Open Applied Music Theory

Peter Hieu Vu

Latest Update: March 16, 2019

Preface

This preface is to be rewritten once I have finished a release of this book. As of this moment, though, I am a young naive undergraduate student studying Computer Science and Mathematics. Why, then, am I writing a music theory book? I don't have a good reason for that, but here we go...

Fountain Pens and happy friends.

I remember the moment when I took my very first music theory course. I was a high schooler looking to register for some classes at a local community college for a program called Running Start. Calculus was full and so, being a clueless Sophomore, I took "Music Theory/Ear Training 1" as an easy class. Little did I know that I would be sucked into a new world that I never could have known before. Ron Bayer was my theory professor and he really showed me what music theory was capable of. No, it wasn't some silly ruleset that musicians use to shake their heads at others. No, it wasn't a silly set of restrictions that musicians use to make top pop hits. In a way, it can be seen like that, but I should have known better as a STEM nut. I discovered that music theory was theory just like Einstein's Theory of Relativity or the Theory of Heliocentrism developed by Copernicus, Kepler, and Galileo. Based on our observations, we've noticed things about how the world works. As we investigate further we begin to find ways to explain why these observations happen. Over time as we experiment and advance, we modify our understanding of the world. Some explanations we'll find to fail completely. Others we'll find still hold true. Many we will find to be obsolete, and proceed to make enhancements and adjustments.

But! Just because one system fails to completely explain a phenomenon does not mean we must scrap this idea completely. Many of us are familiar with the concept of relativity (Galilean Relativity for you physics folks) If you're standing on a cruise ship moving $5m/s$ and walk $.5m/s$ in the same direction as the ship, you'll be moving $5+.5 = 5.5m/s$ relative to an observer on land! Eventually, however, we found out that this addition identity doesn't hold true at high speeds. A very smart person named Albert Einstein developed a new model of Special Relativity in order to explain the newly observed phenomenon. And notice that many people will never get to the point of even learning special relativity even though Galilean relativity is incorrect. Why? Well because it's close enough and most of us don't care enough. The fact that there is a time dilation for someone driving a car on a freeway

compared to a speed limit sensor doesn't matter. Even an engineer won't even necessarily need to account for these effects. And these engineers are professionals! We're entrusting our lives to them yet they use theories that are incorrect?

Okay I'll admit that my analogy isn't the best, but I think music theory should be seen the same way. Music theory is a beautiful thing in the same way that physics, astronomy, chemistry, biology, [etc.] are all beautiful. That is, there is amazing elegance in it and some awesome applications if that's your thing. And that last part is important. Music theory isn't everyone's thing and that's okay. For someone is academia, it's important. For a composer, it's important. If you just wanna play your instrument, though? I would recommend you pick up some theory, but it's ultimately what you want to do with the hobby. I'm not trying to advocate for some kind of *almighty important music theory*.

Hobbies are hobbies :) If you're trying to be a music theorist, you're going to have some trouble if you refuse to learn theory. Otherwise, it'll probably make it more fun, but different things are worth it for different people. For me, I shunned music theory for far too long until I tried it and realized what it really was. When I was applying for university a couple of years ago, I planned to study music composition alongside computer science. Welp. Not all things go to plan. Someday after school started, though, I started getting asked a lot of questions about theory from a friend. I got involved online in theory and composition communities. I got the chance to explain things to people.

One day, I met someone a little out of the ordinary. They asked me a question and I answered it. It was a question about polyrhythms and polymeter I wrote out an answer I thought was pretty good, but it didn't reach them. I wrote out another response. Still, it didn't reach them. I continued to converse until I began to write more and more elaborate explanations with numerous examples and from a ton of different perspectives. Finally after several days, they were finally confident in my response.

Teaching is hard. That's why I love it. Having an intuition for something really can cloud up a good explanation. How do you teach a baby to add numbers? It's so elementary that we do it unconsciously probably hundreds of times a day.

After this little polymeter polyrhythm fiasco I also happened to get into fountain pens. I spent all my time reading textbooks, watching the stock market, doing homework, playing tennis, etc. that I didn't really have any me-time. Yeah I know playing tennis is relaxing too, but not when other people are around. I then started to use fountain pens as an excuse to start writing. Anyways, I soon realized that it was annoying to have to wait for my hand to catch up with my brain, so I came up with the idea of writing a book starting with the material I already had worked on explaining or teaching to others. Here I am now.

To be honest, at the time of me writing this–before writing any substantial part of the book–I don't know how far I'm going to get. In any case, I'd like to thank the imaginary friend for being there for me to brainstorm with. I'd also like to give thanks to my family, my friends, and my girlfriend for always supporting me in everything I do. Finally, I'd like to thank you guys, the community, for giving me the chance to share my knowledge to someone that cares (I'm assuming you care since you at least glanced at the end of the preface :). Here we go!

About

Ideologies

Music theory can sometimes be a really vague topic. We hear items about theory all the time. *Ooh, that's a perfect cadence* and *there's a picardy third!* But, what do these really mean? I mean yes, there's the definition that we can get on wikipedia or google, but so what? We can give labels all day, but labels are just labels. I can just as easily hear a random melody and say "*Oh wow this is truly exquisite. It's an perfectly implemented inverse sub-transit chain from the C to a B.* It's good to understand how to label certain ideas and concepts–after all, we need some way to communicate with one another–but, the hard part often has more to do with what we can do with this knowledge and how to expand on it. As I mentioned in the preface of this book, I view music theory in the same way as I view mathematics or physics. Knowledge of the field and its models evolves over time, but old "outdated" ideas can still be applied where appropriate. Also, there are differences between laws, theories, hypotheses, etc. This book is based on this ideology.

A different approach

With this view of music theory as a science, I hope to use a bit of a different approach. Don't worry though, there won't be heavy math involved :) (or at least not for most of the book). Moving on, the idea is of course to take the good parts of both artistic and scientific (these can be the same thing can't they?) styles of teaching, and combine it with a bit of traditional music pedagogy. To be honest, I'm unsure whether or not this really is a different approach. From my narrow experience with music education (I'm a computer science major after all!), it is a bit of a different approach. In any case, my hope is that this approach can help make music theory accessible for people of all disciplines who may not be super serious about music in academia. In any case, there are three main patterns you will see throughout the book:

- **Examples.** Examples are king in any type of teaching. When I learn things, I like to be amazed. I like to see something that's really cool, and something that is really

cool just by itself. This book loves examples and will use it to help explain just about every single concept that is taught. Sometimes we will introduce an excerpt and ask questions to hopefully bring forth some thought. Sometimes we will introduce an idea in words and then go forth to give examples. In both cases, we hope the examples can really get you thinking about the idea so that you can really understand what it means beyond just the name and how to identify it.

- **Theory (Concepts).** Intuition is a great thing. At the same time, it can be tough as it seems some people have a great intuition for things while other people may have a poor intuition for the same things. From my perspective, though, intuition can be taught. Intuition is something that is built up from experience. This isn't necessarily from direct experience, but experience in general. You might view a physical phenomenon and have an idea of what's happening based on what you've experienced in your life. When something is something people say "isn't intuitive" it's often something that is not experienced in a particular way in practice and in real life. This idea of intuition can be really powerful, but it can be hard to develop. This book tries to develop intuition in order to build practical skills even when you might not be consciously thinking about what you may be doing.

- **Practice.** For some people, intuition comes easy. Notes and chords, rhythm, melody– they might just pop up not unlike how you might read a book or generate your speech. It's often easiest to learn a language quickly by moving to a place that speaks that language, or at least by having constant exposure to the language whether you understand everything or not. After maybe even as short as a month, you might be able to hold your own conversation with natives if you put effort into it! The goal of this book isn't to be like a workbook you'd find in your introductory Music Theory class, but to set up the foundations for you to grow efficiently even after you've forgotten about the book and left it in the dust. We want to give easy opportunities to practice, as well as some tools to help you practice theory in (almost) whatever way you want to. After all, there is over a thousand years of music to learn from! :)

Intuition is a really nice thing to have, and that's why this book is so focused on it. While I'm a bit of a theory nut, I know a lot of you performers and (sorry!) wannabe pop stars will be a bit bored spending an entire week reading a single piece of music. Music should be fun! When you have to think about every single thing you're doing to write, improvise, perform, etc. it can be a bit draining. That's probably why some people (incorrectly) say that music theory can limit your creativity. By now, I'd think you know I strongly disagree with that idea, but I see why! With a developed intuition for music theory, though, you won't have to always think super hard every time you look at some music. Ideally, you'd unconsciously have an implied "understanding" of what was happening so that you can make something better out of it than if you didn't have that intuition.

Coverage

This book is an applied music theory book, and as such, will cover aspects of music theory that are useful for reading music, performing music, and writing music. As of this writing, I have yet to write any actual part of the book and so it is difficult to say what will and what won't be covered. In general, though, I hope to discuss both introductory, intermediate, and advanced content. Anything that could be a help to a musician can show up here :)

This book is a living book that will always be changing. As an open source book, I invite you guys to contribute if you have anything you'd like to add or change. This process will be explained in more detail in the future when it is more complete.

Who is this book for?

Anyone with an interest in music can use this book. That being said, basic topics may not be covered as in depth as other sources since there are many great educational materials already out there. The intermediate and advanced material is where the focus of this book is, but keep in mind that it will take time for the material to accrue. If you're currently studying music, this book may be a good supplement that will hopefully give some good alternate perspectives or tips and tricks.

As for instruments, there is no primary instrument that will necessarily be referred to. Different instruments may pop up in the book to help illustrate an idea, but there is no assumption that the readers will all know any specific instrument.

How to get the most out of this book

As I've mentioned before, this book follows an approach that hopes to be accessible for people from all disciplines, whether it is music-related or not. This book is meant to be easy to read, but also hold a bit denser content for use as supplementary material. This is not meant to be reference material per se. While it will contain summaries and cheat sheet-esque sections, there may be small details that are not covered completely. I think it is important to note caveats and details, but as an *applied* music theory book, not all details are completely relevant in practice.

As for reading the book, you can feel free to read it like a novel. The text should generally be concise, but not in a way that makes it difficult to read or understand. Remember, this book is not meant to be reference material. If you would like, read the book from start to finish. If there is material that you already understand well, feel free to skip it. The book will mention when other chapters might be important or helpful, but the chapters are designed to flow one after another, as well as be able to stand alone.

Contents

Disclaimer

This book is currently in a highly volatile state. You might be reading something and tomorrow when you check the latest version, the whole book might be backwards. As I am about to start the real content of the book, chapters are probably going to be very out of order and content and examples may be missing. The main goal of this period of development is to just begin to get stuff down on paper. This is not a finished product. Well it might never be truly "finished", but this is not something that is ready to be "published" you might say. In any case, thank you for showing interest in this book so early on! If you have anything you'd like to say, please let me know!

Chapter 0

Meta

While there is a good deal of information in the about section (§-/iii), there are a few essentials that I would say are important for "everyone" to read. I know many will probably skip around between chapters and not read this, but that's okay. It totally makes sense to skip stuff you know well and if that's the best way to make use of this book, I encourage it! Anyways, moving on...

0.1 References

There are often times places where the book will mention an idea or topic that has been discussed in more detail before (lower chapter numbers is all this means), or will be discussed in more detail in future chapters. It's understandable that our teaching might not be the best or that certain things might be easy to forget or hard to remember the details of. Additionally, we understand if you want to skip around in the book. To make navigation easier, we will include references that look like §-98.76.5/31415. The first number (98) represents the chapter number, the second number (76) represents the section number, and the third number (5) represents the subsection number. Additionally, this is just the number that would be seen before a chapter/section/subsection title. The first two numbers are what would be displayed in the table of contents for a chapter or section. The number after the slash (31415) is the page number where the topic appears. We will scatter these references throughout the book.