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Ryan C. Williams
Author of Teach Yourself Visually Bass Guitar

with Mike Levine
U.S. editor of *Audiofanzine*

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by Ryan Williams and Mike Levine

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Introduction

A professor in one of my first music technology classes imagined a world where the recording studio wouldn't even use physical controls — instead, it would have just a series of computer panels projecting the necessary controls on the screens that interacted with human touch. Just a few (all right, slightly more than a few) years later, those virtual controls became reality. But those panels didn't remain in the confines of a recording studio. Instead, you can carry them around in your pocket or bag, laying down tracks in between social media posts and a quick game.

This book doesn't try to introduce you to the future. Instead, *iPad & iPhone for Musicians For Dummies* introduces you to the wonderful present where your iOS device can act as a virtual instrument, a guitar and pedal simulator, or even the portable recording rig you always wanted to carry around with you so you'd never forget another hit song. You can do all this and more with your device and a few apps — no need to wait for the future!

About This Book

This book includes several different parts that take a look at different aspects of making music on your iPhone or iPad. Depending on what you want to accomplish or learn about, you can skip around the book and just read what you want, or you can read the book from cover to cover. It's up to you!

Let's take a look at the parts of the book so you can make an informed decision.

Part 1: Getting Started with iOS Music

This section takes you back in time, all the way back to when the first iPhone arrived to a desperate public (lo, those many years ago). When you're up to speed on your history lesson, you'll find out what makes the iOS device such a valuable musical tool, how to choose the best device for your needs, and the apps you'll need to make everything function.

Part II: Playing Music on Your iOS Device

This part contains some fun information about playing your iOS device as if it were an actual musical instrument — because it is! Whether you connect your device to an external controller or use the touchscreen to control new and different instruments, this part gets you up and running. You'll also learn how to connect other instruments (like a guitar or bass) to the device for optimum performance.

Part III: Setting Up Your iOS Studio

Want to record your songs, anytime, and anywhere? This part helps you set up your recording rig, so you can pull together all the parts you need. You'll also learn about the apps you need to make your recordings happen, along with the headphones and monitors you'll use to hear your genius once you finish (and help make it better).

Part IV: Your Recording Workflow

Whether you record in the field or at home, this part helps you plot out your recording projects. You'll gain the knowledge you need to get all of the audio you need on your iOS device and create the tracks you want.

Part V: Using Multiple Apps Together

iOS apps don't have to live separately from each other — the best music comes from using the tools you want in harmony (puns fully intended) with each other. Learn how to make Inter-App Audio, Audiobus, Virtual MIDI, and more options to get your apps interacting.

Part VI: Editing, Mixing, and Sharing Your Projects

After you record all of your audio, you must bring it all together to make the files your listeners can download or stream. This part shows you the tools and techniques you'll need to get your music together and ready to ship, from making large edits to the little tweaks that symbolize perfection. Or at least as close as you can possibly get. No judgment here.

Part VII: The Part of Tens

This part adds a little something extra to the book, giving you some insights into some other apps you can use to make music beyond what you look at in the book itself (both paid and free). You'll also get some insight to the other musical uses you have for your iOS device, from sheet music to tuning your guitar or bass.

Foolish Assumptions

This book tries to address the widest possible audience without regards to how advanced of a musician you are, but I do have to assume a couple of things to make the information in this book useful:

- **You must have an interest in music of some fashion:** If you're not interested in making or recording music, you probably have better things to do than read this book. Note that I'm not assuming you're a virtuoso on your chosen instrument — just that you actually want to make some righteous noise with your iOS device.
- **You must use an iOS device (either an iPhone, iPod touch, or iPad) running iOS 7 or 8:** No other device will work — sorry. And while you may be able to scrape by using some apps on iOS 6, the overall experience probably won't function well. The newer iOS versions just offer too much good stuff to overlook.

And that's it! Fulfill these two basic requirements, and you're good to go!

Icons Used in This Book

Throughout the book, you'll see some icons in the margins that offer some additional information. Some icons just augment your already stellar reading experience, while others contain some knowledge that definitely requires your attention. Let's take a look at those icons so you know how you wish to interact with them.

This icon gives you a little extra information beyond the current topic. You can live without it, but a little time spent on the knowledge could be helpful.

Definitely pay some attention to this icon — failure to do so could put you in danger of losing music or data. Anytime you see the lit fuse, stop and read!

I tend to get a little nerdy and drop some information in the book that appeals to those who really want to dig deep (and probably not anybody else). You can skip it and come back to it later, but I promise the information will be useful at some point.

Everybody needs a friendly reminder sometimes. This icon calls out information you should keep in mind as you go on.

Beyond the Book

A lot of extra content that you won't find in this book is available at `www.dummies.com`. Go online to find the following:

- **Online articles covering additional topics at**

  `www.dummies.com/extras/ipadandiphoneformusicians`

  Here you'll find out the four types of devices you can connect to your iPad, the four tools all recording studios need, how to record audio in a DAW, and much more.

- **The Cheat Sheet for this book is at**

  `www.dummies.com/cheatsheet/ipadandiphoneformusicians`

  Here you'll find a recording checklist, downloading options, and more.

- **Updates to this book, if we have any, are also available at**

  `www.dummies.com/extras/ipadandiphoneformusicians`

Where to Go from Here

As I stated before, you should feel free to read from cover to cover or just skip to the sections that interest you the most. Whatever gets your task accomplished! Most of all, have fun and make wonderful music!

Part I
Getting Started with iOS Music

Visit www.dummies.com for great *For Dummies* content online.

In this part . . .

- Get the basics of creating music with iOS.
- Choose the right device for your music.
- Explore the iTunes App Store.
- Select the right apps to create your masterpieces.

Chapter 1

Digging into iOS

In This Chapter

- Understanding the iOS operating system
- Learning how iOS and apps evolved
- Making iOS work as a music production tool

Before you can make music using your iPhone or iPad, you should understand the basics of the software that makes it tick (or, more appropriately, *sing*). This chapter introduces you to iOS and explores the ways you can interact with the device you're probably holding in your hand right now. (Consider putting it down somewhere nearby — it might be hard to hold both your phone and this book at the same time.) Here you learn the basic functionality of iOS, how your apps work with iOS, and why iOS can be a practical and inexpensive music production tool.

What Is iOS?

iOS is the operating system that powers all the iPhones, iPads, and iPod touches ever produced. iOS does the same job OS X does for Macs and Windows or Linux does for other computers, but Apple designers specifically programmed iOS to handle mobile devices. The operating system handles the basic functionality of every aspect of your device. It determines everything from the apps you see when you first log in to your device to the notifications you receive when you're overwhelmed with texts, phone calls, or messages. Anything your device does, it does because iOS told your device to do it. (See Figure 1-1.)

iOS is an Apple creation that's available only on Apple devices. Although this limits the available choices for iOS fans, and maybe costs a bit more, it also allows Apple to fine-tune the operating system. By restricting iOS to a specific stable of devices, Apple can tailor iOS to work better. As Apple likes to say,

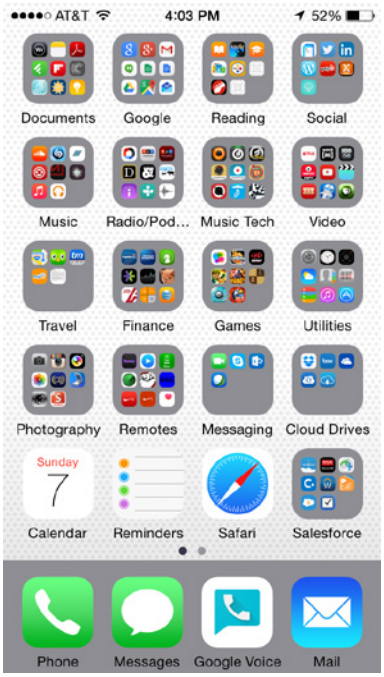

Figure 1-1: A typical iPhone home screen — look at all those folders!

"It just works." You may not experience this level of satisfaction all the time (*Why does this app keep crashing?!*), but, generally speaking, iOS provides a smooth and quick performance, at least for Apple's latest generation of devices.

Understanding the History of iOS

To understand how iOS progressed since its birth, we must part the mists of time and go back all the way to 2007, when the world first learned of the Apple's new device — the iPhone. When Apple first introduced the device that would revolutionize the mobile phone world, it also introduced the world to iOS, the software that would run it. Compared to the latest iteration of iOS (8, as of this writing), the first generation seems a little . . . limited. Back then, Apple didn't even call it *iOS* — they just referred to it as a version of the OS X software Apple uses to run larger devices like the MacBook Pro or iMac. Although the fledgling iPhone's operating system basically existed only to power the device and make it functional, it also introduced a formidable

touchscreen-based interface that would soon take over the mobile device world. No more keyboards, just a few buttons — everything else took place on the screen.

From that auspicious beginning, Apple began creating more versions of iOS, ones that included additional features and access to improved iPhone hardware. These features included:

- Access to the iTunes and Apps Stores
- Messaging improvements
- Newer and better cameras
- Accelerometers and gyroscopic capabilities (basically, iOS could track your phone's movements and how fast those movements occurred)
- Better audio and MIDI (Musical Instrument Digital Interface) capabilities

. . . and so much more, really. You can't always differentiate the evolution of software and hardware, because iOS and the iPhone/iPad/iPod touch are so tied together, but the key takeaway from the history of iOS is that a simple phone operating system evolved from a small device you hold in your hand into a full-fledged platform that allows you to imagine, create, and distribute music.

When the iPhone first came to the market, it was tied to a computer. You plugged it in to sync your information, to update apps and the operating system, and to transfer any songs or other files. As iOS and the hardware progressed, the iPhone and iPad became more autonomous. They became their own platform, and not just peripheral devices to a home computer. Nowadays you can perform any action, including syncing your information to a cloud server for instantaneous access as needed, on the iPhone or iPad itself.

These devices left the nest and flew on their own. That's pretty amazing.

Exploring the Possibilities

There are so many possibilities to explore! The iOS operating system may not cover the entire mobile world, but it does provide the most robust option for musicians wishing to create music on a mobile device. Because Apple made iOS specifically for a limited set of devices, the company can better handle issues like touch response and interactions with external hardware (such as keyboards or other MIDI controllers, as described in Chapter 5). The App Store provides the largest marketplace for mobile-device music apps, a great

many of which are available for free. Although buying an iPhone or iPad may be expensive, the cost of making that device a music workstation is relatively low. Let's take a look at a broad overview of everything you can accomplish with your iPhone or iPad.

Playing music anywhere

Obviously, Apple designed the iPhone and iPad to go along with you wherever you go. With powerful onboard memory and Wi-Fi/wireless data connections, your devices travel easily and provide near-instantaneous access to your data, allowing you to carry the following devices in your pocket:

- Piano
- Modular synthesizer
- Sampler
- Drum machine/sequencer
- Guitar/bass amp
- Effects pedals
- DJ equipment
- Strange and wonderful sound generation devices
- Your entire sheet music collection

This list is only a sample. Your only limitation is the size of your device's storage, your screen size (especially if you're older and need a screen larger than an iPhone's for reading music), and your data connection. It's all so convenient: Carrying these items on your phone certainly beats carting them around in a generously sized motor vehicle!

Apps that use a lot of small controls (such as knobs or switches) will benefit from the larger screen size of a full-sized iPad versus an iPad Mini. For example, large virtual mixers or synthesizers with a lot of controls may need a larger screen size so you can better access these controls (especially if you're performing live and don't get a shot at fixing any mistakes).

For practical reasons, we recommend you buy a sturdy case to go along with your iPhone or iPad. Make sure the case will protect the device in case of an accidental fall, a fractured screen, an accidental spill of liquid, or other traumatic events that can occur while you're lost in playing or composing music. Musicians don't often work in sterile or clean environments, so protect your investment! Be sure that any case you buy also allows you to connect the

hardware you need to make your music. We discuss that hardware more in Chapters 6 and 7.

Be careful when connecting external devices to your iOS device if you put that device in a large or bulky case. And definitely take your iPhone or iPad out of any case you normally put on it before you try to insert it in a dock. Not only will some cases block usage of external connections, but you could also damage the data connector by trying to force that connection.

Storing your sounds

There's no shortage of opinions among musicians and audiophiles, but keep in mind that opinions are always subjective. The iPhone and iPad may not have the "mojo" factor of vintage tube amps or studio-quality recording consoles, but you can still get great audio sounds out of them.

For music playback, the iPhone and iPad can handle mp3, AAC, ALAC, WAV, and AIFF files at different levels of audio quality. Apple recommends sticking with AAC and ALAC files, probably because Apple itself created the formats, but also because you get better audio quality at the same file size over other formats. You'll fill up your phone quickly with high resolution audio files (especially in ALAC, WAV, and AIFF formats), but the choice is yours. Connect a good pair of headphones (not the earbuds that come with the phone, please — it's worth investing in a better pair after you initially buy the device) and you're set. And keep the earbuds in a safe place as a backup. Just in case.

Lossy vs. lossless

The AAC vs. ALAC file formats belong to Apple, and thus work really well on an iPhone or iPad. But the main difference between these files is *lossy* vs. *lossless* data compression. When you convert an audio file to an AAC format, you retain most of the data but lose a little here and there to keep the file size down. The iTunes Store sells music files at 256 Mbps, which most listeners agree is an acceptable resolution for everyday listening.. The standard before 256 Mbps was 128 Mbps, regarded by many experts as the minimum listenable size (although some will turn their nose up at that). Anything lower than that rate and things start to get ugly: You'll hear a distorted high end (think cymbals and other high-pitched noises), and the music just won't sound . . . *good*. ALAC files, on the other hand, use lossless compression. Although ALAC files are larger than AAC files, they don't lose data, and they're smaller than the uncompressed audio of AIFF or WAV files. Again, your only limitation is the size of your device's storage and how much music you want to carry around with you at any time.

Bit depth and sample rate

If you're an experienced musician or audiophile, you may already understand what *bit depth* and *sample rate* mean for digital audio. If you're new to this concept, welcome to a broad and bitterly debated issue that will likely not see resolution (forgive the pun) in your lifetime. The terms *bit depth* and *sample rate* refer to the quality of the digital audio file (the *technical* quality, that is — even the highest levels of fidelity can't make certain recordings of "MacArthur Park" listenable). Digital audio relies on a series of samples of an audio signal (think a series of pictures, like the frames of an old movie). The *bit depth* refers to the amount of information in every sample. A low bit depth (say, 8-bit) might be the sonic equivalent of hearing a bass guitar play a note. A higher bit depth would give you enough detail to let you know that Jaco Pastorius played that note on a fretless bass live before an audience in Japan during the early '70s. The sample rate (expressed in kHz) tells you how many times per second the file samples the audio. The more samples you use, the more audio information you get and the better the file sounds. CD-quality audio files (and most of the files you can purchase on iTunes or at similar stores) use 16-bit audio. As the capabilities of iOS and the iPhone and iPad advance, you get access to higher bit depth and sample rates for your audio files.

What about recording? The iPhone and iPad can already record audio up at 32-bit and 192 kHz, depending on the audio hardware you connect to your device. For those who started home recording on an analog cassette portable studio, this jump is mind-blowing. However, this level of fidelity requires a good deal of outboard gear and the proper recording environment. We discuss these matters more in Chapters 9 and 11. For now, it suffices to say that great sound recordings will cost you a little more money than you just paid for your newest Apple toy.

Surveying the App World

Although the iPhone and the iPad don't outsell the Android devices, for app developers, iOS is a lucrative market that cannot be ignored. Historically, the Android operating system just couldn't handle real-time audio work because the OS had too much latency. Essentially, too much time elapsed between the time a player made a musical action (like pressing a key) and the time the sound actually played. This latency is getting better, but there are still additional obstacles. Because these developers must account for a small number of devices (compared to the seemingly endless Android variants), they can write better tailored and more individualized software. And iOS presents the most stable and functional platform for musical software. You can find thousands of apps on the App Store ready for your use, each