rhythm element, or is it a lead or fill element?
- B) Mix the piano so it blends into the rhythm section. Does it still stick out?
- C) Mix the piano low in the track as if it were a pad element. Does it stick out of the track or blend in?
- D) Mix the piano as if it were a lead element. Does it stick out of the track or blend in?

E4.28: Listen to the electric piano in the example.

- A) Does it belong to the rhythm section, is it a pad or rhythm element, or is it a lead or fill element?
- B) Mix the electric piano so it blends into the rhythm section. Does it still stick out?
- C) Mix the electric piano low in the track as if it were a pad element. Does it still stick out of the track or blend in?
- D) Mix the electric piano as if it were a lead element. Does it stick out of the track or blend in?

E4.29: Listen to the organ in the example.

- A) Does it belong to the rhythm section, is it a pad or rhythm element, or is it a lead or fill element?
- B) Mix the organ so it blends into the rhythm section. Does it still stick out?
- C) Mix the organ low in the track as if it were a pad element. Does it stick out of the track or blend in?
- D) Mix the organ as if it were a lead element. Does it stick out of the track or blend in?

E4.30: Listen to the synthesizer in the example.

- A) Does it belong to the rhythm section, is it a pad or rhythm element, or is it a lead or fill element?

instruments sound bigger or push them back in the track, you're trying to put them into an environment.

Exercise Pod - Adding Reverb To Bongos And Congas

E8.17: Follow steps A through I in exercise E8.10, but keep in mind that faster decays and pre-delays work best.

Exercise Pod - Adding Reverb To Shakers And Triangles

E8.18: Follow steps A through I in exercise E8.10, but keep in mind that faster decays and pre-delays work best.

Layering The Mix

By now all the vocals and instruments should sound pretty good and everything should be in its own space. Now it's time to tweak the mix.

When layering the mix, we'll be thinking of three things:

1. Are the instruments in front or behind each other in a pleasing manner?
2. Does one of the instruments or vocals need a completely different reverb sound, and therefore its own reverb?
3. Does an instrument or vocal need an effect other than reverb, like a delay or modulation? (We'll cover these in the next two chapters.)

When it comes to layering the mix, we're talking about the reverb balance of each instrument or vocal. Some tracks will be up front and in your face and therefore won't have much reverb on them, or the reverb will be tailored so it isn't obvious using the high- and low-pass filters. Others will have more and more reverb on them and seem to be pushed back in the soundstage as a result. If we were to visually imagine what our mix would be like it would look like Figure 8.7.

Using a combination of different sounding reverbs with different pre-delays and decay times, along with using simply more or less reverb, you can layer the mix like anything the pros might do, because that's how they do it. Keep in mind that each song is unique, so sometimes a song won't require much reverb or maybe even none at all, but it's all up to you and your ears how you apply what you've learned in this chapter.

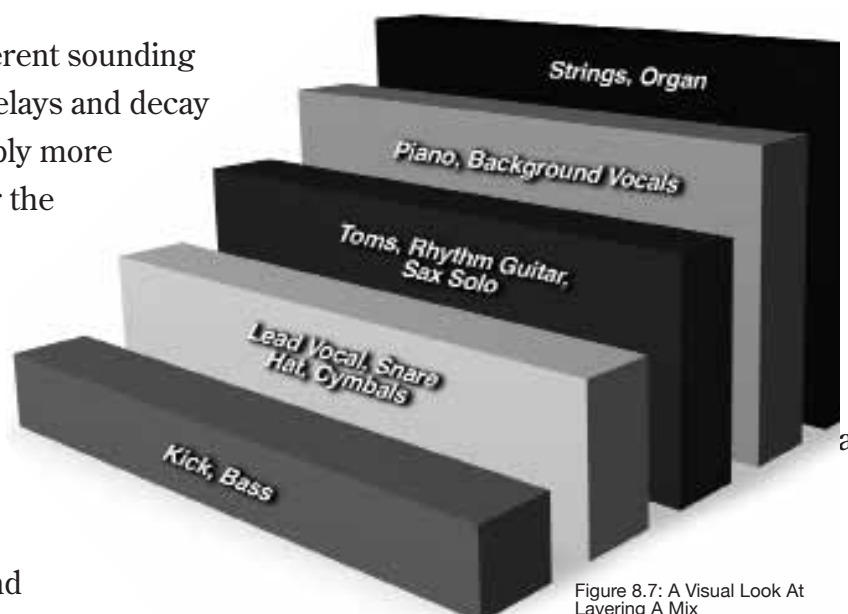


Figure 8.7: A Visual Look At Layering A Mix