PART I

NIGHT OF THE LIVING DEAD: THE OPERA

Part I of a dissertation submitted to the College of the Arts of Kent State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

by

Todd Goodman

April 2017

© Copyright 2017

All rights reserved

Except for previously published materials
Dissertation written by

Todd Goodman

B.M., University of Colorado at Boulder, 1999

M.M., Duquesne University, 2005

Ph.D., Kent State University, 2017

Approved by

___________________________
Frank Wiley, D.M.A., Co-Chair, Doctoral Dissertation Committee

___________________________
Ralph Lorenz, Ph.D., Co-Chair, Doctoral Dissertation Committee

___________________________
Jay White, D.M.A., Member, Doctoral Dissertation Committee, School of Music

___________________________
Mark Lewis, Ph.D., Member, Doctoral Dissertation Committee, Math Department

Accepted by

___________________________
Ralph Lorenz, Ph.D., Interim Director, School of Music

___________________________
John Crawford-Spinelli, Ed.D., Dean, College of the Arts
I want extend my deepest gratitude to my dissertation directors Dr. Frank Wiley and Dr. Ralph Lorenz, who have shown me the true meaning of being a teacher. I hope to some day provide for my students the insight, patience, and passion for our craft that they have provided for me. I also want to thank Dr. Jay White and Dr. Mark Lewis for their time and extremely valuable input that they so graciously shared with me throughout this process.

A special thank you to Stephan Catanzarite for his vision and passion in the creation of Night of the Living Dead: The Opera, for he was able to see the validity of this project way before I was. Thank you also to Mr. George Romero and Mr. John Russo for an amazing screenplay that is not only brilliant for the screen, but that also transfers extremely well to the stage. And thank you to Mr. Bill Hinzman for giving us the creative spark that this project needed.

Thank you to my students and colleagues at the Lincoln Park Performing Art Charter School for allowing me to use them as a laboratory for my pedagogical philosophies and teaching techniques. How Music Sounds owes its thanks to that wonderful collaboration.

My greatest thanks are undoubtedly to my loving wife, Katie Goodman, and my two sons, Emmerson and Foster, for their unconditional love, support, and patience throughout this entire process. This could have never become a reality if it was not for the three of you.
TABLE OF CONTENTS

TABLE OF CONTENTS ........................................................................................................................... iii

ACKNOWLEDGMENTS ........................................................................................................................... v

CAST ......................................................................................................................................................... vi

INSTRUMENTATION ................................................................................................................................... vii

DEDICATION ............................................................................................................................................... viii

NIGHT OF THE LIVING DEAD: THE OPERA

ACT ONE

PROLOGUE ............................................................................................................................................... 1

SCENE 1:

“It's Getting Dark” ................................................................................................................................. 16

First Chorus of the Undead ...................................................................................................................... 58

SCENE 2:

“It's Okay” ............................................................................................................................................... 71

Second Chorus of the Undead .................................................................................................................. 136

SCENE 3:

“I think we should be alright” ............................................................................................................... 152

ACT TWO

SCENE 1:

“It’s Boarded Up Tight” ......................................................................................................................... 237
SCENE 2:

“Interview” ........................................................................................................... 300

SCENE 3:

“What do you way now, Cooper?” ................................................................. 332

SCENE 4:

“Is it Midnight Yet?” .................................................................................. 404

Ave Maria....................................................................................................... 444

SCENE 5:

“Looks Like Someone Had a Cookout” ...................................................... 461
ACKNOWLEDGMENTS

I want extend my deepest gratitude to my dissertation directors Dr. Frank Wiley and Dr. Ralph Lorenz, who have shown me the true meaning of being a teacher. I hope to some day provide for my students the insight, patience, and passion for our craft that they have provided for me. I also want to thank Dr. Jay White and Dr. Mark Lewis for their time and extremely valuable input that they so graciously shared with me throughout this process.

A special thank you to Stephan Catanzarite for his vision and passion in the creation of Night of the Living Dead: The Opera, for he was able to see the validity of this project way before I was. Thank you also to Mr. George Romero and Mr. John Russo for an amazing screenplay that is not only brilliant for the screen, but that also transfers extremely well to the stage. And thank you to Mr. Bill Hinzman for giving us the creative spark that this project needed.

Thank you to my students and colleagues at the Lincoln Park Performing Art Charter School for allowing me to use them as a laboratory for my pedagogical philosophies and teaching techniques. How Music Sounds owes its thanks to that wonderful collaboration.

My greatest thanks are undoubtedly to my loving wife, Katie Goodman, and my two sons, Emmerson and Foster, for their unconditional love, support, and patience throughout this entire process. This could have never become a reality if it was not for the three of you.
CAST

PRINCIPAL MEMBERS

Barbara (soprano), a woman in her early 20s, whose brother is Johnny
Johnny (tenor), a man in his mid-to-late 20s, whose sister is Barbara
Ben (tenor), black man in his early 30s, “hero” of the story
Harry Cooper (bass), middle-aged man, married to Helen and has a daughter Karen
Helen Cooper (mezzo), middle-aged woman, married to Harry and has a daughter Karen
Tom (baritone), teen-aged boy who is boyfriend of Judy
Judy (coloratura soprano), teen-aged girl who is girlfriend of Tom

SUPPORTING MEMBERS

Zombie #1 (actor/chorus), graveyard zombie who starts the conflict
Radio Announcer (voice over), pre-recorded or live
Undead Chorus (SATB), chorus of twelve to sixteen singers
Karen Cooper (actor), 8-year-old child of Helen and Harry
News Anchor (tenor), 1960s-style news anchor
Dr. Grimes (tenor), professor from the University of Pittsburgh
Chief McClellan (baritone), mid-to-late 40s man who is slightly overweight
Deputies (actors), four to five male members from the chorus
On-site News Reporter (baritone), male in his 20s
Monseigneur Rice (tenor), male between the ages of 50 and 70
Vince (baritone), gruff male in his mid-to-late 40s and assistant to Chief McClellan
INSTRUMENTATION

Flute, doubles piccolo and alto flute

Clarinet, doubles bass clarinet

Violin

Violoncello

Piano

Synthesizer

Percussion (one player):

   Guiro, Vibraphone, Tubular Bell (C5), Kick Drum, 4 Tom-toms, Suspended Cymbal,
   Cabassa (mounted), Marimba, Glockenspiel, Splash Cymbal, Triangle, Vibraslap
   (mounted), Bass Drum, High Hat, Timpani (2 drums; 23in, 26in), Tam-tam, Claves
For my amazing wife Katie and our equally amazing sons, Emmerson and Foster
At Rise: The caretaker's house of a church cemetery in rural western Pennsylvania, November 2, 1968 – All Soul’s Day. It is shortly before dusk.

Through an upstairs window, we see the glow of a television, and the partially-obscured figure of a person slumped in a chair in front of the TV. We get a better view of what is playing on the television via a screen above the stage, which slowly glows to life as the "Overture" begins. It is an end-of-year review of the tumultuous year of 1968 through black-and-white news footage. We see and hear snippets of: escalation of the Vietnam War (Tet Offensive, MyLai Massacre, etc.); the civil rights movement (MLK’s "Mountaintop" speech, marches, the assassination of MLK); the Cold War (Prague Spring and the Soviet invasion of Czechoslovakia, nuclear build-up, the
At the end of this collage a network NEWSMAN of the period appears; the Prologue continues to play under as he speaks...
hope to...
He pauses a beat as he is handed a paper from off-camera.

reports of any fatalities at this hour, they are concerned about possible nuclear contamination from the space probe, and for this reason, federal
Probe has crashed to Earth somewhere in western Pennsylvania. Anyone with information on the exact location of the wreckage should immediately contact... recommending that any civilian personnel who come upon the crash site flee immediately and contact their local police departme... This station, along with other television and radio stations, will now suspend regular programming and stay on the air to provide the public with ongoing information about possible fallout from the crashed space probe. Officials are also...
ACT I, PROLOGUE
null
ACCT I, PROLOGUE
ACT I, SCENE 1

"It's Getting Dark"

BARBARA, a pretty blonde in her early 20s, enters the graveyard followed by her slightly older brother JOHNNY who carries a set of car keys and a plastic cross surrounded by flowers. They are searching for their father's grave.
It's getting dark.
NIGHT OF THE LIVING DEAD
NIGHT OF THE LIVING DEAD
ACT I, SCENE 1
ACT I, SCENE 1
ACT I, SCENE 1
Finally noticing the figure, who slowly but steadily approaches them.
ACT I, SCENE 1
NIGHT OF THE LIVING DEAD

Johnny, still teasing her, runs toward the trees laughing, as the figure, who we now recognize as one of the living dead, draws closer to Barbara.

She turns to the figure and attempts to apologize for her brother.
ACT I, SCENE 1

One of the Undead grabs BARBARA and begins to tear at her; she screams. Turning back toward her scream.
The daughter rushes towards the caretaker’s house with the zombie in pursuit.

She punches and kicks at the zombie, which turns towards her, still chewing.
First Chorus of the Undead

ACT I, SCENE 1
ACT I, SCENE 1
The interior of the CARETAKER'S house. The living room is sparsely furnished with sofa and chairs around a fireplace, coffee table, and under a radio and telephone. Two doors to the kitchen are visible. A staircase leads to the second floor. Another door leads to the cellar.

ACT I, SCENE 2

"It's Okay"
NIGHT OF THE LIVING DEAD
ACT I, SCENE 1

We hear screaming from offstage and then pounding on the front door, which suddenly flies open; BARBARA enters in hysterics, with the ghoul from the cemetery just behind her; he gets his arms inside the door, but she slams it shut on them and he retreats. She locks the door. The ghoul begins to pound in a slow, steady rhythm on the door as he rasps and moans.
Suddenly, a second ghoul puts his face to the glass of a living room window and begins to claw and groan. She screams and pulls the curtains across the windows of the living room and then runs into the kitchen. As she does, a figure appears at the top of the stairs and makes its way slowly down. It is the CARETAKER, now one of the living dead. His face is partially-devoured.
BARBARA emerges from the kitchen with a large carving knife. She runs right into the CARETAKER who begins to tear at her as she screams. She tries to raise the knife to stab him but he knocks it from her.
and wrestles him out the front door, which he slams and locks. BARBARA screams and collapses in a sobbing heap.
He helps her stand and then takes her over to the couch where she slumps down.
ACT I, SCENE 1
He hangs up the phone. He walks over and tries the cellar door, but it's locked. He picks up the phone.
ACT I, SCENE 1

BARBARA stares blankly forward.
ACT I, SCENE 1
ACT I, SCENE 1
ACT I, SCENE 1

BEN grabs her, angrily.
She nods and he relaxes.
ACT I, SCENE 1

BEN exits to the kitchen.
BARBARA wanders to the mantle over the fireplace and picks up a music box.
ACT I, SCENE 1

BEN enters with a stack of boards, mainly pieces of kitchen cabinetry, and a hammer and nails.
ACT I, SCENE 1

She takes the boat from BEV and sits down on the couch as she begins to sing through the words.
BEN begins to board up a window as the rapping of the ghouls on the house gets louder again.

NIGHT OF THE LIVING DEAD
And John said, "It's...went right through the guardrail," getting dark."
ACT I, SCENE 1

—it's getting dark. I can still hear the driver screaming. Then the tank went off like a bomb.
ACT I, SCENE 1
ACT I, SCENE 1
And John came to me...

...star...
The relentless rhythm of the violin, like a clock, ping-pongs across the air, creating a sense of timeless terror. The music builds in tension, faster, with increasing intensity. This is the NIGHT of the LIVING DEAD.
ACT I, SCENE 1
Don't you know what's going on out there? What's happening?

Are you crazy?

Are you crazy?

What's happening?

What's happening?

go and find John ny!

Don't you know what's going on out there?

Are you crazy?

What's happening?
ACT I, SCENE 1

We have to go and find him; please!

John!

Sun-day school picnic.

 happen?

John!

This is no going on out there?
Help me, please.

My brother is out there!

No!

My brother is not dead!

Stop saying that!

He's dead!
ACT I, SCENE 3
Second Chorus of the Undead

UNDEAD in various degrees of shade and light.
NIGHT OF THE LIVING DEAD
senza una chorda
ACT I, SCENE 3

"I Think We Should Be Alright"

The rhythmic stomping, tapping, and scratching continues, under. BARBARA is waking up. The RADIO has gone to static. BEN enters from upstairs carrying a rifle, and has a small pair of women's slippers in his back pocket.
NIGHT of the LIVING DEAD
NIGHT OF THE LIVING DEAD
other officials from the National Aeronautics and Space Administration. The meeting has been convened to attempt to deal with the sudden epidemic of murder which has seized the eastern third of this nation…

All radio and television stations have joined their facilities in an emergency network to bring you news as it develops. Word has reached our newsroom from the White House that President Johnson, Secretary of State Rusk, and
Locally, Civil Defense officials in Beaver County have told newsmen that murder victims show signs of being partially devoured.
ACT I, SCENE 3

BARBARA still doesn't respond, so BEN turns to go back upstairs. Before he reaches the stairs, he turns back to BARBARA...
BEN stands, finally notices the static from the radio, and re-tunes it before exiting upstairs. BARBARA sits upright on the couch, wrapping her coat tightly around her, staring off into the distance.
BARB: flt
CLR: vln
VLC: pno
SYNTH: perc

JOHN: no Ped.

NIGHT OF THE LIVING DEAD
ACT I, SCENE 3

RADIO ANNOUNCER (cont.): …and consistent reports from eyewitnesses saying that people in a kind of trance are killing...
You feel the wind up—yes—yes, a—
Can't you—

You were—well, you were just—

Harry—
ACT I, SCENE 3
We're up.

Harry

Yeah, some-thing like that.

Some-thing like that.

Yeah, some-thing like that.
Night of the Living Dead
NIGHT OF THE LIVING DEAD
ACT I, SCENE 3
An UNDEAD HAND grabs been through a gap in the boards. TOM GRABS a hammer.
We've got ta fix these boards!
You're tard. - Bas

Ben

Harry

VLC

The Living Dead
NIGHT of the LIVING DEAD
TOM stops him before he can close it.
NIGHT OF THE LIVING DEAD

JUDY enters from the cellar, and TOM walks her into the living room.
ACT I, SCENE 3

HARRY goes down into the cellar and shuts the door. TOM tries to reason.
We'll all right...
ACT TWO

NIGHT OF THE LIVING DEAD
As the ENTRANCED women and children bask in the glory of the final moments, the house falls silent and the UNDEAD emerge from their hiding place in the cellar.

"It's Boarded Up Tight"

ACT II, SCENE 1
heard them, Harry.

So?

But Harry.

We didn't know who they were.
Not en. - me, with Don't

Turns away from Helen, visibly upset...
That's important?

With forward motion ($q = 108$)

To be right.

What's that supposed -

With forward motion ($q = ?$)
You mean to stand there and tell me there's a radio up there? And you mean to stand there and tell me there's a radio up there?
ACT II, SCENE 1

We're down here! Down, down, down, down.
Harry, are you there? Those people—
Helen, fer—"saw you, dam—buck—down, buck—down."
"...and the time..."
ACT II, SCENE 1
Go ahead, Mis Cooper.

I'll take good care of her.

Reminiscent, like m. 212 (h = 50) [In 2]

She's all I have.

This world.
Lights down on the cellar and up on the living room. BARBARA is slumped on the couch, blankly tracing the outline of
ACT II, SCENE 1

HELEN sits and takes out a pack of cigarettes. As she goes to light it, BARBARA startles at the strike of the match.
Helen:

“I need a hand up here! From upstairs."

Tom:

“TOM heads upstairs.”
Through gritted teeth.

Here.

It can’t be helped.

We can’t help it.

That’s too bad.

HARRY moves an end table over, and TOM and BEN set the TV on it.

ACT II, SCENE 1

Printed on page 392.

Score tempo: (4/4)

Same tempo: (4/4)
ACT II, SCENE 1
ACT II, SCENE 2

Lights fade up on a small area downstage, away from the main playing area. A television ANCHORMAN sits at a small news desk. We hear the unrelenting tap and hum of a Telex machine.
The page contains musical notation and text that appears to be a score for a composition. The text includes references to various musical elements such as 'Fl.', 'Vln.', 'Vlc.', 'Pno.', 'Synth', 'Perc', and mentions of 'Anchor', 'Fl.', 'Cl.', and 'Night of the Living Dead'. It also includes dynamic notations such as 'f', 'ff', and 'p'. The score appears to be complex, with multiple lines and sections, indicating a detailed musical piece.
ACT II, SCENE 2
Her thoughts trail-off briefly.
Doctor Grimes, I know you and your en-ter-staff... I have been working to find some solution to the terri-ble things that are hap-pening.

Push tempo slightly ($q = 126$)
Grimes, in your expert opinion, is there a connection between radiation and this epic of mass murder.

Within the pulse of the left hand

In your "

In Time, slower than before

\( q = 116 \) 

\( \text{sempre} \) 

[joining the piano]
They must be pushed forward.

There are a few more things to be done.

Time to make some more money.

ACT II, SCENE 2
Lights slowly fade as newsman frantically works behind anchor as he continues with his report.
Like before the TV broadcast, yet different (q = 120)"

"What do you say now, Cooper?"

Lights up on the living room.  BEN turns the TV down, but the set continues to radiate bluish shadows from its screen.
Then the Regains composure

Our daughter is injured,
JUDY enters living room. Lights out in the cellar.
TOM exits to the cellar.

There's a big boy name down there. Why don't you hurt the big boy up by the foot and—

Harry gasps the key to the jars. Gasp the fruit in the jars!
Night of the Living Dead
from JUDY and starts to tear it into sheets.
ACT II, SCENE 3
ACT II, SCENE 3

There was a big smile on his face. The room was silent.

There was a moment of silence.

Then, a sudden wave of excitement washed over the room.

Faster, yet (in 11th)

[In 1]

= 96

Time to start it!
The fire outside casts light and shadows on the interior of the house. We hear the

shatter of glass and then a small explosion outside, followed by a second, then a third. The fire outside casts light and shadows on the interior of the house. We hear the

spleen...
She pushes past Harry and out the door.
HELEN calls from the top of the cellar steps.  

F

NO!  

NO!

HARRY slams and locks the door behind her, and then heads to a window to watch.  The truck engine grinds.
ACT II, SCENE 3

HARRY pauses for a moment at the top of the cellar steps, but is about to go into the cellar when BEN kicks down the door. Various UNDEAD trail BEN, clawing at him. BEN pushes them off the steps and returns to the top of the steps. The UNDEAD應用无名力 Guidelines are...
ACT II, SCENE 4

Is it Midnight Yet?
We know. Don't let...
With levels of mastery continuing to rise.
All persons who die during this crisis, even those who are declared dead, will come back to life. They'll come back to life and seek whatever the cause, be it war or peace, will be put right by the human victors. With a menacing pulse (q = 72)
there's no problem. If you have a gun, just shoot them in the head. That's a sure way to kill them.
Music notation page with sheet music.
You men there! You want to get on the Shouting to men offstage

Get the other side of the road. Get the other side of the road.

You men there! You want to get on the Shouting to men offstage

Get the other side of the road. Get the other side of the road.

You men there! You want to get on the Shouting to men offstage

Get the other side of the road. Get the other side of the road.
That was Chief McLellen outside Pottersville. The anchor...

ACT II, SCENE 4

The UNDEAD can be heard, scratching and clawing at the boarded up doors. As the UNDEAD are trying to enter the house, we hear a wind chime blow gently in the distance.
We have to get out of here. Butler County Sheriff's Department.

Quickly, not in time: DO NOT SYNC

The fuse box in the cellar.

f

If the fuses blow in the cellar, the kitchen.

f

Perc

Pinochio's the power god and the fighter god.

Anchor

Harry

flt

clr

vln

vlc

1

pno

synth

NIGHT OF THE LIVING DEAD

Suddenly, the power fails and the lights go out [BLACKOUT for the entire theater, even stand lights]. Except that the living room is dimly lit by moonlight seeping in through cracks in the boarded windows.
ACT II, SCENE 4

The UNDEAD finally break through a board on one of the windows. BEN sets the gun down as he and HARRY rush over to put the board back in.
She kneels with her back to KAREN.
Everything but the area around HELEN dims to black.
HELEN flees to the cellar; lights down on the living room, and up in the cellar; where HELEN lights a candle. KAREN is practically lifeless on the table.
In her last moment, HELEN turns to see her face.
KAREN stabs HELEN repeatedly as HELEN screams. HARRY crosses toward him, but stops. The UNDEAD have advanced, loosening boards on the windows and pounding at the front door.  The pounding is overwhelming. BEN is trying to beat them back at the window.  Lights down on the cellar, up on the living room.

For training it on BEN. and grabs the gun,
as fast as possible, DO NOT SYNC Clarinet B flt

NIGHT OF THE LIVING DEAD
Looks like someone had a cookout.
Amidst the smoldering remains from the night before, CHIEF McCLELLAN and his men arrive.
Looks like someone had a "é" last night boys.

Mysterious, with forward energy ($q = 76$)
ACT II, SCENE 5

Taking out a small prayer book.
ACT II, SCENE 5

VINCE fires again. On the second shot, lights up on BEN inside the cellar; the noise has awakened him. He struggles to his feet and begins to make his way out of the cellar.
ACT II, SCENE 5
NIGHT OF THE LIVING DEAD
BEN steps out across the threshold of the door, squinting and raising his hands at the brightness of the sun.

Lights out.

ACT II, SCENE 5
PART II

HOW MUSIC SOUNDS:
A COMPREHENSIVE GUIDE TO THE GRAMMAR OF MUSIC

Part II of a dissertation submitted to the College of the Arts of Kent State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

by

Todd Goodman

April, 2017

© Copyright 2017

All rights reserved

Except for previously published materials
# Table of Contents

## List of Figures

## Chapters

I. Why A New Text on Musicianship?
- Written Music Theory Texts .................................................. 3
- Supplemental Texts .................................................................... 5
- Why Include History? ................................................................... 8
- Adding Creativity through Composition into Musicianship Training .................................................. 10
- Writing a New Textbook ................................................................ 12

II. Survey and Review of Currently Used Texts ......................... 14
- Comprehensive Musicianship and Written Theory .................. 15
- Aural Skills, Keyboard Training, and Rhythm Study ............... 22
- History of Musicianship ................................................................. 30
- Other Resources ......................................................................... 31

III. What Is Music? ...................................................................... 33
- Music Defined Throughout History ........................................... 37
- Musical Instinct and Planning .................................................... 40

IV. The Beginning: Staff and Clefs ............................................. 44
- Just How Old Is Music? ............................................................... 45
- Music Notation’s Beginnings ...................................................... 46
- History of the Staff ................................................................. 48
- The Modern Staff .................................................................... 50
- Notes ....................................................................................... 51
### VIII. BEGINNING EAR TRAINING

- Matching Pitch .......................................................... 117
- Scientific Background .................................................. 118
- Pitch Hierarchy ............................................................ 121
- Scientific Background of Pitch Hierarchy ......................... 123
- Anchor System ............................................................ 127

### TRAINING EXERCISES ................................................. 129

### IX. SIMPLE RHYTHMIC SUBDIVISIONS ..................................... 133

- Macrobeat and Microbeat ............................................... 133
- How We Relate: Macrobeat and Microbeat ...................... 134
- Subdivision Notation ..................................................... 137
- Time Signatures .......................................................... 143
- Microbeats Inside the Time Signature .............................. 146
- Beaming ........................................................................ 149
- Simple, Compound, Duple, Triple, and Quadruple Meters .......... 151
- TaKaDiMi as the Microbeat ............................................. 152
- Worksheet ..................................................................... 155

### X. IMPROVISATION .......................................................... 157

- Through the Eyes of the Other Arts ................................ 158
- Exploring Your Instrument ............................................ 161
- Packaging Your Ideas ................................................... 162
- Motif in the Other Arts .................................................. 163
- Beginning to Improvise ................................................ 166

### XI. KEY SIGNATURES AND THE CIRCLE OF FIFTHS ........................... 172

- Patterns in the Scale's Pattern ....................................... 173
- A Visual Pattern .......................................................... 180
- Key Signatures - Sharps ............................................... 181
- The Other Side ............................................................ 187
- Key Signatures - Flats .................................................... 192
- Enharmonic Key Signatures .......................................... 198
- Worksheet .................................................................... 201

### XII. INTERVALS ............................................................... 202
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Classification of Intervals</td>
<td>202</td>
</tr>
<tr>
<td>Generic Size of Intervals</td>
<td>203</td>
</tr>
<tr>
<td>Quality of Intervals</td>
<td>207</td>
</tr>
<tr>
<td>Major and Minor Intervals</td>
<td>208</td>
</tr>
<tr>
<td>Interval Inversion</td>
<td>214</td>
</tr>
<tr>
<td>Perfect Intervals</td>
<td>217</td>
</tr>
<tr>
<td>Diminished and Augmented Intervals</td>
<td>219</td>
</tr>
<tr>
<td>Interval Shorthand</td>
<td>221</td>
</tr>
<tr>
<td>Worksheet</td>
<td>223</td>
</tr>
<tr>
<td>XIII. INTERVALIC HEARING</td>
<td>224</td>
</tr>
<tr>
<td>Outside the Anchors</td>
<td>224</td>
</tr>
<tr>
<td>Training Exercises Continued</td>
<td>226</td>
</tr>
<tr>
<td>Intervals Inside our Major Scale</td>
<td>229</td>
</tr>
<tr>
<td>XIV. RHYTHMIC GROUPINGS OF THREE</td>
<td>232</td>
</tr>
<tr>
<td>Similarities Between Simple and Compound Rhythms</td>
<td>232</td>
</tr>
<tr>
<td>Circle Notation in Beat Groupings of Three</td>
<td>234</td>
</tr>
<tr>
<td>TaKaDiMi in Groupings of Three</td>
<td>240</td>
</tr>
<tr>
<td>Worksheet</td>
<td>244</td>
</tr>
<tr>
<td>XV. TRIADS AND DIATONIC HARMONY</td>
<td>245</td>
</tr>
<tr>
<td>The Birth of the Triad</td>
<td>246</td>
</tr>
<tr>
<td>Interval Enharmonics</td>
<td>248</td>
</tr>
<tr>
<td>The Basic Triad</td>
<td>251</td>
</tr>
<tr>
<td>Naming the Triads</td>
<td>253</td>
</tr>
<tr>
<td>Triads in the Scale</td>
<td>257</td>
</tr>
<tr>
<td>Worksheet</td>
<td>259</td>
</tr>
<tr>
<td>XVI. THE BUILDING BLOCKS OF IMPROVISATION</td>
<td>260</td>
</tr>
<tr>
<td>Improvisational Tools</td>
<td>260</td>
</tr>
<tr>
<td>Tool Number One: Repetition</td>
<td>262</td>
</tr>
<tr>
<td>Tool Number Two: Motivic Development</td>
<td>265</td>
</tr>
<tr>
<td>XVII. COMPOUND RHYTHMIC SUBDIVISIONS</td>
<td>279</td>
</tr>
<tr>
<td>Compound Meter Microbeats</td>
<td>279</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>TaKaDiMi for Compound Meter Microbeats</td>
<td>282</td>
</tr>
<tr>
<td>Compound Meter Beaming</td>
<td>284</td>
</tr>
<tr>
<td>Time Signatures of Compound Meters</td>
<td>287</td>
</tr>
<tr>
<td>History of Time Signatures</td>
<td>290</td>
</tr>
<tr>
<td>Time Signature Types - Revisited</td>
<td>295</td>
</tr>
<tr>
<td>Borrowed Rhythms</td>
<td>296</td>
</tr>
<tr>
<td>Mixed Meters: A Brief Overview</td>
<td>299</td>
</tr>
<tr>
<td>Worksheet</td>
<td>302</td>
</tr>
<tr>
<td>XVIII. TRIADIC INVERSIONS</td>
<td>303</td>
</tr>
<tr>
<td>Interval Inversions in Triads</td>
<td>305</td>
</tr>
<tr>
<td>Triad Inversions</td>
<td>307</td>
</tr>
<tr>
<td>Inversion Names and Labels</td>
<td>314</td>
</tr>
<tr>
<td>Open and Closed Position</td>
<td>316</td>
</tr>
<tr>
<td>Figured Bass</td>
<td>318</td>
</tr>
<tr>
<td>Popular Music Shorthand</td>
<td>324</td>
</tr>
<tr>
<td>Worksheet</td>
<td>326</td>
</tr>
<tr>
<td>XIX. PUTTING IT TOGETHER</td>
<td>327</td>
</tr>
<tr>
<td>Art is Art</td>
<td>329</td>
</tr>
<tr>
<td>Do Not Rely on Regurgitation</td>
<td>330</td>
</tr>
<tr>
<td>XX. RESULTS</td>
<td>332</td>
</tr>
<tr>
<td>APPENDICES</td>
<td></td>
</tr>
<tr>
<td>A. IMPORTANT TERMS</td>
<td>337</td>
</tr>
<tr>
<td>B. CREATIVE EXERCISES AND TIMED WORKSHEETS</td>
<td>344</td>
</tr>
<tr>
<td>BIBLIOGRAPHY</td>
<td>352</td>
</tr>
<tr>
<td>INDEX</td>
<td>356</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: &quot;What is Music?&quot; Survey Answers</td>
<td>36</td>
</tr>
<tr>
<td>2: Plan of Study</td>
<td>41</td>
</tr>
<tr>
<td>3: Musicianship Plan</td>
<td>42</td>
</tr>
<tr>
<td>4: Replica of a Bone Flute from <em>Geissenklösterle.</em></td>
<td>45</td>
</tr>
<tr>
<td>5: <em>Epitaph of Seikilos</em></td>
<td>47</td>
</tr>
<tr>
<td>6: <em>Epitaph of Seikilos</em> Notation</td>
<td>47</td>
</tr>
<tr>
<td>7: <em>Jubilate Deo Universa Terra.</em></td>
<td>48</td>
</tr>
<tr>
<td>8: Four-line music staff with neumes</td>
<td>49</td>
</tr>
<tr>
<td>9: Higher and Lower Notes Relative to Each Other on the Staff</td>
<td>50</td>
</tr>
<tr>
<td>10: Five Lines and Four Spaces with Measure Line</td>
<td>50</td>
</tr>
<tr>
<td>11: Drawing Proper Note Shapes</td>
<td>51</td>
</tr>
<tr>
<td>12: Lines and Spaces in Relation to the Keyboard</td>
<td>52</td>
</tr>
<tr>
<td>13: Treble and Bass Clefs</td>
<td>53</td>
</tr>
<tr>
<td>14: Early Forms of the F and G Clefs</td>
<td>53</td>
</tr>
<tr>
<td>15: Early Clef Usage</td>
<td>54</td>
</tr>
<tr>
<td>16: C and F Clefs in early neume notation</td>
<td>54</td>
</tr>
<tr>
<td>17: Early Forms of the C Clef</td>
<td>54</td>
</tr>
<tr>
<td>18: How to Draw Treble and Bass Clefs</td>
<td>55</td>
</tr>
<tr>
<td>19: Treble Clef with Corresponding Notes</td>
<td>56</td>
</tr>
</tbody>
</table>
20: Bass Clef with Corresponding Notes ................................................................. 56
21: Finding Notes by Counting .................................................................................. 57
22: Treble and Bass Memory Aids ........................................................................... 58
23: Ledger Lines ......................................................................................................... 59
24: The Pitch A on the Treble and Bass Clefs .......................................................... 60
25: Eleven-line Grand Staff ...................................................................................... 60
26: The Full Range of the Grand Staff ..................................................................... 61
27: Alto and Tenor Clefs ......................................................................................... 61
28: Lowest note on the alto clef .............................................................................. 62
29: High Notes in Bass Clef and Tenor Clef ............................................................. 63
30: "Middle C" shown on Treble, Bass, Alto, and Tenor Clefs .................................. 63
31: Pitch Comparison of Today's Commonly Used Clefs ........................................ 64
32: Memory Aids for C Clefs .................................................................................. 65
33: How to Draw C Clefs ....................................................................................... 65
34: Other Clefs .......................................................................................................... 66
35: Example of Adjacent Keyboard Notes Corresponding to the Five-Line Staff .... 69
36: Finger Numbers .................................................................................................. 70
37: Cs and Fs on the Keyboard ................................................................................ 71
38: Pentascales Starting on C and D ....................................................................... 72
39: Two Pieces Played with Pentascales ................................................................ 73
40: Finger Numbers Translated into Notation ......................................................... 74
41: Ludwig van Beethoven, "Ode to Joy" ................................................................. 74
42: Cs Around "Middle C" ..................................................................................... 75
43: D Below the C Below “Middle C” ...........................................................................................................75
44: Helmholtz Pitch Notation System ...........................................................................................................76
45: Note Groupings Using Scientific Pitch Notation .....................................................................................76
46: Scientific Pitch Notation ..........................................................................................................................77
47: Spaces of Treble and Bass Clefs with Scientific Pitch Notation .............................................................77
48: Pitch vs. Pitch-class ........................................................................................................................................79
49: Electrocardiogram and Pulse ...................................................................................................................82
50: Rhythm in Comparison to a Steady Pulse .................................................................................................83
51: Rhythm in Comparison to an Unsteady Pulse ..........................................................................................83
52: Rhythmic Circle Notation Basics ............................................................................................................85
53: Example of Circle Notation ......................................................................................................................85
54: Example of a Multi-Circle Rhythm ..........................................................................................................86
55: Note Durations of Whole, Half, and Quarter Notes ..............................................................................87
56: Circle Notation Transferred to Note Durations .......................................................................................88
57: Adding Dots to Notes ...............................................................................................................................89
58: Double-Dotted Note Durations .................................................................................................................89
59: Rest Durations of Whole, Half, and Quarter Notes ..............................................................................90
60: Instructions for Drawing Quarter Note Rests .........................................................................................90
61: Partner Note Durations and Rest Durations ...........................................................................................91
62: Rests and Notes and Their Divisions .......................................................................................................91
63: Examples of Duple Rhythms and Their Corresponding Counts ............................................................92
64: Strength of Arabic Numbers Versus Musical Pulse .............................................................................93
65: Rhythmic Solfege TaKaDiMi .....................................................................................................................93
89: Solfege and Scale Degrees of Major Scales Starting on D and B-Flat ........................................ 115
90: Waveform in Relation to a Vibrating String ........................................................................ 118
91: Parts of the Wave Using a Three-Inch String .................................................................. 119
92: Parts of the Wave Using a Two-Inch String ..................................................................... 120
93: Matching Pitch and Resulting Wave .................................................................................. 120
94: Two Different Pitches and Their Resulting Waves ............................................................. 120
95: Pitch with Bad Intonation .................................................................................................. 121
96: United States Air Force Rank Hierarchy ......................................................................... 121
97: Scale and Corresponding Solfege Starting on C ................................................................. 122
98: Overtone Series Fundamental .......................................................................................... 124
99: First Note in the Overtone Series ....................................................................................... 124
100: Second Note in the Overtone Series ................................................................................. 125
101: Third Note in the Overtone Series .................................................................................... 125
102: Frequency, Solfege, and Division of the String Shown in Notation ................................ 126
103: Note Hierarchy ................................................................................................................ 127
104: Solfege Scale with Do and Sol Anchors ......................................................................... 127
105: Example of a Major Scale Starting on C using Shape Notes .......................................... 128
106: Anchors and Their Relation to Non-anchors .................................................................. 128
107: Training Exercise No. 1; Mi Anchor ............................................................................... 129
108: Training Exercise #2; Sol Anchor .................................................................................... 130
109: Ear Training Exercise #3; High Do Anchor ..................................................................... 132
110: Circle Notation as Macrobeat ........................................................................................ 135
111: Microbeat and Macrobeat as Seen in the Circle Notation ............................................. 135
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>112</td>
<td>Change in Macrobeat</td>
<td>136</td>
</tr>
<tr>
<td>113</td>
<td>Circle Notation into Rhythmic Notation</td>
<td>137</td>
</tr>
<tr>
<td>114</td>
<td>Circle Used as Microbeat</td>
<td>137</td>
</tr>
<tr>
<td>115</td>
<td>“Jingle Bells” with Microbeat, Macrobeat, and Notation</td>
<td>138</td>
</tr>
<tr>
<td>116</td>
<td>“Jingle Bells” Using Half Note as Microbeat</td>
<td>138</td>
</tr>
<tr>
<td>117</td>
<td>Adding Flag to Create an Eighth Note</td>
<td>140</td>
</tr>
<tr>
<td>118</td>
<td>Note Value Pyramid</td>
<td>140</td>
</tr>
<tr>
<td>119</td>
<td>How to Draw an Eighth Rest</td>
<td>141</td>
</tr>
<tr>
<td>120</td>
<td>Note Value and Rest Pyramid</td>
<td>141</td>
</tr>
<tr>
<td>121</td>
<td>Note Value Subdivisions</td>
<td>142</td>
</tr>
<tr>
<td>122</td>
<td>Time Signature</td>
<td>143</td>
</tr>
<tr>
<td>123</td>
<td>Assignment of Roles within the Time Signature</td>
<td>144</td>
</tr>
<tr>
<td>124</td>
<td>Time Signature Bottom Note Assignments</td>
<td>145</td>
</tr>
<tr>
<td>125</td>
<td>Breakdown of Time Signature Components</td>
<td>145</td>
</tr>
<tr>
<td>126</td>
<td>Time Signature Examples</td>
<td>146</td>
</tr>
<tr>
<td>127</td>
<td>Macrobeats and Microbeats of “Jingle Bells”</td>
<td>146</td>
</tr>
<tr>
<td>128</td>
<td>“Jingle Bells” Written in the (\frac{4}{4}) Time Signature</td>
<td>147</td>
</tr>
<tr>
<td>129</td>
<td>“Jingle Bells” with Three Different Macrobeat Durations</td>
<td>148</td>
</tr>
<tr>
<td>130</td>
<td>Comparison of “Jingle Bells” Rhythms</td>
<td>149</td>
</tr>
<tr>
<td>131</td>
<td>Rhythm Without Beams</td>
<td>149</td>
</tr>
<tr>
<td>132</td>
<td>Beaming According to Macrobeat</td>
<td>150</td>
</tr>
<tr>
<td>133</td>
<td>Beaming and Time Signature According to Macrobeat</td>
<td>150</td>
</tr>
<tr>
<td>134</td>
<td>Beaming With and Without a Macrobeat</td>
<td>151</td>
</tr>
</tbody>
</table>
135: Meter Categorization.................................................................................................................... 152
136: TaKaDiMi with Same Macrobeat and Microbeat................................................................. 153
137: Circle Notation on the Microbeat Levels Transferred to Notation and TaKaDiMi ............... 154
138: TaKaDiMi at the Microbeat Level ............................................................................................. 154
139: Composition in White, Red, and Yellow by Piet Mondrian (Holland, 1872-1944) .............. 160
140: Three Styles of Gothic Columns ............................................................................................. 164
141: Outside of the Dome of the Capitol Building, Washington, D.C. .............................................. 165
142: Selection from Part IV of “The Rime of the Ancient Mariner” (1834) ................................. 167
143: Motivic Repetition in “The Rime of the Ancient Mariner” ................................................... 168
144: Motivic Modulation in “The Rime of the Ancient Mariner” ................................................... 168
145: Musical Example of Motif in “Rime of the Ancient Mariner” ............................................. 169
146: Musical and Text Comparison in “Rime of the Ancient Mariner” ........................................ 170
147: Modulation of Musical Motif in “Rime of the Ancient Mariner” ........................................... 171
148: Major Scale Starting on C ........................................................................................................ 173
149: Major Scale Starting on G ....................................................................................................... 174
150: Whole Step from E to F# ......................................................................................................... 175
151: Major Scale Starting on D ....................................................................................................... 175
152: Relationship between Do and Sol ........................................................................................... 176
153: Logic of Fifth Pattern .............................................................................................................. 177
154: A Series of Five Major Scales Showing the Ascending Do to Sol Relationship ................. 178
155: Series of Fifths Starting on C ................................................................................................ 179
156: Order of Sharps in Notation ................................................................................................... 179
157: Sharp Side of the Circle of Fifths ............................................................................................. 180
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>158</td>
<td>Steps for Writing Major Scales Using the Circle of Fifths</td>
<td>181</td>
</tr>
<tr>
<td>159</td>
<td>Creating a Key Signature from a Scale</td>
<td>182</td>
</tr>
<tr>
<td>160</td>
<td>Key Signature Sharps on the Staff</td>
<td>183</td>
</tr>
<tr>
<td>161</td>
<td>Octave Shift of Key Signature Sharps on the Staff</td>
<td>183</td>
</tr>
<tr>
<td>162</td>
<td>Correct Pattern for Key Signature Sharps on the Staff</td>
<td>184</td>
</tr>
<tr>
<td>163</td>
<td>Order of Sharps and Their Key Signatures</td>
<td>185</td>
</tr>
<tr>
<td>164</td>
<td>Sharp Side of the Circle of Fifths and Their Corresponding Key Signatures</td>
<td>186</td>
</tr>
<tr>
<td>165</td>
<td>Ascending vs. Descending Intervals</td>
<td>187</td>
</tr>
<tr>
<td>166</td>
<td>The Descending Relationship from Do to Fa Starting on C</td>
<td>188</td>
</tr>
<tr>
<td>167</td>
<td>First Scale in the Descending Fifth Series</td>
<td>189</td>
</tr>
<tr>
<td>168</td>
<td>Logic of Fifth Pattern</td>
<td>189</td>
</tr>
<tr>
<td>169</td>
<td>A Series of Five Major Scales Showing the Descending Do to Fa Relationship</td>
<td>190</td>
</tr>
<tr>
<td>170</td>
<td>Order of Flats in Notation</td>
<td>191</td>
</tr>
<tr>
<td>171</td>
<td>Flat Side of the Circle of Fifths</td>
<td>192</td>
</tr>
<tr>
<td>172</td>
<td>Creating a Key Signature from a Scale, Flats</td>
<td>193</td>
</tr>
<tr>
<td>173</td>
<td>Flat Key Signature Pattern and Ledger Lines</td>
<td>194</td>
</tr>
<tr>
<td>174</td>
<td>Pattern of Flats in the Bass Clef</td>
<td>194</td>
</tr>
<tr>
<td>175</td>
<td>Order of Flats and Their Key Signatures</td>
<td>195</td>
</tr>
<tr>
<td>176</td>
<td>Differences Between Like-Lettered Key Signatures</td>
<td>196</td>
</tr>
<tr>
<td>177</td>
<td>Flat Side of the Circle of Fifths and Their Corresponding Key Signatures</td>
<td>197</td>
</tr>
<tr>
<td>178</td>
<td>Enharmonics of the Circle of Fifths</td>
<td>199</td>
</tr>
<tr>
<td>179</td>
<td>Circle of Fifths</td>
<td>200</td>
</tr>
<tr>
<td>180</td>
<td>Generic Intervals of a Sixth and a Fifth</td>
<td>204</td>
</tr>
</tbody>
</table>
181: Generic Intervals of a Fifth and a Seventh with Accidentals .................................................. 204
182: Examples of Numerous Intervals with Same Generic Size......................................................... 205
183: Intervals of Like-Generic Size Applied to the Keyboard.............................................................. 206
184: Half-Step and Whole-Step Size and Quality ............................................................................. 208
185: Generic Size as it Corresponds to Scale Degree ........................................................................ 209
186: Major and Minor Thirds ........................................................................................................... 210
187: Major and Minor Seconds and Thirds ...................................................................................... 211
188: Major and Minor Seconds, Thirds, Sixths, and Sevenths ........................................................... 211
189: Interval Example .................................................................................................................... 212
190: Steps to Identifying Intervals for Seconds, Thirds, Sixths, and Sevenths ......................... 214
191: Generic Size of Interval Inversions .......................................................................................... 215
192: Map of Interval Inversions ....................................................................................................... 215
193: Map of Interval Inversion with Notation ................................................................................ 216
194: Interval Inversions of Generic Sizes Two, Three, Six, and Seven ........................................ 217
195: Inversions of Intervals with Generic Sizes of Firsts, Fourths, Fifths, and Eighths .............. 218
196: Steps to Identify Intervals: All Major, Minor, and Perfect ..................................................... 219
197: Augmented and Diminished Quality with Perfect Intervals ................................................ 220
198: Augmented and Diminished Quality with Major Interval ..................................................... 220
199: Steps to Identify Intervals: All Major, Minor, and Perfect ..................................................... 221
200: Interval Quality Abbreviations ............................................................................................... 222
201: Solfege Anchors of Do, Mi, Sol, and Do' ................................................................................ 225
202: Training Exercise No. 4; Outside the Anchors- Re ............................................................... 226
203: Training Exercise #5: Outside the Anchors - Fa ................................................................. 227
204: Training Exercise #6: Outside the Anchors - La and Ti.........................................................229
205: Diatonic and Chromatic Scales...............................................................................................230
206: Intervals Found Within the Major Scale................................................................................231
207: Interval Exercise .....................................................................................................................231
208: Initial Comparison of Simple and Compound Meters...........................................................233
209: Examples of Simple-and Compound Meter Circle Notation..................................................234
210: Circle Notation of Compound Meter Rhythm .........................................................................235
211: The Application of Note Value to Circle Notation Rhythms..................................................236
212: Macrobeat of Simple-and Compound Meter in Circle-and Note Notation...............................237
213: Compound Meter Superimposed Over Simple Meter Using Microbeats..................................238
214: Simple-and Compound Meter with Notation Groupings Aligned by Microbeat......................239
215: Simple-and Compound Meter with Notation Groupings Aligned by Macrobeat......................240
216: Solfege Comparison of Simple-and Compound Meter ............................................................241
217: Syllables of Ta, Ki, and Da Applied to a Rhythm......................................................................242
218: Four Prime Examples of Compound Rhythms ........................................................................242
219: Key Vocabulary Related to Triads.........................................................................................246
220: Various Groupings of Three Notes .........................................................................................247
221: Interval Generic Sizes in Note Groupings ................................................................................247
222: Four Qualities of Thirds..........................................................................................................248
223: Qualities of Thirds Found in the Minor Scale........................................................................249
224: Intervals and Enharmonics, Non-diatonic to Diatonic.............................................................249
225: Intervals and Enharmonics, Diatonic to Non-diatonic.............................................................250
226: Combinations of Triadic Intervals.........................................................................................251
227: Building a Triad ............................................................................................................................ 252
228: Building Triads ............................................................................................................................ 253
229: Multiple Interval Qualities in Triads .......................................................................................... 254
230: Names of Notes in the Triad ........................................................................................................ 254
231: Qualities of Fifths in Triads ....................................................................................................... 255
232: Naming Intervals for Triads ....................................................................................................... 256
233: Steps to Identify Triads .............................................................................................................. 257
234: Diatonic Triads of the Major Scale ............................................................................................ 258
235: Main Motif from Ludwig Van Beethoven's Symphony No. 5 in C minor ......................... 262
236: Lack of Coherent Ideas in a Story .............................................................................................. 263
237: Coherent Ideas in a Story .......................................................................................................... 264
238: Poem Composed Only With Repetition ..................................................................................... 266
239: Poem Composed With Repetition and Motif Development ....................................................... 266
240: Opening Gesture from Ludwig Van Beethoven's Symphony No. 5 in C minor ................ 267
241: Construction of the First Five Measures of Beethoven Symphony No. 5 ......................... 267
242: Diatonic Versus Chromatic Transposition .................................................................................. 268
243: Franz Liszt Reduction of Beethoven's Symphony No. 5, Movement I .................................. 270
244: Motif Development in the Opening of Beethoven's Symphony No. 5 ............................... 271
245: Manipulated Motif in the Opening of Beethoven's Symphony No. 5 ............................... 272
246: Motif Manipulation Tools ......................................................................................................... 274
247: Combination of Motif Manipulations ....................................................................................... 275
248: Todd Goodman's Sketch for "Ave Maria," from Night of the Living Dead, the opera .......... 276
249: President Roosevelt Edits to the "Day of Infamy" Speech, December 8, 1941 ................. 277
250: Simple-and Compound Meters with Exact Resulting Sound .................................................. 279
251: Simple-and Compound Meters with Differing Subdivision .................................................. 280
252: Simple-and Compound Meters at Their Microbeat Level ................................................... 281
253: Division of Simple and Compound Meter ............................................................................ 281
254: Like Microbeats Between Simple-and Compound Meters .................................................... 282
255: Math of Simple-and Compound Meter and Their Shared Middle Microbeat ....................... 283
256: Solfege for Simple-and Compound Meter Microbeats ......................................................... 283
257: Application of TaKaDiMi Syllables to Compound Meter Example ....................................... 284
258: Compound Meter Rhythm Without Beams ........................................................................... 285
259: Compound Meter Rhythm Beamed According to Macrobeat ............................................... 285
260: Beaming and Circle Notation of Compound Meter Rhythm ................................................ 286
261: Common Un-beamed Note Groupings .................................................................................. 287
262: Assignment of Compound Meter Time Signature Roles ....................................................... 288
263: Simple Meter Time Signatures of Two or Four Macrobeats ................................................. 289
264: Simple-and Compound Meter Differences in the Same Time Signature .............................. 290
265: Mensural-and Modern Notation .......................................................................................... 292
266: Perfect-and Imperfect Time Symbols .................................................................................. 293
267: Early Meters and Their Modern Notation Equivalents ......................................................... 294
268: Meter Classification ............................................................................................................. 296
269: Borrowed Rhythm, Triplet .................................................................................................. 298
270: Borrowed Rhythm, Duple ................................................................................................... 298
271: TaKaDiMi in Borrowed Rhythms ........................................................................................ 299
272: Circle Notation Example for Mixed Meter Measure ............................................................. 299
273: Measure of Mixed Meter ............................................................................................................. 300
274: Mixed-and Simple Meter Differences in the Same Time Signature ........................................ 301
275: Macrobeat Differences in the Same Time Signature ................................................................. 301
276: Comparison of Two Rhythms .................................................................................................. 303
277: Intervals in a Triad ..................................................................................................................... 305
278: Intervals in a Triad with Added Root ......................................................................................... 306
279: Interval Inversions Created by the Doubled Octave ................................................................. 306
280: Triad with Doubled Root ........................................................................................................... 307
281: Removal of Doubled Pitch-class ............................................................................................. 308
282: Interval Construction of First Inversion of a Triad ................................................................. 309
283: Root and Bass .......................................................................................................................... 311
284: Inversions of the Triad .............................................................................................................. 312
285: Continuing the Pattern of Inversions ....................................................................................... 313
286: Duplication of the Root Position Triad ..................................................................................... 313
287: F Major Triads in Root Position, First-and Second Inversion .................................................. 314
288: Identification of Root Versus Inverted Triads ......................................................................... 316
289: Closed and Open Position Triads ............................................................................................ 317
290: Intervals of the Outside Notes in a Triad ................................................................................ 318
291: Intervals in the Three Positions of Triads ................................................................................ 318
292: Triadic Naming Intervals ......................................................................................................... 319
293: Root of Triadic Inversion ......................................................................................................... 319
294: Identify Root and Key of Inverted Triad .................................................................................. 320
295: Example of Figured Bass .......................................................................................................... 321
296: Evolution of Figured Bass Numbers.................................................................321
297: Figured Bass Inversion Numbers.....................................................................322
298: Location of Roots in a Figured Bass Example......................................................322
299: Triads and Figured Bass ....................................................................................323
300: Figured Bass by Johann Sebastian Bach, Beschränkt, ihr Weisen ..................324
301: Popular Music Shorthand for Triadic Inversions .................................................325
In my experience of teaching musicianship—which includes written theory, aural skills, music history, keyboard training, and rhythm study at the secondary level—I have yet to find a comprehensive textbook that covers all five topics in a format not too advanced nor too elementary for the serious music student between the ages of fourteen to eighteen, as well as the casual adult musician. Most of the quality books that cover the important musicianship topics for the early learner are either much too elementary or too limited, covering only a small section of the information necessary for a comprehensive musicianship education—typically only one or two of the previously mentioned five topics. There are many fantastic musicianship books dedicated to the very young through the pre-adolescent learner, but when it comes to teenage students these writings can often be condescending and frustrating due to their elementary nature. The same can be said for the advanced material, which is often written in an in-depth manner geared for the advanced collegiate level, and written at a pace that covers material much too quickly for the beginning teenager. To fill a very important gap in the literature, it is my purpose for this text to be specifically designed for this missing demographic, the secondary-level, teenage student.

As students progress through their musical education, they are often asked to consider information completely separate from other topics. Information that would not only strengthen their understanding, but also provide for them a more enjoyable and interesting context into the
subject they are studying. We can see a prime example of this from the beginning of *Introductory Musicianship* by Theodore Lynn, a typical musicianship text. Like many texts, Lynn’s book starts the students’ study by showing them the five-line staff and then immediately placing letter names to those lines and spaces. The author does this completely void of the thousands of years of evolution it took for those lines to develop into what we know today as the musical staff.\footnote{Theodore A. Lynn, *Introductory Musicianship: A Workbook*, 7th ed. (Belmont: Thomson Schirmer, 2007), 1-3.} Can students learn what the staff is and be able to read notes on the staff without the understanding of how that notation developed? Yes, of course, but students have a deeper understanding and appreciation of those same five lines when they are invested with the knowledge of the remarkable evolutionary changes that occurred to that staff. Not only do students appreciate the tool more, they also start to understand how the important non-musical world issues and contemporary topics developed and continue to affect the development of new artistic ideas and trends today.

When I see former students, they all say the same thing about how this seemingly unconnected information made a lasting impact on their learning, and that the result of connecting these historical moments allowed for the long-term comprehension of these musical topics. While no textbook can be expected to cover every detail related to a given topic, what teenage students need is a text that offers a wider, more in-depth look at the basic, fundamental skills of music. Rather than having a text like the Lynn, which covers a tremendous amount of information, this book will cover fewer topics from a much wider, and comprehensive view.

As the study of the all-encompassing concept of musicianship became a widely popular model for music education at the end of the twentieth century, authors have embraced the idea of creating texts that focus on more than just one subject. However, writers and publishers are still creating and updating texts that focus exclusively on one element of musicianship. These
books that are written on the topics of theory, aural skills, music history, or rhythmic study, are still heralded as the models for study. To better understand the need for a new comprehensive musicianship text, one must first discover the inadequacies of the popular single-subject texts used today.

Written Music Theory Texts

In *Elementary Harmony* by Robert W. Ottman, another widely used music theory textbook, the first thirteen pages are dedicated to the material that is covered in the first two to three semesters of a secondary musicianship course. In the opening of chapter one, however, he does mention that there are a few key assumptions about the level of knowledge that a reader must have to continue with this textbook—including major and minor key signatures and scales. If those assumptions are not met, the student is encouraged to start with his other book, *Rudiments of Music*. Even as Ottman suggests in his own book, a strong foundation of the “basics is essential.” However, teachers, academic institutions, and even entire school districts expect their students to very quickly move through the most important elements of music education without a true comprehensive understanding of that material. An example of this can been seen in the June 2009 Orange Board of Education-approved music theory curriculum for their district of schools in Orange, New Jersey, whereas their entire first objective in their scope and sequence for their beginning music theory course is that students are to be able to understand

TODD GOODMAN

pitch on the staff. This objective, which is based on the first chapter of Ottman’s *Elementary Music* textbook, not his suggested *Rudiments of Music*, is found on the first two pages of a 60-page lesson plan sequence. This lesson is only allotted roughly two hours for the teaching, practicing, and discussion of the entire foundational material for music notation.

Numerous secondary schools around the United States use advanced collegiate texts, such as Bruce Benward and Marilyn Saker’s *Music in Theory and Practice* and Stefan Kostka and Dorothy Payne’s *Tonal Harmony with an Introduction to Twentieth-Century Music*, as the guideline text for their music theory courses. In addition to these advanced texts, many of these institutions and districts also follow the content guidelines set forth by The College Board Advanced Placement Program. These textbooks, as suggested by The College Board, include the Benward and the Kostka books as well as the Ottman and the Lynn books discussed earlier, all of which introduce content at a pace appropriate for the college student but not necessarily the high school freshman in a beginning level at a secondary institution. Specifically in the Benward, students are expected to understand the complex concept of macro and micro shifting meters by page thirteen, as well as asking students to know major key signatures by page thirty-one. The pacing in *Tonal Harmony* by Kostka and Payne is very similar in asking students to be able to write all major and minor scales by page thirteen.

In another example, a secondary school in Maryland asks its students, during the first

---

WHY A NEW TEXT ON MUSICIANSHIP?

week of a musicianship course, to complete chapters one and two in Benward’s *Music in Theory and Practice*, as well as chapters one and two in an aural skills book, *The Musician’s Guide to Aural Skills*, by Joel Phillips, Jane Clendinning, and Elizabeth Marvin, in under eight hours of instruction. In this short amount of time, a very wide and extensive amount of extremely important, fundamental information is asked of students. While this pacing and sheer amount of information may work for a mature, advanced high school senior with prerequisite musicianship knowledge, it does not work for a fourteen-year-old freshman just beginning their formal music studies. In one of my entry-level musicianship courses at a secondary, performing arts high school, both of these topics are covered at the end of the first semester, or after roughly 45 hours of instruction.

During a session at the Pennsylvania Music Educators’ Association [PMEA] State Conference in April 2011, Dr. Daniel Perttu, Associate Professor of Theory and Composition at Westminster College, presented a paper on helping secondary teachers select textbooks for their music theory classes. During his presentation he reviewed nine popular texts, including the Benward and Kostka, and outlined their advantages and disadvantages as they pertain to this specific entry-level, high school-age group. Every single book that he reviewed during this session had the same disadvantages—they all moved much too quickly and lacked enough basic musicianship elements.

Supplemental Texts

TODD GOODMAN

In most musicianship courses, the subjects of written theory, aural skills, music history, keyboard training, and rhythm study are not given equal weight. In some institutions, those five topics are even taught as five distinct classes with five different instructors. However, a well-rounded musicianship education must deal with all five, not necessarily on an equal plane, but in a more integrated way than the separate courses afford. Often what happens in a combined musicianship class is written theory is given most of the attention, while aural skills, rhythm study, and keyboard training get a small amount, and history is allotted very little or none at all. In most music history courses, the subject matter is often limited to the study of composers and artistic trends, while the topic of music theory history, which relates to musicianship the most, is avoided altogether. Thus the main textbooks for these musicianship courses are often books similar to the previously discussed Benward, Kostka, or Ottman, while the other subjects are supplemented with other texts. This separation of material often creates an immediate hierarchy of subject importance to the student. College students quickly understand that to better master a subject, they must not only look to different sources for confirmation of the information that they are studying, but they must also look to different experts in many different sources for expanded details related to that subject. They understand that there is never just one way to do anything, and by studying the findings of many scholars, their understanding can be much more comprehensive. By contrast, younger students have a very difficult time with that concept, and they often separate different information from different sources into different categories altogether, regardless of their relationship to one another.

As with written theory, many specialized texts are available for the subjects of aural skills and rhythmic training, but very few exist on the subject of music theory history. While many books and methods spanning centuries exist that cover the keyboard, the topic of keyboard
training during a high school musicianship course is often turned into a piano performance class, rather than true keyboard training, where students learn to use the keyboard as a tool to better understand and enhance the written theory, aural skills, and rhythmic training that they are also learning.

In looking at supplemental texts as we did with the written theory texts, the same issues of pacing and advanced content are found in regard to the aural skills, music history, keyboard training, and rhythm study texts. In sampling only a few of the more popular texts, this issue can be very clearly seen in sight-singing books used throughout the United States. One of the most popular is the aptly named *Music for Sight Singing* by Robert Ottman, with later contributions by Nancy Rogers. First published in 1956, this text has been used by innumerable collegiate and high school music students for the last half-century, and due to its popularity, it is currently still being produced in its ninth edition. Although this book has many wonderful qualities, its monumental downfall is in the very fast pacing in which it moves through its examples. By the end of chapter three, students are asked to sing large diatonic leaps in many different metric subdivisions, while reading in all keys. At the collegiate level, this tier of commitment is absolutely necessary, yet fourteen-year-old freshmen would need an entire semester, if not more, to handle this level of skill, while combining their education with the other four musicianship subjects. Ottman’s *Music for Sight-Singing* is, however, a fabulous collection of musical examples that gives instructors and students access to short exercises for not only sight-singing, but rhythmic study, analysis, and sight-reading. But in 2016, this book is currently selling for over $100, which is a very hefty price for a teenage student or a school district to pay for a supplemental text.

---

Anne Carothers Hall’s *Studying Rhythm*, currently in its third edition, has been a staple in aiding in the teaching of rhythm for more than a quarter-century. The College Board-recommended text, which is almost exclusively exercises, serves as a resource for students and teachers to hone their rhythmic practicing into a logical and systematic progression. As with the others, however, the exercises progress much too quickly for the young, inexperienced learner. In this book, for example, students are asked to perform either two-part duets or independent rhythms with two hands by exercise eleven—quite challenging for a fourteen-year-old vocalist who has never read music, nor had to read two parts before.\(^{12}\) The same is to be said for this text as with the other texts previously discussed: it contains great material, but the pacing is not suitable for younger teenage learners.

---

### Why Include History?

As seen in all areas of our daily lives that deal with public and personal opinions, educational trends are not immune to the waxing and waning of must-have ideas and best practices. As governmental policy makers, school administrations, and teachers come and go, the focus on what is thought to be an absolute necessity to one’s education changes, and quite rapidly. In fact, the inclusion of certain subjects, as well as the exclusion of others, has always been a highly passionate subject for educators and policy makers. Some subjects that were thought at one time or another to be an absolute necessity are no longer even in the curriculum at some institutions. Even the importance of a core subject like history, which was crucial to an American education twenty years ago, has recently come into question with the insurgence of the new

---

S.T.E.M. educational model—science, technology, engineering, and math.\textsuperscript{13} While these subjects are indeed important to a twenty-first century learner, the context in which these students relate that information to their own future highly relies on the student’s understanding of the past.

University of Pennsylvania professor Walter A. McDougall argues that, “History is the grandest vehicle for vicarious experience: it truly educates… provincial young minds and obliges them to reason, wonder, and brood about the vastness, richness, and tragedy of the human condition. If taught well, it trains young minds in the rules of evidence and logic, teaches them how to approximate truth through the patient exposure of falsehood, and gives them the mental trellis they need to place themselves in time and space and organize every other sort of knowledge they acquire in the humanities and sciences.”\textsuperscript{14}

If musicianship’s history is combined with the knowledge and valuable skills one gets from studying it, teenagers could relate the significance of past theories and world events, as well as the theorists and musicians who were instrumental in their creation or success, to their own lives and artistic endeavors. According to Lynne Munson, the Executive Director of Common Core, “It's the knowledge of a subject like history that gives you the wisdom you need to put your own life in a broader context, and know what you might be capable of in the future, by knowing what people have done in the past. Without a knowledge of history, your world is very small.”\textsuperscript{15}


\textsuperscript{15} Peters, “Why Teach History?”
In discussing the five core areas taught in a typical high school musicianship course, the extremely important subject of creativity is mistakenly left out. As more restrictive and limiting models of education, such as the previously mentioned S.T.E.M. model, have become the present-day standard, classes that embrace creativity like art, music, and creative writing are being set aside for the more regurgitative and less critical thinking subjects included within the S.T.E.M. models. As these models have made arts education increasingly less important in the eyes of some, others have fought and continue to fight for validation for the inclusion of these creative subjects into the standard core curriculum. As this exclusion and single-subject focus has been happening within large-scale comprehensive curriculum models, the same can also be said about the study of musicianship. As the time students can spend in the classroom on music and art becomes more and more limited, due to the emphasis on S.T.E.M. subjects, the information taught in musicianship courses must be condensed and limited to the math and science of music: namely, written music theory and aural skills.

Dr. Ken Robinson, educational activist and reformer, writes in his award-winning book Creative Schools that “The conventional curriculum is based on a collection of separate subjects, which are thought to be self-evidently important. That’s one of the problems.”16 He argues that students are asked to look at different subjects, separate from one another, rather than being asked to seek what benefits each has to another, as well as to the skills students are asked to achieve. Dr. Robinson suggests that within an educational system, instead of being held to standards solely based on subject knowledge, students should also be asked to hold a level of competency in

eight areas, which can be taught across and throughout the curriculum. The areas, as suggested by Robinson, are curiosity, creativity, criticism, communication, collaboration, compassion, composure, and citizenship. While studying math, science, music, and reading, students should be also asked to work on the skills associated with these eight areas.

In an interview with Dr. Robinson for the journal *Teaching for the 21st Century*, published by the American Society for Curriculum Development, he was asked why some people still believe that creativity and critical thinking are very separate skills, to which he responded:

> It’s interesting that people see creativity and critical thinking as being opposed. It’s partly because people associate creativity with being totally free and unstructured. But what we really have to get hold of is the idea that you can’t be creative if you don’t do something. You can be creative in math, science, music, dance, cuisine, teaching, running a family, or engineering. Because creativity is a process of having original ideas that have value. A big part of being creative is looking for new ways of doing things within whatever activity you’re involved in.

In teaching creativity through composition, students are asked to apply the critical thinking knowledge they gain from studying written music theory, aural skills, and rhythm study into an outlet that, when applied correctly, demands curiosity, creativity, criticism, communication, collaboration, compassion, and composure into one single task. As a young student begins the process of composing, they are often given a set of written music theory parameters and then asked to create a piece of music inside of those parameters, which often include archaic and unrelatable rules. This process usually occurs much too late in a student’s education, and the result is unfortunate. In first exposing students to composition through

---

17 Robinson, 135-141.
written theory rules rather than creativity, they are more likely to associate the process of composition as one similar to math—plug in the correct notes into the correct formula, and you end up with correct music that properly follows all the rules. This process is again regurgitative rather than creative. By allowing students to be creative within a musical framework, they will be less afraid of rule-breaking and develop more of a sense of creative problem-solving. This same phenomenon happens with high-stakes standardized testing, where students are trained to think that the worst thing they can do is be wrong, while in the creative process, being wrong is sometimes the absolute best thing you can be. Creative music composition is a great tool for showing that very skill.

In surveying the currently available popular literature, the issues of pacing in regard to the difficulty of material within each of these textbooks, and the lack of cross-curricular information, are blatantly apparent. While a student or instructor can find more rhythm examples in Daniel Kazez’s Rhythm Reading and Robert Starer’s Rhythmic Training; more aural skills examples in Bruce Benward’s Ear Training: A Technique for Listening; and so on, the main need for a comprehensive text that seamlessly combines all five musicianship subjects into one resource is greatly needed. Before embarking on the daunting task of writing this book, I felt that the lack of quality texts that covered all five topics in a way that outlined the material clearly and in a well-paced manner inhibited my ability to quickly and efficiently teach my musicianship courses. During my informal discussions with my colleagues, I found that they were having equal frustrations with the four most common items discussed earlier in this chapter—the
WHY A NEW TEXT ON MUSICIANSHIP?

quality and way in which material is presented; the quality of both web and print external resources; the ease and clarity in the material’s format; and, most important, its pacing. In creating my own material for my classes, I realized that the way in which everything combined and flowed would make an excellent high school textbook. With that being said, however, I am not suggesting in any way that these single subject texts are not of the highest quality and extremely important to the literature. I am setting out to write How Music Sounds to address the concerns expressed previously in this chapter, and to hopefully help many young musicians and high school instructors have a more enjoyable and more comprehensive early musicianship education. Therefore, the goal of this text is to cover a smaller amount of fundamental music theory information, using a wider, more comprehensive approach that will allow students to see, over and over, the importance of combining and connecting various avenues of information to better understand the whole picture of musicianship. The pages that follow, specifically Chapters III through IX, create the body of text that will be for student use.
CHAPTER II
SURVEY AND REVIEW OF CURRENTLY USED TEXTS

As stated in Chapter I, there are numerous great texts that focus specifically on the subjects of written theory, aural skills, music history, keyboard training, and rhythm study, and many of these books were absolutely essential in my musical education. It is also important to note that there are also great texts that focus on the overall idea of comprehensive musicianship, just as this book is intended. These books have served the music community for decades, some of which have had numerous editions, and are still a very valuable resource to all musicians and music educators. Where these books lack is not in their content, but in the general demographic of their intended audiences—for the vast majority of these texts were written for the purpose of collegiate usage.

Throughout this chapter, I will review texts from each of the individual musicianship subjects—written theory, aural skills, music history, keyboard training, and rhythm study—as well as comprehensive musicianship texts. I will be looking at the books with a focus on three out of the four common frustrations that were discussed in Chapter I—the quality and way in which material is presented, the quality of both web and print external resources, and the text’s pacing. While an entire book could be written for the sole purpose of reviewing these resources, the texts from each category that I have selected give a general overview of some of the most commonly used materials available.

Without being too redundant, I find it is important to stress again that plenty of these
texts are wonderful books that have given students, like myself, the knowledge of music’s working parts. I am in no way trying to say that these books are not important. What I am saying, however, is that for the demographic previously discussed, and for the all-encompassing musicianship study, these books are not the right type of books for students of this age.

**Comprehensive Musicianship and Written Theory**

**The Complete Musician, 3rd edition**  
by Steven G. Laitz  
Published by Oxford University Press, New York, NY. ©2012.  

**Quality and presentation of material**

At first glance, this text contains an overwhelming amount of information. In its 800+ pages, Laitz covers information typically found in books solely dedicated to written theory, aural skills, form and analysis, and, to some extent, music history. Although it may seem as an copious amount of information to have all of these subjects in one book, the shear volume of instructional material is a necessity for the intended wide and eclectic audience for which this text was written. As explained by Laitz in the foreward, ”The text assumes that there are many levels of students' experiences and backgrounds,” using this text and that this book should appeal to "music majors with varied levels of competency," (xiii). Therefore the text covers each subject in a graduated format so that each section can meet the needs of the specific students who require further knowledge on that subject.

When looking at this text at first glance, it would be easy to quickly dismiss it as being too robust
for your beginning high school student due to the overwhelming nature of the text, and for the most part I would agree. However, there are elements of this book that could serve the typical high school student and their musicianship study very well. In general, this book uses musical examples written by master composers. In the first chapter alone, Laitz introduces students to the music of J.S. Bach, W.A. Mozart, Robert Schumann, Beethoven, F.J. Haydn, Handel, Brahms, Chopin, Schubert, Arlen, and William F. Sherwin. And with each of these wonderful musical examples, a CD is included with the text with around 4,500 recordings of these examples recorded by students and faculty from the Eastman School of Music in Rochester, NY.

Quality of external resources

This text is unique in this category, for the included CD and accompanying workbook, which is sold separately, covers most of the topics and resources other texts use external sources to cover. So even though there are very little external resources, Laitz provides most of the materials needed, including, as mentioned before, audio recordings of selected examples. Although not external, Laitz includes six appendices, which are extremely helpful. Included in these end pages are almost 100 pages of material covering music "Fundamentals" as Laitz calls them (681-767). These pages provide a resource for students on pitch and pitch-class; pulse, rhythm, and meter; intervals; triads, inversions, figured bass; and seventh chords—all of which include some element of analysis.

Pacing

With almost any text written for the collegiate music major, the pacing is going to be much too fast for the younger, beginning teenage student. Such is the case as well with The Complete
SURVEY AND REVIEW OF CURRENTLY USED TEXTS

Musician. The first chapter, "Musical Space and Time," covers within its first nine pages what it takes me nine chapters and over 100 pages to cover in How Music Sounds. In my live class, these nine pages would encompass much, if not all, of the first semester or all of Musicianship I. Part of that, of course, is in my pedagogical philosophy that young students need to have a very deep understanding of elementary musical elements so that their more intermediate and advanced knowledge can be built on an extremely solid foundation. Much of the collegiate material either passes by these topics very quickly, or assumes that students are coming to the course already understanding and comprehending these early beginning materials.

All in all, this text is wonderful, complete, and easy to follow. However, like most, it is in its pacing that renders this text as not a great fit for early high school students—and, of course to be fair, that was never this book's intent.

Rudiments of Music, 4th edition
by Robert W. Ottman
Published by Prentice Hall, Upper Saddle River, NJ. © 2004.
ISBN: 0-13-182655-7

Quality and presentation of material
In the previous chapter, "Why a New Text on Musicianship," Elementary Music by Robert Ottman was scrutinized as a musicianship text that moves at a pace faster than needed for the average beginning music student. However, in the forward of that text, Ottman suggests that before students start using Elementary Music, they should first be familiar with the general basics of music—including major and minor key signatures and scales. If students are not comfortable with these elements, he suggests starting with one of his other books, Rudiments of Music, now in
TODD GOODMAN

its fourth edition.

The overall structure of *Rudiments of Music* is sectionalized into three categories—pitch, time, and harmony (through intervals and keyboard harmony). While the pacing of this book is more geared toward the beginning student, the overall amount of information in any given chapter can still be overwhelming. For instance he covers a brief overview, in a page and a half, of music notation, past and present, as a preface to the main body of the text. While the information he presents is interesting, he only shows examples of eighth and tenth-century notation. Young students are interested in seeing the evolution that these musical elements have taken over the years, and these historical elements add greatly to the overall understanding of musical notation.

In this text, Ottman does a nice job combining the three fundamental musicianship elements of written theory (pitch and harmony), rhythm study, and keyboarding skills in a pacing that would really work well for beginning students, especially those at the secondary level. Where this text falls short, however, is in the inclusion of historical elements and the creative, thought-provoking use of this information. Much of the text reads like a manual for a kitchen appliance rather than a book that should inspire the world’s most interesting and mysterious art form. While the information is all there, the way in which it is presented is very sterile. However, if this text is used in a classroom setting by a dynamic teacher, it would serve its purpose of presenting information and information only.

**Quality of external resources**

While there are no external resources at all in the text, Ottman does provide two of the five
appendices with extra information not typically discussed in a traditional beginning music theory course—such as elementary acoustics and medieval modes—while the other three provide information on clefs, keyboard fingerings, foreign words, and answer keys to exercises found within the text.

**Pacing**

The pacing of this text is quite good for the beginning musicianship student in late high school or early college. For younger students, the text moves at an appropriate pace, but the amount of pure information that is written within each chapter is way too much. He tends to go into too much detail quickly with each item he is discussing. For instance, in the first chapter dealing with rhythm (pages 31 through 38), which is only seven pages, he shows the rhythmic breakdown of note values down to the 64th note. Of course young students can handle and understand 64th notes, but for most students that level of detail at a subject’s introduction only frustrates them, which can sometimes force them to shut down. Overall, *Rudiments of Music* is a quality book that would be great for an older, secondary classroom, or beginning collegiate class that has a dynamic instructor who is able and willing to fill in the missing passion for the subject. This text would not be good for students younger than high school upperclassmen or for the self-paced or online learner due to its information-only format and lack of additional external resources.
Quality and presentation of material

When first looking at this text, many elements of its presentation are overwhelmingly obvious. The first of which is that this book is extremely content dense. Each page is packed with information in the form of graphics, figures, and musical examples that cover a wide range of the areas of musical study, and many of these graphics are accompanied by very little text. For instance, on page eight, the topics of half steps, enharmonic equivalents, interval motion, and note duration are covered—all with only four sentences of text. These pages cover a given topic in a very wide barrage of information giving the reader, at times, too much information.

While the overall amount of information in this text is extremely heavy, this book does have many wonderful aspects. The quality of the musical examples is remarkable. The authors include excerpts of works by master composers including twentieth-century composers, introducing students to the music of Bach, Ives, and Bartók in the first chapter alone. Many theory texts use as examples only that music which is in the public domain, ignoring anything written within the last century. This book is the opposite, celebrating the music of, at least, the early twentieth century.

The other element of this book that I find particularly helpful is the inclusion of historical and scientific elements into the body of the text. Each chapter has a section that covers the historical elements relevant to that information. Although each section is small and the information is
presented in a very concise way, students are still able to make the crucial historical connections to the overall concept discussed. When students can see and place musical elements to historical elements, they better understand why traditions have developed and why certain musical elements are treated the way they are treated.

**Quality of external resources**

While this text does not have an abundance of external resources, it does have an accompanying workbook and CD. The workbook contains worksheet assignments that reinforce the material laid out within each chapter. The workbook, like the text itself, is also graphic heavy and contains little text. Along with the workbook, an instructor’s manual also exists. This manual not only serves as an answer guide for the assignments found within the workbook, but the authors also provide the purpose of each chapter and lay out key talking points to be used within a live class. The accompanying CD provides listening examples for exercises and excerpts found within the main text. Both the workbook and the CD are crucial to the overall effectiveness of this text.

**Pacing**

Pacing in a book like this is a very difficult element to judge fairly, for this book is intended by its creators as a supplement to the in-class instruction that is provided by a live instructor. Instructions in the preface to both the student and the instructor are even provided on the first two pages of this text so that all parties can use this tool to its best potential. However, the pacing of this book does move quickly. To be fair, this, as well as all the other texts reviewed in this chapter, are geared toward older, collegiate-level learners and not the early teenage students for
which *How Music Sounds* is written. The content model for Benward and Saker’s book is more of an informational catalog that is meant to be explained by, and augmented upon, a live classroom instructor. If I were to use this text in my beginning-level Musicianship 1 class, I would spend at least six weeks on the first chapter alone.

### Aural Skills, Keyboard Training, and Rhythm Study

**Music for Sight Singing, 9th edition**  
by Robert Ottman and Nancy Rogers  
Published by Pearson Education, Upper Saddle River, NJ. © 2014.  
ISBN: 978-0205938339

**Quality and presentation of material**

Used as one of the primary sight-singing texts for many solfege, aural skills, and musicianship classes in both lower and higher education, the Ottman and Rogers book, in its ninth edition, undoubtedly has many wonderful elements. *Music for Sight Singing* is basically an anthology of musical examples compiled from external sources, as well as many that were composed by the authors themselves. The book does have some instructional text found at the beginning of each chapter, but only a few pages for each. The teaching text and therefore the book itself can be easily seen as not a stand-alone teaching tool for the self-learner, but as a supplement to the teaching of a live instructor. For instance, the first chapter “Rhythm” has three pages of introductory material that explains what rhythm is; how to use rhythmic solfege; conducting patterns of duple, triple, and quadruple meter; and the notation and use of simple meter in its duple, triple, and quadruple forms. The chapter then goes on to include 59 musical examples of increasing difficulty, all that build on the information presented in the first three pages. Each
subsequent chapter follows the same formula.

The instructional text in this book is not sufficient enough for beginning students of any age, for the topics are covered very quickly with too many assumptions of previous knowledge; however, the overall music examples are wonderful. With the shear amount of examples, over 1,000, it can be understood why many aural skills and musicianship instructors turn to this text for supplemental material for their classes. In comparison, *Solfége des Solfége* by Adolphe Danhauer (1910) contains only 171 musical examples and exercises—although out of the book’s total twenty-one chapters, *Music for Sight Singing* focuses examples of each chapter, as well as two full chapters on rhythm-only examples.

Like the other texts discussed in this chapter that share the longevity of *Music for Sight Singing*, the book must have contents of tremendous merit to live for over half of a century in the world of academia—one which places these kinds of texts under constant scrutiny. And that merit is absolutely the profound number of exercises and wide eclectic array of musical examples found within its 400 pages.

**Quality of external resources**

As has already been discussed, the large number of musical examples found within this book’s pages provides for its user an abundance of material. This book uses resources from 17 external places, including previously published anthologies, collections, books, and manuscripts. Although the authors do not direct the user to a place outside of their book, "external" high-quality resources can be clearly found throughout the text.
Pacing

Music for Sight Singing’s form is unique to other pedagogical texts in that it follows a given sub-topic throughout each chapter, rather than layering elements to create a total learning experience as the student grows. For instance, the first chapter of the book, "Rhythm," discusses simple meter in duple, triple, and quadruple divisions in an in-depth manner, ending with two-part rhythms in the time signature of $\frac{4}{16}$ using 64th note subdivisions. If a student was expected to follow the book in sequential order—and they are not—they would be asked to perform a complicated rhythm in two parts by page 11. Therefore, this book is intended on its usage being guided by a live instructor, so that the content can be used throughout the text simultaneously. For instance, students could be working on rhythmic examples at the beginning of Chapter I, while they are sight singing at the beginning of Chapter II and using the text’s only appendix for vocabulary training.

---

Keyboard Musicianship, 9th edition
by James Lyke, Tony Caramia, Reid Alexander, Geoffrey Haydon, and Ronald Chioldi
Published by Stipes Publishing Company, Campaign, IL. © 2009.
ISBN: 978-1588748447

Quality and presentation of material

The first edition of this text was published in 1969, and it is now in its ninth edition. In looking at this book’s history alone, there must be several elements that work well for it to have survived for over half of a century. One of those elements that makes this book a great resource is the clear way in which the material is presented. In most books written with the non-pianist beginning musicianship student in mind, the material is often childish and condescending. However, this
book is quite the contrary. Even though clip art and illustrations are used, teenage and even older students will find this text to have a nice mix of simple, concise teaching that explains the material without speaking down to the student. Often students coming to the piano in a formal educational setting are very skilled at another element of music. They have a level of proficiency on their instrument and/or voice that has allowed them to reach such a level that affords them the opportunity to study music in a formal setting. However, that proficiency often backfires when they start to study the piano for the first time. They understand how to perform certain things on their primary instrument, but when it comes to understanding the why behind what they are playing, the theory and science eludes them. The same phenomenon often occurs with piano, especially musicians of single-line instruments. When most students first begin, they are often very optimistic, but as soon they are asked to play multiple lines with two hands at the same time, frustration levels increase dramatically. This text does a nice job with easing students into that difficulty. Aside from the first 30 pages, which deal with reading, theory, and rhythm fundamentals, the beginning playing exercises are single-line examples. The authors ask students to work on these single lines, then after they have a grasp on each, transpose it either up or down by a half step—a brilliant way to get students immediately to think about line and shape in music and to not be so buried in the written note. The text takes the next logical step by having students play a single line with both hands, doubled at the octave. This simple yet extremely effective method helps students already with musical knowledge ease into playing independent lines with both hands.

In addition to the cleanliness of this book, the overall musical examples really offer to the student and teacher alike a wide range of teaching examples and playing exercises that, when combined,
TODD GOODMAN

provide a solid balance of learning and doing. This text also provides an abundance of written theory and rhythm study reinforcement throughout the book.

Quality of external resources

Keyboard Musicianship includes an appendix that provides a list for additional suggested repertoire for both solo and piano ensemble works. Granted, all of the pieces in this list are used in other texts by Stecher, Horowitz, and Gordon and published by G. Shirmer, but include works by composers such as J.S. Bach, Bartók, Beethoven, and Stravinsky. In addition to pieces by Stecher, Horowitz, and Gordon, these supplemental suggestions also include the standard pieces for the advancing piano student, such as Burgmüller's Arabesque, Op. 100, No. 2, and Kabalevsky's The Clown, Op. 39, No. 20—works that every intermediate pianist plays.

Pacing

This text is remarkably paced and a great resource for the demographic of student for which How Music Sounds was written. It was my intent in writing this text that a supplemental text for keyboarding would need to be used, and Keyboard Musicianship would be highly recommended as one.
Quality and presentation of material

The overall presentation of the material in this book is clean, but the amount of information on each page can be overwhelming at times. The author does however state that this text is designed as a companion text to be used in college-level aural skills courses. Due to this intended audience for this book, it may be too complicated at times to beginning students.

The main issue with the presentation of material in this book is the author's lack of a solid comprehensive pedagogical method throughout the text. He uses a system called speech cues, which assigns some specific rhythmic gestures with English words—for instance, two eighth notes uses the word "ba-ker"—while other note groupings have syllables assigned, like two eighth notes followed by two sixteenth notes in "ta ta ti-kee." Where this system lacks, and can be confusing for students is in two ways. First is the inconsistent labeling of the same notes. For instance, in the examples stated earlier, two eighth notes are labeled as "ba-ker," while those two same eighth notes followed by two sixteenth notes are labeled something different, "ta ta." Second is in the generalization that all dialects and regions pronounce words the same way with the same inflection. For example, take the word "somebody." In the system used in this book, Kazez uses that word to represent the compound meter rhythmic cell of an eighth note, dotted-eighth note, and a sixteenth note. However, I have heard that word pronounced with many different word rhythms, including two sixteenth notes followed by an eighth note; or a dotted-eighth note, a sixteenth note, and an eighth note. The author does state in the preface of the book that the
speech cue system is only one of many rhythmic pedagogical systems and does provide reference texts for the Kodály, Gordon, and Takadimi systems, although that is the extent of references to these methods.

**Quality of external resources**

Where this book excels is in its external resources. As stated previously, Kazez provides external publication resources for different rhythmic pedagogical methods. He also provides a list (pages 26-27) of listening examples for various meter types, including simple, compound, quadruple, duple and composite (mixed) meter. And even though many of the exercises are written by the author, he also includes examples of similar rhythmic ideas found in the repertoire—a very helpful tool for reinforcing ideas to students.

**Pacing**

The pacing of this text is quite good for certain elements and not so good for others. When Kazez gets into the sections of the book where he uses musical examples as explanation, the book moves at a nice pace, adding new musical elements when needed and maintaining others for review at the right moment. Where the book lacks in its pacing is in the sections that the author uses for explanation through non-notational means. For instance, at the beginning of the book, he briefly defines meter, explains the differences between simple and compound meters, and explains time signatures, all within three and a half pages (7 - 10). Once he gets into rhythms, he moves much slower and more thorough throughout the material. Overall, the author spends an adequate amount of time on each subject and provides a good amount of material for exercise and study.
**Studying Rhythm, 3rd edition**  
by Ann Carothers Hall  
Published by Pearson Education, Upper Saddle River, NJ. © 2005.  

**Quality and presentation of material**

This text is a widely used for rhythmic examples that are to be used within the context of a live musicianship or music theory course. The overall structure of this book is a series of exercises shown using traditional music notation. While the book does start with seven pages of dense text on which the author explains the structure of the book and offers pedagogical suggestions to an instructor, the overall teaching in this book is almost non-existent. While each section does begin with a short paragraph briefly explaining what is coming next, the sterile way in which it is presented would not keep your typical high school student interested. Where this text excels, and I have used it personally in the classroom because of this reason, is in its over one hundred rhythmic examples from easy simple meter to complex metric modulation. But, this construction has this book being used mostly as a supplemental resource and not as a primary source.

**Quality of external resources**

Other than a few references to other sources at the beginning of the book, external resources are non-existent in this book. However, the author does integrate at the end of certain sections rhythms that have been set to external poetry by writers like Walt Whitman and Emily Dickinson. While these exercises are not external resources *per se*, the inclusion of these examples not only provides for the student and instructor a break in the monotony of the purely notationally driven rhythm exercises, but also a way for an instructor to include cross-disciplinary and cross-curriculum lessons while studying music.
Pacing

The pacing of the exercises in this book are wonderful within each section; however, the way in which the sections are organized by meter does not make sense from a pedagogical standpoint. Hall covers $\frac{2}{4}$ using eighth notes and quarter notes only and then moves on to $\frac{3}{4}$, following the same model. Now, if we look at this book as purely a reference book and one that is not intended to be used from cover-to-cover as a traditional text, then the organization of the book is fine. However, if I were to use it in my classroom, I would need to jump around the book a great deal so that I could hit all of the concepts in their simple form before I moved on to the more complicated ideas.

History of Musicianship

While many books exist on the in-depth history of specific areas of music theory, such as medieval theory, the renaissance, or the twentieth century, an over-arching book that covers historical elements specific to the basic written theory, aural skills, and rhythmic study studied in the first year or so of a high school musicianship course does not exist. Not only does one not exist for this level and demographic of student, there are only a few that exist, period, and each of these texts are geared toward advanced collegiate and graduate-level students. These texts include the 1898 writing of Hugo Riemann, *Geschichte der Musiktheorie*, tranlasted into English in 1962 by Raymond Haggh; the massive, almost 1,000-page *The Cambridge History of Western Music Theory*, edited by Thomas Christensen, which is a wonderful collection of primary source material; *Strunk’s Source Readings in Music Theory*, edited by Leo Treitler, which is another
collection of primary sources; and David Damschroder and David Russel Williams' *Music Theory From Zarlino to Schenker: A Bibliography and Guide*, published in 1990. Again, all of these are great texts for the advanced collegiate-level student, but they are completely too advanced for the beginning high school student.

Although no text exists for this information for the demographic of student we are discussing, the connection of this historical information to beginning fundamental elements of music is extremely helpful in getting students to understand the vast amount of history and evolution that the art in which they are studying has moved through, and that by making this connection, they understand that what they are doing as a student of music has been agonized over and altered and changed by brilliant thinkers for the last couple millennia. And that as they continue their study, they are, themselves, progressing an art that has, for countless generations, been doing the same.

**Other Resources**

---

**Written Theory Study**

*Basic Material in Music Theory: A Programed Approach, 12th edition*
by Paul Harder and Greg Steinke  
Published by Pearson Education, Boston, MA. © 2009.  
ISBN: 978-0205633937

*Harmony and Voice Leading, 4th edition*
by Edward Aldwell and Carl Schachter  
Published by Schirmer, Boston, MA. © 2011.  
ISBN: 978-0-495-18975-6

by Jane Piper Clendinning and Elizabeth West Marvin
TODD GOODMAN

ISBN: 978-0393264623

Tonal Harmony, 8th edition
by Stefan Kostka, Dorothy Payne, and Byron Almén

Aural Skills Study

A New Approach to Sight Singing, 5th edition
by Sol Berkowitz, Gabriel Fontrier, Leo Kraft, Perry Goldstein, and Edward Smaldone
ISBN: 978-0393911503

Ear Training: A Technique for Listening, 7th edition
by Bruce Benward and J. Timothy Kolosick
ISBN: 978-0073401362

Sight Singing Complete, 8th Edition
by Maureen Carr and Bruce Benward
ISBN: 978-0073526652

Rhythmic Study

The Rhythm Book, 2nd edition
by Richard Hoffman
Published by Harpeth River Publishing, Franklin, TN. © 2009.

Rhythmic Training
by Robert Starer
Published by Hal Leonard, Milwaukee, WI. © 1969.
ISBN: 0-88188-976-8

You Can Ta Ka Di Mi This! Improve and Expand Your Rhythmic Sense and Precision
by Todd Isler
ISBN: 1-930080-02-6
Before we choose to study a subject, whether it is mathematics, science, a language, or an art, it is extremely important to understand what it is that you are about to study. For most subjects those definitions are clear and easy to understand, while others take more thought and time to grasp. One can describe these subjects quite broadly in a single word, and with that one word, their general content can be understood. However, these broad definitions only work for someone who already knows and understands the general overview of each subject. For example, one could simply say that science is a process of discovery, while mathematics is the study of numbers, language is all about communication, and the arts about expression. Yet do these single-word definitions give us a comprehensive understanding of what math, science, language, and the arts are all about? Do they provide us at least enough understanding to devote a significant amount of time to embark on an in-depth study of them? Of course not. In this chapter we will define music for ourselves by looking at our own experiences and combining that with the thoughts of experts and historical writings.

In thinking about these broad, concrete definitions, the next logical step for me would be to look to the experts, for them to define more clearly what each of these subjects actually is. According to Merriam-Webster, science is the “knowledge about the natural world that is based on facts
learned through experiments and observation,”¹ while math is “the science that studies and explains numbers, quantities, measurements, and the relations between them.”² Most would agree that both of these descriptions of science and math are much clearer than our one-word definitions. However, with subjects in the arts, it is much more difficult to be that clear in our definitions. For example, if you were asked to define dance, you could simply describe it as “creative expression through movement,” but what separates that definition of dance from the activities of horse jumping, synchronized swimming, or stunt flying? In fact, Merriam-Webster defines dance as, “to move your body in a way that goes with the rhythm and style of music that is being played.”³ Some might argue that this definition is a little clearer, but it also states that dance can only be performed with your body and to music. What about, as stated previously, horse jumping or stunt flying? Or the beautiful dances that animals use to show themselves off during their courtship rituals? All of these are beautiful acts of dance, yet none deal with the human body, nor music.

Let us look now to another art, and describe the visual arts in a way very similar to our definition of dance: “creative expression through tangible products.” But once again, using this broad definition, what separates painting or sculpture from architectural drawings or music notation? Before we go any further, try the following exercise:

You are talking about music with a friend from another country who does not speak English well, and they ask, “What is music?” How do you explain it?

Answering that question is a very difficult one, yes? How did you do it? Did you use single words? Did you try to describe the effect that music has on you? Or did you explain the phenomenon of music? If you used single words, did words like melody, rhythm, harmony, song, and beat make it into your definition? If so, you are not alone. Those five words are some of the most commonly used descriptors offered by students as words or terms they associate with music. However, as we will discuss a little later, all are deceptive.

If you described the effect that music has on you, did you use words like emotion, happy, joy, feelings, or sad? Again, you are not alone. Many find the term “music” to be more rooted in the emotional aspect of the effect music has on us, rather than the parts that create it. Many of those who immediately describe the emotional definition of music are often non-musicians, and they use this type of definition since they can only describe how music affects them personally, on an emotional level, rather than the parts that create it. All definitions are very different from our single-word answer, but equally important.

And lastly, if you described music as being sheet music, or the phenomenon of music as a “universal language,” then you are, again, not alone. Many see the definition of music as a much wider, more universal concept than rhythm and melody. Even though all of these approaches to defining music differ greatly, they all set out to define a very mysterious and highly personal topic, which makes music extremely difficult to define. Now that you have had to define music for
TODD GOODMAN

yourself, try this little experiment:

Choose ten people and ask them “What is music?” then record their answers. How different are they?

In surveying those ten people, did you find that even though some answers were similar, none of them were the same? That no two people have the exact same definition of how music is actually defined? As crazy as that may seem, it is extremely logical. Since music and art are highly personal things, each person’s definition will be equally personal, rooted in their own experiences. In an informal survey of 100 of my friends, all of their answers to this "What is music?" question fell into one of the following six key-word categories. These categories included sound, rhythm, melody, expression, communicate, or a variation of an existential, or non-tangible definition like one friend’s answer of, "The best thing in the world."4 Out of those 100 people, over 40% of them studied music at a 4-year institution but yet their answers are still extremely varied.

<table>
<thead>
<tr>
<th>Sound</th>
<th>Rhythm</th>
<th>Melody</th>
<th>Expression</th>
<th>Existential</th>
<th>Communicate</th>
</tr>
</thead>
<tbody>
<tr>
<td>34%</td>
<td>10%</td>
<td>11%</td>
<td>18%</td>
<td>22%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Figure 1: "What is Music?” Survey Answers

Compare your survey answers to mine and see just how varied these answers can be. If we continue this exploration by looking at experts’ definitions, the same is true. Let us start, however, by first looking at this question in a historical context.

---

In the introduction to **MUSICOLoGISt** Isaac Rice's book, aptly titled *What is Music*, the first sentence addresses this very topic. He writes, “The question, ‘What is music?’ is not new, not recent, not even modern; it is as old as history itself.” In trying to define music ourselves, as well as surveying those around us, we can completely agree with Isaac Rice's statement. However, it is extremely interesting to note that Rice's book was published in 1875. We often think of this difficulty in defining music as a modern dilemma, since musical trends are now numerous, shift very quickly, and happen in a global market. We can hear thousands of genres and sub-genres of music by accessing our favorite online music source. And we can clearly hear the differences in style from the music of the 1970s as compared to that of the 1980s. Yet we think of the music of Mozart, Haydn, and Beethoven as all very similar, even though they wrote many decades apart. But as you can see in Rice's text, this has been a source of debate for a very long time. In fact, if we look back 1,500 more years, we see that music, even then, had its shroud of mystery. Another **MUSIC THeORIST** Boethus (ca. 480-524), defines music in his writing, *De institutione musica*, by separating music into three distinct parts “*musica mundana*, music of the spheres, unheard by man; *musica humana*, the harmony that exists within man, between soul and body: and *musica instrumentalis*, the music made by man, an imperfect imitation of the higher kinds of music.”

As we attempt to better understand a subject, we take the time and energy to apply a concrete
definition to it the best we can. However, if that definition becomes too specific, then certain types of music and art are immediately limited and excluded. As mentioned earlier, music may refer to sounds, dots and lines on paper, or a feeling of euphoria or sadness as those sounds link themselves to events or emotions. But by creating a concrete definition, our understanding of music immediately excludes others and limits our ability to grow as musicians.⁸

Remember the definition you came up with for your friend on page 35? Has that definition changed at all after reading the last few pages? For the vast majority of you, that answer will be a resounding yes! Although it may not have shifted drastically, it still shifted. With a subject so enormous and personal, definitions of music are bound to change and shift with the more experience and knowledge you gain. For instance, with your answer to the question, “What is music?” in mind, listen to the following piece:

Using your favorite web browser, look up the following piece of music: Atmospheres by György Ligeti (1923-2006)

The first and most important question after listening to Hungarian composer György Ligeti’s Atmospheres is, “Was that music?” Did it fit your definition? If so, how? And if not, why not? What limiting factors in your definition excluded this monumental piece from your answer to “What is music?” And being truly honest, do you feel it belongs in your definition?

⁸ Rowell, Thinking About Music, 1.
Let us take one more moment to explore another piece that might be unfamiliar to you. Keeping with the same mindset and the same set of criteria, listen to the following piece with your shifting answer to “What is music?” This time in your search, look for a video of a performance of the work, rather than just an audio recording.

Using your favorite web browser, look up the following piece of music: 
4’33” by John Cage (1912-1992)

Again, using your definition, is this piece music? Did the music have a melody? How about harmony and lyrics? Or a beat? No, of course not. The point of this piece, by avant-garde American composer John Cage, is that music is all around us, making up all the seemingly uninteresting sounds that, if focused on, could be fascinating and revered as art. Cage writes in the beginning of his aptly-titled book *Silence*, “Wherever we are, what we hear is mostly noise. When we ignore it, it disturbs us. When we listen to it, we find it fascinating.”

Often we hear birds singing and think of it as music, but when the garbage truck drives by, we find it noise. Why? What separates those two sounds into art and not-art?

The beautiful thing about this question and this debate is that there is no correct answer. Each and every one of our answers, as diverse as they are, has merit. Whether you are a professional musician, a dedicated amateur, a beginner, or a casual listener, each of our definitions of “What is music?” sets the tone for how we approach our learning and studying of this magnificent, yet mysterious, art. As we embark on this journey, however, I make one simple request. Constantly update your definition of “What is music?” based on new information and experiences you have.

---

along the way. Do not be afraid to constantly adjust your conception by striving to experience and learn as much as you can about this wonderful phenomenon called music.

Musical Instinct and Planning

As all of us grow older, one common component of our lives is music. Since birth, we have all experienced some form of music, whether it was background music at a grocery store, a restaurant, or in a mall; as entertainment in the car or in a movie; or in a formal concert—music has always been part of our environment. When you started formally studying music, you created a deeper vested interest, and thus listened more intently. Although this might be your first experience with the theory behind why music sounds the way it does, you have been training your **MUSICAL INSTINCT** since birth. You know the sounds that are pleasing to you, as well as those that make you uncomfortable. You never formally studied why a certain combination of sounds changes your emotional state; it just does. As we study music theory, never ignore this instinct; you will be surprised at how much you already know. With that being said, try this exercise:

**EXERCISE**

You are going to build a simple house. Write down the steps, in chronological order, that you are going to take to build this house.

What did you find to be the first task? Many people feel that acquiring supplies or building a foundation would be a great place to start; however, at the top of your list should be, simply, “devise a plan.” Building anything, whether it be a house, a bird feeder, a pie, or your education, should always start with a plan. Building anything of substance and quality is a complicated and sophisticated process, and has many elements that must work with each other in the right order
to produce the given result. You would never make pizza dough; then add sauce, cheese, and mushrooms; then proceed to bake it, cut it, and eat it, without first preheating the oven. You also would never move on to the next task without first completing the previous one—make the dough but not let it rise; add toppings but only on a quarter of the pizza; or bake it for only half of the time.

![Plan of Study Diagram](image)

This concept is the same in your study of **MUSICIANSHP**; you must put time and energy into each topic to master it before you move on to the next element. This is not a subject for which you can cram. Spend a small amount of time each day doing the exercises within, and you will build a wonderful home that will serve your musical needs for the rest of your life.

Let us look at the above model and how its application to the study of musicianship will make your education more efficient, rewarding, and enjoyable:
Use this book as an outline for your plan, but feel free to add new elements to its course of study. There are other great systems that you can use as a supplement to this text to study these subjects. They can be found in other books, online, or via mobile applications; do some research and make this course your own. I will offer outside sources as other options for study throughout this book.

Once you develop your plan for your study of musicianship, you need to apply a reasonable timeline to that plan. Make sure that you set goals that are achievable within the time you choose. It is also helpful to set multiple levels of goals within your timeline. For instance, you can set out to learn one element in a week, but plan to master it within a month.

Creating a strong foundation in your musical study is the key to being able to better understand and master more complicated subjects later. Spending a little more time on the root ideas will give you an exponential reward in the future. Use the timed quizzes and exercises in this book to help make these fundamental skills instinctual.

In developing better musicianship, customize your study to your own needs; however, do not overlook key ideas. Just as in the construction of a house, one should not skip important steps to get to elements that might seem more fun. Take your time and create quality work, for the skills found in this book serve as the base for the rest of your growth as a musician.

As you work through these ideas, make sure you take the time to step back and assess your progress. If a topic or skill is giving you trouble, spend more time to make sure that those ideas are solid in your understanding before you move on. It is never a good idea to push past a topic if you do not yet fully understand it. Like math, the study of musicianship is a cumulative subject, meaning that each topic builds on the previous.

You should always take time to go back periodically and retest yourself on previous subjects and drills. By keeping the early information handy in your understanding, the more complicated material will be easier and faster to comprehend.
WHAT IS MUSIC?

You must take an active role in implementing the plan set forth in this book. Set your own goals and adhere to a practice schedule that will allow you to be successful.
CHAPTER IV
THE BEGINNING: STAFF AND CLEFS

In the previous chapter, we discussed the philosophy behind the art and phenomenon of music. To better answer those tough questions and understand exactly what music means to us, we must first learn the concrete elements that combine to create it—MUSIC FUNDAMENTALS. In our studies, we often skip to the more complicated, seemingly more interesting elements of music without first striving to completely understand what these fundamentals are, and how and why they came to be. Therefore, when first starting to learn the fundamentals of music, we must connect to how this art was traditionally transferred from person to person. Try the following little exercise:

THINK OF A SONG OR PIECE YOU KNOW. NOW WRITE DOWN THAT SONG’S MUSIC SO THAT A FRIEND COULD SING IT, WITHOUT GIVING THEM ANY VERBAL INSTRUCTIONS.

That was a daunting task, was it not? Why was it so difficult? If the piece had lyrics, you could easily give them to the performer. But what if there are no lyrics, or your friend did not already know the song? Then what do you do?

Dealing with the notes and rhythms of a piece of music is extremely challenging. What you just experienced was the same difficult process for those who had the daunting task of developing the beginnings of our modern system of writing down music, or MUSIC NOTATION. As with any innovative technology, this process took a significant amount of time and lots of trial and error before solidifying into what we know today.
Before we look back at the fundamentals of music and how its notation evolved, we first need to understand just how monumental this subject is.

**QUESTION**

You have been challenged with throwing a birthday party for music. How many candles do you put on the cake? Or, in a less silly way to ask the question: How old do you think music really is?

What was your answer? When we think of the age of music, we often look back, based on our previous study, to the oldest music we know. Most of the time, people will say that music started with Gregorian chant, sometime during the medieval period, between the years 500 A.D. and 1400. But the truth is that music is much, much, much older. In fact, scientists found in the Geissenklösterle Cave, in Germany’s Swabian Jura region, two flutes that are made from the bones of animals and are thought to be between 40,000 and 45,000 years old.¹ Remarkable? Absolutely!

---


Like most, when I first started seriously studying music, I assumed that music was, at most, only a few thousand years old. However, the thought that music was being made over 42 millennia ago completely changed the way I viewed music, and more important, the way I studied it. Something that old must have a complex path and a wonderful backstory that is impossible to ignore. So while you spend time learning about music fundamentals, never forget that what you are studying is not just an ancient art, but a prehistoric one, with tens of thousands of years of history and tradition, much of which we are still striving to discover.

Music Notation's Beginnings

Even though music itself is more than 40,000 years old, music notation is much younger. Looking back to the earliest music notation, the oldest discovered “sheet music” of a complete piece of music was a song called the *Epitaph of Seikilos*. We do have fragments of pieces of music that date much earlier, but the *Epitaph of Seikilos* is the oldest complete piece we have found so far. The *Epitaph* was an inscription on a Greek grave stele, or monument, that was written sometime between 200 B.C.E. and 100 A.D. The stone carving was found in 1883 in Aydin, Turkey, and remains today, still preserved in its original form, on display at the Copenhagen National Museum.³

---

On this carving, the composer wrote the lyrics to a song in remembrance of his wife, and above the words he wrote letters to represent each **pitch**, or note, in the music. Above those pitch letters, he then wrote symbols that represented rhythm.

![Figure 5: Epitaph of Seikilos](https://commons.wikimedia.org/wiki/File:Seikilos1.tif)

*The text translated into modern Greek with letters and symbols for the music*

Much music during this time, and even up until the fifteenth century, was passed from musician...

---

TODD GOODMAN

To musician in an aural tradition, meaning that one performer would play or sing a piece over and over again until the other player learned how to play or sing it. When this method became increasingly more unreliable as music grew in complexity, composers and scholars started to think of new ways to transfer music from one musician to another.5

History of the Staff

As various ways of notating music were experimented with, a few became more widely used than others. These new ways of writing music were shown by using spatial relations on a lined staff. At first, the staff only consisted of a line etched into the paper with an uninked pen, called a dryline. This line gave the scribe a visual reference for the placement of the characters that represented notes, then called NEUMES. The scribe would then create contoured lines around the dryline to show the relative shape of the music. If the pitch of the note went up, so did the scribe's line. Using the dryline allowed the scribe to have a reference point in creating the written music, but it did not provide the musician with a visual reference point to help them easily read and understand the music in a performance situation.

The following example is a piece called Jubilate Deo Universa Terra, which was written by an anonymous composer between the seventh and eighth centuries. We can clearly see the text of the music, as well as the symbols representing pitch written above the text.

Figure 7: Jubilate Deo Universa Terra
Early music notation of note contours around a dryline

5. Mathiesen, Apollo's Lyre, 148-150.
Unlike the notation of the *Epitaph of Seikilos*, the notation of *Jubilate Deo Universa Terra* shows no reference to rhythm. Even though the notation has had more than 700 years to evolve between these two pieces, it has conceivably taken a small step backwards in its neglect of rhythm. However, as notation continues to develop, many elements of our modern notation system start to become more recognizable. For instance, ink was added to the pen used to create the dryline. This created a clear visual reference for how the pitch moved in the music as it related to each of the lines, evolving into a graphic representation more comparable to what we know and use today than that of the *Epitaph* or the *Jubilate*.

By the eleventh century, a monk named GUIDO D’AREZZO, born sometime around 991 A.D., solidified many aspects of music theory and will be a key figure in our study throughout this book. However, most important to our current discussion is his attempt at the standardization of these lines into the four-line STAFF. An example of this early, eleventh-century form of staff writing is seen in Figure 8. It is a setting of the text *Allelúia* found in the *Liber Usualis*—a large book of chants compiled as a guide for the daily liturgical, or church, music used within the church year.

![Figure 8: Four-line music staff with neumes](From the Liber usualis)

What elements of the music are different from modern notation we use today?
Create a hypothesis:
Why do you think some of those changes have happened?

The Modern Staff

As the development of notation progressed through many more stages, our modern musical staff became a set of five lines and four spaces, which is not as modern as we sometimes think. Its use began as far back as the thirteenth century. However, just like the early three-and four-line staves, this five-line staff works in much the same way, by showing notes in relation to one another using a visual reference of vertical lines forming a grid. Notes at the bottom of the grid are lower in pitch than those at the top of the grid. As the notes move up and down the staff, so does the pitch.

Figure 9: Higher and Lower Notes Relative to Each Other on the Staff

To make the music easier to read and more coherent, the staff is divided into MEASURES (or BARS) by vertical MEASURE LINES (or BARLINES).

Figure 10: Five Lines and Four Spaces with Measure Line
Q: What is the difference between the term measure and bar?

A: Absolutely nothing! Measure is an American English term, while bar is more commonly used in British English. Therefore, bar and measure, as well as barline and measure line, can be used interchangeably.

Each of these measures becomes an area for a grouping of notes to be organized. The organization that separates the music into these groupings is based on beat or pulse, and will be discussed in Chapter VI, starting on page 81.

Notes

As discussed previously, the notes that are used today have evolved from the square neumes seen in the Allelúia, in Figure 8 on page 49. Not much has changed in regard to these notes, except that our modern notes are ovals. They are still written on the lines and spaces of the staff to show pitch. The note is placed with a line of the staff going through the middle of the oval, or the oval is placed in the space touching both of its adjacent lines.

The note is drawn as an oval, not a circle.

Make sure the note is exactly in the center of the line or between the lines.

Great examples of perfectly written notes.

Notes too large for the space also make reading music more challenging.

Figure 11: Drawing Proper Note Shapes
On the staff paper provided to you in Appendix B, try to write some notes of your own. Make sure they are oval and fit well on the staff.

EXERCISE

Each oval on the staff corresponds to a note, of which there are seven in our Western musical system. These seven pitches have been given many names throughout their evolution, but in English they are named after the first seven letters in the English alphabet: A, B, C, D, E, F, and G. We also refer to these seven letters as the MUSICAL ALPHABET, with each letter representing a new note within our musical system. For instance, if we look at notes written on the staff, we can see how each of these notes relates to a keyboard. Looking at Figure 12, notice that the note written on the bottom line is followed on the keyboard by the note written on the first space. Then the next key on the keyboard is written on the second line of the staff, which is followed by the note on the second space. And the pattern continues until notes on the keyboard run out.

Figure 12: Lines and Spaces in Relation to the Keyboard

How did we know which key on the keyboard related to the notes on the staff in Figure 12? We would not know without the use of another symbol called a CLEF. A clef tells us which lines and spaces represent specific notes by assigning a specific line in the staff with a note. This reference line, assigned by the clef, is always a line and never a space. As we will study and discuss many
clefs, there are four main clefs, widely used in our modern notation system today, that show pitch—which we will discuss a little later in this chapter. First, let us learn the two more commonly used clefs, called the treble and the bass clefs:

**TREBLE CLEF**

The clef circles the “G” on the staff.

This clef is also called the “G” clef because it shows us where the G on the staff is located.

**BASS CLEF**

The clef starts on the “F” that is also surrounded by two dots.

This clef is also called the “F” clef because it shows us where the F on the staff is located.

The references to "G" and "F" will be discussed a little later in this chapter.

Figure 13: Treble and Bass Clefs

<table>
<thead>
<tr>
<th>History of Clefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Just as in our study of the staff itself, nothing in music happens because of coincidence, and the G and F clefs are not any different. Granted, they do indicate those letters on the staff; however, historically speaking, these clefs evolved from ornate drawings of the letters F and G, which later became our bass (F) and treble (G) clefs.</td>
</tr>
</tbody>
</table>

Figure 14: Early Forms of the F and G Clefs

---

TODD GOODMAN

As the concept of the staff was being developed, a symbol was placed at the beginning of one of the lines of the staff to indicate which note was represented by that line. Guido d'Arezzo again created a standard for which of these symbols were to be used. If you look back at the Allelúia from Figure 8 on page 49, you see a symbol that looks like a C on the third line from the bottom.

![Early “C” Clef](image)

If that symbol means that the line is C, then the starting note must be an A.

Figure 15: Early Clef Usage

This clef symbol indicated to the performer that the third line from the bottom is indeed the pitch C.

A clef was also designed to show F on the staff. These early F and C clefs looked like the following:

![C and F Clefs in early neume notation](image)

These two C clefs both show which line would be the note C. These two F clefs both show which line would be the note F.

Figure 16: C and F Clefs in early neume notation

Just as we explored the evolution of the F and G clefs in Figure 11, we can also see how the C clef changed over time as well.

---

As with the staff and music in general, understanding the past of these elements, such as clefs, as well as understanding their evolutionary path, helps us to better relate to and appreciate exactly what functions they have within our musical systems. With that history in mind, let us look a little more closely at the treble and bass clefs. The first challenge to most musicians is in the drawing of each of these symbols. To master drawing these clefs takes a little practice, and the steps to do so are found in the following figure:

How to draw the treble clef:
1) Draw a slightly curved line with a small dot on the end.
2) Connect the top of the curved line with a swirl that circles the 2nd line, or G.

How to draw the bass clef:
1) Draw a small dot on the 4th line, or F, and curve a half circle around to the bottom of the staff.
2) Draw two small dots in the 3rd and 4th spaces of the clef outlining the 4th line, or F.

Figure 18: How to Draw Treble and Bass Clefs

---

10 George Grove.
After we have had some practice drawing these clefs, the next step is to work on understanding how notes fit onto the staff, using these clefs as reference points. If we look at the **TREBLE CLEF** first, we understand that it is a G clef and that the line that it circles, and rests on, is G. That means that the notes immediately ascending from that line would then be A, B, C, etc., and the notes descending from that line would be F, E, D, etc. Remember that the musical alphabet only has seven letters—we will discuss why later—so once you ascend to the note G, the next note’s letter, even though it is higher than G, is A. This can be seen in the following example between the first and second notes.

*The way A is written in this figure is different than the other notes on the staff. We will discuss this later in this chapter, in the section "Ledger Lines" on page 59.*

The same movement of note names happens with all clefs. The clef just tells us which reference line is which. Let us look at a **BASS CLEF**, or F clef, example.
Notice that when the note moves up on the staff, the alphabet ascends, and when the note moves down, the alphabet descends. The same concept occurs with pitch as well. Notes higher on the staff are higher-sounding than those lower on the staff. So with this knowledge, you can find any note on the staff by finding the clef’s reference line (so far, either F or G), and going up or down in the alphabet by the same number of lines and spaces that the note is away from the reference line.

As you can see in the previous figure, knowing where G and F are located on the staff allows you to be able to count through the alphabet to find any note. However, learning the lines and spaces, and being able to access them quickly in your memory, will allow reading note names to become much faster, and therefore a usable skill. If you had to rely on counting lines and spaces to identify every note from the reference line, reading music in this way would not be a usable skill. It would be such a slow process that it would not help you as much as it could in your endeavors to learn new music quickly, or to SIGHT READ music with your friends. To read music quickly
TODD GOODMAN

and more efficiently at first, we use what are called **MNEMONIC DEVICES** to help us learn these lines and spaces faster. Mnemonic devices are wonderful tools to help your brain remember lists of words or groups of objects. For example, the famous “Roy G Biv” helps us to remember the order of colors in the rainbow (red, orange, yellow, green, blue, indigo, and violet), and the phrase, “My Very Excellent Mother Just Served Us Nachos,” gives us the order of planets from the Sun (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune). In music, we take the letter names of each of the lines and spaces and make a sentence, with each word starting with that letter from the staff. Some very famous mnemonic devices exist for both the treble and bass clefs.

---

**MEMORY AIDS**

The spaces of the **TREBLE** clef spell F-A-C-E

![TREBLE clef](image)

Spells the word FACE ☺

The lines of the **TREBLE** clef are E - G - B - D - F

![TREBLE lines](image)

Every Good Boy Does Fine

Every Girl Bakes Dandy Fudge

The spaces of the **BASS** clef spell A-C-E-G

![BASS clef](image)

All Cows Eat Grass

All Cars Eat Gas

The lines of the **BASS** clef are G - B - D - F - A

![BASS lines](image)

Good Boys Do Fine Always

*Make up some of your own...*

---

Figure 22: Treble and Bass Memory Aids
Many great resources in learning all aspects of music theory can be found online. One of my favorite sites is http://www.MusicTheory.net.

Ledger Lines

As notes get higher and lower on the staff, the staff will eventually run out of lines and spaces. When this happens, we use what are called **LEDGER LINES** to increase the size of the staff. Ledger lines are used frequently and are a very important aspect of learning how notation works.

The staff is extended to allow higher and lower notes to be written. To draw a ledger line, a small line is placed through, or under, the note.

<table>
<thead>
<tr>
<th>F</th>
<th>G</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
</table>

*Remember: this line is “G”*

This same concept is used in the **bass (or F) clef**.

<table>
<thead>
<tr>
<th>G</th>
<th>F</th>
<th>E</th>
<th>D</th>
</tr>
</thead>
</table>

*Remember: this line is “F”*

Ledger lines can be written on any staff, either above or below, to extend the amount of notes that you can use.

Notice that ledger lines are never placed on top of a note above the staff, just under or through the note. The same concept is applied to ledger lines below the staff. They are only used above or through each note, but never below.

The Grand Staff

When studying how all of these clefs work in reference to one another, one specific pitch becomes the keystone to each staff. We understand that the treble clef references a G on the staff and the
bass clef an F, but the placement of another pitch also becomes interesting and important. In looking at the following note in Figure 24, we know that the pitch is an A, but which pitch does the A represent? Is it an A sung by a soprano at the top of her range, or an A sung by a bass at the bottom of his range?

![Figure 24: The Pitch A on the Treble and Bass Clefs](image)

Are these two pitches the same? We agree that they are both As, but if they are the same, then why would we need two different clefs?

To better understand exactly which pitch we are discussing, we must look at how these two clefs relate to each other. If we take both of these clefs and stack them, with the treble clef on top and the bass clef on the bottom, and then we add an extra line in-between the two, we create a theoretical staff called the **GRAND STAFF**. With the two five-line clefs and the extra line in-between, this theoretical grand staff has 11 lines. Although it is not used in this 11-line form, you can clearly see two five-line staves when the middle line is removed. These two staves should look very familiar. This staff is the combination of clefs on which all of our keyboard and piano music is written. It too, is also called the grand staff.
If we add the clef symbols to the upper and lower staves, you can see that the middle line becomes a C, or as it is called, **MIDDLE C**. It is not called middle C because it is the middle of the keyboard, but because it is the middle line of our imaginary 11-line grand staff. If we start on C in the low bass clef, using two ledger lines, and use up all of the notes until we reach the C high in the treble clef using two ledger lines, the staff would look like the following figure:

Figure 26: The Full Range of the Grand Staff

There have been many clefs used throughout the history of Western music; however, today we typically use only four. The two most commonly used, the treble and bass clefs, show specific
pitch locations of G and F on the staff, and have “middle C” in the center when they are stacked. Our next two clefs, **ALTO CLEF** and **TENOR CLEF**, also show specific pitches, although these two clefs show the same pitch, “middle C.”

The alto clef is drawn on the 3rd line. The tenor clef is drawn on the 4th line.

**Figure 27: Alto and Tenor Clefs**

Why would these clefs be useful today?

Why not use the two more commonly used-clefs, treble and bass?

That is a great question which can be answered by looking again at the topic of ledger lines discussed on page 59. Clefs other than treble and bass are used when the range of the instrument lies outside of the comfortable range of those two clefs. For instance, the viola, which is an alto voice in the string section of the orchestra, has a range that does not fit comfortably within either treble or bass clef, and therefore the alto clef is used. In fact, the viola in French is called the alto.

**Figure 28: Lowest note on the alto clef**

Unlike viola, which uses the alto clef almost exclusively, some other instruments use treble or bass.
clef as their standard clef, then switch to a C clef when the range starts to use too many ledger lines. The bassoon, trombone, and violoncello (called the cello) switch clefs, depending on the written range. Let us look at the trombone as an example.

![Diagram of trombone's highest note in bass clef and tenor clef]

Figure 29: High Notes in Bass Clef and Tenor Clef

As we discovered in looking at the history of clefs, one of the most widely used was the C clef. Its use still continues, but now in a much more limited manner. If we compare the exact same note, “middle C,” on all four clefs, we can see how they differ.

![Diagram of "middle C" shown on treble, bass, alto, and tenor clefs]

Figure 30: “Middle C” shown on Treble, Bass, Alto, and Tenor Clefs

We understand “middle C” on the staff using treble and bass clefs, so now let us look at “middle C” in both of our new C clefs.
Notice that all of the notes written on the four different staves, using four different clefs, would all sound exactly the same. Each series of notes starts on “middle C” and moves up the same amount of pitches. With all clefs, the same rule of movement, as discussed with treble and bass, apply. When the note moves up on the staff, the alphabet and pitch ascend. And when the note moves down, the alphabet and pitch descend.

As with treble and bass clefs, we can also apply mnemonic devices to both alto and tenor clefs.
MEMORY AIDS for C Clefs

The spaces of the **ALTO** clef are G-B-D-F

![Diagram of Alto Clef Spaces]

*Great Big Dogs Fight*

The lines of the **ALTO** clef are F-A-C-E-G

![Diagram of Alto Clef Lines]

*For All Cats Eat Garbage*

The spaces of the **TENOR** clef spell E-G-B-D

![Diagram of Tenor Clef Spaces]

*Every Giant Bat Dies*

The lines of a **TENOR** clef spell D-F-A-C-E

![Diagram of Tenor Clef Lines]

*Don’t Freak About Candy Edward*

**Make up some of your own...**

Figure 32: Memory Aids for C Clefs

**How to draw a simple C clef:**

1) Draw two straight lines that go from the top of the staff to the bottom.

2) Draw two little lines that outline either the third line (alto) or the fourth line (tenor).

3) Draw vertical lines, one up and one down from the two horizontal lines.

Figure 33: How to Draw C Clefs

**Other Clefs**

There are many clefs, even within our modern system, that have been used throughout history.

Some are still in use today, but the majority of these clefs we study to better understand the evolution of the staff and its incredible flexibility. Some examples follow:
Baritone F Clef - This clef is no longer in use today but was used in vocal writing for the baritone voice. It is an F clef and written on the third line.

French Violin Clef - This clef is no longer in use today but was used for sixteenth-century and seventeenth-century flute and violin parts published in France. It is a G clef written on the first line.

Baritone C Clef - This clef is no longer in use today but was used occasionally for the baritone voice. It does, however, show exactly the same notes as the baritone F clef that was used more frequently. It is a C clef written on the 5th line.

Mezzo-soprano Clef - This clef is no longer in use today but was used for vocal writing of the mezzo-soprano voice. It is a C clef written on the second line.

Soprano Clef - This clef is no longer in use today but was used for vocal writing of the soprano voice. It is a C clef written on the first line.

Natural/Percussion Clef - This clef is widely used today but has a very different job than that of the C, F, and G clefs. The neutral clef tells the musician that there is no pitch associated with the lines, but each line and space is assigned a percussion instrument that is typically indicated via a legend in the beginning of the piece.

Treble Octave Down Clef - This clef is used a great deal today. It is a standard treble clef, showing where G is located on the staff; however, everything in the staff sounds down an octave. It is used in choral works for the tenor voice.

Bass Octave Down Clef - This clef is occasionally used today. It is a standard bass clef, showing where F is located on the staff; however, everything in the staff is sounded down an octave.

Treble Octave Up Clef - This clef is very seldom used today. It is a standard treble clef, much like the octave down clef with the 8 below the clef; however, this clef sounds up an octave rather than down an octave.

Figure 34: Other Clefs

EXERCISE

On the staff paper provided to you in Appendix B, try writing some clefs and indicating the clef pitch, C, F, or G.
THE BEGINNING: STAFF AND CLEFS

Worksheet

1) Draw **four** of each Treble (G) clef, Bass (F) clef, Alto (C) clef, and Tenor (C) clef:

    *Remember why they are called G, F and C clefs...*

   (G) Treble Clef
   (C) Alto Clef

   (F) Bass Clef
   (C) Tenor Clef

2) Note Identification:

3) Note writing:

   G   E   B   F   C   A

   F   D   A   E   G   B
CHAPTER V

THE EVER-IMPORTANT KEYBOARD

When learning musicianship, the grammar of music, having many different ways to approach each topic will help you embed this information more permanently into your instinct. Many believe that having this wide knowledge of music will also provide you with additional tools that help you to become a better player, teacher, engineer, conductor, composer, etc.

One of the fundamental tools that every musician should be familiar with is the **KEYBOARD**, for it gives visual and aural references to all musicianship topics, especially written music theory and aural skills. There are other instruments that can help with these topics as well, but the keyboard is the only instrument that correlates, with every note, the physical movement and visual placement of the keys with the sounds associated. When notes are higher to the right on the keyboard, so is the pitch, and when the notes are lower to the left, the pitches follow. In fact, if you would take the keyboard and set it vertically with the low notes on the bottom, the movement of the keys would correspond directly with the movement of the notes on the staff.
Notice how with each white key on the keyboard, the note directly above or below corresponds to the line or space on the staff that is directly above or below that key on the keyboard. The letter names of each note also follow the same; for example, if you start on an E, and go up one white key, the next note is an F. If you go down one white key from that E, then the note is a D.

When learning to play the keyboard, often your hands are referred to by numbers, called **FINGER NUMBERS**. These numbers simply correspond to the fingers on each hand and help you to learn the placement of each finger on the keys of the piano. Note that both of the thumbs are numbered 1.
Remember the grand staff from our discussion about the staff and clefs on page 59? The “middle C” that we learned as the middle line in-between the two five-line staffs is the starting point for our studies of the keyboard. How we find the note C is by looking at the pattern created by the black keys. As you can see, groups of two and three black keys span the entire keyboard.
Now that we are able to find C by locating the pattern of black keys, let's find "middle C." Remember that "middle C" is called middle C because it is the middle of the grand staff, not because it is the middle of the keyboard. (Although it is roughly in the middle of an 88-key keyboard—which will include 99 percent of all acoustic keyboards.) The best way to locate "middle C" is to find the fourth set of two-note groupings. The bottom of the keyboard only has one black key, so do not count that. On keyboards without 88 keys, find the C roughly in the middle of the keyboard.

Pentascales

The word *penta* is a Greek word meaning "five." One of the most common ways we use the word penta is with a pentagram, which is a five-sided shape. A **PENTASCALE** is a series of five
adjacent notes—for example, C - D - E - F - G is a pentascale. Pentascales are helpful because you can use these notes to play the piano without moving your hand. This is a great beginning step to learning the piano. Try playing a few pentascales.

Using the keyboard finger numbers discussed on page 69, put your number one finger—which will be your thumb of your right hand—on C, and press every white key with fingers 1 - 2 - 3 - 4 - 5. Now do the same starting on G. Try your left hand by placing 5, or your pinky, on G. If you play these pentascales starting on C and/or G, you will hear what sounds like a familiar scale. However, if you
start a pentascale on any other note, the scale sounds slightly different. This is due to different scale patterns and how the spaces between each note change. We will discuss scale patterns in Chapter VII, which starts on page 96.

<table>
<thead>
<tr>
<th>EXERCISE</th>
<th>Try playing the following two exercises:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>What piece do you hear?</td>
</tr>
</tbody>
</table>

**right hand**

Just by using finger numbers and the pentascale, we can play the keyboard. Try playing this piece by putting the thumb of your right hand on “middle C” and follow the finger numbers in 1.

![Right Hand Exercise](image1)

Did you hear “Mary Had a Little Lamb” when you played the fingers of the right hand?

Now that you played through “Mary Had a Little Lamb” with your right hand, place the pinky finger of your left hand on the C below “middle C,” and try playing the following piece:

![Left Hand Exercise](image2)

Did you hear Beethoven’s “Ode to Joy” in the left hand?

Figure 39: Two Pieces Played with Pentascales

As your fingers press the keys on the keyboard, the pitches move up and down. As you play through each
piece, visualize the notes also moving up and down on the staff. In the first four notes of “Mary Had a Little Lamb,” the notes on the staff move down twice and up once, looking like Figure 40 on page 74. Play the first four notes again and see how that relates to the staff.

Figure 40: Finger Numbers Translated into Notation

Figure 41 is what the first twelve notes of Beethoven’s “Ode to Joy” would look like on the staff. Play through it with the finger numbers from Figure 39 on page 73 and relate it to the staff. Also pay attention to how your fingers move on the keys.

Figure 41: Ludwig van Beethoven, “Ode to Joy”

Now that we can find “middle C” on the keyboard, and we used that knowledge to play two classic
pieces on the keyboard, how do we discuss all of the other Cs? We played “Mary Had a Little Lamb” with our left hand starting on the C below “middle C,” but if we expand our use of the keyboard, that way of describing those notes may get extremely confusing. If we look at a few Cs on the staff and name them using “middle C” as a reference, we end up with the following names:

![Figure 42: Cs Around “Middle C”]

Trying to describe a pitch by saying that it is two, three, or four tones away from a reference pitch can be extremely confusing. If we look at Figure 42 again, what would happen if someone assumed that “2 Cs above ‘middle C’” included the note middle C? They would end up playing the C in-between those two, and not the note requested. It is even more confusing when we look at notes that are not C. For example, would you call the following pitch in Figure 43, the D below the C below “middle C”? Confusing, right?

![Figure 43: D Below the C Below “Middle C”]

To clarify how each of the notes are named, many music theorists have proposed various systems of classification, including one by Hermann Helmholtz, who was not only a musician, but a medical doctor and a revered scientist. Helmholtz suggested that each section of the keyboard, from each C to the next C, be listed as a separate, smaller unit and therefore given a unique mark—instead
of referencing each note solely by its relationship to “middle C.” In this system, Helmholtz uses a series of lowercase and uppercase letters, along with tick marks, to show exactly which pitch is being referenced. Two Cs below “middle C,” the last note in Figure 42, on the keyboard was written as an uppercase C. The C above that, or the C below “middle C,” was written as a lowercase c. Middle c was written as a lowercase with a tick, c’, and the C above that with two tick marks, c”.

The whole system looked like the following:

Figure 44: Helmholtz Pitch Notation System

Now most musicians today do not use the Helmholtz system, but what we do use is a system that is a product of it. Just as neumes followed an evolutionary track to become notes, the Helmholtz system was the springboard for our modern system, called **Scientific Pitch Notation**—also called International Pitch Notation, as well as Octave Notation. Much like the Helmholtz notation, within this system, the keyboard is split into sub-groups of notes, using C as the dividing note. Using an 88-key keyboard, the bottom C is assigned the number one, the next C is two, and so forth, reaching all the way to eight.

Figure 45: Note Groupings Using Scientific Pitch Notation

---

1 Hermann Helmholtz, *On the Sensations of Tone as a Physiological Basis for the Theory of Music* (London; Longmans, Green, and Co., 1885), 15-16.
Using this system, we can now refer to any note and its grouping number. Anyone familiar with this system will know exactly the pitch to which you are referring. If we look again at the Cs in Figure 44, we see that the Helmholtz upper/lowercase system is simply replaced by numbers.

![Figure 46: Scientific Pitch Notation](image)

Any note that falls in-between these Cs is given the number of the C below it. Therefore, if a D was written above “middle C,” or C4, then that D, instead of being called “the D above ‘middle C,’” will now be called D4—referring to the D above the C in group 4. Let us look at the notes in the spaces of the treble and bass clefs. We know the name of each note from memorizing our mnemonic devices F-A-C-E, and All Cows Eat Grass, but let's look at how each note falls into a Scientific Notation note group.

![Figure 47: Spaces of Treble and Bass Clefs with Scientific Pitch Notation](image)

This way of looking at notes on the staff may seem confusing at first, but once you get familiar with it, having a tool to communicate exactly what pitch you need is extremely helpful and important.
The terms *note* and *pitch* can sometimes be confusing, especially when they are used without the scientific pitch notation numbers. So to be more clear in our descriptions of these elements, we must be more specific in the terms that we use for specific musical elements. For instance, the term *pitch*, although we have used it up until this point in our studies as any generic note, is really a very specific term with a very specific meaning. When we use the word *pitch*, we are referencing a specific note or frequency. For instance, “middle C,” or C4, is a pitch. It tells us exactly which C we are referencing. Another prime example is the pitch A-440, which most instruments use as their tuning note. The 440 in this pitch references the **HERTZ** rate, or the number of waves or cycles that occur per second, at which it would be tuned—also A4, or the A above “middle C.”

Now when we are thinking in a broad, generic sense about pitch, we want to reference all notes with that same letter name by using the term **PITCH-CLASS**. Unlike pitch, which is specific to one note, pitch-class references all of the notes that share the same name. For instance, you might say that a piece begins on the pitch C4, but that the pitch-class F♯ begins each of the groupings of three black notes on the keyboard. Again, pitch refers to one specific note, while pitch-class references all of the notes that share the same name, regardless of their placement on the staff. One pitch or frequency can also have multiple names, which is discussed later in the section on Enharmonics in Chapter VII, starting on page 96.
Pitch-class, all notes of the same name

Pitch, specific note

Figure 48: Pitch vs. Pitch-class
1) Mark the following pitches on the keyboard.
   Write the **LETTER** name on the key.

   \[ E - A - D - B - C \]

2) Write the note from the keyboard on the staff provided.
   Place the note within the given staff.

3) Mark on the keyboard which pitches are written.

4) Write out a C pentascale.

Write out a G pentascale.
Of all of the numerous aspects that combine to create this magnificent and mysterious art, one crucial element is rhythm. Music can exist in many forms, with variations in style, form, and instrumentation to name just a few, but fundamental elements like pitch and rhythm create music’s foundation. The study of these foundational materials is essential to your growth as a musician.

Before the topic of rhythm can be understood, one must first understand the concept of **PULSE**, and how pulse relates to rhythm. Often when we first start learning about rhythm, we are not asked to separate these two very distinct elements from each other, which creates confusion. While both elements are very important, rhythm cannot live without pulse.

When we think of the word *pulse*, we quite often think of our heart and its heartbeat. That constant pulse within our bodies is one of the most crucial activities that allows for our life to continue. Without that steady heartbeat, blood does not flow, and oxygen and nutrients are not transmitted to the rest of the vital organs in our body. Yet unless we are exercising or have had a jolt of adrenaline through some other activity, our heartbeat remains unnoticeable in our daily lives. The same is to be said of pulse in music. Pulse is critical within music, and without it, the
music is damaged and often unrecognizable. Yet, as with our heartbeat, pulse is also unnoticeable as the crucial element it truly is.

Pulse is the unchanging, repetitive force that drives all music. Think about your heart again. As it pumps, there is a consistent, steady beat that may speed up or slow down gradually, but it has a consistency in its beating. Look at the following sample of an electrocardiogram, or E.K.G. Do you see how the distance from each peak to its neighboring peak is consistent?

![Electrocardiogram](image)

Figure 49: Electrocardiogram and Pulse

This consistency of spacing in the heartbeat creates a consistency in the time it takes in-between beats. That consistency in pulse is what allows rhythm to happen in a piece of music. With a steady pulse, any sound that is perceived as change around that pulse is what creates rhythm. For instance, if you hear a steady beep, and over top of that beep something else is clicking, but not in the same way as the beep, you now have an audible pulse and a perceived rhythm. Now if that audible pulse goes away, does the rhythm still make sense? Of course, because you still feel the implied pulse. Without that steady pulse, variants in the rhythm are not understood.

Look at the following figure. Notice how the rhythm and the pulse differ.
RHYTHMIC GROUPINGS OF FOUR

Do you recognize the piece of music from its rhythm? Maybe. Now if we take that same rhythm, and this time, instead of looking at it in relation to a steady pulse, we place each of the sounds against an unsteady pulse, what is the result?

Notice how the rhythms in Figure 50 and Figure 51 look completely different, even though they each contain the same number of elements. The only difference between the two is that the rhythm in Figure 51 is set against a non-steady pulse. Therefore, would you have recognized the piece from this rhythm? Not at all. The result is that the rhythm is not recognizable, or understandable, for that matter. Without a steady pulse, there is nothing against which the perceived change of the sound in the rhythm can be understood.

Think about the piece “Jingle Bells.” (Which is the rhythm in Figure 50.) Now sing the rhythm of that song, without the words, to a friend, but ignore the pulse. Did your friend know the piece?

When we start learning about rhythm, we often jump right into the notation of rhythm, without first
understanding how it actually works aurally. It is undeniable that music is an aural art, meaning that it is transmitted from performer to listener through our ears, and that notation is just a tool used to help us, as musicians, to better remember and more efficiently transfer that music from musician to musician. Even though written notation is a visual art in itself, how music sounds to the ear is what makes us fall in love with its wonder and mystery.

A great, yet simple way to learn how to hear rhythm before being concerned with traditional music notation, is through a method I call CIRCLE NOTATION. This method is extremely useful and versatile in helping you understand how all rhythm is structured within sub-groups, and how each of these sub-groups have common, if not identical, components to others. If we were to start by diving directly into rhythmic notation, the options would be overwhelming and often off-putting for a beginning musician. But by using circle notation, we begin by looking at what makes each of these rhythms the same, and not at what separates them.

Before we progress into learning about how we use circle notation, think about the following question:

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>How many different states, or forms, can a sound take? Meaning, how many different ways can that sound be present?</th>
</tr>
</thead>
</table>

On the surface, that is seemingly a very complicated question, but in reality, it is quite simple. Just like the states of matter, a sound can really only exist in three states—attacked, held, or silent. If we think of all the sounds that we hear in music, can they be placed into one of those three states of sound? Absolutely. Even if a sound is getting louder or softer, for example, it is still a note being held throughout a number of beats. So therefore, instead of thinking about all the
different variations a note's rhythm can have, we combine all of those variations into the simple understanding of those three states—attacked, held, or silent.

To begin to place sounds into those three states in the circle, you must first take the number of pulses, or beats, you are using and write them surrounded by a circle—for us at the beginning of our studies, this number of pulses is four. As we will find out as we progress, much of our Western music is in a sub-grouping of four, called SIMPLE METER, which we will discuss in-depth in Chapter IX, "SIMPLE RHYTHMIC SUBDIVISIONS" on page 133. After we have our beat grouping, we then use three different symbols to show the three states of sound.

So if you have a circle with four numbers as above, and you hear an attacked sound that is held through the next pulse, then another attacked sound, followed by silence, you would write:

Figure 53: Example of Circle Notation
If you are going to have more than one grouping of four beats, you can draw multiple circles. Notice that in simple meter, your circles always contain four numbers within each circle. So, let us try three circles:

\[
\text{silence - sound - held - sound - held - silence - sound - sound - sound - held - held - silence}
\]

![Figure 54: Example of a Multi-Circle Rhythm](image)

This example, for beginners, is a very complicated rhythm to notate in our standard system. However, it is easier to understand using the number dictation system. Is this system meant to replace standard notation? No! However, it is a way to get you listening to rhythm before you can write it in our standard notation system.

**EXERCISE**

Try taking some popular music you know, like a nursery rhyme or a holiday favorite, and write out the rhythm using the above method.

**Note Durations**

As wonderful as circle notation is to get you listening to rhythm groupings, in the bigger picture of music, we still need to worry about pitch in conjunction with rhythm. To show these variations in the beat with notes on the staff, we alter the way each note looks. We either alter the noteheads by displaying them as filled-in or open, sometimes adding note stems, and if a stem is added to the note-head, sometimes flags are attached to the stems. We can then use these variations of notes to show how many beats or partial beats each note receives. The length of time in which a note is held
is called its DURATION.

Each style of note is given a certain number of beats.

<table>
<thead>
<tr>
<th>Note</th>
<th>Beats</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole note</td>
<td>Four</td>
<td>It is called a whole note because it takes up a whole grouping of four beats.</td>
</tr>
<tr>
<td>Half note</td>
<td>Two</td>
<td>It is called a half note because it gets half (½) of the value of the whole note.</td>
</tr>
<tr>
<td>Quarter note</td>
<td>One</td>
<td>It is called a quarter note because it gets a quarter (¼) of the value of the whole note.</td>
</tr>
</tbody>
</table>

The whole note has only an open, or white, note head with no stem.

The half note has the same open, or white, note head of the whole note with an added stem.

The quarter note is very similar to the half note, but the quarter note has a filled in, or black, note head.

Figure 55: Note Durations of Whole, Half, and Quarter Notes

If we look again at the circle notation example in "Figure 53: Example of Circle Notation" on page 85, but this time apply the above notes, we can quickly see how the two ideas correlate. We hear sound on beat one and that sound is then held through beat two, giving us sound for two beats—beats one and two. In looking at our note durations above, we can see that a half note gets two beats, so therefore we would use a half note to represent the first two beats of sound heard in our circle rhythm. Beat three has an attack, and there is silence on beat four. So, we would use a quarter note for beat three to show that there is sound for only one beat. So far, this rhythm would look like the following:
Now beat four is unique, in that we have not discussed a symbol for silence, but just as each sounding note has a unique symbol for each duration, so does each duration of silence.

Adding a Dot

When we look at the durations for the three notes we have studied thus far, we immediately see that something is missing. We have unique notes for one, two, and four beats, but we do not have a specific note for the duration of three beats! To get to three beats using these three notes, we would have to somehow combine a half note, which has a duration of two, with a quarter note’s duration of one. It is doable using a symbol that we will discover later in this book, but instead of combining two note durations to create a third, we simply use a DOT. When added to a note, a dot adds half of the value of whatever note or symbol comes before it. For instance, if a dot is added to a half note, which gets two beats, the dot adds half of the value of that note, or one more beat, giving that dotted-half note a duration of three beats.
If adding a dot adds half of the value of whatever note or symbol comes before it, what happens when we dot an already dotted note?

The dot adds half of the value of whatever comes before it, so if a dot is added to an already dotted note, the second dot adds half of the value of the preceding dot. So a double-dotted whole note would have a duration of seven beats. The whole note gets four beats; the first dot adds half of that, or two; then the second dot adds half of the first dot, or one; therefore, four plus two plus one equals seven.

\[ 4 + 2 + 1 = 7 \]

Dot adds 1/2 of the value of whatever symbol comes before it, whether that symbol be a note, or another dot.

We now know how to write rhythm in the circle number system as well as how to count the beats for whole, half, and quarter notes. Yet, as seen in Figure 56, we also need to be able to show

\[ 2 + 1 = 3 \]
\[ 4 + 2 = 6 \]
silence. The / symbol we used in the circle notation is transferred to our notation system using a series of symbols and shapes. The whole, half, and quarter notes have a partner shape that has the same name as its sounding note, but show that instead of sound, silence is needed. These silent notes, called RESTS, look quite different from their partners.

The whole rest is given four beats. It is called a whole rest because it takes up a whole grouping of four beats. The whole rest is a black rectangle that sits under the middle line on the staff.

The half rest is given two beats. It is called a half rest because it gets half (½) of the value of the whole rest. The half rest is a black rectangle that sits on top of the middle line on the staff.

The quarter rest is given one beat. It is called a quarter rest because it gets a quarter (¼) of the value of the whole rest. The quarter rest is a unique symbol. It is an ornate marking that looks like a Z with a little c under it.

Figure 59: Rest Durations of Whole, Half, and Quarter Notes

| Memory Aide: Whole rests look like graduation caps, which end your WHOLE schooling. Half rests look like hats. H is for Hat / H is for Half. |

Rests, like clefs, can be tricky to draw properly. Here are a few hints on the correct way to draw the most complicated rest, the quarter rest.

To draw the quarter rest:

1) Make a slanted letter Z with the top of the Z starting on the fourth line.
2) Draw a C underneath connected to the Z.

Figure 60: Instructions for Drawing Quarter Note Rests
RHYTHMIC GROUPINGS OF FOUR

If we then compare the notes with the rests, we can see how the unique features of each of these symbols will help us know which beats have sound and which are silent.

<table>
<thead>
<tr>
<th>NOTE</th>
<th>REST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Note / Whole Rest</td>
<td>-0-</td>
</tr>
<tr>
<td>4 beats</td>
<td>-</td>
</tr>
<tr>
<td>Half Note / Half Rest</td>
<td>-0-</td>
</tr>
<tr>
<td>2 beats</td>
<td>-</td>
</tr>
<tr>
<td>Quarter Note / Quarter Rest</td>
<td>-0-</td>
</tr>
<tr>
<td>1 beat</td>
<td>-</td>
</tr>
</tbody>
</table>

Figure 61: Partner Note Durations and Rest Durations

If we take that same information, but this time look at it split into a rhythm pyramid, we can clearly see how each note and rest then splits to become the next division.

<table>
<thead>
<tr>
<th>RESTS</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>whole split into 2 halves</td>
<td>-0-</td>
</tr>
<tr>
<td>2 halves split into 4 quarters</td>
<td>-0-</td>
</tr>
</tbody>
</table>

Figure 62: Rests and Notes and Their Divisions

Are dots applied to rests, just as they are to notes? Yes, dots can be applied to rests as well. They are treated in the same manner, by adding half of the value of the symbol that comes before the dot, even if that symbol is a rest. Even though they are not commonly used in the duple meters, we do see them...
periodically. They are, however, used extensively in triple meter, which is discussed in Chapter XVI, “Compound Rhythmic Subdivisions,” on page 243.

Combining all of the information we have discussed in this chapter, let us look at some rhythms and line up the number of beats each note or rest receives.

\[
\begin{align*}
\text{Figure 63: Examples of Duple Rhythms and Their Corresponding Counts} \\
\text{Rhythmic Solfege} \\
\text{As we study rhythm, we learn that many different systems are used around the world to make this process easier and more comprehensive. Each of these systems has its own strengths and weaknesses and is designed for different intended purposes, e.g., educational, performance, and communication. In this book, we will explore three systems widely used in the United States, but focus our attention on one. It is my opinion that this system is superior, and I will, of course, state my case as we continue to study it; however, it is you who must adapt to whatever method works for you. Do not, however, immediately turn off one of these methods without first deeply immersing yourself in it and discovering its benefits for yourself.}
\end{align*}
\]

Did you notice right away that the number three take the most effort and therefore has the strongest sounding syllable? Then four, then two, and then finally the weakest-sounding number, which is
one? Now do the same exercise, but instead of using numbers, use a generic syllable like “bum” in its place. Try it again and notice where the strongest beats lie. This time the strength of the grouping of four undoubtedly lies on beat one, followed by beat three, then two, and finally the weakest of the beats, four. How do those two exercises compare? Which do you find more musical?

Of course, we find the generic syllables to be more musical, with the strongest beat occurring on beat one, the next strongest on beat three, followed by beat two, and finally the weakest being beat four. Now, if counting with our English numbering system creates an uneven beat distribution, how can we use these numbers to count without feeling this beat discrepancy?

In India, musicians use vocalizations to learn, explain, and even pass on rhythms from one person to the next. At the core of their method is a syllable system known in India as SOLKATTU. These musicians, regardless of their instrument, are required to know and use these syllables to VOCALIZE, or sing, rhythmically through a piece of music, using these syllables, before they are allowed to play it on their instrument. In a duple meter, or our grouping of four, we use the syllables Ta-Ka-Di-Mi, (pronounced tah - kih - dee - mee), instead of the English numbers. Try the above exercise again using Ta-Ka-Di-Mi.
What are your results? Does the beat strength align more with the musical system? Absolutely! We will continue with TaKaDiMi in Chapter IX, "SIMPLE RHYTHMIC SUBDIVISIONS" on page 133.
1) Transfer the following number dictation to music notation.

\[ \begin{array}{c}
\{1\} \ \{2\} \ \{\dot{\ \ \ \ \ \ \ \ \} \ \{4\} \\
\{\} \ \{\} \ \{3\} \ \{4\} \\
\{1\} \ \{\dot{\ \ \ \ \ \ \ \ \} \ \{4\}
\end{array} \]

2) Transfer the following notation into our new circle notation.

\[ \begin{array}{c}
\{\} \ \{\} \ \{\} \ \{\} \\
\{\} \ \{\} \ \{\} \ \{\} \\
\{\} \ \{\} \ \{\} \ \{\}
\end{array} \]

3) Write out the ta ka di mi syllables for each of the following examples.

*Please write the syllables under each note.*

\[ \begin{array}{c}
\{\} \ \{\} \ \{\} \ \{\} \\
\{\} \ \{\} \ \{\} \ \{\} \\
\{\} \ \{\} \ \{\} \ \{\}
\end{array} \]
All music, regardless of style, genre, age, etc., can be simplified by using the common laws of music. It is an extremely simple, yet profound rule that music sounds like music. No, you did not read that incorrectly. Very often, we forget, or never realize in the first place, that music is music. The pitch-class D, which occurs in the music of Mozart, is the same pitch-class in the music of Metallica or Beyoncé. Two quarter notes followed by a half note is the same rhythm in Beethoven’s music as it is in Johnny Cash’s music, or the music of Dave Mathews, or John Williams. Simply put, music is music. If we study and familiarize ourselves with those rules, understanding the difficulties of music is not as challenging because we begin to associate each of these elements not only with all music, but with other musical elements as well.

When we break down music into its common elements, we start to realize that each of these concepts are not as complicated and confusing as once thought. We have been able to quickly identify notes on the staff by familiarizing ourselves with not only the staff’s layout, but also its rich history and evolution. Now looking to the next step, we start to combine those notes to create larger groups, called INTERVALS. An interval is a classification system that uses the distance or space that occurs between two notes as its main indicator. Intervals are also the foundation for creating larger structures of more than two notes. Later, in Chapter Eleven, "INTERVALS" on page 202, we will discuss all intervals in a more in-depth manner.
Half and whole steps are the smallest interval building blocks of our western system of scales. All scales, with a few exceptions, are comprised of a pattern of half and whole steps. A **half step**, or semi-tone in British English, is an interval between two adjacent notes, which can be seen easily on the keyboard. Start on any key and go to the very next, regardless of color. Those two notes make up the interval of a half step. As you can see, a half step can be from a black key to a white key, or a white key to a white key, but a half step never occurs between two black keys, for there is always a white key between each grouping of black keys.

![Half Step on the Keyboard](image)

**Figure 66: Half Steps on the Keyboard**

In our previous studies, we discussed the letters associated with each white key on the keyboard, but we did not discuss the letter names of the black keys. To understand how to find the letter names of the black keys, as well as how to notate most half steps, an **accidental** is required. An accidental is a symbol that is placed before a note, or letter name, that tells you to raise or lower the pitch by a half step. Three of the most common accidentals are called a **sharp**, which raises the pitch; a **flat**, which lowers the pitch; and a **natural**, which cancels all accidentals.
Accidentals

\# Sharp raises the pitch by a half step.  
\b Flat lowers the pitch by a half step.  
\n Natural cancels all accidentals.

Figure 67: Accidentals

Let us look at an example of each of the half step intervals we just discussed—a white key to black key half step, and a white key to white key half step. Remember, a half step is an interval between two adjacent notes.

White Key to Black Key

White Key to White Key

Figure 68: Half Step Interval Examples

Enharmonic Pitches

Because we can raise, or sharp [\#], and lower, or flat [\b], any given pitch-class, we find that we can therefore call any pitch-class that we use by two different names. The multiple names used for a pitch-class are called ENHARMONICS. Enharmonics are an extremely important aspect of music theory, for they allow the movement and combination of pitches to be more uniform, and therefore easier to understand. For example, the pitch indicated in Figure 69 on page 99, could be called either an A\#, for it is the note above
A, or a B♭, because it is the note below B. Notice that one key on the keyboard can share, at this point, two names. In some cases, double sharps (♮) and double flats (♭♭) are used for enharmonic pitches.

![Enharmonic Pitches](image)

Figure 69: Enharmonic Pitches

Now if we look at a few more half steps and work out how they would be played on the keyboard, as well as how we would notate them, we notice that we would need to use accidentals on some, but not on others.

![Two Types of Half Steps on the Keyboard](image)

Figure 70: Two Types of Half Steps on the Keyboard

Remember that one note can be written enharmonically, or in two or more different ways. A note can be either a sharp (♯) of the previous note, or a flat (♭) of the next, as we see in Figure 71, depicting a half step above A.
A to (B♭ or A♯) would be notated like this in treble clef.

_A half step with both options_

Figure 71: Half Step Written with Enharmonics

In the first example in Figure 70 on page 99, C to C♯ could have also been written C to D♭.

**QUESTION**

• Since we are discussing one note, why not just pick one name?

Think of the multiple names for these notes as cheese. We can have one type of cheese that is useful in many, many different forms—mozzarella cheese, for instance. Mozzarella cheese, when sliced, is delicious on sandwiches or with crackers, but it needs to be shredded to be used in lasagna and pizza. Mozzarella can also be crumbled or cubed for other uses, but regardless of its form, it still has the same overall composition. Enharmonics are the same. We have a pitch that, depending on how it is used, needs to have a slightly different form.

These two differently named pitches, although sharing a key on the keyboard, are NOT the same note. Even though they sound the same on a piano or guitar, or any instrument that is tuned using equal temperament, they do have differences that require them to have two unique names. Depending on how they are used, you can hear subtle differences in them when listening to choral, string, or other non-equal tempered music. I know that this concept is very tricky and confusing, but we will discuss the scientific reasons as to why later in Chapter XI, "INTERVALS" on page 202.

Using the piano keyboard as a visual reference for learning the half step can be a crutch, but will undoubtedly slow you down in the future. It is OK to use it at this stage, but quickly memorize the layout of pitches so that you no longer need the visual reference.
MEMORY AID for Keyboard Layout

Below is a keyboard that shows C D E F G A B C. Notice that there are only two half steps that occur from a white-note to another white note. Those pitches are E-F and B-C. If you remember that those two half steps are white note half steps and do not require accidentals, and all other half steps do require accidentals, you will no longer need the keyboard for reference.

![Keyboard Layout Diagram](Image)

Figure 72: Memory Aide for Keyboard Layout

Whole Steps

In continuing to build our basic building blocks of music, let us now explore the **WHOLE STEP**. The whole step, or tone in British English, is comprised of two half steps. You can approach finding a whole step in the same manner that we approached half steps: by using three adjacent keys on the keyboard and skipping the middle.

![Whole Step Diagram](Image)

Figure 73: Whole Steps on the Keyboard
TODD GOODMAN

Just as with a half step, a whole step can be from a white key to a white key or a black key to a black key. However, there are a few exceptions in which a whole step can span from a white key to a black key, or visa versa. As seen in Figure 73 and Figure 74, an interval that begins on an E and moves up a whole step must move from a white key to a black key—E to F#. The same happens with the pitch B when it jumps to C#. If we move down a whole step, the exceptions are F# to E and C# to B.

![Whole Step Diagram]

Figure 74: Two Types of Whole Steps Written on the Keyboard

Now let us look at some examples of whole steps by how they are played on the keyboard, as well as their notation, with accidentals if needed.

![Keyboard and Bass Clef Diagram]

C to D would be notated like this in bass clef.

Figure 75: Whole Step on the Keyboard and in Bass Clef

In Figure 76 on page 103, if we look at the two notes played on the keyboard only, out of the context of a piece of music, we can call these two notes by their enharmonic names. We are unaware of any implications to other notes, so we can call that interval by its enharmonic names: G# to A#, or A♭ to B♭. Without any reference to a scale, which we will discuss in "Major Scales" on page 104 later in this chapter, we do not know if those two notes should bear their sharp (#) or their flat (♭) names.
One note can be written in a number of different ways. Any note, especially notes that are played on black keys, can be either a sharp (♯) of the previous note or a flat (♭) of the next.

In the previous figures, A♭ or G♯ can be written B♭ or A♯, respectively, because both letters are adjacent to each other. A to B and G to A are next to each other in the musical alphabet. The same is true with the example in Figure 79, B to C♯ or C♭ to D♭. However, this whole step should never be written as B to D♭, for B and D are not adjacent letters in the alphabet. All whole steps must be written with adjacent letters. The letters used to write these notes are extremely important within the context of a piece of music.

As you can see, the difference between enharmonic pitches is starting to become clearer as we better understand how music is constructed. Whether it is within the construction of a scale,
which is our next topic, or within the construction of wider intervals, which we will discuss in Chapter XI on page 202, how we write a pitch is just as important as the pitch itself. Therefore, it is extremely important that you do not think of enharmonics as the same note, just with different names, but as a similar note whose name changes in the context in which it is used.

The **Major Scale**, like most other scales, is a simple series of half and whole steps. Each scale has a unique pattern of these building block intervals which, when combined, gives it its unique sound. The major scale takes its characteristics from the following pattern:

```
Whole Whole Half Whole Whole Whole Half
```

Figure 78: Interval Pattern of the Major Scale

Now that we know the major scale pattern, as well as the concepts of half and whole steps, accidentals, and enharmonics, we should be able to construct a major scale from any pitch. All major scales are the same, in that they all have the exact same pattern of half and whole steps; they just start on different notes. As we discussed previously, if we think about everything in music that is different, we become overwhelmed very quickly; however, if we think about what elements are the same, but just built slightly different, the overall challenge of understanding music is much less daunting.

With that in mind, let us try a few examples of scales. First, let us think of a major scale starting on the pitch-class F, remembering the pattern of a major scale—Whole, Whole, Half, Whole, Whole, Whole, Half.
**Steps:**

1) Find the starting note.
2) Go up a whole step to the next note.
3) From the new note, go up a whole step to the next note.
4) From the new note, go up a half step to the next note.
5) repeat following the pattern...

**Major Scale starting on F.**

Written in notation, this scale would be as written to the right:

**Why use B-flat and not an A-sharp?** Any traditional scale can only have one of each letter name. If there is already an A-natural then there cannot be an A-sharp as well. In this case, that pitch has to be B-flat because we already have an A-natural.

Figure 79: Major Scale Starting On Pitch-Class F

Using the same steps that we used for the major scale starting on F, let us try to write another scale with the same pattern. This time, let us start on the pitch-class E.
Major Scale starting on E.

As you can see, the same pattern starting on different pitch-classes will produce a different set of notes, yet they all yield a similar-sounding major scale. A scale starting on F has a B-flat and a G-natural, while the same pattern starting on E has a B-natural and a G-sharp. Let us try one more scale together, this time starting on the pitch-class C.

Written in notation, this scale would be as follows:

*Why sharps?* This scale uses sharps because there cannot be an A-flat and an A-natural in the same scale.

Figure 80: Major Scale Starting on Pitch-Class E

Figure 81: Major Scale Starting on Pitch-Class C
Try playing the above scales on the keyboard. The notation is given to you, as well as a map of the keys themselves. Start to feel the pattern of these scales.

Just as we discussed in Chapter III, “What Is Music?,” the process of making some of this information instinctual is crucial to making the overall understanding of musicianship a usable skill. Yes, it is extremely important to have resources to reference, but by being able to access quickly in your brain certain pieces of information, these now become very usable skills.

Think about performing a new work on stage for the very first time in front of an audience. Do you have time to think about lines and spaces on the staff, or what clefs mean? No, that information must be readily available to access at any time, instantly. One piece of information that should, without a doubt, be instantly available is the musical alphabet. You should be able to say it forwards and backwards at an instant, without hesitation.

Work on saying and understanding the musical alphabet forwards and backwards as fast as possible. A B C D E F G - G F E D C B A

Just as in our study of rhythm, many musicians use a system of syllables called SOLFEGE that provides a unique name for each note within the scale. By labeling each note in this manner, the syllable helps to create an anchor system within the scale, showcasing those elements across each scale that are the same. We use this system in the study of written theory and aural skills to help us become more familiar with each pitch, and more important, its function within the scale.
In Chapter IV, we discussed the history of music notation, and how important the understanding of the origins of these tools is to us as musicians. The appreciation of a tool’s evolution can tremendously aid in our mastery of related concepts. We find the same with our study of solfege.

As we discussed previously in Chapter IV, Guido d’Arezzo had a major role in the solidification of our early notation system. He also had a significant role in the creation of pitch names, which eventually led to the development of our modern solfege system. Guido was a chapel master whose job it was to teach and lead the choir of singers for the Masses held at his church. To help better communicate what he wanted from each of his singers, Guido used a series of six syllables to refer to the six pitches that comprised the hexachord—the early scale system. A hexachord, which you will see throughout your study of written music theory and music history, is a series of six notes, each of which is separated by a whole step—except the middle two, which are separated by a half step. A hexachord starting on C would look like the following figure:

![Hexachord Diagram]

Figure 82: The Hexachord

To get the syllables for each note, Guido used the eighth-century work *Ut queant láxis*, a plainchant *Hymn to Saint John the Baptist* that may have been written by Paulus Diaconus. In *Ut queant láxis*, each phrase of the first stanza starts with the first note of the ascending hexachord starting on C, as seen in Figure 82.
To get the syllables used in our solfege system, Guido took the first note from each line of the
*Ut Queant Láxis*, or *The Hymn to Saint John the Baptist*, and assigned that note the syllable
that was used in the text. For instance, the first note of the piece is C, and the text for that line
starts with the syllable *Ut*. The next phrase starts on the note D, and the text uses the syllable *Re*
[pronounced Ray]. The note E uses *Mi* [pronounced Me], F uses *Fa*, G uses *Sol*, and A uses *La.*
This results in notes C, D, E, F, G, and A having the syllables *Ut, Re, Mi, Fa, Sol,* and *La.* Notice
that each SCALE DEGREE, or note of the scale, has a unique, corresponding solfege syllable.
So you can better understand what this looks like, let us transcribe the above eleventh-century
neume notation into our modern notation. *Ut Queant Láxis* would then look like the following:
In some regions of the world, a few of these syllables—for instance, Ut and Sol—have changed over time. In 1640, Ut was changed at the suggestion of music theorist Giovanni Battista Doni, who thought that the syllable Ut was too difficult to sing.¹ He changed the syllable to Do [pronounced Doh]. Although the new syllable Do was considered an easier word to sing, it was also a suggested change by the theorist, so that the first note of the system would be in honor of his last name, Doni. So was it really a practical change, or a self-serving suggestion? Either way, we can thank Doni for the lyrics, “Doe, a deer, a female deer.” What would Rodgers and Hammerstein have written if they had to start with Ut?

Another change came when some Western cultures, like the United States, removed the third letter from Sol to make all the syllables a uniform two letters. This made the fifth note of the scale (or in Guido’s system, G) the syllable So. In addition to the discussed changes to the syllables themselves, additions were also made to enhance the system. If we look at Guido’s original solfege, we notice that there are only six syllables, yet the major scale contains seven

notes. Solfege for the seventh scale degree was added in 1482 by Bartolomeo Ramis de Pareja. It was given the solfege syllable of Si, which was taken from the words sancte ioannes—the last line from the first verse of Ut Queant Lâxis seen previously in Figure 84. In some cultures in the nineteenth century, Si was then changed to Te by British music teacher Sarah Anna Glover (1786-1867) in her system called TONIC SOL-FA. Tonic Sol-Fa was first very popular in South Africa, and it later spread throughout Europe, thanks to inclusion of the system into the British Education Act of 1870. Glover suggested, among other major changes (which we will discuss in the next section, “Fixed vs. Movable Do”) the shift from Si to Te, so that every scale degree had a unique letter to begin each syllable, which differentiated the solfege Sol and Si. As the system continued to evolve, Te was later changed to Ti, leaving us with the following system:

```
   ^   ^   ^   ^   ^   ^   ^   ^
  Do  Re  Mi  Fa  So  La  Ti  Do'
```

Figure 85: Modern American Solfege and Their Corresponding Scale Degrees

The Heimholtz System that we discussed in "Scientific Pitch Notation" on page 74, gives us the idea that we can show different octaves from a given pitch by using a tick-mark, either above (meaning higher), or below (meaning lower) a given pitch. We can extend this concept to solfege, which we can see in Figure 85, with Do’ sounding an octave higher than Do.

Fixed vs. Movable Do

2 Cattin, 59-60.
TODD GOODMAN

Two systems of using these solfege syllables exist and both are still used around the world. The first was the original system based on Guido’s design, called fixed solfege, or **FIXED DO**. The fixed do system is primarily a note naming system in which each pitch is given a unique syllable, though these syllables are relative with the F and G hexachords. In this system, each note is always called that syllable. In fact, some cultures do not have letter names for the pitches on the staff. They just use the solfege syllables. In this system, C is always Do, D is always Re, E is always Mi, and so forth. Two major scales starting on different notes would have different syllables, as seen in the following figure:

A major scale starting on C would have these syllables:

![Figure 86: Solfege for a Major Scale Starting on C](image)

A major scale starting on E would have these syllables:

![Figure 86: Solfege for a Major Scale Starting on E](image)

The other solfege system used today is called **MOVABLE DO**, or movable solfege, and it is an adaptation of Sarah Anna Glover’s Tonic Sol-Fa system. Unlike the fixed system where C is always Do, this system requires that Do moves to always be the first note of a given scale. With Do always being the first scale degree, every like-scale has the same solfege syllables. This means that each scale that has the same intervallic building blocks—for example, the major scale with Whole, Whole, Half, Whole, Whole, Whole, Half—also now has the same solfege. The only difference is that each scale just happens to start on a different pitch-class. A major scale on C starts on Do, but so does a major scale on E, F, G♯, G♭, etc. For example, let us look again at the
major scales starting on C and E that we first explored with fixed Do in Figure 86. With movable Do, they look exactly the same using the movable Do solfege system, because intervalically, all of these scales are exactly the same scale.

A major scale starting on C:

\[
\begin{align*}
\text{Do} & \rightarrow \text{Re} \\
\text{Re} & \rightarrow \text{Mi} \\
\text{Mi} & \rightarrow \text{Fa} \\
\text{Fa} & \rightarrow \text{Sol} \\
\text{Sol} & \rightarrow \text{La} \\
\text{La} & \rightarrow \text{Ti} \\
\text{Ti} & \rightarrow \text{Do'}
\end{align*}
\]

A major scale starting on E:

\[
\begin{align*}
\text{Do} & \rightarrow \#\text{Re} \\
\#\text{Re} & \rightarrow \#\text{Mi} \\
\#\text{Mi} & \rightarrow \text{Fa} \\
\text{Fa} & \rightarrow \text{Sol} \\
\text{Sol} & \rightarrow \#\text{La} \\
\#\text{La} & \rightarrow \text{Ti} \\
\text{Ti} & \rightarrow \text{Do'}
\end{align*}
\]

A major scale starting on F:

\[
\begin{align*}
\text{Do} & \rightarrow \#\text{Re} \\
\#\text{Re} & \rightarrow \#\text{Mi} \\
\#\text{Mi} & \rightarrow \text{Fa} \\
\text{Fa} & \rightarrow \text{Sol} \\
\text{Sol} & \rightarrow \text{La} \\
\text{La} & \rightarrow \text{Ti} \\
\text{Ti} & \rightarrow \text{Do'}
\end{align*}
\]

Figure 87: Solfege for Major Scales Starting on C, E, and F

The question that scholars of music have been asking for centuries is, “Which system is better?” Neither system is better than the other, because they both have different functions. It would be like comparing a car and a truck. Both have different functions, although their main job is to provide transportation. It is the same with our two systems of solfege.

As both systems have their strengths and weaknesses, there are cultural uses of these systems that drive much of the passion behind which system people tend to use. Typically, Europeans use the fixed Do system, for they are rooted more in the traditions of Renaissance Europe. Also, from a practical standpoint, their education system teaches solfege and sight singing at a very early age, so it makes more sense to use the fixed system. In the United States, however, the movable Do
system is used more often, for it simplifies a vast amount of musical information into one idea that can then be transferred through all music, regardless of what note begins a work. Also, this system tends to work better for older students, and since education in the United States does not focus on intense music theory scholarship until the undergraduate level at college, the movable Do system is used more frequently.

I like both systems and I find them both extremely important. I have chosen the movable Do system for this book, but hope that you, at some point in your studies, explore the fixed system and everything it has to offer.

The Uses of Solfege

When you look at a major scale as a set of whole and half steps, you can immediately see a pattern that can be transferred to any other note in building other major scales. This same principle applies to our use of solfege. Just as we noticed in Figure 87 on page 113, a major scale on C with the scale degrees 1, 2, 3, 4, 5, 6, 7 and 8, would have the solfege syllables of Do, Re, Mi, Fa, Sol, La, Ti and back to Do’, as seen in the following figure:

<table>
<thead>
<tr>
<th>Scale Degree:</th>
<th>Notice that we write a little caret above the numbers to indicate scale degree. Without the caret, it shows pitch-class numbers, which are used in an advanced atonal music theory, called set theory.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notation:</td>
<td></td>
</tr>
<tr>
<td>Solfege:</td>
<td>Do Re Mi Fa Sol La Ti Do’</td>
</tr>
</tbody>
</table>

Figure 88: Scale Degrees and Their Corresponding Solfege

Now, if we apply that same philosophy and compare a major scale starting on D to a major scale starting on Bb, you should notice the only thing that changes is the notation itself. We still have
the same sequence of whole and half steps and scale degrees, which all use the same solfege.

Major Scale Starting on D

Half or Whole Step: W W H W W W H

Scale Degree: 1 2 3 4 5 6 7 8

Notation:

Solfege: Do Re Mi Fa Sol La Ti Do'

Major Scale Starting on B-Flat

Half or Whole Step: W W H W W W H

Scale Degree: 1 2 3 4 5 6 7 8

Notation:

Solfege: Do Re Mi Fa Sol La Ti Do'

Figure 89: Solfege and Scale Degrees of Major Scales Starting on D and B-Flat
1) Identify each of the following intervals as either a half step or a whole step.

2) Write the following, requested intervals above the given note.

3) Write a major scale starting with each given pitch.
As our study of the language, science, history, and grammar of music continues, different challenges arise with each unique element of this fascinating and mysterious art. One of the most challenging of these elements is that of the development of **aural skills**, or ear training. However, as with each previous section, we have reduced the elementary elements of music to a pattern of simple ideas that are easily mastered. As the understanding of these smaller concepts become more instinctual, your ability to grasp larger, more complicated topics will start to become easier and more applicable to your performance and enjoyment of music.

**Matching Pitch**

To a non-musician, the concept of **matching pitch**, and aural skills in general, may be a silly idea. Even some beginning musicians fight the need for a developed ear. I have been asked numerous times, “If I play the piano, why do I have to sing?” A great question, and one that takes years to truly answer, so that you can understand the importance of a well-trained ear. But to begin, the best way to get a glimpse of its importance is to experience it. Once you have studied ear training and solfege, your level of playing will increase ten-fold. Your ability to grasp written theory will increase dramatically, and your strength in rhythm studies will expand. However, to simply answer this question, the understanding of how to produce sounds with your body is not designed to make you a singer—quite the contrary. Its purpose is to increase the level of comprehension to these sounds and their relationship to each other in your inner ear. It is to help you hear pitches, know what those
pitches are, and understand their relationship to the music that you are playing or enjoying.

Scientific Background

When we hear a pitch, what is it that makes the sound change? There are many aspects of a sound's quality that can change, like its **DYNAMIC** or **TIMBRE**, which we will discuss later in Chapter IX, "INTERVALLIC HEARING" on page 224. Yet the one quality that is crucial to understanding how pitch works is its **WAVELENGTH**. When anything makes a sound, it moves the air around it, creating vibrations that travel out away from its source. When that vibrating air hits and moves our eardrum, we hear a specific sound. How our eardrum determines what that sound is relies 100 percent on the makeup of that wave. Its dynamic comes from its height and its timbre from its shape, but what differentiates the pitch of that sound is the distance between those vibrations, or wavelength.

What exactly is wavelength? As our sound vibrates, it produces a wave. Just as a human fingerprint is unique, this wave tells the listener everything about a particular sound, just by how the wave is made. Let us use the example of a string. If we pluck a string on a guitar or violin, or any tight string for that matter, the vibration of the string moves the air and produces the sound's wave.

![Waveform in Relation to a Vibrating String](image)

Figure 90: Waveform in Relation to a Vibrating String

As mentioned earlier, what gives a particular wave its pitch is the length from a point in the
wave to its return to that given spot—its wavelength. All sound waves travel at roughly the same speed, around 770 mph, so a higher note would have more waves than a lower note within a given amount of time. A higher pitch requires a smaller wavelength, allowing more waves to occur within a given time. A longer wavelength means the note is lower in pitch, because there would not be as many vibrations of that wave within a given time. For example: a long string will produce a note with few waves, thus making the pitch lower. A short string will produce many waves, making it higher. Let us look at this concept visually.

Wavelength is measured in millimeters and hundredths of a second. However, for ease of explanation, let us simplify the concept and the math to inches and seconds. For example, a string that is three inches long produces a sound with a wave that contains two wavelengths in the time of one second.

If we shorten the string by only one inch, look at the result. There are now three wavelengths that will hit and vibrate your eardrum in each second, rather than the two produced by the longer string—resulting in a higher pitch.
As we start to practice matching pitch, remember what produces different pitches in the first place—wavelength. As we match pitch, we must align the wavelength of the note we are singing to the note with which we are hearing, and thus trying to match.

What happens if the note that we are singing has a different wavelength than the note we are hearing? If we combine the two notes that we previously discussed in Figure 91 and Figure 92, we can see what would happen.

The two pitches that were played together, which do not match wavelengths perfectly, are not the same. The matching of two pitches' wavelengths is called **intonation**, and is crucial to your study
of music. Let us look at two pitches, but this time their wavelengths are not perfect. We see that there is interference to the sound that will cause the pitch to wobble or pulse, which makes it out of tune.

![Figure 95: Pitch with Bad Intonation](image)

As you go throughout your day, try matching any pitch you hear—telephone ringing, background music, door squeak, dog bark, etc.

The element in this course that will best help you understand how and why each pitch acts and moves like it does is solfege, discussed previously in Chapter VII, "Solfege" on page 107. Solfege assigns each note a syllable, which mentally attaches a function or job to each pitch as you sing or hear it. To understand this concept, we first must understand that each note has a varied level of importance to the scale. Just as the government, companies, military, and religion, just to name a few, have structured levels of leadership—so does music.

If we look at the chain of command for the officers of the United States Air Force, we see that each rank has a different job, with different levels of responsibility.

![Figure 96: United States Air Force Rank Hierarchy](image)

This progression of leaders, or the Air Force's hierarchy, is a clear progression of power. A general has command over a colonel, who has authority over a lieutenant colonel, who has authority over
TODD GOODMAN

a major, and so forth.

Like the above example, most arrangements of power are clear and linear. Music’s hierarchy of pitch, however, is non-linear, which makes its initial examination somewhat tricky. When first looking at the notes of a major scale, it is common for most people to organize the pitches as they are approached in the scale. Do moves to Re, which moves to Mi, Fa, Sol, etc. However, they do not function that way. Yes, in the scale, those notes do progress from Do to Re to Mi, but they do not progress that way in the context of a MELODY. If all music was only written as ascending and descending scales, this art would be extremely boring. But what makes music extremely interesting is the way composers create anxiety with the use of this pitch hierarchy, and with each pitch’s own tension and release.

![Scale and Corresponding Solfege Starting on C](image)

Figure 97: Scale and Corresponding Solfege Starting on C

Let us look again at a major scale starting on C. Play through it a few times, up and down, as written in Figure 97. It is a nice organic unit that flows from beginning to end. Even if you play the scale from low Do to high Do', or in reverse, it seems complete, as long as you start and end on Do. Now play the scale again, but this time stop on Ti. Do you feel tension? Does your ear tell you that you need to return to Do? Now, play the scale again but this time stop on Fa. Is there even more tension this time? Do you feel that Fa needs to move to Sol, which then needs to move back to Do? This tension that you are feeling is being created by the departure from the foundation of the pitch Do. When another pitch...
is played, your ear is relating that note to Do, and your musical instinct is working out how to return that pitch logically back to the foundation of the scale.

Write down the solfege pitches from Do to Do'. Play each note, followed by Do. Write down how much tension you feel from the departure from Do and how, using only your ear, you would return to Do.

EXERCISE

Scientific Background of Pitch Hierarchy

If each pitch has a certain function, let us examine why. Each pitch we hear is comprised of a series of other pitches that literally sound above it. This series of notes is called the OVERTONE SERIES. If a string was plucked that sounded the pitch C3, or the octave below middle C, its vibration would move our eardrum 13,100 times every second. This movement, or its wavelength, is called the note's hertz rate (abbreviated as Hz). As technical as this sounds, it is not a modern concept. Using different terminology, a Greek musician and mathematician named PYTHAGORAS (c.570 BC - c.475 BC), whom we all know for his Pythagorean Theorem of $A^2 + B^2 = C^2$ used with right triangles, first documented that as the larger string vibrates, so do smaller proportional sections of the string. These smaller vibrations also produce sounds that are harmonious to the larger string. As the whole string vibrates, it also is vibrating to produce many higher notes within the overtone series, called positive interference. The bottom note of the overtone series is called the FUNDAMENTAL.

Let us look at an example. We can start with any given pitch as the fundamental, but for this example we will use C3. As we look at each of the notes within the overtone series, we can see how each of these notes with smaller wavelengths compares to the fundamental.
As the fundamental vibrates, an overtone is also heard at double the original pitch—$131 \text{ Hz } \times 2 = 262$ Hz or C4. If the string was divided exactly in half, the smaller string would also produce C4, an octave higher than the fundamental C3.

If we continue to divide the string, however, this time in thirds, then one section of the smaller string would produce the note G4, which is above the C4 octave that resulted from the division of the string in half. The frequency would also be treated the same, multiplying the fundamental pitch by 3—$131 \text{ Hz } \times 3 = 393$ Hz.
As we continue to divide the string, this time in fourths, then C5, a note two octaves higher than the fundamental, is produced, giving it a frequency of 524 Hz—131 Hz x 4 = 524 Hz.

As we hear the pitch C3, we also hear these other notes ringing as overtones to the larger string fundamental. Notice that within the first three notes of this series, there are three Cs and one G. We will explore the overtone series in much detail later, but for now the important aspect of this concept is that as one pitch is produced, others that have proportional frequencies are working within that note to strengthen its sound. The importance of this phenomenon to our study of pitch hierarchy is that notes have a strong tendency to move to others, due to the overtone makeup of the fundamental pitch, or Do, of the scale. The strong relationship from Do to Sol is due to their close proximity to each other within the overtone series.
In this chapter, we seem to be talking about science more than music. Why? Understanding any subject requires attention to much more than the subject itself. As we progress through our study of why music sounds the way it does, we will continue to talk about history, science, math, and literature, as they will help us gain a deeper understanding of music. Could you be an amazing musician without knowing the math behind what makes a pitch an octave higher? Sure, but this deeper understanding of the complexity of music gives you the desire to respect it, not just understand it.

The importance of Sol in the pitch hierarchy is evident in our brief mathematical exploration of the first few notes of the overtone series. So let us look at the rest of the notes, and place them into jobs and rank of importance in the music chain-of-command. I am not saying that some pitches in the scale are not important; quite the contrary: every note is important. What I am saying is that by understanding each pitch’s job, we can better understand and hear how these notes work together to create something bigger—just as second lieutenants are as crucial as generals to the workings of the Air Force.

As we have already seen, Do is the foundation of our scale system. It gives us a starting point, as well as an ending point. It also provides a reference point for which other notes create tension or provide a release. Unlike the military system of rank, which is very clear, music is not. Look at your exercise
where you wrote all the notes and their tendencies. How many notes want to resolve to Do? You may have anywhere from two to four. Which are right and which are wrong? Why do we all have so many differing answers? The answer is simple, yet complex of course. As music evolves, composers constantly challenge the set rules that the previous composers who came before them established—like a teenager rebelling against parental rules. As new rules are set, which rebel against the previous generations’ rules, we have music that is constantly changing. This evolution is what makes art exciting and different from non-humanitarian subjects like math—2 + 2 always equals 4.

\[
\text{Do} \quad \text{Sol} \quad \text{Mi} \quad \text{Ti} \quad \text{Fa} \quad \text{Re} \quad \text{La}
\]

**Figure 103: Note Hierarchy**

As we explore the nuances of the hierarchy of pitch, we also will look at a system of hearing that will allow us to anchor our ear, both inner and outer, to a given scale. The **ANCHOR SYSTEM** sets the notes of our traditional scales into a hierarchy, similar to the one discussed before. But the system gives us reference notes that we can use to then find other notes in the scale. We already know that *Do* and *Sol* are extremely important to our function of pitches within the scale, so let us make those two notes our first anchors. To help us visually identify the notes when we see them in notation, we mark the anchors with unique symbols. Mark *Do* by circling and *Sol* by boxing, as follows:

\[
\text{D} \quad \text{R} \quad \text{M} \quad \text{F} \quad \boxed{S} \quad \text{L} \quad \text{T} \quad \text{D'}
\]

**Figure 104: Solfege Scale with *Do* and *Sol* Anchors**

This system of marking each note with a unique symbol is not new, but an adaptation of shape
notes—a nineteenth-century American system used for congregational singing as well as early music education.

With Do as our number one anchor and Sol as number two, what other pitch would aid us as an anchor? Both Fa and Ti are important notes in the hierarchy, but they are both adjacent to anchor notes already. Only one other pitch in the scale is not adjacent to an already-made anchor. Yes, Mi. Mi has notes on either side that are not anchored into the scale. So, our final anchor is Mi—mark Mi with a triangle.

By setting our foundation into the scale with only three notes, Do, Mi and Sol, we can get to any other note with just one step. But before we can explore the other notes, we must first make our aural understanding and performance of these three notes unmistakably solid. We can do this with three exercises:
Training Exercises

Exercise #1: Mi Anchor

1. **Play a C on the piano and, by singing, match the pitch exactly.** *Hear the vibrations of the wave and match them so you do not hear a wobble to the sound.* [You can use another non-wind instrument, but the sustain of the piano works best for these exercises.]

2. **Sing a few times up and down a major scale on C while holding Do on the piano.** *Spend a few seconds singing each note.* Focus on hearing the quality of the sound and how it relates to Do. As you do this, look at the solfege letters and take a mental picture of the sound.

3. **Sing from Do to Mi while still holding Do on the piano.** DO NOT PLAY MI ON THE PIANO! Use Do as a reference for your ear. Listen to how Do and Mi relate to each other. If you are having problems finding Mi, start on Do and sing up to Mi through Re. When you find the perfect place for Mi, sing the interval from Do to Mi. Do this until you can sing from Do to Mi without using Re.

4. **Practice singing Do to Mi without using Re.**

![Figure 107: Training Exercise No. 1; Mi Anchor](image)

Every time you practice one of these exercises, which should be three to four times a day, only work on it for a few minutes at a time, then move on to another exercise or instrumental practice. However, every time you come back to the exercise, start from the beginning. Do the whole exercise—it should only take a few minutes.

Remember: **Practice makes permanent!** When you practice, focus on being consistent and accurate. If you practice something wrong, it becomes permanently wrong.

Once you are comfortable with Mi and its relationship to Do, move on to the following Sol exercise. As you do this, I want you to think of one more aspect of what you are hearing. With practice, humans have the amazing ability to hear multiple things at once. We have two different sets of
hearing: outer hearing, which describes the air vibrations felt by our eardrum; and inner hearing, which describes sounds that are not audible but still heard in the brain. Think of the word *panda*. Did you hear it in your head? Yes. No one spoke the word, but you still heard the word with your inner hearing. The same concept can be applied to music and the study of ear training. We can train our ear to hear multiple notes at once. As you sing through this next exercise, listen to how each note relates to *Do*. How do *Do* and *Sol* sound together? What quality does *Do* have when heard with *Sol*?

---

**Exercise #2: Sol Anchor**

1. **Play a C on the piano and match the pitch exactly.** Again, hear the vibrations of the wave and match them so you do not hear a wobble to the sound.

2. **Sing a few times up and down a major scale on C while holding *Do* on the piano.** Spend a few seconds singing each note; however, this time listen to what sound is created by hearing each with *Do*. Continue to look at the solfege letters and take a mental picture of the sound.

3. **Sing from *Do* to *Mi* and then to *Sol*, still holding *Do* on the piano.** YOU MAY ONLY PLAY *DO* ON THE PIANO! Use *Do* as a reference for your ear. Listen to how *Do* and *Mi* relate to each other; now listen to how *Do* and *Sol* relate. If you are having problems finding *Sol* from *Mi*, start on *Do* and sing up to *Mi* (which you should be getting fairly good at by now). Now sing *Mi*, *Fa*, *Sol*. When you find the perfect place for *Sol*, sing the interval from *Mi* to *Sol* a few times. Do this until you can sing from *Mi* to *Sol* without using *Fa*.

4. **Practice singing *Do* - *Mi* - *Sol***.

5. **Sing *Do* to *Sol***. Once you are comfortable with *Do* - *Mi* - *Sol* you can work on the relationship from *Do* to *Sol*. Really focus on hearing *Do* in your inner ear and sing *Sol*. What quality do those two notes, heard together, produce?

---

Figure 108: Training Exercise #2; Sol Anchor

130
**ALWAYS END EACH INTERVAL WITH YOUR INTENTION!**

If you set out to practice Do - Sol, but need some help by using Mi, end with Do - Sol. If you sing Do - Mi - Sol, your brain remembers the last thing it heard, which is Mi - Sol, not Do - Sol.

Now that we understand the concept and have Do, Mi and Sol as fairly solid anchor pitches, let us add the last anchor. High Do’ is often overlooked and dismissed as a simple pitch to hear and sing because it is the same pitch, or in the same pitch-class, as low Do. This is a major misconception. The only notes that can be considered the same note are those with matching wavelengths. As seen in our first discussion of overtones, octaves do have close relationships, but they are not the same note.

One of the challenges many students face in hearing and singing high Do’, or the octave, is its similarity to Sol. They are closely related to each other in the overtone series and conversely found inside each others’ notes. As you sing through these next exercises, it is imperative that you not only focus on hearing the quality of high Do’ as it relates to the low Do, but also on hearing them together. Use your inner hearing to hear the low Do, and sing the upper Do’ using your outer hearing.
1. Play a C on the piano and match the pitch exactly.

2. Sing a few times up and down a major scale on C while holding Do on the piano.

3. Sing from Do to Mi to Sol and then to high Do’, still holding Do on the piano. YOU MAY ONLY PLAY DO ON THE PIANO! Use Do as a reference for your ear. Listen to how Do and Mi; Do and Sol; and now Do and Do’ relate to each other. If you are having problems finding Do’ from Sol, start on Do, sing up to Mi, sing Sol, now sing Sol-La-Ti-Do’. When you find the perfect place for high Do’, sing the interval from Sol to high Do’ a few times.

4. Practice singing Do - Mi - Sol - Do’ and Do - Sol - Do’.

5. Sing Do to high Do’. Once you are comfortable with Do - Mi - Sol - Do’ and Do - Sol - Do’ you can work on the relationship from Do to Do’. As with the other exercise, really focus on hearing Do in your inner ear and sing Do’. What quality do those two notes, heard together, possess?

6. Sing all of the anchors in any order you would like; however, this time DO NOT hold down Do on the piano. This process is helping you anchor into the scale by planting Do in your inner ear. If you get stuck, which is perfectly normal, do not play any other notes on the piano—only Do. Use what you have just studied to allow your ear, not the piano, to find the notes you need.

Figure 109: Ear Training Exercise #3; High Do’ Anchor

With a friend, write down the solfège letters and mark the anchors. Using a pencil, point to anchors on the sheet while your friend sings each. If they get stuck, move back to Do. Take turns being the pointer and the singer. You are playing solfège bounce-the-ball, just like in cheesy sing-a-long videos.
Rhythm is one of the driving forces behind music. While other elements—such as pitch, intonation, timbre, and harmony, just to name a few—are all extremely important, a piece’s rhythm provides for that music a unique identity that can only be supplied via its rhythmic construction. A piece of music could be performed with all the right notes and each of those perfectly in tune with each other. But with none of the rhythms played correctly, do you think the piece will have the same identity? Probably not. In some cases, it might even be unrecognizable. But if that same piece is played with a few wrong notes, some of which are out of tune, yet each note is played with the correct rhythm over a steady pulse, the piece will undoubtedly have the intended rhythmic character. Now, I am not suggesting that music be played with the focus on rhythm only. I am only stressing how important rhythm is to the overall character and performance of music. Of course, pitch, intonation, timbre, and harmony are all extremely important, but a clear focus on your perfection of rhythm is imperative.

---

Macrobeat and Microbeat

As we discussed previously, at the beginning of Chapter IV (starting on page 81), the importance of a clear pulse is crucial to any rhythm study. As we continue to explore rhythm’s intricacy and its many nuances, we will forever see that the foundation of all rhythm is pulse. For
me, regardless of how complex or simplistic the rhythm might be, pulse is its driving force. As we continue to discuss rhythm, and therefore pulse, we will begin to break these rhythmic ideas into two levels—MACROBEAT and MICROBEAT. However, if we start our study with all of rhythm's differences, the subject becomes extremely daunting and overwhelming. If we begin our deeper exploration of rhythm just as we have with every other topic up to this point, by looking at what makes its elements the same, and then combine those elements into more complicated topics, we can quickly become successful.

How We Relate: Macrobeat and Microbeat

Before we continue digging deeper into rhythm, let us discuss the prefixes macro and micro as they are used in other subjects. As a general rule, one should explore, when possible, how topics in music relate to other subjects. Not only does this help us understand music better, but it can provide us a deeper connection to these other subjects through a subject about which we are extremely passionate—music. The terms macro and micro are Greek words that mean large (macro) and small (micro), and they can refer to elements in any subject that occur on both a large as well as a small scale. One of the subjects that uses these terms extensively is economics, or the study of the creation, distribution, and sale of products and services. The study of economics encompasses a wide range of areas and products and how those areas are categorized is typically through their large-scale effect on a whole country or state (called macroeconomics), or on their local affect (called microeconomics). As you can see, the sale of a product on the local level, although small, can have serious effects on the large-scale sale of that same item. The same principle happens in music.
As in our first discussion of circle notation, in Chapter IV on page 83, that system can act as a visual reference to help us build upon the concept of how microbeats and macrobeats work within rhythms. First, think of the circle as a unit. Not just a measure on the notation staff, but a versatile unit of four beats, or pulses, that can be used in many different ways. Now within each circle, we can count the total number of pulses used to make up our rhythmic grouping. In the way we discussed the circle earlier in Chapter IV, each number within the circle was felt as the pulse, or its macrobeat.

![Circle Notation as Macrobeat](image)

When the macrobeat is then divided, however, we can see the same rhythmic grouping found in the microbeat as well. Think of the circle notation as being exactly the same, but now we are just thinking about it in layers. If we look back at the rhythm we explored in Figure 50 on page 83, but this time layer the macrobeat and the microbeat, we can start to see how these large-and-small scale rhythms work with each other.
We can change the macrobeat to any number, yet the microbeat can remain the same, allowing us to focus on the elements within the rhythm that are the same. In the previous figure, the macrobeat and the microbeat are both four, but both can change. The macrobeat can be any number of beats, while the microbeat is typically four or six. In this chapter we will focus exclusively on the microbeat of four—called SIMPLE METER.

For instance, let us again use the rhythm in Figure 111, but this time let us make the macrobeat two, while keeping the microbeat four. Notice how the rhythm does not change at all, but the change in the macrobeat shifts the rhythm’s emphasis.
Notice how the two rhythms would sound almost identical, but all that changes is the shift in the macrobeat. As we discussed earlier, at the end of Chapter VI, the beat that typically gets the most emphasis is beat one. How, then, would these two rhythms sound different? In Figure 112, beat one in the second circle would more than likely be played with a slightly heavier feel than that same sound the way it is written in Figure 111. Why? Because beat one has more weight than beat three.

Now, if we continue to apply the concept of macrobeat and microbeat to the rhythmic notation we discussed earlier in Chapter IV, we can see how each of these concepts can be expressed in many different ways. If we take the same rhythm we discussed in Figure 53 on page 85, and instead of seeing it as its own measure, we now look at it as the microbeat subdivision of a larger grouping, we can see how that same rhythm can be expressed differently. First, let us assume that each number represents one beat. The rhythm would look like the following:

![Figure 113: Circle Notation into Rhythmic Notation](image)

Now, let us take that same rhythmic figure, but this time, let us assume that it is now one beat of a larger four-beat measure.
The larger circle would be the rhythm’s macrobeat, while the smaller circles would be its microbeat. If we were to go back to “Jingle Bells” in Figure 112 and write out the rhythm notation of that measure of four beats, it would look like the following:

Notice that each of the beats in the microbeat is still being represented by the quarter note. Therefore, a note that is held for two microbeats, in this example, would be represented by a half note, and a note held for four beats would be represented by a whole note. Each of these beat groupings are extremely versatile. Not only can we group them within many different macrobeat groupings, but we can assign different note values, or symbols, to represent each micro-and macrobeat. For instance, if we assign the microbeat in Figure 115 to be represented by the half note, then the rhythm, although the same, would look much different.
The rhythm in Figure 115 and Figure 116 is the exact same rhythm; it is just being shown by using two different note values. The microbeat in Figure 115 is being represented by a quarter note, and the microbeat in Figure 116 is being represented by a half note.

What makes the study of rhythm seem extremely difficult is that any note value can represent any part of the microbeat or macrobeat. It is very misleading when we hear that a quarter note gets one beat, when that is not always the case. For instance, when we wrote “Jingle Bells” using the half note as the microbeat, the quarter note in that case gets only a half of a beat, not one beat. Therefore, it is often better to think about note values in units rather than beats, and to understand that the concept of a beat shifts frequently. Just as clefs are movable on the staff, the pulse is also movable throughout the rhythmic symbols.

What was that crazy-looking symbol in Figure 116 on page 139? That symbol, a whole note with two lines on either side, is called a double-whole note, and it is used for rhythms that have eight units. Now that we are starting to look at the layers of rhythm, we need to have symbols that
allow us to combine notes, in the case of the double-whole note, as well as to divide notes further. For instance, if we have a macrobeat of a quarter note, how do we show the subdivision of the microbeat? In music, as in math, we can constantly divide what we are using in half. We divided the whole note in half to get the half note, and the half note was divided in half to get the quarter note. So a quarter note can easily be divided in half again, giving us an eighth note. And of course, we can follow that same pattern forever if we want. We get the symbols for each of these new note values by simply adding flags to the stem of the quarter note.

\[
\text{\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{fig117.png}
\caption{A quarter note plus a flag equals an eighth note.}
\end{figure}}\]

Every note can be divided, or split, into two. To show the division, we simply add another flag to the note. An eighth note has one flag, a sixteenth note has two, a thirty-second note has three, and the pattern can continue forever.
If a thirty-second ($32^{\text{nd}}$) note has three flags, how many flags would a two-hundred and fifty sixth ($256^{\text{th}}$) note get?

\[32 \times 2 = 64 \times 2 = 128 \times 2 = 256\]

3 flags 4 flags 5 flags 6 flags 256th note

This same principle is applied to rests, as well. The eighth rest is a unique symbol that looks very much like an ornate seven—the number 7, compared to the eighth rest $\text{♩}$. To draw the eighth rest:

1) Draw a dot on the 3rd line with a small line up and to the right.
2) Connect the little line with the 2nd line of the staff.

Figure 119: How to Draw an Eighth Rest

If we then look at how rests divide in the same way we looked at the sounding notes, we can see very similar characteristics. Remember, just as we continue to add flags to notes to divide their duration, that same logic is also applied to rests.
As we continue to break down these note values as they relate to their notation symbols, we must constantly remember that the beat value—both macrobeat and microbeat—is changeable, depending on which of the notes is assigned the pulse. I understand that it sounds like a complicated concept, but just as we discovered with the staff and letter names, it is organized in a logical manner. Once we can grasp the logic of the system, it is not difficult at all.

To relate this topic to what we have previously learned, think about the five lines and four spaces of our staff. What is the following note?

Did you say a B or a D?

If you did, you are wrong with both answers.

Why?

The reason we do not know which note this is, is because we do not know which notes are assigned to which lines without a clef. The same thing happens in rhythm. Without a reference, we do not know which notational symbol is assigned to each microbeat or macrobeat.
SIMPLE RHYTHMIC SUBDIVISIONS

Let us think about the same symbol, but reference it to two different macrobeats. The whole note is often seen as getting four beats, but it only gets four beats when it is referenced to the quarter note as the pulse. If we use the whole note as the pulse, we can see it having one beat, not four. Once the macrobeat symbol is established, the other note values then get *their* value, based on how they fit in relation to the macrobeat.

<table>
<thead>
<tr>
<th>NOTE NAME</th>
<th>SYMBOL</th>
<th>UNITS</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Whole Note</td>
<td>![Symbol]</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Whole Note</td>
<td>![Symbol]</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Half Note</td>
<td>![Symbol]</td>
<td>2</td>
<td>1/2</td>
</tr>
<tr>
<td>Quarter Note</td>
<td>![Symbol]</td>
<td>1</td>
<td>1/4</td>
</tr>
<tr>
<td>Eighth Note</td>
<td>![Symbol]</td>
<td>1/2</td>
<td>1/8</td>
</tr>
<tr>
<td>Sixteenth Note</td>
<td>![Symbol]</td>
<td>1/4</td>
<td>1/16</td>
</tr>
</tbody>
</table>

Figure 121: Note Value Subdivisions

When looking at notes on a staff, the first and most important element on that staff is the clef, for it tells us which lines and spaces are assigned to which notes. Without the clef, the staff is almost useless. The same phenomenon happens with rhythm. We have symbols that represent various degrees of divisions of notes, but without knowing which note value is the macrobeat, or how many pulses there are in a grouping, those symbols, like the staff, are not nearly as effective. To know that information, we use a **TIME SIGNATURE**—basically, rhythm’s clef. A time signature is a symbol made up of two numbers stacked on top of one another, which is placed directly to
the right of the clef at the beginning of the staff. These two numbers tell us how many macrobeats are in each measure, as well as which symbol, or note value, is used for each macrobeat within the measure.

![Figure 122: Time Signature](image)

The two numbers in the time signature have very different jobs. For simple rhythms, the top number tells us how many macrobeats are found within the measure, and the bottom number assigns the note value, or symbol, to that macrobeat. Take the time signature, sometimes called meter, in Figure 122. The top number is four, telling us that there are four macrobeats found within each measure. Theoretically, that top number can be any number, but the numbers two through twelve are the most common. The bottom number is four as well, but this number tells us which note value is assigned the macrobeat. This number is derived from the division of notes, with the whole note being one, or the macrobeat. Basically, you can ask the question, “How many of these notes does it take to make a whole note?,” and that answer will tell you which note value is assigned the macrobeat. For instance, in the following figure, how many macrobeats are in each measure? And which note value is assigned that beat?
As you can see, the top number is three, which means that there are three macrobeats within each measure in this music. The bottom number is two, and if we answer the question, “How many of these notes does it take to make a whole note?”, we see that it would be a half note. It takes two half notes to make a whole note, which means that each of those macrobeats is represented by the half note symbol. Let us then look at each of the note values and see how many of each fits into a whole note. Again, indicating how many of each note would fit into a whole is what is used as the bottom number of the time signature.

<table>
<thead>
<tr>
<th>NOTE NAME</th>
<th>SYMBOL</th>
<th>BOTTOM TIME SIGNATURE NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double Whole Note</td>
<td>⌒</td>
<td>1/2</td>
</tr>
<tr>
<td>Whole Note</td>
<td>⌒</td>
<td>1</td>
</tr>
<tr>
<td>Half Note</td>
<td>⌒</td>
<td>2</td>
</tr>
<tr>
<td>Quarter Note</td>
<td>⌒</td>
<td>4</td>
</tr>
<tr>
<td>Eighth Note</td>
<td>⌒</td>
<td>8</td>
</tr>
<tr>
<td>Sixteenth Note</td>
<td>⌒</td>
<td>16</td>
</tr>
</tbody>
</table>

Figure 124: Time Signature Bottom Note Assignments
Looking back at Figure 123, any music that has this time signature would have three macrobeats, with the half note assigned to each macrobeat. The microbeats would then be divided from that half note into quarter and eighth notes. Let us look at a few more examples. Answer the following questions for each signature written:

**QUESTIONS:**
1. How many macrobeats are in each measure?
2. Which note value, or symbol, is assigned the macrobeat?

**ANSWERS:**
1. 2
2. 5
3. 2
4. 3

Figure 125: Breakdown of Time Signature Components

Now that we understand how the individual components of the time signature work, let us look at how each of the signatures in Figure 125 would look filled with notes.

Each would look like the following:

Figure 126: Time Signature Examples

Now that we understand how the time signature assigns macrobeats and its corresponding note value, we can look at how each of those macrobeats are divided and subdivided into the meter's
microbeats. If we think back to our discussion regarding "Circle Notation" on page 83, we can now assign a circle to each of our macrobeats. In simple meter, each macrobeat will be divided into two or four divisions, but I find it more beneficial to subdivide all simple meters into a microbeat of at least four beats. When we then think of each macrobeat (or the top number of the time signature) as a microbeat (or subdivision of four), we can start to see how more complex rhythms are layered. Let us look back at our “Jingle Bells” example, but this time assign it a time signature in which we can layer its macrobeats and microbeats.

![Figure 127: Macrobeats and Microbeats of “Jingle Bells”](image)

In the previous figure, we can see that there are four macrobeats, and each of those macrobeats can be assigned any note value. Let us then look at what that same rhythm would look like with a quarter note assigned as the macrobeat symbol. Since there are four macrobeats, and each of those will be represented by a quarter note, what would the time signature be? If you answered $\frac{4}{4}$, you would be absolutely correct!
If we take that same rhythm, but this time look at it using three different macrobeats, we can quickly see that rhythm is extremely versatile.
In the previous figure, if we only look at the circle notation, we can clearly see that every one of those rhythms is exactly the same. In changing the symbol assigned to the macrobeat, all of the microbeat divisions change as well. This shifting notation of rhythm is what makes reading it, at first, extremely confusing. But if we understand that each of these rhythms are the same, just written differently, it makes reading it much more manageable. In fact, if we take just the notation of the above rhythms, and look at them from a mathematical standpoint, we can see how one is just a double, or half, of the other.
Note values that are smaller than a quarter note are designated by the addition of a flag, or multiple flags, to the stem. While these flags make it easier to differentiate between different note values, it makes it difficult to tell them apart when there are many put together in a row. Look at the following rhythm, written using eighth (\(\text{e}\)), sixteenth (\(\text{x}\)), and thirty-second notes (\(\text{q}\)).

Figure 131: Rhythm Without Beams

Is it difficult to read? Yes! Can you quickly identify which notes are eighths or sixteenths? Not at all. What makes it difficult is that all of the flags visually run together. Therefore, it is hard to tell the difference between one, two, or three flags. We also do not have a clear understanding of how these notes are grouped into a macrobeat.
For the ease of reading, and to help define which of the notes are the beginning of the macrobeat, we can **beam** together any flagged notes that fall within the same macrobeat. Thinking in the circle notation, any flagged note that shares a circle can be beamed together. Let us look at that rhythm again, but this time group the rhythm by its macrobeat.

![Figure 132: Beaming According to Macrobeat](image)

We can now clearly see that this rhythm is grouped by a quarter note macrobeat, and that there are four beats in the measure, making this rhythm in $\frac{4}{4}$.

![Figure 133: Beaming and Time Signature According to Macrobeat](image)

Now, if we look at that same rhythm again, but this time we beam it without any reference to a macrobeat, it becomes extremely difficult to read—even with the beams. Notice that each of the note groupings is uneven, which adds to the confusion.
Figure 134: Beaming With and Without a Macrobeat

In comparing these two examples in Figure 134, one might quickly assume that they are not the same rhythm; however, they are. What makes them different is their beaming. Notice that number two is, without a doubt, easier to read, since it follows the macrobeat. Therefore, it is extremely important that we beam rhythms according to their macrobeat.

Time signatures are split into two different categories, based on their macrobeat and their microbeat. When a rhythm is categorized by its microbeat, it is split into either **SIMPLE METER** or **COMPOUND METER**. Simple meter, which is what we have been discussing this whole chapter, is any rhythm that has a microbeat with a division of two beats, or a subdivision of four—typically any time signature with a 1 (\(\circ\)), 2 (\(\bigcirc\)), or 4 (\(\bigcirc\)) on the bottom. A compound meter is any rhythm that has a microbeat with a division of three beats, or a subdivision of six, which we will discuss in-depth in Chapter XIV, "RHYTHMIC GROUPINGS OF THREE" on page 232.
Whether a meter is simple or compound, it is also categorized by its macrobeat, as well. This categorization uses the number of beats found within the measure. If the number of macrobeats is two, then it is considered a **DUPLE METER**. If it has three macrobeats, it is a **TRIPLE METER**, and if it has four macrobeats, it is a **QUADRUPLE METER**.

![Figure 135: Meter Categorization](image)

Just as there is a wide diversity in the systems and usages of solfege for pitch, there are also many valuable systems used to aid in the understanding and comprehension of rhythm study—including those developed by Zoltán Kodály (1882-1967) and Edwin E. Gordon (1927-2015). But the system I find to be the most effective is that of TaKaDiMi. As we discussed in Chapter VI, "Rhythmic Solfege" on page 92, TaKaDiMi provides a system of syllables for each beat, to add emphasis to the pulse’s natural hierarchy. In doing so, we can now speak rhythm in the same way we can speak pitch with our Do-based solfege system.
Now that we understand the roles of both macrobeat and microbeat, we can expand our usage of the TaKaDiMi system. Previously, TaKaDiMi was only used within our circle notation, assigning beat one as \textit{Ta}, beat two as \textit{Ka}, beat three as \textit{Di}, and beat four as \textit{Mi}. Now that we have a layered system, however, we need to layer the tools we are using. TaKaDiMi is most effective when it is used for the microbeat layer, which creates a consistency in like rhythms across differing meters.

For instance, let us look at the example we discussed at the onset of our rhythm studies.

![Figure 136: TaKaDiMi with Same Macrobeat and Microbeat]

With a rhythm like this, in which the macrobeat and microbeat are the same, TaKaDiMi provides a very straightforward tool to help understand it. This rhythm would be spoken as \textit{Ta - Di}, letting us know that there is a sound on beat one that is held through beat two, with another attacked sound on beat three, followed by silence on beat four. Now, if we apply that same thinking to the microbeat, we can see how the TaKaDiMi syllables show us the like rhythms throughout our whole musical idea. In the first measure of “Jingle Bells,” in the following example, we can clearly see with syllables that the rhythm is made up of two elements, \textit{Ta-Di} and \textit{Ta}, which are then repeated. By again focusing our study on what makes various elements of music similar, we can understand music more quickly and comprehensively.
Perform the following rhythms using Ta Ka Di Mi.

Using the first three examples, write in the syllables for each of the notes below. If you would like, put the syllables for rests in parenthesis. The first one is done for you.

No 1

Try No. 4 without writing in the syllables.
TODD GOODMAN

Remember, as sixteenth notes are added, TaKaDiMi moves to the subdivision of four, giving the sixteenth notes those syllables.

No. 5

No. 6

No. 7

No. 8

No. 9

No. 10

No. 11

No. 12

156
When we start our study of musicianship, especially in the subtopic of written music theory, we often quickly disassociate creativity within those studies and we jump head first into the “rules” of music. To appreciate and understand the customs and traditions that music has had throughout history, and therefore its arrival to where it is today, that study, of course, requires focus and attention on the rules, theories, and practices that those historical composers, performers, theorists, and educators established. In doing so, we very quickly get bogged down in the right way that music is written and performed. The reason right way is italicized is because there is no such thing as right or wrong music, or right or wrong art—period. When we focus on playing or writing music the right way, what we are actually doing is focusing on performing and writing historically accurate music organized in the way that our ancestors created music, not right music—a huge difference!

Yes, that statement is extremely bold and some may disagree, but before you take a stand either way, let us spend some time looking and thinking about this concept from the perspective of the other arts.
I have heard students say many times that they cannot, or will not, improvise because they are scared that they will make mistakes or play wrong notes. Why is that? If we first think about the creation of music and art in the twenty-first century, we can immediately see and hear why those new to the arts might have some apprehension in beginning this improvisation process. Unfortunately, this apprehension applies to all the arts, not just music. We hear perfect studio recordings on the radio and streaming services. We go to live concerts with musicians who have been playing and perfecting their craft for long periods of time. And in hearing those concerts and recordings we sometimes feel, especially as beginning musicians, that we too must be able to create at that level of perfection. Yes, we always want to strive to be the best we can be at all times, but remember the philosophy that every journey, regardless of how long, begins with the first step. Every artist had to start at the beginning and every artist had to make mistakes to get to the level they are today. Remove the performing arts from this conversation and apply this same logic to anything, regardless of its subject matter—was LeBron James an NBA All-Star the first time he played basketball? Did Steve Jobs know what the iPad was going to become when he started working on his first computer? Or did Emeril Lagasse know he was going to revolutionize home cooking when he fried his first egg? No, of course not! Remember these revolutionaries as we talk about the wonderful concept and creative tools that improvisation can give you as a musician.

We discussed previously in Chapter VII on page 96 that music is music. Regardless of the style, genre, time period, region, or medium, music is music. All of it follows the same laws of physics
and acoustics, and it all uses the same material—sound. Now we can take that concept further by saying that all art is art. Whether we are discussing dance, theater, painting, poetry, film, or music, all art sets out to do the same thing, which is to provide a vehicle for self-expression. As we pursue more knowledge about music by learning the customs, rules, and traditions of those who came before us, we must always remember that art must be about your ability to express yourself. Without a deep connection to what it is that you are doing, this journey may seem more like a chore rather than the exploration it truly is. Improvisation can provide for you a tool for self-expression throughout your entire musical exploration.

Before we continue discussing improvisation in music, let us first approach this concept from the visual arts. Look at the following painting and think about what rules this painter is following and/or breaking. And then ask yourself, “Is this a good painting?”
So what do you think? What rules did Piet Mondrian break or follow? And what was your answer to, “Is this a good painting?” I am sure most of you, like me when I first started, had a similar reaction: “I don’t know! I know nothing about paintings!” And some of you probably thought that you do not have the knowledge and/or training to criticize a painting such as this. Some of you also may have thought, “I can do that!” But regardless of what you thought, I guarantee that all of you had a reaction. You all either liked it, or you did not, from your first impression. Now what does this mean to our study of music? Yes, we have rules and traditions that we must learn to become better at what we do, but we also need to understand that we have

---

instincts for musical elements that we have never formally studied before. Just as we probably
have no idea as to the historical relationship that the Mondrian painting has to the rest of the art
world, we can still think and talk about what it means to us, as viewers from our standpoint today.
Improvisation can provide the same creative outlet for you. We have a passion for music and a
desire to create, listen to, and perform it, and probably have had for a long time. I implore you to
trust that instinct and understand that there is no such thing as wrong art. There is poorly-crafted
art, art that may not speak to us on a personal level, and historically inaccurate art, but you
cannot create anything that is wrong. Yes, if you are performing in a given style or genre, there are
traditions and elements that we use so that what we are playing fits into that style. Understanding
and mastering those stylistic elements takes time, study, practice, and patience, but from a purely
creative place, wrong does not exist. As we discuss some tools to help you feel more comfortable
in your exploration of music through improvisation, remember that there is no wrong; just have
fun and be creative!

### Exploring Your Instrument

The first step in creating a comfortable relationship with improvisation is getting to know the
tools that you can use to be creative. Whether you are a singer or an instrumentalist, getting to
know what your instrument can do will help you tremendously in being more creative—and your
voice is indeed an instrument.

Using your favorite web browser, look up the following piece of music:

What did you notice in this piece that was different from the music to which you typically listen?
The way in which Berio uses the voice is much different than other typical vocal music. Yes?

Did you like it? What did you like about it and what did you not like? Were there elements that shocked you? After you answer all of these questions, ask yourself how you can explore your instrument differently. Are there sounds you can make that you have not previously thought?

Using your instrument or voice, explore the sounds you can make.

- Think traditionally, using common techniques.
- Think non-traditionally, making up your own techniques.

*This process will take more than one practice session. Keep thinking about creative uses of your instrument every time you practice or listen to music!

After you have explored your instrument, write a list of all the things you really liked and did not like. Keep a journal of these sounds and ideas so that you can use them later in your creative process.

Packaging Your Ideas

Now that you have spent some time exploring your instrument, the next hurdle we often tackle when it comes to improvisation is the knowledge and ability to construct our ideas into a package that makes musical sense. Remember that our musical instinct is much stronger than we think it is, and that we have been listening to music all of our lives. Therefore, on the subconscious level, we understand much more than we give ourselves credit for. In other words, trust yourself!

There is no such thing as wrong music—be yourself and be creative!

Most art is organized through a tool called a **MOTIF**, which is a short recurring idea or
theme that is found throughout an artistic work. Motifs are used as a way of organizing ideas throughout all of the arts, and are the primary method of musical construction for not only composition, but improvisation as well. Before we dive into how music uses the idea of a motif as a building block, let us first look at some of the other arts and how they use the motif to organize their material.

<table>
<thead>
<tr>
<th>Motif vs. Motive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Originally, a <strong>motif</strong> is a short idea used in art, whereas a <strong>motive</strong> is a reason one might do something. However, music sometimes uses motive for motif.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Motif in the Other Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>First, let us look at some examples of motif as it is used in the field of architecture. When a building is being designed, many elements are used over and over again throughout the entire building or space. Take a moment and look around at the room in which you are currently sitting. Do you see reoccurring elements in the design of that space? Of course! What are they, and how are they being used?</td>
</tr>
</tbody>
</table>

Many architectural designers use like-doors, windows, light fixtures, archways, and so forth to make the space feel comfortable. We feel comfortable in those spaces because there are like-elements that are used throughout the design. Imagine what the room would feel like if every element of the space was different—different doors, different windows, different light fixtures, and different sized chairs. The space would feel unsettling. Yes? Since there are no consistent ideas throughout the room, it would feel jumbled and disorganized, even hard to be in. It is in the repetition of the design and construction elements—the space's motifs—that makes it feel
comfortable and welcoming.

Let us take a look at an example of a historical motif found in the designs of the Greek Gothic era. Look at the following three designs. Have you seen them before?

![Ionic, Doric, Corinthian columns]

Figure 140: Three Styles of Gothic Columns

These column designs were used as a way to unify buildings, not just from a design standpoint, but also from a social standpoint. These design motifs were organized by a Greek system of architectural order. This order was used to organize the design of a classical building in a very similar way that the key of music is used, or the way grammar is used to unify a written language. This unity in music is found throughout elements like motif, key (discussed in Chapter XI), and intervals (discussed in Chapter XII), which are used in the same way across all of the arts. Within architecture we can clearly see how designers, like the Greeks, can use columns or other elements to showcase a building's design in much the same way a composer, writer, painter, or dancer uses motivic repetition to create a coherent language in their work.

Look at the following picture of the dome of the Capitol Building of the United States of America

---

2 https://commons.wikimedia.org/wiki/File:Classical_orders_from_the_Encyclopedie.png

in Washington, D.C. Do you see anything interesting about the architectural design?

![Outside of the Dome of the Capitol Building, Washington, D.C.](image)

**Figure 141:** Outside of the Dome of the Capitol Building, Washington, D.C.

Of course! You can see Corinthian-style columns as well as Corinthian-style embellishments all over the outside of the building. The architect of this part of the building used classic Greek design elements in a new, early-nineteenth-century way. This is a process that all artists use, regardless of their art, style, genre, or medium, and it is a technique that will help you greatly, not only in your improvisation, but in your whole musical and artistic study. It is often said that “Good artists copy, but great artists steal.” This quote, or variations of it, has been attributed to many great artists, including writer T.S. Elliot, composer Igor Stravinsky, businessman Steve Jobs, and visual artist Pablo Picasso. What all of these revolutionaries mean is that all great artists are

---

TODD GOODMAN

very clear in understanding and respecting their influences and life experiences through their art. As we continue to discuss improvisation, think about what this quote means and how it applies to your study of music.

**Beginning to Improvise**

When I began improvising, I was very nervous about trying to come up with musical ideas in an instant. Being a classically trained, play-exactly-what-is-on-the-page musician, improvisation seemed like a far-off, mysterious world that was almost a fantasy for me. What made the process much simpler, however, was when I began to look at these musical elements as simply small building blocks that, when combined with each other, created something much larger. This music made much more musical sense than the music I was making up without a system. This process made the task of improvisation, and later composition, much more manageable. So, just as the Greeks created Architectural Orders to organize their architectural designs, you too should create groups of elements that you enjoy and intend on using in your improvisation. When an architect sits down to create a new building, do you think they start from absolute scratch? Or do you think they have an idea, or a set of elements that they choose from, as a starting point? Yes, of course, they absolutely have a set of elements they choose as their beginning point.

Choosing those beginning elements, at first, may seem extremely daunting, but let us first look at one of the other arts and compare that process to music. Now that we understand the concept of a motif and how their repetition can aid in the designing and construction of buildings, look at the following poem and read it aloud to yourself. As you are reading, look and listen for anything that you might see or hear as a motif.
Figure 142: Selection from Part IV of “The Rime of the Ancient Mariner” (1834)\(^5\) by Samuel Taylor Coleridge (1772-1834)

Did you find a motif, or motifs? Absolutely! There are many motivic ideas that are repeated throughout these three stanzas. But what makes this piece interesting however, is what happens in the development of these motifs. If we look to these words to purely their sound and not meaning, we can see the repetition of the short idea “I looked upon the rotting,” which is found two times within the first stanza. In the next stanza, Coleridge then shortens, or DIMINISHES, that phrase and omits “upon the rotting,” which leaves only “I looked.”

---

[I looked upon the rotting] sea, And drew my eyes away;  
[I looked upon the rotting] deck, And there the dead men lay.

[I looked] to heaven, and tried to pray; But or ever a prayer had gusht,

Figure 143: Motivic Repetition in “The Rime of the Ancient Mariner”

At the beginning of the next stanza, he then alters the middle of the last word and changes, or MODULATES, that phrase to “I closed,” going from “I looked” to “I closed.”

[I looked] to heaven, and tried to pray; But or ever a prayer had gusht,  
A wicked whisper came, and made My heart as dry as dust.  
[I closed] my lids, and kept them close,  
And the balls like pulses beat;

Figure 144: Motivic Modulation in “The Rime of the Ancient Mariner”

As a reader or a listener, did you pick up on this? Maybe, or maybe not, but what makes studying a poem in this way an interesting exercise, is that we can see that if it were music and not words, the same development process happens. If the main motif of this piece is “I looked upon the rotting,” the writer clearly uses it in three different ways. He repeats it, he diminishes it, and then he modulates it—three very musical qualities. If we then transfer that discovery to our musical motif, we start to collect improvisational tools that allow us to be better-equipped to handle the development of these motifs as we improvise.
Let us look at the Coleridge poem one more time, but now let us treat each word and syllable as if it were music. Compare how the words and music relate to each other.

**Rime of the Ancient Mariner**

Samuel Taylor Coleridge  
(1834)  

Todd Goodman  
(2016)

Can you see how the text motif of “I looked upon the rotting” repeats musically as well? The notes and rhythms of the music follow the same pattern as the text, which repeats and is then diminished.
In Figure 146, the repetition and diminution of the motif is very clear. As the text repeats, so does the music, and as the text is shortened, the music follows. Now if we look at the change from “I looked” to “I closed,” we can see that the word “I” is treated the same throughout, while different pitches are used for “looked” and “closed.” By using the same notes for “I” and modulating the notes on the second part of the phrase, we feel a familiarity as the music moves forward—similar to how an architect would create a comfortable building by using multiple windows with similar doors and archways.
As we analyze the word motif throughout the Coleridge poem, and then compare that to what music, using the same technique, might look like, we can see that by using motifs and then manipulating them through repetition, diminution, and modulation, we can quickly build a series of tools to use in our improvisation. Remember, the use of poetry and architectural design in this section is to show the relationship between how artists in other disciplines use tools similar to those of a musician. Look for ways to enhance your creativity in music through experiencing all of the arts.

Using the same logic as we did with the "Rime of the Ancient Mariner," analyze the following excerpt from a speech given by former British Prime Minister, Winston Churchill:

"We shall not flag or fail. We shall go on to the end. We shall fight in France, we shall fight on the seas and oceans, we shall fight with growing confidence and growing strength in the air, we shall defend our island, whatever the cost may be, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fight in the hills. We shall never surrender."

• Look for text motifs, repetitions, diminutions, and modulations.
As we continue to reduce the basic elements of music down to their common denominators, we can further see that everything is formed from patterns of notes, intervals, and rhythms. It is the awareness and complete comprehension of these basic patterns that help to make the understanding of music part of your instinct, and not just passing knowledge. For instance, if we look at a non-musical topic, like the knowledge you might have of the world capitals, that information must be stored in your brain; however, it might take a little thinking time to access it, since you might not use that information on a daily basis. However, if you study those world capitals for just a few minutes, fifteen times every day for a few weeks, that information will take significantly less time to access in your brain, since you have accessed it numerous times in the recent past. Once that information gets ingrained into your instinct, you have very quick access to it whenever you need it. The basic building blocks of music should be so ingrained in your brain that they no longer require significant time to access. One of the goals in your musicianship education is to embed these fundamental elements into your musical instinct. There are a few of those key fundamental elements that are crucial to your instinctual knowledge of music, one of which we will focus on later in this chapter.
No, the title of this section is not a typo. As we discussed earlier, in Chapter IV on page 44, our major scale is the combination of a set of patterns of whole and half steps made up of the following: $W - W - H - W - W - W - H$. As previously discovered, when this pattern is applied to any note, the result will always be a major scale, regardless of the starting pitch. But if we explore the bigger pattern that is found when those scales are compared to one another, we start to see a wonderfully helpful pattern that will provide for us a tool to help us to plant this information into our musical instinct.

When we first started studying pitch hierarchy, in Chapter VIII, “Ear Training,” starting on page 117, we quickly noticed that out of all the notes, the two that had the strongest bond—aside from $Do$ and $Do^1$—were $Do$ and $Sol$. Due to their close proximity in pitch ratio, $Sol$ has an incredible tendency to move back to $Do$. If we look at that relationship, but this time through the major scale, we can see something quite remarkable. To do so, let us examine seven major scales starting with a major scale on $C$. To write that scale, remember to start on $C$ and then follow the major scale pattern of whole and half steps. That will give us the following scale:

![Figure 148: Major Scale Starting on C](image-url)
You can see in the above example, all of the notes in the major scale starting on C are unaltered or without accidentals. *Unaltered* simply means that each pitch letter is represented without an accidental. Also notice that as we progress through the rest of our studies, we are going to apply our aural skills anchor system to scale writing, so that the anchor information will be reinforced throughout all of our studies. The understanding of each solfege syllable within the scale is a skill that we should strive to make part of our musical instinct through practice and repetition.

Continuing from our major scale staring on C, begin the next scale on Sol of the major scale on C. Follow the whole-and half-step pattern and write a major scale on G. You should come up with the following scale:

Compare the major scale starting on G to the one starting on C. Other than starting on a different note, what is the only other difference? The major scale starting on G has an accidental; one, to be exact. Moving from *La* to *Ti* requires a whole step, and to do that from *La* in G major, or the pitch E, requires the use of an accidental. Remember that a whole step is two notes on the keyboard separated by one key, or two half steps. In this case, we move from E to F, which is a half step, and then on to F#.
Every letter of the musical alphabet must be present in a standard scale. Take G for instance a whole step above E is F♯ not G♭ because we need to have an F in the scale and we already have a G.

Continue the same pattern but this time use our major scale starting on G as our beginning point, we can start to see a pattern. To begin, we start on Sol of our existing scale—this time, D. Following the same pattern of whole and half steps and remembering to include every letter in the alphabet, we get this scale.

As we move the pattern of whole and half steps up from D, we notice that this scale now has two
accidentals—F♯ and C♯. F♯ is a note that is also found in the major scale starting on G, but this scale adds another accidental—this time, C♯. Now, if we look at just these three scales, we should notice yet another pattern. If you count the notes starting on Do and then ending on Sol, what number do you get, making sure to count Do as number one?

\[
\begin{array}{cccccc}
1 & 2 & 3 & 4 & 5 \\
\text{Do} & \text{Re} & \text{Mi} & \text{Fa} & \text{Sol} & \text{La} & \text{Ti} & \text{Do'}
\end{array}
\]

Figure 152: Relationship between Do and Sol

Notice that the space between Do and Sol is five. This space, which we will discuss in-depth in Chapter XII, “Intervals,” starting on page 202, is called the interval of a fifth, because there are five note letters from the starting note to the ending note. Looking at our major scale starting on C, the fifth from Do to Sol is C to G, or C, D, E, F, G—five notes. Now, if we look back at our major scale starting on D, which of course is a fifth from G, we see the addition of a new accidental, C♯. If we then look at the relationship between our previous accidental F♯ and our new accidental C♯, we can see that the distance from F♯ to C♯ is indeed a fifth.

If we continue the same exercise with the next scale, starting on the Sol of D, what new note do you think will have a sharp? Again, use the pattern we just discovered. If the relationship between our old Sol from the previous scale and new Do to our new scale is a fifth, and the relationship between our added accidentals is a fifth, we can figure out the new scale without using half and whole steps.
Now, if we continue to look at these scales through their relationship of the fifth, we can see that this pattern continues throughout the rest of the scales. Of course, we can check every scale with the half-and whole-step pattern to make sure that we accurately figured out the fifth relationships.
A major scale on A has three accidentals; F#, C#, and G#. F# was added from the scale on G, C# was added with the scale on D, and now G# with this scale.

A major scale on E has four accidentals; three from the previous scale and an added D#. Do you see the pattern?

Continuing with the same relationship, a major scale on B has five accidentals; four from the previous scale and an added A#.

With the major scale on F#, an E# is added to our progression of accidentals. You may ask, why F# and not F? Because the Sol of the previous scale is F# and not F.

Our last scale in the series is the major scale on C#, which added a B#.

Figure 154: A Series of Five Major Scales Showing the Ascending Do to Sol Relationship

Two extremely important patterns were uncovered from performing this exercise. Again, if we first look at the pattern produced by the first note of each scale, this Do to Sol relationship produces the following extremely important pattern: C - G - D - A - E - B - F# - C#. If the same system is applied to the accidentals that are added to each additional scale, we see that each has the same order of sharps: F# - C# - G# - D# - A# - E# - B#. Can you see the connection to each? If we look at these patterns in
KEY SIGNATURES AND THE CIRCLE OF FIFTHS

notation, we can clearly see that the space between each of these notes is a fifth.

![Figure 155: Series of Fifths Starting on C](image)

Let us look at the ORDER OF SHARPS in notation as well. The exact same pattern arises.

![Figure 156: Order of Sharps in Notation](image)

As you are starting to see, everything in music is a series of patterns. Understand the pattern, and you can have a deeper knowledge of the larger concept. Not only does understanding the pattern help you comprehend these elements better, it also provides for you tools that can help you be successful faster in your musical comprehension. Building a major scale, prior to understanding this relationship of a fifth, was accomplished by looking at a pattern of intervals: half and whole step relationships. Now, we can use this movement of a fifth, both as the beginning notes for each scale as well as the added accidentals. By looking for these patterns and embracing them, we can access
TODD GOODMAN

this stored information in our brains faster and more efficiently.

If we think of these scales in a circle, called the CIRCLE OF FIFTHS, we can create a visual aid to help us understand these scales and their accidentals. Like the face of a clock, the circle of fifths assigns the space on the circle to twelve equal slots, with zero at the top, three to the right, and six to the bottom. Since a major scale on C has no accidentals, it will be placed at the top of the circle. Then fill in the circle, moving clockwise, with the rest of the series of scale-beginning notes. Remembering that C has no accidentals, number the rest of the beginning notes with ascending numbers. These numbers will tell us how many sharps are in each scale.

Now instead of using the cumbersome series of half and whole steps to create any major scale, we can use this series of fifths to create them in a much faster and more economical manner. To write
any scale, just follow the following four steps:

1) **Find the starting pitch on the circle.**
   - *ex: E*

2) **What is the number associated with the pitch?**
   - *ex: E is associated with the number 4.*

3) **Take that many sharps from the order of sharps starting on the left with F#.**
   - *ex: The first four sharps are F#, C#, G#, D#.*

4) **Write from the starting note to an octave higher with those accidentals from the order of sharps.**
   - *ex: A major scale beginning on E is E - F# - G# - A - B - C# - D# - E.*

![Figure 158: Steps for Writing Major Scales Using the Circle of Fifths](image)

Now that we understand the relationship between each of our scales by using the patterns created by their Do to Sol relationship, we can condense that information even more. Now we can know how many accidentals are found within a scale by using the circle of fifths. We can then collapse all of that information into one location and place it at the beginning of the staff. We do this so we can know which scale the music is based on before we even begin reading the notes. This group of accidentals is called a **KEY SIGNATURE.**

Let us take the major scale starting on E that we wrote in Figure 158. We know that this scale has four sharps and that those four sharps are F#, C#, G#, and D#, but we do not know that information without going through the whole process of thinking through the fifth relationships. This process would make it very difficult to use this information quickly or to have it become
instinctual; however, if we use these four sharps in a key signature, we can quickly see, before we notice any other information, that this music uses those accidentals.

Condense all of the accidentals to the beginning of the staff.

Figure 159: Creating a Key Signature from a Scale

Continuing that same logic, we can create a key signature for each of our seven sharp scales. Before we do that, however, we must look at how each of these symbols used to create our key signatures are placed on the staff. Remember that our order of sharps is the order in which they are added to the scale as we move around the circle of fifths. They will always be used in this order, regardless of where they appear in the scale—F#, C#, G#, D#, A#, E#, and B#.

REMEMBER

I use the silly mnemonic device Fat Cats Get Down And Eat Babies to help me remember the order of sharps.

When these sharps are added to the staff to create a key signature, they also follow a specific pattern. If we look at the sharps placed on the staff in both treble and bass clef, using a repeating up / down pattern, we can see two issues will occur.
Do you see anything that looks confusing in this placement of sharps on the staff? Yes! In the treble clef, both A# and B#, as written, are off the staff, which requires the use of ledger lines. Ledger lines are not used while in key signatures, because they are confusing to the eye when written without the use of a note head. The accidental alone in the ledger line is indeed tricky to read, and therefore avoided in key signatures. Looking back at Figure 160, one could suggest that to fix the problem, all that needs to be done is moving the signatures down an octave to start on the lower F# rather than the higher one. Let us see what that looks like.
As you can see, the way we wrote the accidentals in each figure, both octaves cause the same issue by requiring ledger lines to be used in the key signatures, which is not ideal. So, as musicians throughout the past few centuries worked through how to construct these key signatures more clearly, a pattern option arose allowing for all sharp accidentals to be used in the key signature across all clefs that did not have a need for ledger lines. That pattern is down, up, down, down, up, down. Notice the double down in the middle of the pattern. This will always happen when moving from $G \#$ to $D \#$, and then when moving to $A \#$ in every clef, for every key signature requiring five or more sharps.

![Figure 162: Correct Pattern for Key Signature Sharps on the Staff](image)

If we look at this order of sharps and how they are written on the staff, and apply this information to the circle of fifths, we can see each key signature and their relationships to each other, based on their Sol to Do relationship.

As each sharp is added to this series, a new key signature is born. A key that has one sharp, which would be $F \#$, has a beginning note of $G$, and is therefore referenced as the key of G major, or a scale
that starts on G and has the major scale half and whole step pattern. If we then cross reference that key to the sharp side of the circle of fifths, which we previously discovered in Figure 157 on page 180, we will notice that the scale in the number one slot on the circle is indeed G. If the second sharp in the series is added, which is C♯, we now have the key signature for D major. Again we see D as the key in the number two slot on the circle of fifths. As we continue to add more sharps, we work our way, one by one, around the circle of fifths until we reach the key of C♯ major with seven sharps. Let us look at the order of sharps again, but this time isolate the first four major keys of G, D, A, and E, so that we can see how each works against the whole series of sharps.

![Figure 163: Order of Sharps and Their Key Signatures](image)

G Major

D Major

A Major

E Major
Now that we understand where our key signatures come from, we can apply the concept to the entire circle of fifths. By using the circle along with our order of sharps, we can very quickly find our key signatures. To do so, we follow these four steps:

**KEY SIGNATURE STEPS**
1. Find the key on the circle.
2. Find the number associated with that key.
3. Take that number of sharps from the beginning of the order of sharps.
4. Use those sharps in the correct configuration on the staff.

**Order of Sharps**

<table>
<thead>
<tr>
<th>F#</th>
<th>C#</th>
<th>G#</th>
<th>D#</th>
<th>A#</th>
<th>E#</th>
<th>B#</th>
</tr>
</thead>
</table>

1 sharp, which is F#
2 sharps, which are F#, C#
3 sharps, which are F#, C#, G#
4 sharps, which are F#, C#, G#, D#
5 sharps, which are F#, C#, G#, D#, A#
6 sharps, which are F#, C#, G#, D#, A#, E#

Figure 164: Sharp Side of the Circle of Fifths and Their Corresponding Key Signatures
When the sharp scales are applied to the circle of fifths, we only complete half of the diagram. Where do we get the information for the other half? We have already used all of the ascending fifths, but we have not used the descending fifths. Although, what is a descending fifth from Do? Looking at the scale solfege, we see that because of its lack of symmetry, the syllable for any space moving up is not the same as it is when it is moving down. Start on Do and move up to the next note: we get Re. Remember that this space is considered a second, since we count the note on which we started. Now, start on Do and move down a second: we get Ti. Now try the same with a fifth. Moving up, we move from Do to Sol, but moving down, we go from Do to Fa. Even though Sol is an ascending fifth from Do, it is a descending fourth, making Fa our descending fifth.

Let us now look at that relationship of the descending fifth, to see if it relates to accidentals and starting pitches in the same way the ascending scales did.

Before we continue, create a hypothesis, or make an educated guess, as to what you think might happen with this descending pattern of scales. It is absolutely okay to be wrong, but see if you can predict that pattern before we work it out. This is a great exercise to get your brain working.
To start, we must find a descending fifth from C—C - B - A - G - F. F is a fifth below C. Now using our scale pattern of W - W - H - W - W - W - H, write a major scale starting on F.

![Diagram of scale pattern and notes]

Figure 166: The Descending Relationship from Do to Fa Starting on C

Just as we noticed in the pattern of ascending scales, we can see the same phenomenon happening with the descending scales. The only difference is that with the descending scales, we do not see a sharp, but a flat. In this pattern of whole and half steps, we encounter the movement from A to B♭. Again, why do we use B♭ and not A♯? Because we already have an A in the scale, and we need to have some kind of B represented. We cannot have two As, and we need some form of B. Let us look at the next scale, which starts on B♭, the descending fifth from F.
B♭ now becomes Do and an E♭ is added.

Flats: B♭ - E♭

The first scale in this series starts on an F and has a B♭. But when we compare that scale to the next in the series, we notice that the next scale starting on B♭ has two flats, just as in the sharp series. The next scale in each series has one more accidental. However, let us see if the flats follow the same pattern of a fifth as the sharps did.

Yes! The pattern of descending fifth scales follows the same logic as the ascending fifth scales. The only difference in the descending scales is that each of the additions are added a fifth below rather than a fifth above, as with the sharps. Now that we understand this pattern, we can continue working through the pattern of flat scales in the same way we worked through the sharps.
As with the sharps, two important patterns arise that will help us become more familiar with how accidentals are used within a given scale. The descending interval of a fifth, from Do² to Fa, gives us the following series of notes that will be used to complete the left side of our circle of fifths.

Figure 169: A Series of Five Major Scales Showing the Descending Do to Fa Relationship
The beginning of each of these scales is laid out onto our circle of fifths in the same manner that the sharps were; however, this time they are written around the circle in a counter-clockwise notation. Numbers are also added to the notes to indicate how many alterations, or flats, they have. This time, however, they do not reflect a clock face, but the mirror of the sharp side of the circle of fifths. Instead of thinking from twelve to eleven and then to ten on the left side of a clock, we start again at zero and move to one, two, and three. However, even though we have the same numbers on the left side of the circle as we do on the right, the numbers on the left represent flats, while the numbers on the right represent sharps. Therefore, we would use the flat, left side of the circle, in the exact same manner as the sharp, right side. For instance, the major scale starting on B♭ has two flats—B♭ and E♭—while the major scale starting on G♭ has six—B♭, E♭, A♭, D♭, G♭, and C♭.
Memorize the following four patterns:
Use the included mnemonic device for help

ORDER OF SHARPS: F C G D A E B
Fat Cats Get Down And Eat Babies

ORDER OF FLATS: B E A D G C F
Spell the word BEAD then add Gulls Can Fly

SHARP SIDE: C G D A E B F♯ C♯  FLAT SIDE: C F♭ B♭ E♭ A♭ D♭ G♭ C♭

Key Signatures - Flats

Just as we condensed all of the accidentals found in each of the sharp scales into a corresponding key signature, we can apply that same concept to the flat keys as well. Each of the flats used within that

1. For the ease of reading numbers associated with each note, sharps will be indicated by a number above the letter (also reminding you of the association of the interval of an ascending fifth) and flats will be indicated below the letter (the descending fifth).
given scale are pulled into one cluster at the beginning of the staff. As with the sharps, the number of flats in each of the key signatures corresponds to the number of flats in each of the major scales. So the major scale starting on $A_b$ has four flats, which are $B_b$, $E_b$, $A_b$, and $D_b$. Those four flats are then pulled to the front and used as a key signature.

Condense all of the accidentals to the beginning of the staff.

Even though we have two $A_b$s in this scale, only one is used in the key signature. That one accidental applies to both $A_b$s in the scale.

Figure 172: Creating a Key Signature from a Scale, Flats

As you can see, the procedure for this process is the same as it is for the sharp accidentals. And just as we had to organize the sharps on the staff to avoid ledger lines in the key signature, we must also look at the flats. Looking back at Figure 170 on page 191, we see that the order of flats is $B_b$, $E_b$, $A_b$, $D_b$, $G_b$, $C_b$, and $F_b$. If we apply those symbols to the staff in both treble and bass clef, do any of the flats require a ledger line? Let us first look at the treble clef and apply the flats in two patterns: one that starts by going down from $B_b$ to $E_b$, and the other by going up.
With the treble clef, the pattern that starts with the B♭ moving down to the E♭ requires the use of a ledger line for the next-to-last (also called the PENULTIMATE) flat—C♭. However, the pattern that starts by moving up from B♭ to E♭ does not require ledger lines—at least not for the treble clef. Let us then check the same up/down pattern in the bass clef.

With this discovery, it is clear that the pattern of flats in our key signature must be up, down, up, down, up, and down to avoid the need for a ledger line for C♭ in the treble clef.
As we become more familiar with how these key signatures work and how they relate to each other, that we can see how each works against the whole series of flats, just as we did with the sharps.

As we add new flats to the order, the creation of a new key signature follows the exact same procedure as adding sharps did earlier in our discussion. With one flat, B♭, the key signature would be the first spot on the left of the circle of fifths, or F. As we continue to add more flats, we work our way around the circle of fifths again, one by one to the left, until we reach the key of C♭ major with seven flats. Let us look again at the order of flats, but this time isolate the first four major keys of F, B♭, E♭, and A♭, so that we can see how each works against the whole series of flats, just as we did with the sharps.

Figure 175: Order of Flats and Their Key Signatures

As we become more familiar with how these key signatures work and how they relate to each other...
on the circle of fifths, it is imperative that you notice that most of the letters of the musical alphabet are represented on the circle in multiple ways. For instance, we find the letter F on the circle in two places, as F major (with one ♭) and F♯ major (with six sharps). Even though these two keys have an F as the foundation of their signature, they are not the same. If we look at the two starting notes on the keyboard, we can see that each of these keys and their resulting scale would be a half step apart.

Resulting scales:

F Major:
F G A B♭ C D E F♯

F♯ Major:
F♯ G♯ A B C♯ D♯ E♯ F♯♯

As you can clearly see, F major and F♯ major are not the same key. Therefore, as we are learning these signatures, extra care needs to be taken that we properly attach the correct accidentals to each of the letters that require them.

Now that we understand where our flat key signatures come from, we can continue applying this concept to the left side of the circle of fifths. By using the circle, along with our order of flats, we can very quickly find our key signatures. To do so, we follow the same four steps as on the sharp side:
KEY SIGNATURE STEPS
1. Find the key on the circle.
2. Find the number associated with that key.
3. Take that number of flats from the beginning of the order of flats.
4. Use those flats in the correct configuration on the staff.

Order of Flats

B♭  E♭  A♭  D♭  G♭  C♭  F♭

1 flat, which is B♭

2 flats, which are B♭, E♭

3 flats, which are B♭, E♭, A♭

4 flats, which are B♭, E♭, A♭, D♭

5 flats, which are B♭, E♭, A♭, D♭, G♭

6 flats, which are B♭, E♭, A♭, D♭, G♭, C♭

7 flats, which are B♭, E♭, A♭, D♭, G♭, C♭, F♭
Before we can put these two sides of the circle together, we first have to review the concept of enharmonics, first discussed in Chapter VII in the section "Enharmonic Pitches" on page 98. Remember, enharmonic notes are those that share the same key of a modern keyboard, but have different names, three in most cases. It is imperative that you remember that enharmonic notes are not the same notes, they just share a key on the keyboard. For example, the F♯ key on the keyboard could also be called G♭; however, both have very different jobs. You would never use a G♭ in a major scale starting on G, but you would use an F♯. This topic of enharmonics will become more clear when we discuss how triads are built in Chapter XV, starting on page 245. The concept of enharmonic notes is extremely important to the construction of the circle of fifths, because of overlap of pitches at the bottom of the circle. If we look at both circles separately, we see that the bottom three places have two letters, one from the sharp side and another from the flat side.
Figure 178: Enharmonics of the Circle of Fifths

The completed circle with key signatures looks like the following figure:
Figure 179: Circle of Fifths
1) ID the following key signatures using the circle of fifths.

2a) Write the order of flats on the spaces provided. Also, write the flats in the staff provided in the proper place on the staff. *Remember up a 4th down a 5th.*

2b) Write the order of sharps in the spaces provided. Also, write the sharps in the staff provided in the proper place on the staff. *Remember down a 4th up a 5th with the exception of A.*

3) Write the following keys in the staff provided following the traditional placement of accidentals within the staff.
CHAPTER XII

INTERVALS

One of the basic building blocks in the construction of all music is the INTERVAL—the distance, or space, between two notes. Just as all things are built in stages, so is music. First, the single note. Second, single notes are put together to create intervals, which, thirdly, are used to create scales and chords. Scales and chords are put together to create small ideas, and finally, those smaller musical ideas, like the motif, are combined to make the larger musical idea complete.

As we explored previously in Chapter IV, "THE BEGINNING: STAFF AND CLEFS" on page 44, the half and whole step are just two examples of intervals.

The distance between two different adjacent keys on the keyboard is called a half step. If one key is skipped and the note moves to the next key, it is called a whole step.

Both the whole step and the half step are called intervals, yet the term interval is used more widely to describe the distance between any two notes, not just half and whole steps.

The Classification of Intervals

The understanding of how intervals are classified allows us to speak about music with a vocabulary that provides a tool that helps us explore music with a deeper comprehension of
nearly all its elements, including written music theory and aural skills. Since all the elements of music that deal with pitch are, in some way, comprised of intervals, this topic is one that requires a comprehensive understanding.

### Generic Size of Intervals

All intervals are classified by two distinct categories—**INTERVAL SIZE** and **INTERVAL QUALITY**, both of which are extremely important in understanding how these intervals function throughout a piece of music. When thinking of these two categories, quality always seems to stand out to young musicians as the more important of the two, but that is not the case. In fact, an interval’s size is actually slightly more crucial to its overall classification, but it is the pairing of its size and quality that provides for us the interval’s true identity. Although both are extremely important, in this section we will focus on an interval’s size.

The size of an interval is basically defined as how many letter names it takes to get from one note of the interval to the next. For example, if we move from C up to D, we go through two letters: C and D. Therefore, the **GENERIC SIZE** of that interval is a second, or 2. If we were to find the distance, or generic size, of an interval that moves from C up to A, we must, as with the second, count how many letters it takes to move from one letter to the next: C (1) - D (2) - E (3) - F (4) - G (5) - A (6). There are six letters from C to A, making the generic size of these two notes a sixth, or 6. What is the generic size of the interval from E up to B? Count the letters: E (1) - F (2) - G (3) - A (4) - B (5). There are five letters from E up to B, which makes the generic size of that interval a fifth. Let us look at these two intervals in notation.
What about intervals that use accidentals? The same logic applies to notes with accidentals as it does to notes without accidentals. To find the generic size of an interval, we look at how many letters of the alphabet it takes to move from one note's letter to the next—not the note's sound, but its letter. For a specific example, let us find the generic size between the interval moving from C# up to A♭.

How many letters of the alphabet does it take to move from C# to A♭: C# (1) - D (2) - E (3) - F (4) - G (5) - A♭ (6). The generic size of the interval from C# to A♭ is still a sixth, just as the generic size of the interval from C up to A is a sixth. How they differ, however, is in the interval's quality, which we will discuss a little later in this chapter, in the section "Quality of Intervals" on page 207. Using the same technique we used to figure out that the generic size of an interval ascending from C# to A♭ is a sixth, what is the generic size of the intervals between Eb and B, and D and C#?

The generic interval of two notes is solely based on the notes' letter names and has no relation to their accidentals.
Since generic size is solely contingent on the distance between an interval’s letter names, and not the interval’s resulting sound, many different intervals can have the same generic size, even though they might not look, or sound, like they should share anything at all. For instance, the following nine intervals between the pitches D and A are all the generic size of a fifth, even though they all sound, and look, quite different.

```
Db to A #  Db to A  Db to Ab  D to A #  D to A  D to Ab  D# to A #  D# to A  D# to Ab
```

![Interval: 5](image)

Figure 182: Examples of Numerous Intervals with Same Generic Size

We can quickly understand how easy it can be for a beginning musician to see all the intervals shown in Figure 182 as completely different intervals—because, of course, they are. However, each interval is not totally unique. They all have the same generic size of a fifth because they move from D up to A: D (1) - E (2) - F (3) - G (4) - A (5). Can you see why all the intervals are the generic size of a fifth?

Let us look again at the first three intervals in Figure 182, but this time, let us apply those notes to a keyboard to see just how different they are.
Notice with each of these intervals how each set of notes is separated by a different number of keys. $\text{Db to A}$ spans ten keys from its beginning to its end, while $\text{Db to Ab}$ only spans eight; however, both are still generic fifths, because they go from the letter D to the letter A.

As I said previously, the generic size of an interval is crucial to understanding exactly what the interval's function is as it relates to the other notes, intervals, and chords of a piece of music. You must make sure you take your time when you are identifying an interval's generic size, and ensure its
accuracy, for it is truly the foundation of its identity.

As we discussed at the beginning of this chapter, all intervals are categorized by two main characteristics: their generic size—which we now know how to calculate—and their quality. In thinking about these two categories and how they are used, we can loosely compare them to our names. Our last name, or surname, which is the name of the family that we were born into, is a name that encompasses a larger group of people. For instance, my last name, Goodman, is used to describe everyone in my immediate family, as well as a certain line of my extended family. In my house, there are currently four Goodmans. The last name of a person is like an interval's generic size. Generic size is a broad term that identifies the interval by only the distance between its two letters. In Figure 182 on page 205, we can see nine different intervals of a fifth that start and end on the same letter names. We can see that same concept with the nine different Goodmans who will visit my parents' house on Christmas Eve. What gives us a unique identification mark, however, is when we use our first name, or given name, with our last. On Christmas Eve, there might be nine Goodmans in the house, but there is only one Todd Goodman. An interval's quality gives us its first name, or unique identifier, that helps us differentiate between all the generic sizes.

There are many techniques and strategies that musicians use to find an interval's quality. Although many of these are good, I have had the most success in the overall education of a beginner using the knowledge of key signatures and scales that we discussed in-depth in Chapters VII (“Scale Patterns,” on page 96) and XI, (“Key Signatures and the Circle of Fifths,” on page 172). Since both of these topics are key elements in the further development of your musicianship knowledge, using them
to find an interval’s quality not only allows us to connect the three topics, but it also allows us more practice in using key signatures and scales in a meaningful and useful way.

REMEMBER

There is never just one way to do anything. Once you understand one technique and philosophy, go out and study the others as well. It will only help you further your understanding of the topic, and eventually help you teach it to others.

Before we can jump right in and start discussing how to identify an interval’s quality, we have to first define the words that we use to describe those qualities. They are major, minor, augmented, diminished, and perfect—each of which are used in the very same context in which they are used in non-musical conversation. **MAJOR** means big, while **MINOR** means small; **AUGMENTED** means growing, while **DIMINISHED** means shrinking; and **PERFECT** means exact. At first, the term "perfect" may seem like an odd choice to be used for an interval; however, when we look deeper into why the term "perfect" was chosen, it will become clear.

**Major and Minor Intervals**

To start, let us look again at our half and whole steps, both of which have the generic size of a second. If we look at both intervals, starting on the pitch C4, we can quickly see the difference in quality.

![Figure 184: Half-Step and Whole-Step Size and Quality](image)

As we look at both of these intervals, even though both are generic seconds, we can see that one is
clearly larger than the other. We must ask: which one takes more keys to go from one note to the other? The interval from C up to D is, without question, larger than C to D♭. If we look to the definitions we discussed earlier, which one do you think would apply to these two intervals? Since we have two intervals, one of which is bigger than the other, big (major) and small (minor) seem to be the best choices. Therefore, we can call the interval from C to D major, and the interval from C to D♭ minor. When we combine their newly discovered quality with their generic size of a second, we can now use the full names of one of these intervals. The whole step can now be called a major second, and the half step a minor second.

Now, you might be tempted to say, “Wow, that was easy. The big intervals are major and the small ones are minor—got it!” I must be honest and say that interval quality is not that easy. In fact, it is a little confusing at first; however, if we break this topic down to its simplest form, as we have with all of the other topics, we will start to see a pattern form, which is very easily understandable.

Let us again look at a major scale starting on C. Remember that the generic size of each of the intervals found within the scale corresponds to the scale degrees of each of the notes.

![Figure 185: Generic Size as it Corresponds to Scale Degree](image)

The intervals in any scale are broken down into two categories: those that derive their label from the major or minor quality, and those from the perfect name. Of course, we have already looked at two of the major and minor intervals; however, to explain why some receive one label, while others receive a
different one, we must first understand more about how major and minor work. For perfect intervals, you must, for now, trust what I am telling you without any explanation as to why. We will discuss the "why" a little later, in "Interval Inversion" on page 214.

Intervals with a generic size of 2, 3, 6, or 7 are called either major or minor depending on their size, or number of half steps. Those with a generic size of 1, 4, 5, or 8 are called perfect. If we look again at the whole and half steps we discussed in Figure 184 on page 208, we can see that each of those intervals has a different amount of half steps—the C to D♯ only has one, while the C to D has two. If we continue that same logic with the next set of generic-sized intervals, the answer is the same.

Figure 186: Major and Minor Thirds

Just as we did with the interval of a second, if we count the number of keys it takes to move from C to E, and compare that with the number of keys it takes to move from C to E♯, we can see that C to E is the larger of the two. That means that the interval from C to E would be named major (big), and the interval from C to E♯ would be named minor (small). Those four examples of seconds and thirds would have the following names:
Just as we previously calculated the size for the seconds and the thirds, we could do the same for
the sixths and sevenths, but the results would be the same. What we would find is that each of the
intervals, moving from the first note of the scale to the notes on scale degrees 2, 3, 6, and 7, will all be
major intervals, if those notes are in the key. If they are lower by a half step from that note which is in
the scale, those intervals would then be minor.

You may ask, what about intervals with notes that are either a half step higher, or more than a half
step lower than the note that is in the key? Those intervals are either growing or shrinking beyond
their major and minor labels, so they would become either augmented (growing) or diminished
(shrinking), which we will discuss in-depth later in this chapter, in the section "Diminished and
Augmented Intervals" on page 219.
As we start exploring our method for identifying intervals, it is important to remember that the order in which we approach this information is critical. If we find the right information in the wrong order, it often leads to the wrong final answer.

The three main steps to identifying any interval are pretty simple. Let us work through them by using the following example:

First, identify the generic size of the interval by counting letters, or lines and spaces—D (1) - E (2) - F (3). Now that we know the generic size, the second step is to identify the key of the bottom note of the interval, which in our example is D.
To find a key, use the circle of fifths:

1) Find its location in the circle.  
   For example: D is in the second slot on the right, or sharp (♯) side of the circle.
2) Find the number associated with that key.  
   Key of D is associated with 2.
3) Take that number of accidentals from the order of sharps or flats.  
   Key of D has two sharps, which are F♯ and C♯.

The third step is to ask the question, “Is the top note in the key of the bottom?” This means that for our answer to be yes, the top note in the interval would need to be in the same key, or major scale, as the bottom. In our example, the key of D has two sharps, F♯ and C♯, so yes. F♯ would be in the key of D. If the answer to that question is yes, and it is a generic size of 2, 3, 6, or 7, the interval is a major interval. If the answer is no, then it is not major, and we need to investigate a little further. If it is a half step lower than what would be in the key—an F-natural in our example—then the interval is minor. If it is not a half step lower, then it has another name, which we will discuss a little later in this chapter.
**Figure 190: Steps to Identifying Intervals for Seconds, Thirds, Sixths, and Seventh**

<table>
<thead>
<tr>
<th>Steps to Identify Intervals (2, 3, 6, and 7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Identify the generic size of the interval.</td>
</tr>
<tr>
<td>2) Identify the key of the bottom note.</td>
</tr>
<tr>
<td>3) Ask the question: Is the top note in the key of the bottom?</td>
</tr>
<tr>
<td>If the answer is yes, the interval is major.</td>
</tr>
<tr>
<td>If the answer is no, and it is a half step lower, the interval is minor.</td>
</tr>
</tbody>
</table>

1) Generic size: 3  
2) Key of bottom note: E, 4 sharps (F#, C#, G#, D#)  
3) Is top note in key? No  
   Is it a half step lower? Yes = minor

1) Generic size: 6  
2) Key of bottom note: E♭, 3 flats (B♭, E♭, A♭)  
3) Is top note in key? Yes = major

**Interval Inversion**

The reason intervals fall into two different groups—those that are major or minor (2, 3, 6, 7), and those that are perfect (1, 4, 5, 8)—has to do with their **inversion**. The word inversion is a form of the verb *invert*, which means "to put in the opposite direction." If something goes up, then its inversion goes down. **Interval Inversions** are extremely important in understanding exactly how certain intervals are named. Let us look at just the generic size of a second and a third to see
exactly what happens when those intervals are inverted.

For descending intervals, we use the alphabet backwards.

C up to D
Generic size: 2

C up to E
Generic size: 3

As you can see, the inversion of an interval is quite different than the original. An interval with a generic size of a second (C up to D), when inverted (C down to D), becomes a seventh, while a third becomes a sixth. As you continue up the scale, that phenomenon continues across the entire scale. Since the scale is made up of seven unique pitch-classes, and seven is an odd number, each scale degree will be paired with a different scale degree when inverted.

As you can see in the map in Figure 192, the intervals with generic sizes that are associated with major and minor intervals (2, 3, 6, and 7) are associated with those same generic sizes when inverted.

This would also mean that those intervals associated with perfect intervals (1, 4, 5, and 8) are also
associated with their similar counterparts when inverted. If we look at the same map, but this time use notation, we can begin to apply the knowledge we have just gained in regard to quality, to these notes.

![Map of Interval Inversion with Notation](image)

The ascending intervals in this map all have the same bottom note, C. Knowing, from our circle of fifths, that the key of C has no sharps or flats, look at the qualities of intervals on the generic sizes of 2, 3, 6, and 7. Are the top notes of these intervals—D, E, A, and B—in the key of C? Absolutely! This means that each of these intervals would be labeled *major*. Now we need to do the same procedure to each of these interval’s inversions; however, notice how in each of these intervals, the bottom note changes. Each of these intervals would then have to be analyzed—from step two of our interval identification steps—using a different key signature.
1) Generic sizes:

2) Keys of bottom notes:

3) Are the top notes in the keys? No.
   Are they a half step lower? Yes. For each of the top notes to be in the key of the bottom, they should all be a C#, as indicated by their keys—underlined above. Since they are C-naturals, they are indeed a half step lower, making each of these intervals minor.

Figure 194: Interval Inversions of Generic Sizes Two, Three, Six, and Seven

Once the intervals are inverted, we can quickly see that the top notes of the inverted intervals are not in the key of their respective bottom notes. This makes the labels of their inverted partners opposite.

If an interval of a second is major when it is ascending, its inversion will be minor, and a sixth, when it descends. In all intervals with a generic size of 2, 3, 6, and 7, their label of quality flips to the opposite when the interval is inverted. Major becomes minor, and minor becomes major.

Perfect Intervals

As we have discussed in-depth, the characteristics of intervals with a generic size of 2, 3, 6, and 7 all contain a like-bond, unifying them in a similar fashion. If we apply the same process to the other generic sizes—1, 4, 5, and 8—something remarkable happens. Although these intervals, when inverted, still have a different partner when it comes to generic size, you can see in Figure 193 on page 216, the interval with a generic size of one becomes an eighth, a fourth becomes a fifth, a fifth becomes a fourth, and so on. What makes these intervals unique from the major and minor intervals is their inclusion in each others’ keys. With the interval of a major second, the top note of that interval is in the key of the bottom, which is why it is labeled major. But when the inversion of that interval, a
sixth, was explored, we saw that the top note was not in the key of the bottom, making it minor. Let us see what happens with the inversions of the intervals with generic sizes of 1, 4, 5, and 8.

![Diagram of inversions of intervals with generic sizes of firsts, fourths, fifths, and eighths]

1) Generic sizes: 1, 4, 5, 8
2) Key of bottom note: All C, no sharps or flats
3) Are the top notes in the keys of the bottom notes? Yes. All of them.

Figure 195: Inversions of Intervals with Generic Sizes of Firsts, Fourths, Fifths, and Eighths

Notice how, in each of these intervals, the top notes are in the keys of each of the bottom notes. Unlike the major and minor intervals, which flip their quality when they are inverted, these intervals do not. They remain in the keys of each other as they are inverted. Since the word "perfect" means exact, or complete, these intervals are labeled as such, because when they are inverted, they remain exact in the relationship of their keys.

Now that we understand how, and just as important, why, we have two different groupings of interval qualities, the steps on how to identify an interval must be revisited. As our knowledge of these topics continues to grow, these how-to charts will adapt and adjust to our expanding comprehension. Remember, it is important to remain mentally flexible as we delve deeper into why music works the way it does. Our process of discovery will change, based on the knowledge we have.
**STEPS TO IDENTIFY INTERVALS** *(all major, minor, and perfect)*

1) Identify the generic size of the interval.
2) Identify the key of the bottom note.
3) Ask the question: Is the top note in the key of the bottom?
   If the answer is yes…
   and the generic size is a 1, 4, 5, or 8 = **Perfect**
   and the generic size is a 2, 3, 6, or 7 = **Major**
   If the answer is no…
   and the generic size is a 1, 4, 5, or 8 *(we will discuss this later)*
   and the generic size is a 2, 3, 6, or 7, and it is a half step lower = **Minor**
   if it is not a half step lower *(we will discuss this later)*

---

Figure 196: Steps to Identify Intervals: All Major, Minor, and Perfect

**Diminished and Augmented Intervals**

As we see in the chart in Figure 196, there are still some areas of interval identification that have yet to be discussed. More specifically, what do we call intervals that are either larger or smaller than those that are perfect? Or, what do we call those intervals that are lowered by more than a half step, or are larger than the major intervals? For these intervals, we use the terms *augmented* and *diminished*, which mean growing (augmented) and shrinking (diminished).

Let us first look at how these terms work with the perfect intervals—1, 4, 5, and 8. If the generic size of an interval is a 1, 4, 5, or 8, and the top note is in the key of the bottom, the interval is perfect. But if the top note is not in the key of the bottom, we must then look at how it is different. If the top note is raised by a half step from what is in the key, it is called augmented because it is growing, or larger, than the perfect. If the top note is lowered by a half step from what is in the key, it is called diminished because it is shrinking, or smaller, than the perfect.
1) Generic sizes: All fifths
2) Key of bottom note: All F; 1♭ (B♭)
3) Are the top notes in the key of the bottom notes?

Yes = **Perfect**  

No larger by a half step = **Augmented**  
No smaller by a half step = **Diminished**

Figure 197: Augmented and Diminished Quality with Perfect Intervals

When intervals with generic sizes of 1, 4, 5, and 8 grow outside their respective keys, beyond their perfect label, they are called augmented, and called diminished when they shrink. The same concept is also applied to intervals with generic sizes of 2, 3, 6, and 7. While all intervals, regardless of their generic size, are called augmented when they are raised by a half step beyond their place in the major key, the two groups are treated differently when it comes to the labeling of notes that are lowered. Unlike the perfect intervals, which move directly from perfect to diminished when they are lowered by a half step, the major intervals must first move through the minor interval before they can be called diminished.

1) Generic sizes: All thirds
2) Key of bottom note: All E♭; 3♭s (B♭, E♭, A♭)
3) Are the top notes in the key of the bottom note?

Yes = **Major**  

No smaller by a half step = **Minor**  
No smaller by two half steps = **Diminished**  
No larger by a half step = **Augmented**

Figure 198: Augmented and Diminished Quality with Major Interval

While this may seem a little confusing at first, when the steps to identifying intervals are combined with a new, clearly-organized chart outlining the alterations to the interval's labels, this process becomes much more streamlined and easier to understand.
**STEPS TO IDENTIFY INTERVALS** *(all intervals)*

1) Identify the generic size of the interval.
2) Identify the key of the bottom note.
3) Ask the question: Is the top note in the key of the bottom note?

   If the answer is yes…
   
   and the generic size is a 1, 4, 5, or 8 = Perfect
   and the generic size is a 2, 3, 6, or 7 = Major

   If the answer is no…

   and the generic size is a 1, 4, 5, or 8
   if it is a half step lower = Diminished
   if it is a half step higher = Augmented

   and the generic size is a 2, 3, 6, or 7,
   if it is a half step lower = Minor
   if it is TWO half steps lower = Diminished
   if it is a half step higher = Augmented

- or -

Use the following chart:

<table>
<thead>
<tr>
<th>generic sizes</th>
<th>lowered by two half steps</th>
<th>lowered by a half step</th>
<th><strong>IN MAJOR KEY</strong></th>
<th>raised by a half step</th>
</tr>
</thead>
<tbody>
<tr>
<td>2, 3, 6, and 7</td>
<td>DIMINISHED</td>
<td>MINOR</td>
<td>MAJOR</td>
<td>AUGMENTED</td>
</tr>
<tr>
<td>1, 4, 5, and 8</td>
<td>DIMINISHED</td>
<td></td>
<td>PERFECT</td>
<td>AUGMENTED</td>
</tr>
</tbody>
</table>

Figure 199: Steps to Identify Intervals: All Major, Minor, and Perfect

**Interval Shorthand**

Intervals have long names, so to save time and room on the page, they are often written using shorthand abbreviations. Just as there are many different techniques used in finding the names of these intervals, there are different ways theorists, educators, and players write them. Usually these differences are separated by genres of music, geographical locations, languages, and academic institutions, and you will, more than likely, encounter many of these abbreviations throughout
TODD GOODMAN

your time spent in music. There is not one correct way, but there are differing opinions as to why certain groups prefer one set of abbreviations to another. In this book, I will teach you one of these ways, but again, understand that this is not the only way.

To quickly show the difference between these intervals, we use only the first letter of each of their names. Because as the first letters of the words *augmented*, *diminished*, and *perfect* are unique, the distinction between these three are very clear. Where the issue arises in this shorthand system is between major and minor, because both start with the letter "m." Since the word major means big, and minor means small, both "M" and "m" have been adopted to represent major and minor in this system. The uppercase M represents major, while the lowercase m represents minor. Therefore, to quickly write the full name of an interval, which includes its generic size and quality, we need to only write one letter and a number—M3 is a major third, since the M is capitalized; d4 is a diminished fourth; and A2 is an augmented second. The "A" for augmented is written as uppercase as well, since it is a larger interval than the major, while the "d" for diminished is written as lowercase. As you continue your education in written music theory, you will see that this practice of using upper-and lowercase letters will extend to other aspects of music as well.


<table>
<thead>
<tr>
<th>Interval Quality</th>
<th>Abbreviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>diminished</td>
<td>d</td>
</tr>
<tr>
<td>minor</td>
<td>m</td>
</tr>
<tr>
<td>Major</td>
<td>M</td>
</tr>
<tr>
<td>Perfect</td>
<td>P</td>
</tr>
<tr>
<td>Augmented</td>
<td>A</td>
</tr>
</tbody>
</table>

Figure 200: Interval Quality Abbreviations
Identify the following intervals with their **generic size** and **quality**.

\[
\begin{array}{cccc}
P5 & m2 & P5 & A1 \\
\end{array}
\]
Now that we have a better understanding of how intervals are named, as well as the new vocabulary associated with those names, we can continue our discussion about how we can train our ears to hear and aurally understand these intervals. Just as each pitch-class has its own quality and color of sound, or TIMBRE, each interval has its own unique sound as well. It is on that sound that we, as musicians, can focus our hearing to being able to identify these intervals aurally. Since music is an aural art, our ability to be able to hear, recognize, and replicate these sounds is crucial to our development as musicians. This ability is indeed a skill that requires, just like any other skill, constant, consistent, and accurate practice. Schedule a few minutes a day during your regular instrumental or vocal practice session to work on your ear. Without a regular return to these exercises, your aural skills development will not be as great as it could be.

As we left off at the end of Chapter VIII, “Beginning Ear Training,” starting on page 117, we learned that pitch anchors are a great way to create a foundation for your ear training. We previously discussed that the uses of Do, Mi, Sol, and Do’ as concrete anchor points on the scale, provide for us a safety net as we explore, and become comfortable with, the other solfege. Before we move on, however, let us review these anchors and apply the vocabulary of interval
identification we learned in the previous chapter.

\[\text{D R M F S L T D}\\]

Figure 201: Solfege Anchors of Do, Mi, Sol, and Do’

All the notes found within a major scale are in the key of the first pitch-class, or Do. If they are not in the key, they are not found in the scale. Therefore, we understand that all these notes in our solfege thus far are in the major scale, and we also know what their qualities are based on their scale degrees. For instance, the interval from Do to Mi is a major third (M3), because we know that the generic size is a three and the quality is major, since the top note is in the key of the bottom note. Where this information becomes extremely helpful is that all major thirds, regardless of what pitch-classes are used to create them, have a very similar sound to every other major third. I am not saying, however, that once you know this one major third, you can understand and hear them all. What I am saying is that by breaking down all this information and combining the common elements, your training can be much more efficient.

We know that the interval from Do to Mi is a major third (M3), the interval from Do to Sol is a perfect fifth (P5), and the interval from Do to Do’ is a perfect eighth, or octave (P8). We can continue the exercises we started in Chapter VIII, but now add the understanding that those solfege syllables now also represent interval names. In fact, I feel they are synonymous with one another. When I sing from Do up to Mi, in my head, I also hear the term ”major third.”

As the anchors of Do, Mi, Sol, and Do’ become more comfortable in our hearing, the next step in this process is to move to the notes that are adjacent to the anchors, the first of which is Re. Even though Re is used throughout the process to hear Mi better, the end goal is to make Re, as well
as all of the other non-anchors, as strong as the anchors, eventually we will be able to use all the notes in the major scale as anchors to hear the pitch-classes in-between the solfege.

- **Exercise #4: Outside the Anchors - Re**

  1. **Play a C on the piano and match the pitch exactly.** *Note: you can start to use pitch-classes other than C, but keep them close to C. The best choices are C#, B, or B♭.*

  2. **Sing a few times up and down a major scale on C while holding Do on the piano.**

  3. **Sing from Do to Mi to Sol and then to high Do', still holding Do on the piano.** YOU MAY ONLY PLAY DO ON THE PIANO! *Remember to use Do as a reference for your ear.*

  4. **Practice singing Do - Mi - Sol - Do', Do - Sol - Do', and Do - Do'**

  5. **Sing all of the anchors in any order you would like.**

  6. **Sing from Do to Mi, then down to Re.** If you get stuck, sing from Do up to Re. Listen to where Re sits and how it relates to Do and Mi. *Then try the exercise again.*

  7. **Sing from Do to Sol, then leap down to Re.** You will hear that this is getting more challenging. If you get stuck, repeat the exercise from #6. Really listen to the relationship between Do and Re. *Then try it again.*

  8. **Sing from Do to Do', then leap down to Re.** The most challenging jump yet. *If you have issues, repeat the same exercise as above.*

  **This whole process is helping you develop Re into an anchor.**

Figure 202: Training Exercise No. 4; Outside the Anchors- Re
Did you notice anything interesting with that exercise? Are you starting to hear that Re has a very strong tendency to move either upwards towards Mi, or down towards Do, depending on the note that comes before it? If you sing the major second from Do to Re, the clear tendency of Re is to continue its movement to Mi; however, if you were to sing another anchor pitch and leap down to Re, its tendency is to continue to fall to Do. Listening for and consciously taking a mental note of what these pitch tendencies are will help you identify them more quickly. These tendencies will also help you hear their placement in the scale much more confidently as you sing or play your instrument. Now try a similar exercise, but this time focus on Fa.

1. **Pick a pitch-class close to C. The best choices are C♯, D, B, or B♭.**

2. **Practice singing Do - Mi - Sol - Do', Do - Sol - Do', and Do - Do'.**

3. **Sing all the anchors in any order you would like.**

4. **Sing from Do to Mi, then up to Fa.** Pay close attention to where Fa sits and how it relates to Mi. Listen to Fa's tendency as it ascends.

5. **Sing from Do to Sol, then down to Fa.** As you did with the previous step, pay close attention to what Fa wants to do as it descends from Sol.

6. **Finally, sing from Do to Fa.** If you have issues, think about how Fa interacts with Sol. Hear Sol in your head first, and then approach Fa as if it is a lead-in to Sol.

Figure 203: Training Exercise #5: Outside the Anchors - Fa
TODD GOODMAN

What tendencies did you hear in the Fa exercises? As you are singing these single line exercises, did you hear that Fa wants to move to Sol most of the time? What creates that tendency is the unique characteristic of the interval of a perfect fourth. The relationship of these intervals is consistent throughout each scale, even though the pitches themselves change. Regardless of whether you started on C, C#, D, etc., the relationship of those notes and the sound of that interval is almost the same. A major second sounds like a major second, while a major third sounds totally different.

Every time you practice one of these exercises, which should be three to four times a day, only work on it for a few minutes at a time, then move on to another exercise, or instrumental or vocal practice. However, every time you come back to the exercise, start from the beginning. Do the whole exercise—it should only take a few minutes.

The next exercise combines the exploration of the non-anchor pitches La and Ti. La and Ti are unique, in that they do not have two neighbors that are anchors, like Re and Fa. In our training, we sometimes combine La and Ti because they often act together in their tendencies, although they do have very strong relationships to the other pitch-classes on their own. As you sing through this next exercise, pay close attention to what tendencies La and Ti have as a team, versus how they act on their own.
1. **Pick a pitch-class to start.** The best choices are C#, D, B, or B♭.

2. **Sing through all the anchors:** Do - Mi - Sol - Do', Do - Sol - Do', and Do - Do'.

3. **Sing through anchors, but add Re and Fa.** Leap around the anchors as you have in the past, but this time add in Re and Fa. Pass through them like they are in-between the more solid anchors.

4. **Sing from Do to Sol, then up to La.** Pay close attention to the tendency of La. It wants to do two things—fall back to Sol, and move up through Ti to Do'. *Think about how La might be used in the context of a piece of music.*

5. **Sing from Do to Do', then down to Ti.** Again, Ti has two tendencies. It either wants to ascend back to Do', or descend down through La to Sol. *Really focus on how you think it would be used in a piece of music.*

6. **Sing through all the pitches.** Bounce around from syllable to syllable. *Really focus on how each scale degree sounds, and how it functions in relation to the other scale degrees.* If you get stuck, go back to Do, refocus your sense of that note, and try again.

---

**Figure 204:** Training Exercise #6: Outside the Anchors - La and Ti

---

**Intervals Inside our Major Scale**

Our solfege system is an extremely helpful tool when it comes to ear training and our focus on pitch hierarchy and tendency. But it is also a wonderful tool for us to understand and quickly reference intervals inside our scale. When music uses a set of given pitches that are made up of
either the major or the minor scale, it is referred to as **DIATONIC** music. Diatonic has Latin roots, from the words *dia*, meaning "through," and *tonos*, meaning "tone." When combined, they create a word that means "music through a given sound or scale." In diatonic music, only the notes of that scale are used with no alterations or **CHROMATICISM**. The evolution of the use of chromatic pitches in music is fascinating, and well worth your time to research, but for our intents and purposes in this book, understanding what chromatic notes are will suffice. *Chroma*, the Greek word for color (spelled khrōma in Greek), was used for these notes, because the Greeks felt these notes added more color to the greyness of the sound of some of their basic scales.

The following figure shows two diatonic scales: the first without chromaticism, and the second with each of the chromatic tones added in parenthesis. The second scale is an example of a chromatic scale.

![Figure 205: Diatonic and Chromatic Scales](image)

In thinking about the diatonic major scale from an ear training perspective, we can actually find all of the major, minor, and perfect intervals within its notes. In fact, all these intervals can even be found by starting from either *Do* or *Do’*. If we look back to all the intervals that are created by the notes of the major scale, we can clearly see each of them.
Almost every interval commonly found in music can be created within a major scale, and, remarkably, from the scale’s starting pitch. So in our study of aural skills, one simple exercise of singing the major scale and leaping back to Do after each scale degree, can help us tremendously in learning how these intervals sound, and how they fit into the context of the scale.

**Andante** ($\text{MP} = 80 - 88$)

Figure 207: Interval Exercise

Do’ Do’ per-fect oc-tave, Do’ Re min-or sev-enth, Do’ Mi min-or sixth, Do Fa per-fect fifth,
As we learned in Chapter IX, “Simple Rhythmic Subdivisions,” which begins on page 133, rhythms can be divided into three categories: simple (microbeats of four), compound (microbeats of six), and mixed (different groupings of four or six microbeats that are found within the same measure). But before we look deeper into the microbeats of compound rhythms, let us look at the similarities and differences these groupings have compared to the groupings of four that we previously studied.

| Similarities Between Simple and Compound Rhythms |

Many of the fundamental elements found in music, as we have repeatedly discovered, are common throughout seemingly different components, which, on the surface, have nothing at all to do with each other. Rhythm is no exception. Before we start our discussion, however, let us first try a little experiment. Even though you might not understand, at first, what you are seeing, look at the following two rhythms and study them carefully. Are there any similarities between the two? If so, what are they?
RHYTHMIC GROUPINGS OF THREE

Moderato (\( \bar{\} = 108 \))

\begin{music}
\begin{musicnotation}[t]{\musicstaff{1}}
\begin{musicframe}
\begin{musicnote}
\texttt{m}\texttt{f}
\end{musicnote}
\end{musicframe}
\end{musicnotation}
\end{music}

compared to

Moderato (\( \bar{\} = 108 \))

\begin{music}
\begin{musicnotation}[t]{\musicstaff{1}}
\begin{musicframe}
\begin{musicnote}
\texttt{m}\texttt{f}
\end{musicnote}
\end{musicframe}
\end{musicnotation}
\end{music}

Figure 208: Initial Comparison of Simple and Compound Meters

What elements did you see that are common between the two? At first, one might immediately identify these two rhythms as being totally different, for they look completely different. But, as we continue our exploration of how and why rhythm works the way it does, we will start to realize that these two rhythms are actually very similar. In fact, some elements are identical.

When we first started discussing rhythm in this book, the initial topic that we covered was pulse, and the understanding that all rhythm, regardless of its complexity, is reliant on this concept of a steady pulse. It is only with a constant pulse that the differences in rhythm can be felt, and without that pulse, rhythm is non-existent. It is imperative that you understand that all rhythm is dependent on pulse.

COMPOUND METER, which we will be studying in this chapter, functions just like the simple meters we studied in Chapters IV and IX. The only difference between the two is in their division of the beat. When beats are divided in a simple meter, those beats are split evenly in half—a
whole note is divided into two half notes, and those two half notes can be further divided into four quarter notes.

![Diagram showing Division of Simple Meter Rhythms](image)

Compound rhythm, and therefore compound meter, utilizes notes and rests that are divided into thirds, instead of halves, like simple meter. Before we can discuss that difference in more depth, let us first look, as we did with simple meter groupings of four, at how to start hearing these rhythms by using the tool of circle notation.

**Figure 209: Examples of Simple-and Compound Meter Circle Notation**

The way in which we use the circle notation tool is the same, regardless of whether we are in a simple or compound meter. The only difference is in the amount of numbers inside of the circle. With simple meters, we use four numbers, or beats, in the circle, while with compound meters we use three.
Circle notation is used in the exact same way with both meters. When you hear sound, you circle the number; when the sound is held, you underline it; and when the beat is silent, you put a slash through the number. A four circle example in compound meter would look like the following:

Figure 210: Circle Notation of Compound Meter Rhythm

The knowledge we have of circle notation in simple meter is very easily transferred to compound meter. The only difference between the two meters in the circle notation system, is the number of beats found within each circle, or beat grouping. Where the major difference between the two is clearly seen, is in the traditional note notation of both meters.

Let us look at these notational similarities and differences by using the two circles found in Figure 209 on page 234. If we take these two rhythms and assign a note value to each number—an eighth note, for example—let us explore how they compare to each other.
Figure 211: The Application of Note Value to Circle Notation Rhythms

Notice again how both rhythms look very similar. Both rhythms begin with a quarter note, since sound is heard for the first two beats, and the note value for each beat is an eighth note—two eighth notes added together equal a quarter note. In both examples, we can also see that each rhythm contains an eighth rest when silence is heard on a given beat. In the transfer of information from the circle notation to the use of standard note notation, many similarities exist between these two rhythms, but where the large difference occurs is in the grouping of note values as they are found inside the circle. For example, we discussed previously in the section on “Beaming,” in Chapter IX, found on page 150, that all notes found within a given circle are considered to be members of a rhythmic grouping, and should therefore be beamed, or grouped together. So if we revisit a circle in simple meter, and compare it to a circle in compound meter, the true difference between the two will arise.
Do you notice that the simple meter, when grouped, is represented by a stand-alone note value—in this case, the half note? The compound meter example, meanwhile requires the addition of a dot. Remember that a dot adds half the value of whatever comes before it. Here is the fundamental notation difference between simple and compound meter—simple meters use stand-alone note values, while compound meters require the use of dots to encompass the rhythm's grouping of three.

To further see how these two meters differ, let us superimpose them on top of one another, lining them up using their microbeats. Before we do that, however, I must first remind you that the fundamental concept of pulse does not change—pulse is pulse. Many different speeds, or pulses, of a piece of music can exist. Pulse can even change speeds within the context of a single piece of music, but as we have repeatedly seen throughout this text, pulse is consistent.
As we superimpose these two meters on top of one another, let us assume that each of these meters is using the same pulse for its numbers, or microbeats, in the circle—each number will occur over the top of the same pulse. What do you notice?

![Diagram of Compound Meter and Simple Meter Superimposed Over Each Other Using Microbeats](image)

Each of the groupings in Figure 213, has the same total number of beats—twelve. But, other than the first beat, none of the remaining downbeats, or beat ones, line up. Even though both rhythmic groupings have the same number of beats, their differences are highlighted even more when we add note beams, based on their circle grouping to each rhythm. Remember that groups of notes are beamed together based on their inclusion in a meter's rhythmic subgroup, or circle. This makes them look like the following:
Now, if we take that same idea of rhythmic groupings, but this time line up downbeats, we notice that a drastic shift happens to all of the other beats. Two major things happen when we line up simple meter and compound meter downbeats. First, the number of beats changes between the two meters. No longer are there the same number of microbeats between the two meters that we previously saw in Figure 214. Second, only the downbeats of each circle line up. When we compare the grouping of four to the grouping of three, no other part of the microbeat aligns itself with another beat in the other meter.
These fundamental differences create the separation of the two types of meter used in music. As we continue to study compound meter, you will begin to understand why and when each type is used, how to understand them better, and how to perform them with more efficiency.

Solfege is a very helpful tool in learning and mastering the concepts of music. Why we use solfege, for pitch as well as rhythm, is to show us what elements in these topics are alike, and
RHYTHMIC GROUPINGS OF THREE

which are unique. The solfege we use in this text for rhythm, TaKaDiMi, has a comprehensive system for understanding and applying vocabulary to each of a rhythm’s microbeats. In a simple meter, as previously discussed in Chapter IX, “Simple Rhythmic Subdivisions,” the grouping of four beats, using our rhythmic solfege system, is labeled using Ta, Ka, Di, and Mi, the system’s namesake. However, in compound meter, when downbeats are aligned, beats two, three, and four of simple meter do not line up with any of the other beats of compound meter. Simply put, only beat one is shared between the two. When solfege is applied, both of the downbeats, regardless of whether they are simple or compound, both use Ta as their downbeats. Since beats two and three do not line up with any other beat, they both get their own unique names, Ki (pronounced Key) for beat two and Da for beat three—Ta - Ki - Da. When the subdivision of these two meters is lined up, we can clearly see why beats two and three of compound meter require their own unique syllables of Ki and Da.

<table>
<thead>
<tr>
<th></th>
<th>Simple Meter</th>
<th>Compound Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ta</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>Ka</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Di</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Mi</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Ta</td>
<td>Ki</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Da</td>
</tr>
</tbody>
</table>

Figure 216: Solfege Comparison of Simple-and Compound Meter

Let us look at an example of a rhythm in a compound meter, and see how the TaKaDiMi solfege syllables are applied. Notice that the syllables in parenthesis are silent, but when we think in rhythmic solfege, we want to keep those syllables in mind as a placeholder for the pulse—remembering that the pulse does not stop.
Time signatures for compound meters are calculated differently. It is discussed in Chapter XVII, in the section “Time Signatures of Compound Meters,” on page 287.

Percussion Clef, which is used for non-pitched percussion instruments. See “Other Clefs” section of Chapter IV, on page 65.

Figure 217: Syllables of Ta, Ki, and Da Applied to a Rhythm

Now that we can see how similar the uses of the syllables Ta, Ki, and Da are to Ta, Ka, Di, and Mi, we can start to work on a better understanding of how groupings of three—compound meter—sound and feel. Use the following four examples as an exercise to get more comfortable with this rhythmic grouping of three:

Figure 218: Four Prime Examples of Compound Rhythms

Did you notice anything different about how these four rhythms feel, compared to those that we studied previously in simple meter? Absolutely! For me, they almost feel weightless compared to simple meter rhythms, because there are more notes in compound meter, and therefore these
rhythms have the feeling of more space between their downbeats.

As we continue to explore further subdivisions of these rhythms in Chapter XVII, “Compound Rhythmic Subdivisions,” which begins on page 279, we will continue to see which elements of these meters are unique, as well as which elements are similar, and use that information to increase our knowledge of meter and rhythm as a whole.
Perform the following rhythms using Ta Ka Di Mi if the rhythm is simple, or Ta Ki Da if it is compound.

№ 1

№ 2

№ 3

№ 4
When you ask most people the question, “What is music?,” which we so rigorously studied, analyzed, and debated in Chapter III, a typical answer one gives is a two-word answer, “Harmony and melody.” Would you now say the same thing, having studied musicianship for some time? Understand, however, that most people do not give that answer on a whim, in fact, they say that because most non-trained musicians really only hear those two elements. They understand that most music, and essentially all popular non-art music, has a singable melody, which is sung over a set of moving notes that are blocked together in some way. All of which is 100 percent true. Remember, in this instance, that what we are hearing when we listen to a piece of music is the same thing everyone else is hearing when they listen to that same piece.

So why the difference in understanding? It comes down to vocabulary. If you do not know what to call something, how do you discuss it? Think back to a conversation you have overheard, or been a part of, that went completely over your head. Did it go over your head because you did not understand most of the words people were saying, or because the words were used in a different context? Absolutely! I am not saying, however, that if you learn the vocabulary for the anatomy of the brain, you can automatically have deep, intelligent conversations about the latest neurological developments in brain surgery techniques. What I am saying, is that there is no way you could have those conversations without that vocabulary. The same concept applies to music.
and the arts. Much of what we are learning, at the beginning stages of our musicianship training, is simple vocabulary. In fact, that is all the first few semesters of a college-level written music theory course are—learning the vocabulary. Now, as we learn that vocabulary, we use drills and activities, like analysis and composition, to help us better understand how a concept works and quickly access the words to describe it, but the foundation in that learning is being able to discuss those elements through language.

Before we explore our next idea, let us take a quick look at the inventory of key vocabulary words that we have learned up to this point, which we will be associating with the next topic, triads.

<table>
<thead>
<tr>
<th>Key Vocabulary Already Studied that is Important to Triads</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Minor Interval Scale Degree</td>
</tr>
<tr>
<td>Diminished Pitch Interval Size</td>
</tr>
<tr>
<td>Major Pitch-class Interval Quality</td>
</tr>
</tbody>
</table>

Figure 219: Key Vocabulary Related to Triads

In looking over this list, do you have an understanding of what those words mean within the context of music? If yes, great: let us move on. If no, I would suggest re-reading Chapter XII, “Intervals,” which starts on page 202, or see the section on Key Terms in Appendix A.

The building blocks of music, which have been discussed a lot in this book, continue to build higher. First, we discussed notes and specific pitch. Then we put two of those notes together and they grew into intervals. In this chapter, we are going to discover the natural continuation of that progression—the combination of two specific intervals. But first let us look at the following
groupings of notes. Each grouping has specific pitches and intervals, but not all are examples of our topic of this chapter, triads.

![Figure 220: Various Groupings of Three Notes](image)

As you can see, the four examples of note-groupings in Figure 220 all look completely different, yet they do have some similarities as well—they each contain three notes and they each start on the pitch E4. But all these note groupings are not considered triads, only one is. If we analyze the word *triad* for just a second, we can see that it is the Latin word for "three." Yes, all four of these note groupings contain three notes, but if we look at them more closely and dissect them to discover the generic interval size in-between each of the notes, we see that only one is created with all threes.

![Figure 221: Interval Generic Sizes in Note Groupings](image)

Out of these four examples of note-groupings, only one is made up of three notes, that are being separated by the generic interval size of a third. The other three note-groupings are elements used in music; however, they are not triads. Therefore, the definition of a **TRIAD** is a grouping of three notes that are separated, or can be separated when rearranged, by the generic interval of a third. All of the note groupings used in Figure 220 and Figure 221, however, are called **CHORDS**—a group of three or more notes. Just like the difference between the terms *song* and *piece*, where all songs can be called pieces, but not all pieces are songs; the same can be said
regarding triads and chords. All triads are chords, but not all chords are triads. In this chapter, we will be studying all the various triads and their uses.

### Interval Enharmonics

Before we can dig deeper into the triad, we must first step back and look at the interval of a third (an example of which can be seen in Figure 198 on page 220). We know that thirds can have four basic qualities—major, minor, augmented, and diminished—but let us look at each of these intervals to determine their uniqueness, compared to other like-intervals.

![Figure 222: Four Qualities of Thirds](image)

Out of these four intervals, only two have properties unique to the *diatonic third*, or the third found within the major and minor scales. I understand we have not discussed minor scales, but even if we solely focus on the major scale, only two qualities of thirds are found—major and minor. The same principle occurs in the minor scale as well. Even though we will not discuss this scale in-depth in this book, we can briefly see that only major and minor thirds are found in minor scales as well.
Now let us look at the two other qualities of thirds—augmented and diminished. If we take those two intervals and rethink them as enharmonic notes, we will see that they can also be written as intervals found within the diatonic scale.

![Figure 224: Intervals and Enharmonics, Non-diatonic to Diatonic](image)

How an interval is written is extremely important, and, for the most part, should not be changed. Seeing the augmented-and diminished third rewritten as the enharmonic intervals of a major scale...
second and perfect fourth, however, we can understand how these intervals of thirds are not truly unique to the diatonic system. If we did the same thing with the major and minor thirds, the result would be a diminished fourth and an augmented second. Again, these are two intervals that are not native to the diatonic scales.

Figure 225: Intervals and Enharmonics, Diatonic to Non-diatonic

Each pitch and interval can be written multiple ways using enharmonics, and the way in which a note or interval is written is extremely important, because it shows its purpose. But because music is an aural art, some ways of thinking about intervals, for example, arc back to their place and function in the diatonic system. If you were to hear an augmented third by itself, with out the reference of any other music, you would never identify it as such, but would think of it as a perfect fourth. It is because of this that triads are only comprised of major and minor thirds, and not augmented or diminished ones.
We know that triads are made up of three notes: those which are separated, or can be separated, when rearranged by two intervals of thirds. We also know that out of the four qualities of thirds, only two—major and minor—are used to make triads. So if there are two intervals, and each of these intervals can be one of two qualities, how many possible combinations can we have of those intervals? Yes, four!

<table>
<thead>
<tr>
<th>1st Option</th>
<th>2nd Option</th>
<th>3rd Option</th>
<th>4th Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Third</td>
<td>Major</td>
<td>Major</td>
<td>Minor</td>
</tr>
<tr>
<td>1st Third</td>
<td>Minor</td>
<td>Major</td>
<td>Major</td>
</tr>
</tbody>
</table>

Figure 226: Combinations of Triadic Intervals

With these four possible combinations, we can create all the triads used in music. Again, remember that even though triads are chords, chords are not triads. There are hundreds of chord possibilities, but only four triads.

Before we get into all of the types of triads, let us first discuss how to build one. Yes, a triad is built of two thirds, both of which are either major or minor, but how those thirds stack is unique. Since the quality of each interval is decided by the inclusion or non-inclusion of the interval’s top note in the key of its bottom note, we must think in two different keys when first building triads in this way. Once we understand how triads are constructed, we will then move towards a simpler means of building them, but for now, it is better to understand why they are built the way they are. When we think about the basic building of a triad, we must think of two independent
intervals sitting on top of one another. If we take the first option in Figure 226, of a minor third with a major third on top, we must think about each independently, where the bottom note of the top interval is taken from the top note of the bottom. Let us look at an example of this, starting on F4.

Figure 227: Building a Triad

This process may seem cumbersome, and it is, but it is important in understanding why these triads are built, and later named, the way they are.

Notice in Figure 227, that the first third is the one on the bottom, not the one on the top. When talking and thinking about notes of a triad, or the intervals found in the triad, these elements are always viewed from bottom to top. For instance, the triad in Figure 227, in speaking, would be indicated as F - A - C—reading the letters from the bottom of the triad to its top. Also, the first third is always seen as the bottom third, and the top third is the second, just like you would view floors of a building.

Now, let us build all of the triads discussed earlier, using the same process of combining thirds.
Now that we have built the four types of triads, using the method of stacking two thirds, we can analyze them and name them. If we look again at the quality of each third in the four types of triads, we can see that there are two of each quality, major and minor, found in each third slot. Unlike intervals, which only have one quality, and therefore can derive their name from that
quality, triads have multiple identities of quality.

<table>
<thead>
<tr>
<th>1st Option</th>
<th>2nd Option</th>
<th>3rd Option</th>
<th>4th Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Third</td>
<td>Minor</td>
<td>Minor</td>
<td>Minor</td>
</tr>
<tr>
<td>1st Third</td>
<td>Major</td>
<td>Major</td>
<td>Minor</td>
</tr>
</tbody>
</table>

Figure 229: Multiple Interval Qualities in Triads

Since a triad’s name cannot be derived from its thirds' interval quality, we must also look at any other intervals that are found within its notes. To do so, we must also name each of the notes in the triad, so that we have a better vocabulary with which to discuss them. The notes of a triad get their names from the generic interval size positions they hold within the triad, with the exception of the first. The first note, being the base, or foundation, of the triad, is called the **ROOT**, just like the root of a tree. The second note in the triad is called the **THIRD**, because it sits a generic interval size of a third above the root. Even though it is the second note in the triad, it is never called a second, because it gets its name from the intervallic position it holds. The third note in the triad is called the **FIFTH**, because it is a generic fifth above the root.

![Figure 230: Names of Notes in the Triad](image)

Since we must look to the other interval in the triad for naming possibilities, we must analyze the interval between the root and the fifth, which will be a generic fifth in all four cases.
Unlike the thirds in the triad, which only are major and minor, the fifths contain three qualities—perfect, augmented, and diminished. If we take our previous chart from Figure 225 on page 250, and add the qualities of fifths, we can see that each triad now has a unique element that can provide for it a name. The triads with fifths that are unique, take their names from that interval, while the two triads that have perfect fifths, take their names from the first third.
So why do we use the first third, and not the second third, to name the minor and major triad? Since the interval of a perfect fifth is made up of Do and Sol, the two most closely-related notes outside of the octave, the sound of that interval is very open. When the middle note, the third, is added to the open fifth, the color of that triad is changed significantly. Try it for yourself. Play an open fifth, F and C. Really listen to the open sound that it creates. With one hand play a very loud fifth, F and C again. With the other hand, play very softly, either a minor or major third, A or A♭. Can you hear how that opened sound instantly either becomes bright with sound or dark, depending on which third you played? That one note changes the quality of the triad, and therefore, that is the note that gets the triad’s naming rights.
STEPS TO IDENTIFY TRIADS
1) Make sure that what you are identifying is a triad—three notes separated by thirds.
2) Identify the key of the bottom note.
3) Using the steps to identify intervals, identify the quality of the fifth.
   If the fifth is augmented = augmented
   If the fifth is diminished = diminished
   If the fifth is perfect, move on to number 4.
4) Identify the quality of the first third.
   If the first third is major = major
   If the first third is minor = minor

Figure 233: Steps to Identify Triads

Triads in the Scale

Now that we understand how a triad is formed and how it is named, we can start to look at how each of these triads functions with the diatonic scale—for our purposes, the major scale. To begin, we need to figure out which scale degrees produce which quality of triad. To do that, we write a scale in a key, and using only diatonic notes, fill in the third and fifth on top of the root. Once we have eight triads, we must use our steps to identifying triads, and label each triad with its quality.
In the following figure, the notes that have black noteheads are the scale degrees, as well as the roots of each triad.

<table>
<thead>
<tr>
<th>Key</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
<th>6th</th>
<th>7th</th>
<th>8th</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect</td>
<td>Perfect</td>
<td>diminished</td>
<td>Perfect</td>
</tr>
<tr>
<td>1st</td>
<td>Third:</td>
<td>Major</td>
<td>minor</td>
<td>minor</td>
<td>Major</td>
<td>Major</td>
<td>minor</td>
<td>minor</td>
</tr>
<tr>
<td>Triad:</td>
<td>Major</td>
<td>minor</td>
<td>minor</td>
<td>Major</td>
<td>Major</td>
<td>minor</td>
<td>diminished</td>
<td>Major</td>
</tr>
</tbody>
</table>

While the key of the whole example above is D major, two sharps, each individual triad must be analyzed in the key of its bottom note—hence the changing keys.

Each triad, created by using the notes of the major scale, has a quality that is unique to that scale degree. For instance, the triad that is found on the first scale degree is major. Within a major scale and a major key, the triad found diatonically on the first scale degree will always be major—always. As will the minor triad found on scale degree two; the minor triad on scale degree three; the major triad on scale degree four; and so forth.
Identify the following chords as **major** (uppercase), **minor** (lowercase), **diminished** (lowercase with °), or **augmented** (uppercase with +).
CHAPTER XVI
THE BUILDING BLOCKS OF IMPROVISATION

Improvisational Tools

Before we can discuss, in a more in-depth manner, the tools that make up the building blocks of improvisation, and subsequently composition, listen to the following piece of music with the same understanding with which we looked at Coleridge’s use of motif in “The Rime of the Ancient Mariner,” found in the section "Beginning to Improvise," in Chapter X, starting on page 157.

Using your favorite web browser or online music streaming service, look up the following piece:

Symphony No. 5 in C minor; Movement 1
by Ludwig Van Beethoven (1770-1827)

Since this piece is in the public domain, the score, or sheet music, of this work is available online for free. Search for the score as well, so you can see the music as you listen.

What did you just hear? Did you hear how Beethoven uses this idea of motif in this movement? Before we go on, however, did you hear that Beethoven uses one main motif throughout this entire piece—the music first heard at the very opening? The whole five-minute movement of this symphony uses only one main motif! That is it. Just one, four-note, idea. What he then does next with those four notes is to mold and craft all of the rest of the music of this movement from that opening gesture. This simple idea is a technique many, many improvisers and composers—
THE BUILDING BLOCKS OF IMPROVISATION

including me—use, and have used, throughout history. Although the idea of motif development is simple, the implementation of it is extremely difficult.

Just like music itself, there are many styles, techniques, and tools for improvisation, and therefore composition, and the theories that surround them are even more diverse. However, what gives an artist their voice is in their choice of these creative elements. In this book, I am sharing with you the techniques and tools with which I have found success. Of course, I have studied and practiced many, many more, and you should too, but the two main tools I am going to show you are the ones I have gravitated toward as an artist. Like all of the other tools and techniques discussed in this book, these are not the only way, but just a few out of the many ways you can organize your music creation. Research more and start to put together your own creative tool bag. Remember that sometimes the best creative tools we can use are not just musical, but they are also found in dance, the visual arts, literary arts, theater, and film, just to name a few.

Before we discuss these tools from a musical standpoint, let us first compare the process of improvisation and composition to that of a furniture maker. A carpentry artist needs three main things before they can begin the process of creating a new piece of furniture. They need a set of plans, or an idea of what they are wanting to build in their head: materials—such as wood, nails, screws, glue, sandpaper, stain; and tools—like a saw, hammer, planer, biscuit jointer, rasp, etc. Just as a carpenter needs to have tangible products—tools and materials—before they can begin the hands-on process of creating a new product, the same is to be said for improvisation and composition. Before venturing off in your improvisational playing or composition, think about your plan, just like the carpenter. Then combine your exploration of sound on your instrument or
voice with your knowledge of motif acquired so far, and voilà, you now have the plan, materials, and tools to start working in improvisation and composition.

Tool Number One: Repetition

One of the best, most memorable motifs of all time is the opening of the first movement of Beethoven’s Symphony No. 5 in C minor—the music we listened to at the beginning of this chapter. Although we do not have time in this book to discuss minor keys, the idea of motif development is the same regardless of the musical language you are using—major, minor, modal, quartal, atonal, etc. Even though you may not know exactly what is happening with the key or the harmony in these examples, focus on the metamorphosis of the motif, from which there is much to learn.

Allegro con brio. ($\text{\~f} = 108$)

![Figure 235: Main Motif from Ludwig Van Beethoven’s Symphony No. 5 in C minor](image)

We have all heard those four, very famous notes—three Gs and an E♭, and they are possibly the four most recognized notes in Western culture today. What makes them so important? Are these four notes really that spectacular? No, not at all. In reality, they are just two notes, and one just happens to be repeated three times. However, it is not those opening four notes that give this motif a permanent place in the shrine of Western music, but what happens to them throughout the rest of movement. Before we dig into those motific developments Beethoven so wonderfully
crafted, let us first think about what elements of music make it so special when it is compared to
the other arts.

Music is indeed a unique art, because unlike literature or the visual arts, music lasts only in
the moment we hear it—no more, or no less. Yes, if we learn the technique of how music is
written down, we can look at the music's notation and, after years of study, hear the music in our
highly developed musical brain. But for the other 99.5 percent of the population who does not
have that skill, music only exists in the now. By contrast, a painting or a poem can be looked at or
read for as long as the consumer wants. There is no limit of time to their enjoyment of that piece.
However, once we hear a note in a piece of music, it only lasts a specific length of time and then it is
gone. So what does this mean to the creators of music—improvisers and composers? It means that
how and when we say something is critical to our audience's understanding of what we are trying to
say.

As we start to put together our toolbox for improvisation, remember the idea that music is simply
just a series of sounds presented within the restraints of a given time. With that in mind, read the
following story:

**The Ice Cream Factory**
by Todd Goodman

It was early and Ron was late for school. The cellar was dark and spooky and smelled
like my grandmother's feet, but what startled the spider wasn't the bear, but the oversized
lemonade he had consumed the night before.
"Where are my shoes?" Jake yelled to his mom.
"Thursday sounds like a good day to meet up," she said.
But when the man returned, he noticed that his sandwich was half-eaten, even though no
one else was in the room.

Figure 236: Lack of Coherent Ideas in a Story
Did that make any sense? Of course not! What made it incoherent was the fact that there was no repetition of an idea, no character that continued throughout the story, and no setting that remained the same. There is not a single element in this story that the reader can hold on to—nothing that they can follow. Now imagine that story as a piece of music: a piece of music with five unique plots, four unconnected characters, and two unique settings. But remember, unlike this story, music does not have the luxury of words. Yes, of course, some music has lyrics, but in great songs, the lyrics only add to the music, for they themselves cannot carry a piece on their own. What would a piece of music organized like this story sound like? It would be totally incoherent. So incoherent that you would not have any idea what is going on, and within the first 30 seconds your brain would give up trying to figure it out. Now let us revisit that same story, but clean up the number of ideas to one plot, two connected characters, and a single setting.

**The Ice Cream Factory, Take Two**  
by Todd Goodman

It was early and Ron was late for school. His bedroom was dark and spooky and smelled like his grandmother’s feet, but what startled him wasn’t his gigantic, stuffed bear, but the oversized lemonade he had consumed the night before. "Where are my shoes?" he yelled groggily to his mom. "I think you left them on the stairs. Like you always do," she said. But when he returned with his shoes, he noticed that his bear was not in the same place he left it, even though no one else was in the room.

Figure 237: Coherent Ideas in a Story

Now, did that story make any sense? Absolutely! Now that the story has one plot (the mysterious movement of Ron’s stuffed bear), two connected characters (Ron and his mom), and a single setting (the house), the flow and comprehension of the story works. Now, how does that connect
to music, and specifically, the opening of Beethoven’s Symphony No. 5? When we changed the story to have one main character—Ron, who continued throughout the story—we could clearly understand who was doing what. In the first version, Ron, the spider, Jake, someone’s Mom, the man, and the narrator all had a part. As a reader, we had no idea who was doing what, and what actions were going on. But in the second, there was only Ron and his mother, which made the flow of the story make total sense. Just as with that opening motif that Beethoven uses throughout his symphony, we can clearly see that repetition of elements throughout a piece is the key to its comprehension. If elements of a piece repeat, then the listener has something in the piece to follow throughout the music.

As you are thinking about your music, remember that the only way the listener is going to know what you are trying to say is by repeating elements. If they only get to hear something once, the listener has a very hard time connecting it to anything else they hear, but if they hear that same music multiple times, even in different contexts, they can then better start to connect that idea with its variations.

### Tool Number Two: Motivic Development

When creating a new piece of art—let us use poetry as an example—can a writer rely on repetition alone to create a piece? Yes, of course; art can be whatever you want it to be. But for that piece to be appealing, at least to me, it needs to go somewhere or do something. What do you think of the following poem?
I walked...
I walked...
I walked...
I walked...
I walked...
I walked.

Figure 238: Poem Composed Only With Repetition

I feel a piece like this is interesting, for it allows the reader to fill in much of the unwritten elements of the poem. However, I also became bored very quickly with the poem, for it does not take me anywhere. Try this same thing musically. Pick two notes and play them over and over and over without stopping or variation. What do you think? Music like this could work in the right context, but for the most part, the listener becomes bored very, very quickly. Now if we take that same structure of repetition, but alter it slightly, we can create a poem that works much better.

I walked...
I walked alone,
Yet I walked free.
Freely I walked, while
Knowing why I walked.
I walked.

Figure 239: Poem Composed With Repetition and Motif Development

Like the story we discussed earlier, does this poem make more sense? Yes! Even though I walked is repeated the same amount of times as in the previous piece, the alterations to each line allowed it to move forward and have much more coherent energy then the first poem. These ideas of
repetition, and the slight variations of that repetition, give us our two main improvisational and compositional tools. So let us look at how Beethoven uses these two elements in the opening of his Fifth Symphony.

We know the opening four-note gesture—three Gs and an E♭—but what does he do next?

He simply repeats the motif, but this time he moves the notes to another pitch-level. Instead of three Gs and an E♭, he writes three Fs and a D. This is a process called transposing the motif, or just TRANSPOSITION or sequence. Notice that both of these statements of the motif are the interval of a third, and both begin with the exact same rhythm. Where they differ is in the pitches he decides to use, and the length of the last note of the second statement.
Motives can be transposed to any pitch-level, either diatonically (meaning in the same key), or chromatically (meaning the key shifts to a new key). For instance, the following motif is transposed three times, both diatonically and chromatically. Can you see the difference?

![Motif Diagram]

**Figure 242: Diatonic Versus Chromatic Transposition**

A diatonic transposition moves the motif to another pitch-level, while maintaining the key of the original motif. The generic intervals are maintained, but the interval quality does not have to be the same. For instance, in Figure 242, the interval between the first two notes in the original motif, C to D, is a major second. In the two diatonic transpositions, that interval is a major second in the music starting on D (D to E), but a minor second in the music starting on E (E to F). In a chromatic transposition, however, the motif is moved to another pitch-level, but the key is altered, so that both the quality and generic size of each of the motif’s intervals are maintained. In both of the chromatic transposition examples, we can see that the first two notes are the interval of a major second, and regardless of the key that that music is moved to, with a chromatic
transposition, that interval will always be a major second. Therefore, what Beethoven does in the opening of his Fifth Symphony is to simply diatonically transpose the opening motif down a second, while maintaining its rhythmic identity.

Let us study that music again, but this time we will look at a brilliant piano reduction of that symphony written by the remarkable romantic composer Franz Liszt (1811-1886). What Liszt did in this piece was to take the entire symphony that Beethoven wrote, and reduce it so that it can be played by a single musician on a single piano. What this reduction allows us to do is to dissect the piece, so that we can look at the compositional tools Beethoven uses in a much simpler form, rather than the twelve staves of the full score.

Here is the Liszt reduction of the opening of that symphony. Do you notice anything about how Beethoven is using the motif from a tranpositional standpoint?
Can you see the motif and how Beethoven moves it around throughout the piece? To be able to quickly see it, look for all of the rhythms that look like this: \( \frac{1}{2} \frac{1}{4} \). How many recurrences of this motif do you see after his initial statement in the excerpt in Figure 243, from measure 2 to measure 24? And what tool is Beethoven using to manipulate them? Did you count 13 recurrences of this motif, and did you notice that most of these recurrences are manipulated

---

using the technique of diatonic transposition? Let us look at that music again, but this time I will mark all of them for you.

As we talk about repetition, can you see how brilliantly Beethoven uses the idea of repetition and motivic manipulation at the beginning of this piece? In the first seven statements of the motif, he transposes numbers 1, 2, 4, and 7 simply by using a diatonic transposition. All of the intervals in these four repetitions are the same, just at a different pitch-level. What he then does with repetitions 3, 5, and 6 is that he keeps the rhythm exactly the same and repeats the first
TODD GOODMAN

three notes, but he changes the interval between notes three and four of the motif. Instead of that
interval being a generic third, he uses a second, a fourth, and then a second, instead of the third
from the main motif.

Now, in statements 8 through 12, he goes back to the original idea of an interval of a third
between notes three and four, but instead of repeating the opening note three times, he repeats it
twice. This changes that interval of a third, from notes three to four, to notes two to four. He then
fills in the gap of the third by changing note three to the note in-between notes two and four.

What Beethoven did in this case is keep the rhythm of the motif the same, but change one of
the pitches. Just like he did in statements 8 through 12, he changed the interval of the last two
notes, this time changing the third note of the motif. This is a very common technique in motif
manipulation that you can use throughout your improvisation and composition.

When you listen to this excerpt of the piece, is there an abrupt difference when these motifs
change, or does it seem almost seamless? Of course, you can hear that it is not the exact same
music over and over, but the changes Beethoven makes to the motif allow the piece to remain
comfortable and recognizable in hearing, yet have a forward movement of energy, due to the
changes of the motif. In 25 measures of music, we hear the motif, as well as some version of the manipulated, motif 14 times.

So far, we have discussed direct repetition and transposition to manipulate a motif, but there are many, many more ways a motif can be altered. With the knowledge you now have of how transposition works, the process of applying the rest of these motif manipulation tools is pretty easy. Look at the examples of a few of these tools in the next figure and then take a motif that you come up with by playing it or writing it down. Try to manipulate it using these techniques.
**Rhythmic Diminution** takes the rhythm of the main motif and decreases all of the note values by one or more levels.

**Rhythmic Augmentation** takes the rhythm of the main motif and increases all of the note values by one or more levels.

**Modal Transposition** keeps all of the notes of the main motif on the same lines and spaces, but changes the key of the whole motif. This example is now in G major with 1# (F#).

**Diatonic Inversion** flips all generic intervals to their inverse. For example, an ascending second has an inverse of a descending second.

**Octave Displacement** changes the octaves of given notes within the motif.

These tools are very versatile and can be adjusted, modified, and/or combined to create new tools. For instance, you can combine Diatonic Inversion, Modal Transposition, and Rhythmic Augmentation to create a new manipulation of the motif.
There are many entire books written about the improvisation and composition process, and this idea of motif manipulation and development. I encourage you to continue to research and study these tools. However, with the few tools that I have provided for you in this chapter, you should have more than enough knowledge to start playing with these techniques to enhance your improvisation and writing. Experiment with these tools and see which ones you are drawn to as an artist. Then explore combining those techniques with some of the others. Remember, there is never a wrong way to be creative!

Before we continue with the next chapter of this book, however, it is very important that we discuss how composers, like Beethoven, are typically viewed. Many people—myself included when I was younger—think differently about the composers who created these famous masterworks. We often place them up high on a pedestal and disassociate them from the creative process that they went through. These composers—and along the same lines, authors, painters, sculptors, filmmakers, etc.—all went through a similar creative process, which includes making mistakes. We think of these artists as demigods who were constantly creating these perfect works—who never struggled with the writing process. Both of the those thoughts are absolutely
false. In fact, Beethoven struggled significantly with this opening idea of his Fifth Symphony. He wrote and rewrote, and was in a constant state of sketching and re-sketching this music, until he thought it was perfect.

Using your favorite web browser, look up the following:

- **Beethoven Sketches**
- **Beethoven-Haus Bonn**

You can see in these sketches the painstaking effort that Beethoven put into working and reworking his ideas into these brilliant pieces of music.

All artists work and rework their ideas—and this includes, as well, the skills associated with improvisation. You must try, and make mistakes, before you really understand what it is you are trying to do artistically. Look at the following sketch of the "Ave Maria" aria from my opera *Night of the Living Dead*.

Figure 248: Todd Goodman's Sketch for "Ave Maria," from *Night of the Living Dead, the opera*
Can you see how many changes were made to the music? How many edits and mistakes I made in just a few measures? The creative process takes time to unfold, and you will make mistakes as you figure it out. Even the best artists make mistakes, and go through an editing process of their original ideas.

One of the most powerful and important speeches in the history of the United States was President Franklin D. Roosevelt’s famous “Day of Infamy” speech that he gave on December 8, 1941, following the Japanese bombing of Pearl Harbor in Hawaii. That speech helped to unify a hurting nation, and set the tone for the entrance of the United States into World War II. I bring this speech up in a book on music because in Roosevelt’s initial ideas for that speech, many elements were different. In his first draft, he opened that speech not by saying the famous “…a date which will live in infamy,” but rather, “…a date which will live in world history,” which is undeniably not as powerful. Luckily, Mr. Roosevelt made those changes with his own hand, and we can see exactly how he changed his speech to those very famous words.

Figure 249: President Roosevelt Edits to the "Day of Infamy" Speech, December 8, 1941

---

2 https://www.archives.gov/files/education/lessons/day-of-infamy/images/infamy-address-1.gif
TODD GOODMAN

As you work through learning these techniques and tools for improvisation and composition, remember that it is OK to make mistakes and to try new ideas. Not everything you play or write is going to work, and that is perfectly normal. Just keep playing and writing, and eventually you will find techniques and tools that speak to you as an artist. And the most important thing in this whole process is that you have fun doing it, and enjoy what you create.
To really understand how rhythm works, like most things, we need to peel back its layers and get to its core. For rhythm, that core is its microbeats. But we have seen, in Chapter XIV, “Rhythmic Groupings of Three,” starting on page 232, just how similar macrobeats can be when comparing two unique rhythmic meters—simple and compound. If we put those two like-rhythms together and are careful with the notation, the resulting sound can be exactly the same, like in the following figure:

![Figure 250: Simple-and Compound Meters with Exact Resulting Sound](image)

What makes these two rhythmic meters unique is how their subdivisions, or microbeats, are used. If we divide the notes by their next level of subdivision—in this case, the eighth note—we can see an immediate uniqueness not seen in their macrobeats.
The differences between the music in Figure 250 and Figure 251 are very clear. The first figure has two rhythms with resulting sounds that are identical to each other. The second figure, although both containing straight eighth-notes, has resulting sounds that are completely different from each other. If we continue our subdivision of these rhythms down to their microbeat level, we can see, and hear, a further separation between the two. While simple meter has four notes per macrobeat, compound meter has six.

To really hear the difference between the two meters, tap your hand with a steady pulse that you get from a metronome. (If you do not have one, there are metronome apps for smart devices as well as websites that provide that tool free for your use.) Once you have a steady pulse, say the numbers evenly one through four. Now, with the same pulse, say the numbers one through six evenly. What did you notice?

<table>
<thead>
<tr>
<th>Simple Meter</th>
<th>Compound Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 2 - 3 - 4</td>
<td>1 - 2 - 3 - 4 - 5 - 6</td>
</tr>
<tr>
<td>1 - 2 - 3 - 4</td>
<td>1 - 2 - 3 - 4 - 5 - 6</td>
</tr>
</tbody>
</table>
Second Subdivision of Macrobeats

Moderato \( \text{=} 108 \)

Simple Meter

Moderato \( \text{=} 108 \)

Compound Meter

Figure 252: Simple-and Compound Meters at Their Microbeat Level

The microbeats for compound meter function in the same way as microbeats for simple meter. The only difference is the number of notes required for the first division of the macrobeat. As we have repeatedly discussed, a simple meter divides simply in half, while compound meters require a division of thirds at the first level. Once that first level occurs, the rest of the divisions are the same.

![Simple Meter with Quarter Note Macrobeat](image)

![Compound Meter with Dotted-Quarter Note Macrobeat](image)

Figure 253: Division of Simple and Compound Meter

Did you notice in Figure 253 that the second level of subdivision is the same? The eighth notes
in both simple and compound meter split equally into two sixteenth notes. It is the first division, however, that makes the two examples unique.

As we briefly discussed earlier in Chapter XIV, rhythmic solfege is a very useful tool in helping us understand where in the macrobeat each specific microbeat is found. This is accomplished by assigning each unique microbeat a distinct syllable—just as we have with pitch. We have previously learned that any simple meter grouping of four is assigned the syllables Ta, Ka, Di, and Mi, while any compound meter grouping of three is Ta, Ki, and Da. But what happens when the first level of subdivision in a compound meter is divided again?

In the section “TaKaDiMi in Groupings of Three,” in Chapter XIV, on page 240, we compared the first level of compound meter (the grouping of three) to the second level of simple meter (the grouping of four), and found that the only like-beats occurred on the first, or downbeat, of each grouping. When we compare the second divisions of both meters, we see one more like-beat between the two meters.

Figure 254: Like Microbeats Between Simple-and Compound Meters
We can see that both Ta and Di are shared beats between the two microbeats. This phenomenon happens mathematically with anything when it is being divided evenly by fours and by sixes. The middle of that division for both will be the same.

\[
\frac{2}{4} = \frac{1}{2} \quad \frac{3}{6} = \frac{1}{2}
\]

Figure 255: Math of Simple-and Compound Meter and Their Shared Middle Microbeat

Since those two beats happen at the same time, rhythmically, we use the same solfege for each—showing the similarities between the two. This makes the beginning and middle for both simple- and compound meters the same, with Ta the beginning and Di the middle. Therefore, beats two and four in simple meter—as well as beats two, three, five, and six in compound meter—are all unique. Therefore the group of six, or the compound microbeats, are labeled as Ta - Va - Ki (kee) - Di (dee) - Da - Ma, with Ta and Di being shared with Tā - Ka - Di - Mi.

These syllables are used in the exact same manner as they are in simple meter. The TaKaDiMi for each of the six microbeats holds its position on its assigned beat. When there is sound on that
TODD GOODMAN

beat, the respective syllable is used. When that beat is held or silent, that syllable is used as a place holder for that beat, but is not spoken—much like the ghost pitches that are used in pitch solfege.

Before moving on, let us look back at the first music I asked you to ponder when we started our discussion on compound meter, at the beginning of Chapter XIV. I showed you an example of simple meter music, and asked you to compare it to compound meter music. Before we compare the two, let us apply our new knowledge of TaKaDiMi solfege to the compound meter music. Other than beat three of the second measure, which we will discuss later in the “Borrowed Rhythms” section of this chapter, the rest of the music should now make sense using the syllables Ta - Va - Ki - Di - Da - Ma.

Moderato \( \{q = 108\} \)

Figure 257: Application of TaKaDiMi Syllables to Compound Meter Example

Beaming, in notation, is one of those topics that seems complicated at first, but really makes sense once you apply the idea of note groupings that we have been discussing—regardless of whether those beat groupings are in fours or sixes. The overall idea of beaming is simple: to group rhythms into their microbeat groupings, so that the reader can clearly see which notes belong to which beat. Just as we did in the “Beaming” section of Chapter IX, which begins on page 150,
we can look at a rhythm and take out all of the beams. This process very clearly shows us how important beaming is. Take a look at the following rhythm. Do you recognize it?

![Figure 258: Compound Meter Rhythm Without Beams](image)

All we see in this figure is a line of quarter (\(\square\)), dotted-eighth (\(\cdot\)), eighth (\(\wedge\)), and sixteenth (\(\wedge\)) notes. Can you read it? Maybe, but was it easy to read? Probably not.

What makes reading a rhythm like this difficult is not being able to see exactly where the macrobeats lie in the measure. In other words, we cannot see the big beats. By beaming notes together, based on where they fall in each macrobeat, this custom helps us clearly see each note in relation to the other notes in the bigger macrobeat.

Can you quickly see, in Figure 258, how many macrobeats are in that grouping of notes? No, not at all. You could figure it out, but by the time you do that, in an instance of sight-reading, this music would have already passed.

Now let us look at the same rhythm, but this time, let us beam it properly, according to its macrobeats.
Is this rhythm easier to read? Absolutely! Visually, we can see where each macrobeat falls, unlike this very same music, which is un-beamed in Figure 258. If we now compare the note notation of this rhythm to what it would look like in circle notation, we can see again how each beamed grouping lines up with the macrobeat, as seen in each circle.

Notice how, in beat three, the quarter note (\(\text{♩} \)) and the eighth note (\(\text{♩} \)) are not beamed together. Since rhythms in compound meter are comprised of notes grouped in threes, this rhythm is extremely common. When the macrobeat is a dotted-quarter note, the first division of that note is three eighth notes. If two of those eighth notes are then combined, the resulting rhythm is a quarter and an eighth. Since the quarter note does not have a flag, a beam is not connected from the eighth to the quarter. Even though these notes are not beamed together, we still understand that the first level of division from this macrobeat, the dotted-quarter note (\(\text{♩} \)), is the eighth note,
and that a common rhythm found in this meter is the quarter and eighth combination—Ta (♩) - Da (♫), or Ta (♩) - Ki (♩).  

Figure 261: Common Un-beamed Note Groupings  

Time Signatures of Compound Meters  

Time signatures in compound meters work similarly to those in simple meters. Both numbers give us specific information as to how many beats are found within the measure, and what note is assigned to that beat.

Where compound meters differ is in the assignment of what those values represent. In a simple meter, the top number tells us how many macrobeats are in the measure, while the bottom number tells us which note value is assigned to that macrobeat. If the time signature is 4/4, for example, then the number of macrobeats in each measure is 4, which is taken directly from the top number. The note value that is assigned to that macrobeat is a quarter note, since it takes four quarter notes to make a whole note.

With compound meters, both numbers still show the number of beats in the measure and the note value assigned to each beat, but where the difference lies between the two is in what beat the top number represents. Again, in a simple meter, the top number tells us how many macrobeats
are in the measure. In compound meter, the top number does not represent the macrobeat, but the first division of the macrobeat.

For instance, if the time signature is $\frac{6}{8}$—a very common, compound meter time signature—then the top number, 6, represents the first division of the macrobeat, not the macrobeat itself. And the note value that is assigned to that first division of the macrobeat is given to us by the bottom number. In this case, there are six beats in the measure, and each of those beats is represented by an eighth note. But the macrobeat is actually three of the eighth notes combined, or a dotted-quarter note. Remember, what makes a time signature compound is the fact that the macrobeat is divided into threes on its first division, not in half, like it is in simple meter. Therefore, in the time signature of $\frac{6}{8}$, there are two macrobeats.

So how can we tell by looking at them which time signatures are simple and which are compound? While there is no steadfast rule that guides this question, most of the time signatures that are used commonly will logically fit into one or the other. For instance, any time signature with a 2 or a 4 as its upper number will always be in a simple meter.
While we can say that any time signature with a 2 or a 4 as its upper number is always a simple meter, we cannot say that there is a similar steadfast rule for compound meters. (Although, time signatures with a 6, 9, or 12 as their upper numbers are more than likely going to be compound.) How the beat is felt, and therefore written, determines whether those time signatures are simple or compound.

Let us take 6, for example. If the pulse of the music is slow and the composer writes in the meter of 6, where each of the six beats is felt as a main beat, then the music would be in a simple meter, because the first division of the macrobeat, (an eighth note), is divided in half, not in thirds. But if the music were faster, and only beats one and four were felt as main beats, then the music would be compound, because the first division of the macrobeat, the dotted-half note, would be divided into thirds, not in half.
With that being said, time signatures with a top number of 6, 9, or 12, will most likely be in a compound meter, although it is important that you look at how the music is beamed to get a better understanding of what is being written. In most cases, however, the METRONOME MARKING—the symbol at the beginning of the music that tells you how many beats per minute the macrobeat gets—will be a straight note value (like \( \frac{1}{2} \), \( \frac{1}{4} \), or \( \frac{1}{8} \)) if the meter is simple, or a dotted note (\( \frac{1}{2} \)., \( \frac{1}{4} \)., or \( \frac{1}{8} \).) if the meter is compound. For examples of both, see the metronome markings in Figure 264.

As I have stressed throughout this book, the knowledge of a subject can, and should be enhanced by a deeper understanding of that subject’s history and evolution. Time signatures and meter are no different. While we do not have the time in this text to delve into the complete history of any of the subjects we are discussing—for there are, in fact, entire texts written solely on those histories—we do have the time to look briefly at those stories, so that your interest is sparked, and you can spend some time researching and exploring those subjects on your own. Use the resources in Appendix C, “Resources for Further Learning,” starting on page 320, to help guide your study. Learning is something that does not, nor should it ever, stop, and I encourage you to
continue to find new and interesting ways to approach these topics.

If we look back through the history of the time signature, we see many different changes and alterations to how this musical tool is used. But what we are going to look at, for the purpose of this book and your heightened awareness of the content of this chapter, is the development of the early split of simple and compound meter—although they were not originally called by those names. This delineation in microbeat division happens much earlier in the evolution of music than most people would think.

INFO  Discussions and writings on rhythm, and the importance of rhythm in the Western world, date back as far as c. 350 B.C.E., in Aristotle’s *Poetics*.

But where and when the idea of meter—and, more important, the writing of that meter—becomes a prime topic for composers and theorists is in the early 13th century, with the idea of *mensural notation*—the showing of precise rhythmic durations with specific notation symbols. This "new" music starts to move away from single-line vocal music, to more complicated counterpoint, which will eventually dominate composition trends by the early 15th century and beyond. Mensural notation was a brilliant system that evolved from previous systems used throughout Europe in the thirteenth century. It was then codified by theorist Franco of Cologne around 1280, in his treatise, *Ars cantus mensurabilis*, "The Art of Measured Chant."¹ This new system allowed composers and scribes the ability to show, via notational symbols, different rhythmic note values, just as we do today. Before this time, notes on the staff were shown using the neume system, which we discussed previously, in the section "History of the Staff," in Chapter IV, starting on

These neumes were great for showing pitch on the staff, but because of their similarity to each other, rhythm was difficult to show. With this new mensural—meaning "measured"—system, a new symbol was assigned to each level of division of the beat.

For our purposes in this chapter, what makes the look-back at mensural notation even more interesting is how these early music pioneers divided their music into rhythm groupings of two and three, or meter. They looked at these divisions in two forms: perfect and imperfect. Perfect time was divided into three sub-beats, while imperfect time was divided into two.

In our modern world, where the majority of our music, especially popular music, is in a simple meter, (mostly $\frac{4}{4}$), the thought that anything with a sub-division of three would be considered perfect, is against our modern customs. So why do you think these 13th century writers would make the triple division perfect? The answer is very simple—religion. Christian ideas, customs, and thoughts made their way into all aspects of European life, including music. Three was considered a holy number, for it represented the trinity—the Father, Son, and Holy Ghost, and was therefore given the perfect name.

The symbolism of that number, which also represented purity, was a circle, so that symbol was assigned to the perfect time (groupings of three), or tempus perfectum. To represent imperfect
time (or groupings of two), or *tempus imperfectum*, that circle was cut in half.

Mensural Notation: "Time Signatures"

<table>
<thead>
<tr>
<th>Perfect Time</th>
<th>Imperfect Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Tempus perfectum</em></td>
<td><em>Tempus imperfectum</em></td>
</tr>
</tbody>
</table>

Figure 266: Perfect-and Imperfect Time Symbols

To continue perfecting their idea of imperfect-and perfect time, early musicians added the terms "major" and "minor" to each classification, to show whether a meter was divided into threes or twos at the microbeat level. Remember that major means big and minor means small. The major label meant that each microbeat level was divided by three from its previous level, while the minor was divided by two, since as two is smaller than three. What this means is that the concept of simple (minor) and compound (major) meter was being developed in the middle of the 13th century—over 700 years ago.

How do these imperfect and perfect times compare to what we know today? A minor perfect time would have a macrobeat of three, but a microbeat of two, making it a simple triple meter, like $\frac{3}{4}$. But what makes these early time signatures even more interesting is in the evolution of their symbols, which we will see after we look at the four early time signatures.
Figure 267: Early Meters and Their Modern Notation Equivalents

If we look closely at the symbols used for minor imperfect time (◯) and major imperfect time (◯), we can see a resemblance to two commonly-used time signature shorthands—common time (♩) and cut time (♩). It is remarkable to know that what we are studying has been around for more than a millennium, and it has taken centuries for some of these ideas to develop into the tools and traditions we use today.
Compound meters, just like simple meters, can be further categorized into sections. These sections are the same for both simple and compound meters. This further classification is taken from the meter’s number of macrobeats. If the number of macrobeats is two, then that meter is a duple meter. If it has three macrobeats, it is a triple meter, and if it has four macrobeats, it is a quadruple meter.

Now that we have the vocabulary and knowledge to discuss meter with these two classification systems, we now know and can talk about specific meters using these two categories. If I say a meter is simple duple, we know that the first level of its subdivision is two (simple) and that each measure has two macrobeats (duple). We do not know the exact note assigned as the macrobeat, but we do know that there are two, and that each beat will be divided in half.

Now that we understand compound meter, the same rules apply. If we have a triple compound meter, we know that the macrobeat will be a dotted note, which will be divided into three notes, and that there will be three macrobeats per measure. Let us compare a simple triple meter with a compound triple meter.
We now understand how compound and simple meters work. Simply put, compound rhythms are in threes or sixes, while simple rhythms are in twos or fours. But can they mix? Absolutely! Music can be written or played in one type of meter—for instance, simple meter—while rhythms from the compound meter can then be inserted into the other simple meter.

For example, imagine we have a piece of music in $\frac{3}{4}$, that has three steady macrobeats per measure. But on the third beat, we want to divide that quarter note into three eighth notes rather than two. We simply borrow a compound meter rhythm, and insert it into that beat. Understand that the macrobeat does not change. The speed of the eighth notes in the triple subdivision must be faster to allow for the extra note.

Try the same exercise we did previously in this chapter, but this time, instead of fours and sixes,
think twos and threes.

Tap your hand with a steady pulse that you get from a metronome. Once you have a steady pulse, divide the pulse in half by saying the numbers, evenly, one and two. Now, with the same pulse, say the numbers one, two, and three evenly. Go between the two. What did you notice?

| Simple Meter | 1 - 2 - 1 - 2 - |
| Beat         | Beat          |

| Compound Meter | 1 - 2 - 3 - 1 - 2 - 3 - |
| Beat          | Beat          |

What you just did in that exercise is the process of borrowing a rhythm. The steady pulse could be the pulse in either simple or compound meter. If the consistent rhythmic subdivision in that meter is a two, and you said "three," you just performed a triplet, which is borrowed from the compound meter. If the consistent rhythmic subdivision is a three, and you divided it in half by saying "one" and "two," then you just performed a duple, which is borrowed from the simple meter. Can you hear and feel how the subdivision speeds up or slows down when we borrow a rhythm, but the macrobeat does not?

In the notation, to show that it is borrowed, the number of the grouping is added beside the beams of the grouping, or a bracket is added to the note heads if it is a quarter note or larger.
When a compound grouping of three is used in a simple meter, it is called a **Triplet**, and a grouping of six is called a **Sixtuplet**. Simple meter rhythms can also be added to compound meter rhythms. For instance, music in \( \frac{9}{8} \) could have a beat that is divided in two rather than three. That division of two, called a **Duple**, is a rhythm borrowed from the simple meter.

Let us look back at Figure 269, and discuss how one would TaKaDiMi that rhythm. The solfege syllables used for borrowed rhythms are the same ones that would be used in their metric counterpart. So the rhythm in this figure would be said: \( \text{Tà - Di } | \text{Tà - Di } | \text{Tà - Ki - Da} \), because the syllables for a grouping of three in compound meter are \( \text{Tà - Ki - Da} \).
For most music, there are only three types of meters; simple, compound, and mixed. We have discussed simple and compound meters quite extensively, and we know that each of these meters are classified by the grouping of their subdivision. What makes a mixed meter *mixed* is that it contains at least one of each of the other simple and compound meters—essentially mixing the other two meters. Although it may seem that mixed meters might be a rarity, they are used frequently in the Western music of the 20th and 21st centuries, as well as being commonplace in Eastern music. Mixed meters have the wonderful ability to create rhythmic energy by their uneven nature. Here is what the circle notation would look like for a mixed meter measure of music.

Notice that the total number of beats adds up to seven, which is something we have not seen yet

---

2 There is another type of meter called irrational meter, but we will not be discussing it in this text. Use some of the "Resources for Further Learning," found in Appendix C, starting on page 320, to discover more information about this other way of thinking about meter and time signatures.
in this text. The most common top numbers in mixed meter, using our standard time signatures, are 5, 7, and 8. But as I mentioned previously, some wonderful music from the East is written and/or felt in 11, 13, and even 15.

When we read a mixed meter time signature, the numbers of the time signature take their rules from compound meter. This means that the top number shows the number of the first subdivision of the macrobeat. If that number is 7, it means that there are not seven macrobeats, but seven first subdivisions of the beat. How that macrobeat is arranged in the measure is shown either by the beaming of the subdivision, or by indicating that information about the measure.

![Figure 273: Measure of Mixed Meter](image)

In this measure you can see that both the first level of subdivision is shown not only by beaming, but by a number indication above the music of 3+2+2. This tells us that the seven eighth notes in this measure will be grouped in that configuration—one in a compound meter and two in simple. Some composers and publishers use the number indication when the beaming is unclear, but in most cases, the beaming will show you the note groupings.

Some time signatures, like the $\text{\textfrac{6}{4}}$ we discussed previously in this chapter, can be either one or the other types of meter—like the $\text{\textfrac{6}{4}}$ in Figure 264 on page 290. The same phenomenon occurs in mixed meter as well. Let us look at one such example.
Mixed Meter

\[ \begin{array}{cccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\end{array} \]

Notice the groupings in this measure are 3+3+2.

Simple Meter

\[ \begin{array}{cccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\end{array} \]

And the groupings in this measure are 2+2+2+2.

Figure 274: Mixed-and Simple Meter Differences in the Same Time Signature

Since the number 8 can be divided unevenly, as well as evenly, any meter with a top number of 8 has the unique ability to switch identities—it can be a mixed meter or a simple meter. This metric identity is determined, as we have previously discussed, by the grouping of the measure's first division of the macrobeat. In the two examples found in Figure 274, the mixed meter is divided into 3+3+2, while the simple meter is 2+2+2+2—both of which, of course, total eight.

Unlike borrowed rhythms, in mixed meter the pulse remains on the first subdivision of the macrobeat, or the bottom number of the time signature, not the macrobeat itself. In the previous example of mixed meter, the pulse is firmly assigned to the eighth note (\( \cdot \)) and the macrobeat changes from a dotted-quarter note (\( \cdot \)) to a quarter note (\( \cdot \)).

Mixed Meter

\[ \begin{array}{cccccccc}
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\
\end{array} \]

Figure 275: Macrobeat Differences in the Same Time Signature
Perform the following rhythms using Ta Ka Di Mi if the rhythm is simple, or Ta Ki Da if it is compound. If the meter is mixed, it will contain both simple and compound subdivisions and therefore both Ta Ka Di Mi and Ta Va Ki Di Da Ma. Remember a rhythmic meter can borrow subdivisions from the other and the borrowed syllables are used for that grouping.

№ 1

№ 2

№ 3

№ 4
Revolutionary music theorist Heinrich Schenker published the following phrase in most of his writings: *Semper idem sed non eodem modo*, which means in English, "Always the same, but not always in the same way." What do you think Schenker means by this? And how might this phrase apply to any of the other arts we have studied so far in this text?

As we have discovered over and over in this book, many, if not all, of the fundamental elements of music can, and should be, viewed and approached via their common connections. For instance, take the following two rhythms. Previous to our studies, both of these rhythms may have been seen as two totally different rhythms, but are they?

![Moderato](#)

![Moderato](#)

Figure 276: Comparison of Two Rhythms

Yes, these two rhythms look different, but they sound exactly the same. As we have studied
throughout this book, many elements of music, and art for that matter, follow a similar logic. As we invest the many, many hours it takes to learn these terms, concepts, and skills, remember to always keep this concept in mind. If we, again, focus on what makes all of the musical elements similar, these large-scale concepts are much easier and faster to learn.

Keeping the Schenker quote in mind—*Semper idem sed non eodem modo*—while coupling it with the information we just discussed, how else could we apply this Schenkerian philosophy of music to our studies? If we listen to the music of Wolfgang A. Mozart and then compare it with the music of film composer John Williams, do both composers completely create absolutely new ideas in their music? Or are there like elements between them? Yes, of course there are like elements! In fact there are many, many like elements between both of their music. If we go a step further and observe all tonal music—the music we are studying in this book—it all follows the same set of expectations. Meaning that notes in the scale, regardless of which piece they are in, want to do the same thing. For example, Ti in the major scale has an extremely strong tendency to move up to Do’. Do you think that Ti only wants to go to Do’ in the music of Bach, but not in the music of Coldplay? Or do you think that regardless of its place in history, or its musical genre, Ti has a tendency to move to Do’, period? Absolutely! Without a doubt, Ti wants to move to Do’! This phenomenon is present in all tonal music, regardless of when it was written or who wrote it. Now Schenker’s theories are much more in-depth than that, and you should take time at some point in your studies to familiarize yourself with his writings, but in the simplest terms, all tonal music is "Always the same, but not always in the same way." As we progress in our study of triads and their variations, use this philosophy to help you learn more quickly and efficiently.
Interval Inversions in Triads

Remember that the definition of a triad is three notes that can be, when rearranged if necessary, stacked into intervals of thirds. We began our in-depth discussion of this topic in Chapter XV, which starts on page 245, but what we did not discuss is the latter half of the definition—"when rearranged if necessary." In that previous chapter, we did look at different combinations of groupings of three notes and their intervallic construction, seen in Figure 220 on page 247, but we did not attempt to move those notes around to reconstruct the chord. Before we do that, however, if you need a refresher on how interval inversions work, please reread the section "Interval Inversion" on page 214, found in Chapter XII, "Intervals."

Triad vs. Chord

A TRIAD is three notes that can be, when rearranged if necessary, stacked into intervals of thirds.

versus

A CHORD is a grouping of three or more notes.

Therefore, all triads are chords, but not all chords are triads.

If we look at a triad purely from its intervals, we understand that each triad is made up of three notes separated by thirds, with a fifth spanning all three notes.

Figure 277: Intervals in a Triad
Now let us take that same triad, but this time add, above the triad, another note with the same pitch-class as our root. By adding a fourth note to our triad, we start to see the inclusion of different intervals other than thirds and fifths.

![Added root an octave higher](image)

Figure 278: Intervals in a Triad with Added Root

With the doubled octave, we now see two other intervals that were not seen in our previous discussion of the triad—the fourth and the sixth, which are found between the third and the doubled octave, as well as the fifth and the doubled octave. However, we know from our knowledge of interval inversion, found in Chapter XII, that the fourth and the sixth are simply inversions of the fifth and the third, respectively.

![Interval Inversions Created by the Doubled Octave](image)

Figure 279: Interval Inversions Created by the Doubled Octave
By adding the repeated pitch-class of the root above the triad, we now have more notes in our chord, but no new pitch-classes, or unique intervals; therefore, this chord is still considered a triad, even though it has four notes. It still receives the triad label; since there are only three unique pitch-classes contained within the chord, the fourth note is called a **Double** in the triad.

Think about this triad as you would a peanut butter and jelly sandwich. The ingredients of our sandwich are bread, peanut butter, and jelly. Even though the sandwich has two pieces of bread, we would not consider the ingredients to be bread, peanut butter, jelly, and bread, would we? No. The bread in the ingredient list is just doubled, on the bottom and top of the sandwich. The same happens with our triad when a doubled pitch is added. Let us look again at the chord in Figure 278 on page 306. We can now clearly see that the root, which is pitch-class F, is found two times within this chord.

![Figure 280: Triad with Doubled Root](image)

As you can see, the intervals that are created by the doubled pitch-class of the root are the fourth and the sixth, which are both interval inversions of the fifth and the third; again, not adding any new material to the chord. But what would happen if we take that same chord, and eliminate the lower of the doubled roots? We still have three notes, but now our intervals are no longer thirds.
With this chord, we have three pitch-classes: F, A, and C. When the triad has the root on the bottom, as seen in the left chord in Figure 281, the intervals above the root are two thirds, which are found between F and A (3rd), and A and C (3rd). When the root on the bottom is removed, the intervals found above the bottom note and the other two notes are now no longer intervals of thirds, but a third and a fourth respectively. Although the intervals in this triad have changed, we can still see that the pitch-classes that make up the chord are still the same. The only thing that has changed in this triad’s construction is the order of notes from the bottom of the chord to its top. Instead of the notes being in the order of root, third, then fifth, the bottom note of the triad is now the third. In Figure 281, we can see that the bottom F, the root of the chord on the left, is no longer present in the chord on the right, and A, or the third, is on the bottom. Remember that both triads still contain all three pitch-classes of F, A, and C.

Now that the bottom note of the triad has changed, why do we not change the label of the bottom note of our triad’s new root? To answer that very important question, we must look back briefly at the definition of a triad—three notes that can be, *when rearranged if necessary*, stacked into intervals of thirds. When those three notes can be rearranged and stacked into thirds, that fundamental form of that triad is called its **root position**, since the stacked notes are
separated by intervals of thirds—specifically, major and minor thirds. It is in this fundamental form that the bottom note is considered the root.

Let us look back again at the triad on the right of Figure 281 on page 308. Since the three notes in this chord are separated by a third and a fourth, we know that the bottom note of this triad cannot be its root, since one of the intervals above it is not a third. We do know, however, that the fourth is an interval inversion of the interval of a fifth, and therefore could be part of a root position triad when rearranged.

<table>
<thead>
<tr>
<th>REMEMBER</th>
<th>In root position, a triad can be analyzed by either of its two thirds, found between its root and third and third and fifth, or between its first third and fifth. For example:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fifth</td>
<td>Perfect</td>
</tr>
<tr>
<td>2nd Third</td>
<td>Major</td>
</tr>
<tr>
<td>1st Third</td>
<td>Minor</td>
</tr>
<tr>
<td>Triad Name</td>
<td>Minor</td>
</tr>
</tbody>
</table>

Figure 282: Interval Construction of First Inversion of a Triad

When the root of the triad is moved from the bottom of the chord to the top, leaving the third of
the triad on the bottom, the resulting triad is called its **FIRST INVERSION**. This inversion of the triad is constructed of two intervals—a third and a fourth, with the outer interval, from the bottom note up to its top, being a sixth. With the example found in Figure 282, we can see that the interval from A up to C is a third and the interval from C up to F is a fourth, while the overall interval from A up to F is a sixth.

As we start to discuss triads and their inversions, one very important point in the vocabulary used to describe a triad must be clarified before we can move forward. When a triad is in root position, the notes from bottom to top of the triad are called its root, third, and fifth. Those labels, regardless of their position within an inversion or chordal spacing, are permanently attached to those pitches. The triad we have been discussing in this chapter, F-major, would have as its root the pitch-class F, while its third will always be pitch-class A and its fifth, pitch-class C. When speaking of a major triad starting on F, the root is always F; the third, A; and the fifth, C.

Another way to think about these chordal labels is the same way we treat pitch solfege when it comes to the scale in our movable Do system. The first scale-degree, or the bottom note of the scale, is always called Do. The second is always Re, and so on. This same concept happens with chordal labels as well. In a triad, the root is always the bottom note of the triad when it is stacked in thirds. When a triad is in root position, the notes from the bottom of the triad to the top are always labeled the root, then the third, then the fifth. Of course, these names come from their generic interval size above the root of the chord.

Another note label that is used for all chords is that of the bass of the chord. The bass label is
TRIADIC INVERSIONS

attached to the bottom note of the chord, regardless of its function in the chord. For instance, when a triad is in an inversion, or not stacked in thirds, the bottom note of that triad is not called the root; it is called the **BASS**. In a root position triad, when the root is on the bottom, the root is also called the bass. But when the triad is in an inversion, like the first inversion we discussed in Figure 282 on page 309, the root is no longer the bottom note, so the bass is not the root. In fact, the bass note in a first inversion triad is the third.

![Figure 283: Root and Bass](image)

We can see that both of the triads we have studied so far are unique in their intervallic construction, yet they both are also comprised of the same pitch-classes. Even though each of these triads are made up of the same three pitch-classes, they do, indeed, have a uniqueness in sound, as well as function, because of the way each of their interval combinations sound with the other.

Before we discuss why this happens, let us first look at what happens when we shift the triad one more time. To find the first inversion, the root in our first triad was doubled an octave higher. The bottom doubled root was then taken away, leaving the triad's third on the bottom of the chord as the triad's bass. This leaves us with a triad that still contains all of the same pitch-classes as the previous triad, but now the notes are in a different order, with a different intervallic construction. Instead of the chord containing two thirds, this new triad has a third, followed by a fourth.
When discussing a triad or a chord, we always speak of those notes from the bottom of the chord to its top. The first note of any chord, in speaking, is its bass, or bottom note.

If we follow the same process as we did when we created the first inversion triad, the third in the bass is treated in the same way. The third is doubled at the octave, and the lower double is removed, creating a new triadic inversion with the same pitch-classes. This creates another new triad, with yet another set of unique intervals.

When the third is doubled at the octave, and then that bottom double is removed, what is left is a triad with, again, all of the same pitch-classes as our root position triad and our first inversion triad. But this new triad has a slightly different intervallic construction. For this inversion, we can see that the intervals from its bottom to its top are a third followed by a fourth—shown in the chord on the right in Figure 284 on page 312. Although this triad contains the same pitch-classes of F, A, and C, it has a different intervallic layout as the previously discussed triads.

What happens if we do this process one more time?
Just as we did with the other inversions, the bottom note is doubled at the octave—in this case, the bottom note, or bass, is the fifth. Then the bottom double is removed, leaving a three-note chord, which still only contains the three pitch-classes of our root position, first, and second inversions—F, A, and C. As this new triad is created, we must first find out if the intervals in it are unique from the previous three intervallic combinations. And no, of course they are not, for we can see that the intervals found within this triad are a third, followed by another third: the same as our root position triad. Also, the pitch-classes from the bottom to the top are exactly the same in both triads—F (root), A (third), then C (fifth). Since both triads have the same intervallic construction and the same pitch-classes, they share the same name.

In this case, the triad of F, A, and C, is an F major triad, regardless of where it sounds in the range and where on the staff it is written. What makes the triad unique is its intervallic make-up, coupled with its pitch-classes. As we have seen with each of these inversions so far in this chapter, each triad holds the name of an F major triad, either in root position or an inversion, regardless of
where it is written. You can see this in the following figure:

**F Major Triads**

![Diagram of F Major Triads in Root Position, First and Second Inversion]

Figure 287: F Major Triads in Root Position, First-and Second Inversion

With all of the possible combinations of intervals within the triad, a shorthand of names was developed to quickly discuss these chords. Now, just like other topics we have discussed, triad and inversion names vary, based on the genre of music you are discussing, as well as your
geographic location. Musicians in different parts of the world use different labeling and names due to the traditions of that music, although they are fundamentally the same thing.

To better understand this concept, I replace music and triads with food—specifically, sandwiches. First, think about a simple sandwich. In our minds, we often categorize a sandwich as a sandwich with no other thought about it, but when we look at a given category of sandwich from a variety of different geographical locations, we discover something very interesting. Where I live, Pennsylvanians call a sandwich on a long roll with a variety of meat, cheese, and toppings a "hoagie." However, just northeast of us, the people of Connecticut call that very same sandwich a "submarine." Head south from Connecticut to New York City, and there that same sandwich is called a "hero." Go north to New England and the name changes again, to a "grinder." In Louisiana they call them "po'boys," while in other parts of the world they get the name "gatsby," (South Africa), or "Bánh mì" (Vietnam). These are all long rolls filled with meat, cheese, and toppings, but based on their geographical location and history, they are named different things. The same applies to musical elements as well. Remember discussing this very idea in regard to our movable and fixed Do solfege systems. Chordal inversions have a very similar story.

There are many approaches to naming a triad and its inversion; however, for this book, we will focus on two. One is typically used in Western art music (i.e., "classical" music) and the other that is used in modern popular music. Let us look first at the art music example, for it is a much more thorough way to label these triads. (although this way does make the process slightly more complicated). Once we understand how this complete, thorough system works, the others are very easy to understand.
In labeling triads and their inversions, the first step is to find out if the triad is in root position or in an inversion. To do so, we simply look at the intervals above the bass. If both of the intervals above the bass are thirds, then the triad is in root position. If the intervals are a combination of a third and a fourth, then the triad is inverted.

![Diagram of triad inversions](image)

**Figure 288: Identification of Root Versus Inverted Triads**

In Western art music, the label that is applied to these inversions comes simply from the intervals above the bass. When the triad is in this form, it is called **CLOSED POSITION**. A closed position triad is one that is stacked together, note after note, without skips. For instance, a closed position F major triad in root position would be: root, third, and then fifth, without breaks. An **OPEN POSITION** triad is one that skips notes. For instance, an open position F major triad in root position might have the notes root, fifth, then third. The third in the open position triad is skipped over, and placed above the fifth. However, because both of these triads still maintain the root as their bass, they are both considered root position triads.
To understand how these labels work, we must always think of these triads in their closed position. Once these concepts become more usable for you, you will be able to apply that knowledge to open position triads as well. But for this book, we must focus on closed position.

Up until this point, we have looked at the distance, or interval, between the first and second, as well as the second and third notes of our triads. And from that, we understand that root position triads are made up of thirds exclusively, while inversions contain a fourth. But we have, only briefly, explored the distance from the first to the third note. In looking at those intervals, we can see that a root position triad, and its interval from the bottom note to the top note, is a fifth, but the interval between the outer two notes in both inversions is a sixth. It is with those interval differences that we can start to organize the labels for each of these triads.
Let us look again at these three triads by just their intervals.

We can see again that each of these triads has a unique intervallic construction, and it is from that makeup that the names are derived. Out of these intervals, we can formalize a system in which these labels can be established by looking at the outer interval, from the bottom to the top, and the bottom interval, from the bottom to the middle.
By looking at just these two intervals, we can quickly see their uniqueness—just as we did with triad quality. A root position triad can be also referred to as a $5\ 3$ chord; a first inversion would be a $6\ 3$ chord; and a second inversion triad would be a $6\ 4$ chord.

The next step in establishing the complete name of a triad and its inversion is by identifying the quality and root of the chord. To refresh your knowledge of triad qualities, please look back at Chapter XV, "Triads and Diatonic Harmony," starting on page 245. Remember that in a triadic inversion, however, the root of the triad is not the bass, so its identification must be thought through carefully. To find the root in a triad inversion, you can either stack the triad into thirds so it is in root position, or you can just look at the top of the interval of the fourth. When the triad is in closed position, the top note of the fourth will always be the triad’s root.

In a closed position triad, the top note of the fourth is always the root.

Figure 293: Root of Triadic Inversion
Once you know the root, you can then start to figure out the quality of the triad, by looking at its fifth and third in relation to the root's key, which we discussed in-depth in "Naming the Triads" on page 253. Even in an inversion, the same concept of naming the triad applies.

Root: F; 1 b (B♭)

Figure 294: Identify Root and Key of Inverted Triad

Since both the third and fifth are in the key of the root, the triad is major—F major, also shown as an uppercase F. We also know that this triad is in its first inversion, due to the fact that its intervals are a sixth (outer two notes) and a third (bottom and middle notes). Since we know the root (F), its quality (major), and its inversion (first), we can show all three with a very convenient shorthand—F 6 4.

Before we continue, however, we must briefly discuss the interval numbers used to show inversions. These figures, at one point during the evolution of music, were used extensively to show players exactly what triads were to be played during a given moment in the music. These numbers were written under a bass line, and the player would then improvise over that bass with the understanding of which chords to play, based on the figures under the music. In the following example, we can see three bass notes that represent three triads. How we know which chord is which is by knowing which intervals are needed above the bass. Look at the following example. What do you think each of these chords would be?
When we first explored these figure numbers, we understood that a root position triad is also referred to as a $5\ 3$ chord; a first inversion, a $6\ 3$ chord; and a second inversion, a $6\ 4$ chord, but in the previous figure, we see nothing under the F, and only a six under the D. During the evolutionary process that music notation followed over the past roughly 800 years, various customs and common practices morphed and changed to create a much simpler, more efficient version of its previous self. So did this system of figured bass. While we still use certain elements of it, other elements became common knowledge, and therefore not needed. So, let us look again at Figure 295. This time, use both the full, historical figures, as well as the modern shortened figures, and you will start to see each triad and its inversions.

---

We can see that the figures $5\ 3$ that represent a root position chord are taken away completely, and
any bass note that is by itself is assumed to be a root position triad. The 5 and the 3 are assumed and not needed. The same thing happened with the first inversion as well. They are shown by using just the number 6, rather than the full $3$; the third above the bass is implied. Meanwhile, the second inversion triad is shown with the full figure of $\frac{6}{4}$.

![Figure 297: Figured Bass Inversion Numbers](image)

If we revisit the music from Figure 295 on page 321, we can now understand which triads are being represented by these bass notes and figure numbers.

![Figure 298: Location of Roots in a Figured Bass Example](image)

Let us look more closely at the second chord of Figure 298. We know that the bass note is a D, and that it is a first inversion triad. We also know that this bass note is the third of the chord. If we build a sixth and third above the bass note, D, we get an F and a B♭—the B is flat in this case.
because of the key signature. We know that the top of the fourth interval in any inversion is the root, which makes B♭ the root in this example. We know that B♭ has two flats, B♭ and E♭, and that the other two notes in this chord, D and F, are both in that key, making this chord a B♭ major triad in first inversion, or a B♭ 6.

The same logic can be applied to the last chord of Figure 298. If the bass note is a B♭, and we know that it is a second inversion triad, we know that the B♭ is the fifth of the triad, and that the root is the top of the fourth, or E. We also know that the key of E has four sharps, (F♯, C♯, G♯, D♯), and that both of the notes above the B♭ are not in the key, meaning that it is more than likely a diminished triad with a minor third and a diminished fifth—both of which are true. So this triad would be written as an e° 6, or an e diminished in second inversion.

![Figure 299: Triads and Figured Bass](image)

That seems like a long process at first, but remember that some musicians read this notation in real time. It is very intuitive and helpful once you take the time to understand it. Now, even though we might not understand everything that is written in the following music, we can see examples of what we have been discussing in this chapter. All you have to do is apply the same logic we used to come up with the inversion numbers for our root position, first and second inversions triads.
Now that we understand how inversions really work, we can look at one of the simple ways that inversions are indicated, especially in Western popular music. Let us first look at the root position triad. Just as with our other system, a root position triad is indicated by using the root of the chord only. So an F major root position triad would be shown by just the letter F.

One of the ways the systems differ is in their handling of inversions. Instead of using inversion numbers, the bass is simply indicated after the root. So a first inversion of an F major triad would be indicated by F/A. The capital F shows us that we have an F major triad, and the A is what note is in the bass. An F major triad in second inversion would be written as F/C.

---

Both systems are still widely used today, and they are both very different in their breadth of use. Although the popular music system is much simpler, it does allow the user to understand exactly what is happening with the triads above the bass. The art music system also provides for us the use of a more robust system, which is expandable exponentially. Even though we cannot go more deeply into these systems in this book, I encourage you to continue your study of these and other systems. Remember, *Semper idem sed non eodem modo*, and that many elements in music are much more similar to other elements that you may already know well. Focus on what connects these elements, and use that knowledge to learn the new topic more quickly.
1) Identify the following key signature and triad with its root and inversion.

2) Write the following triad with its correct quality and inversion.

3) Identify the root, quality, and inversion (if any) of the following triads.
When studying any subject, the effect that each of its layers has on one another, when compared to the whole, is sometimes as fascinating as the subject itself. For instance, how the economy of your town affects that of your region, county, and even the global economy is fascinating. When I was growing up, in my hometown—a small town of about 3,000 people—two companies had manufacturing plants there that were unique in the world. One produced bicycle frames for high-end, performance bicycles, and the other coated paper with a resin that was later used in electric motors, electrical transformers, and even military bullet-proofing gear for the Army—only one other company in the world did this procedure.

As a kid, I always felt, like most kids, that I lived in a place that was boring, and not important to the rest of the world. But quite the contrary: the people of my town were producing products that were used throughout the world in extremely important ways. If you have ever used electricity, you have been the beneficiary of a product from my hometown. Also, bicycles from my town were used in every major professional bicycle race, as well as for pleasure riding by millions throughout the world.

Now, what do coated paper and bicycle frames have to do with music and our study of musicianship? Everything! Even though each little element we have studied, or you will study
TODD GOODMAN

throughout your career as a musician, seems small and insignificant to the larger whole of being a musician, it is not. In fact, they are all as important to your journey through music as the frame is to the bicycle, or the insulation paper is to an electrical engine or transformer. For without that frame, there would be no bicycle, and without that paper, every electrical engine and transformer would catch on fire.

Just as I felt that where I lived as a kid was a boring, insignificant place in relation to the rest of the world, I also felt the same way about my early studies of music theory and aural skills. I could already play well, or at least I thought I played well, and in my head I did not understand the need to know all of these music theory things that I probably would never use when I played the trumpet. However, the correlation between watching a bicycle made in my little "insignificant" hometown fly down the Avenue des Champs-Élysées during the final moments of the Tour de France, to my deep-rooted understanding of key signatures, scales, and triads as I played in the trumpet section of a Mahler Symphony, instantly connected.

No matter how small and insignificant you might think this information is to your playing, writing, listening, and understanding of music, you are grossly underestimating that knowledge. Like most musicians, it will take some time and hindsight to truly understand the extreme importance this information holds, and how much it will influence you as a musician. But believe me, if you keep at it, you too will come to that realization. Embrace it, and allow it to enhance your enjoyment of music making and music listening!
You may notice how much of my philosophy and writing in this book connects elements of musical study to the other arts—especially the visual arts, architecture, culinary arts, and the literary arts. I have found, in teaching this subject for over a decade, that most abstract ideas that we ask students like yourself to embrace—like motif development, and enharmonics—really make much more sense when we relate them to artistic, yet non-musical ideas, like poetry and sandwiches. So as you continue your study of music, please remember that musical knowledge is out there to be found in every aspect of life, and not just solely in your study of music.

When you read a great novel, pay attention to how the writer deals with character development and timing, and know that what that writer is doing is essentially the same thing composers and improvisers do in constructing a great piece of music, or a great solo. When you visit an art gallery—and you should visit many art galleries—pay attention to the artist’s use of color, and apply that to your study of chords, enharmonics, and chromatics. Look at how a simple brush stroke of a single color can change all of the other colors around it, and make a painting come to life. That single brush stroke can be a chromatically altered pitch, or a different motif manipulation in your music. Think about the unique ingredient on your sandwich that you would otherwise never try, and how mixed with the rest of the ingredients, it transforms your meal into something magical. How might you approach your music differently after having that sandwich experience? When you travel to new places, keep your brain open for experiences that might help enhance your musical understanding. What might you notice in the architecture, or
the sounds, and smells of a new place that you can then morph into creating a different musical experience for yourself and your listeners?

Regardless of what style of music you enjoy, or what involvement you may want from music, remember that music is just one of the many, many wonderful aspects of art, and that we, as artists, can learn tremendously from each other. Spend time reading, looking at paintings, writing poetry, traveling (either in person or virtually) to look at unique architecture, or experiencing great food; all will teach you tremendous things about yourself as a musician and an artist.

As you study this information, do not rely, as so many do, on the regurgitation of this information. Being able to spout off definitions of musical elements, but not understand what you are actually saying, does not help you at all! Having to take thirty seconds to be able to know how many flats are in the key of D major does not help you either. (D-major has zero flats, by the way. It does, however, have two sharps: F# and C#). But knowing the key of D major instinctually does help you tremendously! Being able to play the scale; know which note in the key is Sol; or be able to spell its tonic triad without having to think about it, are very helpful and usable skills.

As you study, and eventually master, these topics, understand that regurgitation does not help, but comprehension does. Do not be satisfied with just being able to spout off the textbook definition, but be satisfied with your ability to simply and effectively use the topic, and/or explain
it to someone. Use the timed tests in Appendix B, starting on page 323, to work towards a better comprehension of these topics. Study them a little bit every day, rather than just cramming for a one-shot test, which is so unfortunately prevalent in our education systems today. Getting an "A" on a test does not help you be a better musician, but a long-term comprehension of that same topic does. Think about your knowledge of these topics; if you cannot explain them simply to someone new to the topic, you do not know them well enough, and you need to revisit them. I know we all want to learn as much as we can as quickly as we can, so that we can, get better at playing and writing, but quick knowledge does not help—only long-term comprehension works.

Use all of the resources you can, both musical and non-musical, to become a better musician, artist, and arts advocate. Remember that all art is art, and that you can learn from everyone and everything. But most important, remember that music should be enjoyable. Although the journey to its understanding is difficult, and can be frustrating at times, remember why you love it.
CHAPTER XX

RESULTS

Over the last decade, I have had the pleasure of teaching this information at both the secondary and university levels, and I have been able to mold these pedagogical techniques into a system that I have found to be the most effective way to produce not only musical growth, but long-term comprehension. When those techniques are then coupled with the fostering of students' creativity, their interest in the subject and their musical thoughts and ideas are expanded greatly. During my study of these musicianship subjects as a young high school and university student, much of what we were taught was to simply regurgitate one author or teacher's concept of the mechanics of music, rather than being taught to use our ideas as tools to start our own musical self-discovery, and to develop our own interests in researching new ideas that would, in time, grow into our own philosophies. Nor do most instructors ask their beginning musicianship students to connect the very similar ideas used to organize and structure the other arts, and to apply those very same concepts to music.

In the beginning of this early, extremely important venture into musicianship—written theory, aural skills, music history, keyboard training, and rhythm study—students are often introduced to music via hard, steadfast rules that are thrust upon a pedestal by many teachers. For most students, this can be very off-putting. They are taught the "rules" of music, and then when they happen to break them, they are chastised—even though the majority of rules we are taught
as first-year music theory students are traditions that date back centuries and are in no way relevant to today’s culture, and therefore, today’s artistic trends. As we have repeatedly discussed throughout this book, it is my philosophy that there is no such thing as wrong art. There is however bad art! Therefore, telling someone trying to be creative, but in the same breathe that they are wrong, completely backfires.

I have found that musicians, young and old, want to celebrate the wonderful magic that makes music such a special, creative art. By adding, even just a little bit of that creativity and wonder into their musicianship study, students of all ages react better to learning the customary rules set forth in traditional music theory training. Yes, of course, students need to understand traditions and the mechanics of music. But if the way those mechanics are approached is devoid of creativity, and of connectivity to the current culture and artistic trends, (as well as to the other, very closely related arts), then students tend to focus less intensely, and lack longevity in their knowledge. On the other hand, if a small amount of creativity, self-expression, and self-exploration is added into our teaching of musicianship, then students react in a much more positive way. Instead of setting students up to rebel against these steadfast rules, ask them to explore them through improvisation and composition, or through their own discovery of a new pedagogical system, and they will always come back to the rules themselves. Once they do that, it is no longer a rule, but a discovery of which they are proud.

With more than a decade of students who have studied musicianship through the systems set forth in this text, I surveyed a variety of these former students to get their reactions to this system, and to learn what elements of it worked for them. All of the students who were surveyed
TODD GOODMAN
took this course live, using these materials, with me as their instructor. At the time of taking
this course, they were either sophomores or juniors at the secondary level, and they were music
majors at the Lincoln Park Performing Arts Charter School—a conservatory-style music program
at the pre-college level. Currently, these students range from new collegiate, recently graduated
high school students, to students who have already obtained Master’s Degrees in music.

While the specifics of what they found most helpful from this method of musicianship instruction
varied, the overall message from all of the students that were surveyed was very consistent—they
all loved the creative elements added to the course, and found that these elements increased
their interest and long-term comprehension exponentially. One student, who is now eight years
removed from the course, said "It was the teacher's attitude and demeanor that made the class
more effective for me when compared to other classes with different teachers. Other teachers
were often inflexible, and treated this material as if it was more important than any other musical
studies. [Todd] Goodman treated this material as important (because it is), but applied it better
to how we, as musicians, use it every day."¹ This student, Katie Legge, is a recent graduate of the
Eastman School of Music with a Master’s Degree in Theory Pedagogy. Another student, Tyler
Silver, who studied music but moved on to another career after high school, wrote, "What I can
say about your classes is that you set [the material] in detail, and allowed me to apply what I
learned to what I was working on."² Silver also said that other methods of learning this material
work, but that this approach "seemed to make it more real, more exciting and desirable to learn
about it." He also wrote, "the reason why I think that way is because despite how intricate and

¹ Katie Legge, interview Facebook Messenger.
² Tyler Silver, interview Facebook Messenger.
beautiful the study of musicianship can be, you allowed us to apply it to anything."³

When I was trying to decide which responses from former students I wanted to include in this book, I looked for students who had various levels of musical study outside of their experience with these methodologies. The first student I quoted, Katie Legge, studied at Lincoln Park and then went on to get a Bachelor’s degree in Theory and Composition from Kent State, and as previously stated, earned a Master’s Degree in Theory Pedagogy, while Tyler Silver with no formal post-secondary education, still makes music today and works in a non-musical field. Elijah Davis, the next student that I would like to showcase, is currently a senior music production major at Berklee College of Music in Boston—a school that prides itself on non-traditional teaching styles and methods. When asked how the method in this book compared to his other musicianship studies, Davis wrote the following:

In my experience now, having upwards of six to seven theory teachers, I enjoyed your methods in general much more than any other teacher’s. There was a push to always try to understand the material holistically, look at it from different angles and see it from different perspectives. Exploration and creativity were put first and I think that’s why a lot of knowledge from your classes stuck with me so well. You weren’t just feeding me information to memorize for a test; you pushed for me to understand and use what we learn in a meaningful way. Whereas the typical theory class is just information I could read in a book, I felt like we went beyond some of that.⁴

As I think about the writing of this book, and this different, yet crucial way of introducing students to a new thinking and a new understanding of music fundamentals through creativity and the other arts, I am excited about the results that I have seen in my own students over the last decade. I am confident that this book can help other teachers move their thinking beyond the

³ Ibid.
⁴ Elijah Davis, interview Facebook Messenger.
same pedagogical methods that we all learned, and to introduce young students to this creative
and interdisciplinary way of thought early in their studies, rather than waiting to their advanced
collegiate, or even graduate, studies.

I hope you find this book helpful, and I am honored that you have taken the time and energy to
read it. Now, go do something creative!
APPENDIX A

IMPORTANT TERMS

ACCIDENTAL A symbol used before a note to alter the pitch. There are five; including, sharp, flat, double-sharp, double-flat, and natural.

ALTO CLEF A clef that shows C4 on the middle line of a five-line staff.

ANCHOR SYSTEM A pedagogical system for ear training that uses solfege syllables to anchor one’s ear into the key.

AUGMENTED Literally means growing. Term used for intervals and triads to show quality larger than major. Also used as a compositional technique to enlarge a motive, typically via rhythm.

AURAL SKILLS The study of identifying and understanding music using the ear.

BAR See measure.

BASS In a chord or triad, the bass is the lowest note, regardless of the chord’s root.

BASS CLEF A clef that shows F3 on the fourth line up from the bottom. Also called an F-clef.

BEAM The grouping of rhythms into their microbeat so that the reader can clearly see which notes belong to what beat.

CHORD Three or more notes played together.

CHROMATICISM Notes that are in-between the diatonic notes of a key, or scale. (From the Greek khrōma, meaning color).

CIRCLE NOTATION A teaching tool that helps focus a person’s rhythmic hearing on beat groupings.

CIRCLE OF FIFTHS The relationship of all twelve chromatic key signatures to each other through a clock-like visual model. It shows both major and minor key relationships via the interval of a perfect fifth.
<table>
<thead>
<tr>
<th><strong>CLEF</strong></th>
<th>A symbol that is used at the beginning of a clef to show which lines and spaces are assigned to specific pitches. Clef examples are: treble, bass, alto, tenor, percussion, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLOSED POSITION</strong></td>
<td>The fundamental form of a triad or chord, whose notes are stacked directly upon one another without skipping notes of the chord.</td>
</tr>
<tr>
<td><strong>COMPOUND METER</strong></td>
<td>A meter where the macrobeat is divided into three equal parts.</td>
</tr>
<tr>
<td><strong>DIATONIC</strong></td>
<td>Music that has notes that are exclusive to one key, or scale.</td>
</tr>
<tr>
<td><strong>DIMINISHED</strong></td>
<td>Literally means shrinking. Term used for intervals and triads to show quality smaller than minor. Also used as a compositional technique to shrink a motive, typically via rhythm.</td>
</tr>
<tr>
<td><strong>DOT</strong></td>
<td>The symbol (.) added to a note that adds half of the rhythmic value of whatever symbol comes before it.</td>
</tr>
<tr>
<td><strong>DOUBLE</strong></td>
<td>A note within a chord that has the same pitch-class as another member of the same chord.</td>
</tr>
<tr>
<td><strong>DURATION</strong></td>
<td>The length of a note. Shown in notation with different note symbols: whole, half, quarter, eighth, etc.</td>
</tr>
<tr>
<td><strong>DYNAMIC</strong></td>
<td>The volume or loudness of a sound.</td>
</tr>
<tr>
<td><strong>ENHARMONIC</strong></td>
<td>Multiple names given to one pitch.</td>
</tr>
<tr>
<td><strong>FIFTH</strong></td>
<td>A generic interval size that is crucial to many elements of music; including triads, key signatures, and aural skills.</td>
</tr>
<tr>
<td><strong>FIGURED BASS</strong></td>
<td>A notational shortcut that shows the intervals used above the bass.</td>
</tr>
<tr>
<td><strong>FINGER NUMBERS</strong></td>
<td>Numbers that are assigned to the fingers for the purpose of playing the piano. Both thumbs are given the number one.</td>
</tr>
<tr>
<td><strong>FIXED DO</strong></td>
<td>A system of solfege which affixes the syllable Do to pitch-class C regardless of the key signature.</td>
</tr>
<tr>
<td><strong>FLAT</strong></td>
<td>A symbol placed in front of a note that lowers it by a half step.</td>
</tr>
<tr>
<td><strong>FUNDAMENTAL</strong></td>
<td>The bottom note of the overtone series.</td>
</tr>
<tr>
<td><strong>GENERIC SIZE</strong></td>
<td>see Interval Size</td>
</tr>
<tr>
<td><strong>GRAND STAFF</strong></td>
<td>A group of two staves with the top staff using the treble clef and the</td>
</tr>
</tbody>
</table>
### IMPORTANT TERMS

**GUIDO D’AREZZO**
Italian music theorist (c.991 - c.1050) who is credited for the creation of solfege.

**HALF STEP**
An interval that moves between two adjacent keys on the keyboard. A half step is also known as the interval of a minor second or augmented unison.

**HERTZ**
The unit in which the frequency of a note’s wavelength is measured. One hertz, abbreviated as Hz., is equal to one cycle per second.

**INTERVAL**
The distance between two pitches.

**INTERVAL INVERSION**
An interval that is looked at in reverse. An interval that ascends from one pitch-class to another has an interval inversion when that interval instead descends to the second pitch from the starting pitch-class.

**INTERVAL QUALITY**
One of the two classification systems that are used to label intervals—generic size and quality. Interval quality uses the terms major, minor, augmented, diminished, and perfect to show the exact amount of distance in the interval.

**INTERVAL SIZE**
One of the two classification systems that are used to label intervals—interval size and quality. Interval size is the number of pitch-class letter names, or lines and spaces, it takes to get from one note to the next.

**INTONATION**
The amount of precision between two pitches of the same wavelength.

**INVERSION**
The reversal or flipping of a musical element—an interval, a chord, or a motif.

**KEY SIGNATURE**
A series of sharps or flats that are added to the beginning of the staff that show which pitch-classes are consistently altered from the natural in the music. The key signature also shows the tonality of the music.

**KEYBOARD**
The term used for any keyboard instrument, which includes the piano, synthesizer, organ, and other.

**LEDGER LINES**
Lines added to the top or bottom of the standard five-lined staff to extend notes beyond the staff.
**MACROBEAT** The large beat felt in a given piece of music. Also, the top number in a simple meter time signature.

**MAJOR** The term given to the quality of interval, scale, chord, or key.

**MAJOR SCALE** A scale of pitches that follows a set pattern of whole-and half steps—whole, whole, half, whole, whole, whole, half.

**MATCHING PITCH** The practice of matching a given played pitch by singing the same pitch with the voice.

**MEASURE LINE** also called a Bar Line. The line used to separate the staff into measures based on the music's time signature.

**MEASURE** also called a Bar. The space in-between the measure lines, which shows a specific number of beats as indicated by the music's time signature.

**MELODY** A grouping of notes and rhythms that creates a recognizable and often memorable unit of music. Thought of by some to be one of the main elements of music, along with harmony.

**METRONOME MARKING** The number of beats per minute that a piece of music is performed. Typically written as the macrobeat equal to the number of macrobeats per minute.

**MICROBEAT** The small subdivision of the macrobeat of a piece of music. Often the smallest unit of rhythm.

**MIDDLE C** The fourth pitch-class C above the bottom of a traditional 88-key keyboard. Also written as the fourth octave C, or C4.

**MINOR** The term given to the quality of interval, scale, chord, or key.

**MNEMONIC DEVICES** A series of words that are used to help someone improve their ability to remember a group or list.

**MODULATE** The process of changing the key or rhythm of a given piece of music.

**MOVABLE DO** A system of solfege that allows the syllable Do to move so that it always represents the tonic of any key.

**MUSIC FUNDAMENTALS** A group of information and techniques that combine to create a foundation for music creation.
**MUSIC NOTATION**
The tool used to write down music so that it can be passed on from person to person.

**MUSICAL ALPHABET**
The series of letters assigned to musical pitches. The letters A through G are used in the English system.

**MUSICAL INSTINCT**
A level of understanding that all musicians have.

**MUSICIANSHIP**
The study of music theory, aural skills, rhythm, and music history combined into one subject. Musicianship is also the term used to describe a musician's level of skill.

**MUSICOLOGIST**
A person who studies the historical context of music.

**NATURAL**
The symbol placed before a note to show that it is unaltered by either a sharp or a flat.

**NEUMES**
A Medieval system of music notation used throughout Europe that utilized square notes and note groupings.

**ORDER OF FLATS**
The order that flats are added into a key—B, E, A, D, G, C, F.

**ORDER OF SHARPS**
The order that sharps are added into a key—F, C, G, D, A, E, B.

**OVERTONE SERIES**
A series of notes that are the natural breakdown of vibrations of a given pitch.

**PENTASCALE**
A scale that is comprised of five notes, typically the first five notes of any larger scale.

**PENULTIMATE**
The next to last of something—notes, chords, measures, etc.

**PERFECT**
The term given to the quality of generic unison, fourth, fifth, and octave intervals.

**PITCH**
The name given to a note with a specific frequency. The fourth A on the keyboard is labeled as the pitch A4, seeing as it has a specific frequency of 440 Hz.

**PITCH-CLASS**
The name given to all of notes that share a relative place in the musical alphabet. The pitch-class A would reference all of the frequencies of As, including 110 Hz, 220 Hz, 440 Hz, 880 Hz, etc.

**PULSE**
The steady and consistent beat that drives all rhythm. It is only over a steady pulse that the variations of sound that create rhythm can be felt.
PYTHAGORUS  Greek (569 B.C.E - c. 480 B.C.E.) One of the forefathers of music and music theory who is credited with the first writings on musical temperament or tuning systems.

QUADRUPLE METER  A meter that has a macrobeat of four beats.

REST  A duration of silence that is shown in music notation by different symbols.

ROOT  The bottom note of any chord when it is stacked in its fundamental position. For a triad, that fundamental position is a stack of thirds.

ROOT POSITION  A chord that is organized with the root note as its bottom note.

SCALE DEGREE  The position that each note holds in a scale. The first note of a scale has a scale degree of 1, while the fifth note of a scale has a scale degree of 5.

SCIENTIFIC PITCH NOTATION  A system of assigning pitches with their octave placement in the 88-key keyboard layout. A4 is the A that is in the fourth octave.

SHARP  A symbol placed in front of a note that raises it by a half step.

SIGHT READ  The ability to read and perform a piece of music at the first sight.

SIMPLE METER  A meter that has a microbeat, or subdivision, of four beats.

SIXTUPLET  A compound meter macrobeat of six equal divisions of a beat that is placed into a simple meter.

SOLFEGE  A series of syllables taken from the plainchant *Ut Quent Laxis* that are assigned to specific scale degrees of a scale.

SOLKATTU  A solfege and hand gesture system of rhythm from Southern India.

STAFF  A group of five equal horizontal lines that are used as the primary tool of our modern musical notation system. Symbols that represent pitch, dynamics, and other performance directions are placed on, above, and below the staff.

TENOR CLEF  A clef that shows the placement of the pitch C4 on the staff.

THIRD  A generic size of an interval and the building block of all triads.

TIMBRE  The quality of a sound that distinguishes it between different
instruments and voices.

**TIME SIGNATURE**  A symbol comprised of two numbers at the beginning of a piece of music that indicates how many beats are found per measure and which notational symbol is used to represent that beat.

**TONIC SOL-FA**  A pedagogical system that uses movable Do as the basis for pitch identification.

**TRANSPOSITION**  The process of transporting a piece of music, a part of, or motif found within to a different key or pitch-level.

**TREBLE CLEF**  A clef that shows the placement of G4 on the staff. Also called a G-clef.

**TRIAD**  Three notes that are separated by thirds that are used together as a unit.

**TRIPLE METER**  A meter that has a microbeat of three beats.

**TRIPLET**  A compound meter microbeat of three equal divisions of a beat that is placed into a simple meter.

**VOCALIZE**  The process of singing a note that you hear in your inner hearing.

**WAVELENGTH**  The distance between one peak of a wave to the next, which determines the pitch of a sound.

**WHOLE STEP**  An interval that moves between three adjacent keys on the keyboard. A half step is also known as the interval of a major second.
APPENDIX B

CREATIVE EXERCISES AND TIMED WORKSHEETS

Use the following exercises to make your learning more creative! Remember that there is no such thing as wrong art! Have fun, and, of course, be creative!

“If you're not prepared to be wrong, you will never come up with anything original.”

-Ken Robinson

CREATIVE EXERCISE #1

Over a few day's time, come up with a short piece of music that you can present to someone—either a friend or family member. As you are creating your music, use the following guidelines:

- The piece MUST be original and MUST be able to be performed by you.
- You may use other performers, but are not required to do so.
- The piece must be between 30 seconds and 3 minutes in length.
- The piece must fit within your definition of “What is Music?”

See Chapter III, "WHAT IS MUSIC?” starting on page 33 for a refresher if needed.

In addition to creating this music, you should also create a VISUAL representation of your music. It does not have to be tradition music notation, but does have to visually represent your work in some way. BE CREATIVE! Take a risk.
CREATIVE EXERCISE #2

Using your favorite online music listening source, listen to the piece *Short Ride in a Fast Machine* for orchestra by American composer John Adams (b. 1947). Write a short, creative essay consisting of 150-200 words describing the piece. However, you may NOT use any of the following words:

- MUSIC, RHYTHM, ORCHESTRA, SONG, PIECE, MELODY, HARMONY,
- JOHN ADAMS, PITCH, or DYNAMICS

Also, you cannot use the name of any instrument.

Other than writing 150-200 words, and NOT using the above terms, there are no other restrictions—be creative!

CREATIVE EXERCISE #3

The greatest innovations that have significantly changed the world were products of necessity and often just sheer dumb luck. So, in the next few days, invent something that will revolutionize the way you live your life. It doesn't have to be complicated, but it does need to be something that will help you live life better. For this assignment, please do the following:

1) Name your product
2) Draw (in detail) the product.
3) Write a brief (3-5 sentence) description of what the product does.
4) Write a product tag line, e.g. “The quicker picker upper!”
5) Share your product with a friend!
TIMED WORKSHEET
CLEF AND STAFF

Lines and spaces for treble and bass clef, as well as commonly used C clef names.
TIME: Aim for completion in 30 seconds or less.

What pitch does both of these clef signs show?

Clef Name

Clef Name

LINES

SPACES
TIME: Aim for completion in 30 seconds or less.

Label each note with its pitch name.

QUIZ No. 1

QUIZ No. 2

347
TIME: Aim for completion in 2 minutes or less.

Label each example as a half step or whole step.
CREATIVE EXERCISES AND TIMED WORKSHEETS

TIMED WORKSHEET
CIRCLE OF FIFTHS and ORDER OF SHARPS AND FLATS

TIME: Aim for completion in 30 seconds or less.

---

♭'s: _____ _____ _____ _____ _____ _____

♯'s: _____ _____ _____ _____ _____ _____
Label each example with its corresponding key signature.

TIME: Aim for completion in 30 seconds or less.

1. C major
2. G major
3. F major
4. D major

5. A major
6. E major
7. B major
8. F sharp major

9. C sharp major
10. G sharp major
11. F sharp minor
12. D sharp minor

13. A sharp minor
14. E sharp minor
15. B flat major
16. F flat major

17. C flat major
18. G flat major
19. F flat minor
20. D flat minor

21. A flat minor
22. E flat minor
23. B major
24. F major

25. C major
26. G major
27. F major
28. D major

29. A major
30. E major
31. B major
32. F sharp major

33. A sharp major
34. E sharp major
35. B flat major
36. F flat major

37. C flat major
38. G flat major
39. F flat minor
40. D flat minor

41. A flat minor
42. E flat minor
43. B major
44. F major
TIME: Aim for completion in 30 seconds or less.

Label each example with its generic interval size.
BIBLIOGRAPHY


Isler, Todd. *You Can Ta Ka Di Mi This! Improve and Expand Your Rhythmic Sense and Precision*. Brooklyn: Gerard and Sarzin Publishing Co. 2005.


TODD GOODMAN


BIBLIOGRAPHY


accidental 93–94
flat 93–94
natural 93–94
sharp 93–94
anchor system. See aural skills
aural skills 113–128, 220–225
anchor system 123–128, 220–225
matching pitch 113–117
aural skills 113–128, 220–225

B
bar lines. See measure lines
bars. See measures
borrowed rhythm. See rhythm

C
chord. See also triad
chromaticism 226
circle notation. See rhythm
clef 48–62
alto clef 57–61
bass clef 49, 51–57, 59–60
C clef. See also alto clef or tenor clef
F clef. See bass clef
G clef. See treble clef
history of 49–50
tenor clef 57–61
treble clef 49, 51–57, 59–60

D
diatonic 226–227
dot. See music notation

E
ear training. See aural skills
Edwin E. Gordon. See rhythmic solfege
enharmonic 94–97, 101
Epitaph of Seikilos. See music notation

F
fifth. See triad
Figured Bass. See triad, triad inversion
finger numbers 65–66
Franklin D. Roosevelt 274

G
grand staff 55–57. See also music notation
Guido d’Arezzo 45, 50, 104–107. See also solfege, history of

H
half step. See intervals
harmony. See triad
Heinrich Schenker 301–302
See also scientific pitch notation

I
improvisation 152–166, 257–275
in the other arts 153–156
international pitch notation.
See scientific pitch notation
generic size 199–219
half step 93–97, 100–103, 108
interval enharmonics 245–247
interval inversion 210, 303–305
interval quality 199, 203–219
augmented 204, 215–218
diminished 204, 215–218
major 204–210, 215–218
minor 204–210, 215–218
perfect 204, 213–218
interval shorthand 217–218
whole step 97–103, 108
interval shorthand. See intervals
interval size. See intervals, generic size
intonation 116–117
inversion. See interval inversion;
See motif manipulation

K
keyboard 64–76
finger numbers 65, 70
key signature 168–197
circle of fifths 176–178, 180–197, 209
order of flats 188–193
order of sharps 175–181
enharmonic key signatures 194–196

L
ledger lines 54, 57. See also music notation

M
macrobeat. See rhythm, subdivision
major scale. See scales
measures 46–47
measure lines 46
melody 118
meter
duple meter 147–148, 293
mixed meter 297–299
quadruple meter 147–148, 293
triple meter 147–148, 293–294
metronome marking 288
microbeat. See rhythm, subdivision
middle C 56–57, 59–60, 67–70. See also scientific pitch notation
mnemonic device 53–54, 60–61
motif 157, 157–167, 259–272
in the other arts 158–160
motif manipulation 262–272, 269–272
diminish 162
modulate 163–166
repetition 162–163, 259, 262–264
transposition 264–270
chromatic transposition 265
diatonic transposition 265
musical alphabet 48
musical instinct 36–39, 168
music fundamentals 40
music, history of 41–45
musicianship 37
music notation 40, 150
duration 82–87
dot 84–85
rest duration 85–88
Epitaph of Seikilos 42–45
history of 42–45
mensural notation 289–292
neumes 44–45
rhythmic notation 133–148
beaming 145–147, 233–234, 282–285
time signature 139–145, 239

N
neumes 44–45. See also music notation
note duration. See music notation

O
octave notation. See scientific pitch notation
overtone series 119–123
fundamental 119–120
history of
Pythagoras 119–120

P
pentascale 67–70
pitch 47–48, 74–75
history of 43–45
pitch-class 74–75
pulse. See rhythm
Pythagoras 119. See also overtone series

R
repetition. See motif manipulation
rest duration. See music notation
rhythm 77–91, 129–151, 229–240, 277–299. See also meter
borrowed rhythm 294–297
duple 296
sixtuplet 296
triplet 296
circle notation 79–91, 131–134, 149–150, 231–237, 284, 297
pulse 77–79
subdivision 129–151, 133–148, 278–280
macrobeat 129–151, 234–235
microbeat 129–151, 235–237
rhythmic solfege 88–90. See also TaKaDiMi
Edwin E. Gordon 148
Zoltán Kodály 148
root. See triad

S
Sarah Anna Glover. See solfege,
history of
scales
scale degree 105–107, 110–111
scientific pitch notation 70–74, 107
solfege 103–111, 117–119, 123–128, 220–227. See also rhythmic solfege
fixed Do 108–110
history of 104–107. See also Guido d’Arezzo
tonic Sol-Fa 107
Sarah Anna Glover 107
Ut queant laxis 104–107
movable Do 108–111
pitch hierarchy 117–128
solkattu 89. See also TaKaDiMi
staff 45–48, 52, 64–65, 70, 70–71
grand staff 56, 66

T
TaKaDiMi 148–150, 237–240, 280–282
third. See triad
timbre 220
time signature 285–294. See music notation, rhythmic notation
history of 288–292
tonic Sol-Fa. See solfege, history of
triad 242–255, 301–323
bass 309–312
closed position 314–316
fifth 251–255
open position 314–316
root 251–255
third 251–254
triad inversion 305–323
figured bass 316–323
first inversion 308–312
inversion names 312–314
popular music shorthand 322–323
root position 306–312
second inversion 310–312
triad quality
augmented 253–255
diminished 253–255
major 253–255
minor 253–255

W
wavelength 114–117

whole step. See intervals

Z
Zoltán Kodály. See rhythmic solfege