SoundSphere

Meet the Cast

Standard Edition

Spark & Anvil

Copyright & License

This book collects 5 chapter books from the Soundsphere cast — each character embodies a different curricular primitive; together they teach the full subject.

Methodology: distributed-narrative learning per Bruner narrative-cognition + Habgood intrinsic-integration + SAMHSA TIP 57 trauma-informed register.

Spark & Anvil is a 501(c)(3) public charity. All apps free forever; no ads; no tracking; no in-app purchases.

spark-and-anvil.com

##

For everyone who learns by hearing a story first.

Contents

Introduction

The Soundsphere cast was authored to embody the curriculum, not decorate around it.
Each of the 5 characters you'll meet in this book teaches a specific primitive —
a particular tactic, a particular technique, a particular way of seeing.
Together they form an ensemble: the cast IS the curriculum.

Read in any order. Each chapter stands alone.
Each character also appears in the matching Spark & Anvil app (free, forever)
where you can practice what they teach.

— *The editors at Spark & Anvil*

Bloom

*BLOOM — *attack / sustain / decay / release. how a sound begins, holds, fades.**

Bloom shimmered. She was a firefly-tween. Her glow was soft and warm. It was like cream with amber light. She wore a chunky studio tunic. It had pockets everywhere. She moved with a quiet hum. She held a stack of small cards. They had big, bold letters: A, D, S, R.

Her workshop was a cozy place. It smelled faintly of ozone and old paper. Tiny lights blinked on every surface. Wires snaked across the floor. They looked like sleeping snakes. Strange instruments sat on shelves. They waited to make new sounds.

"Welcome," Bloom said. Her voice was soft. It hummed like a tuning fork. "I am Bloom. I teach *envelope*."

She held up her cards. They glowed faintly. "It's how every sound has a shape."

I blinked. A sound has a shape? I thought sounds were just... there. Or gone. Like a light switch. On, off. Simple.

Bloom seemed to read my mind. She smiled. Her amber glow pulsed gently. "Sounds are not just on and off. They begin. They hold. They fade."

She tapped one of her cards. "This is a big idea. But it's also very simple. Think of a bell. Or a drum. They don't just appear. They have a story."

She picked up a small, glowing device. It had a tiny screen. "This is my envelope tracker," she explained. "It shows sound shapes. Like a map for your ears."

Bloom pressed a button. A clear piano sound rang out. *DONG!* It was bright and quick.

On the screen, a bright line shot up. It climbed super fast. It looked like a tiny rocket. Then it dropped a little. It held for just a split second. Then it faded away. It was gone almost before I could blink.

"See?" Bloom pointed. Her finger glowed. "Sharp beginning. Quick fade. Then gone."

Next, she pressed another button. A violin sound filled the room. *WHEEEE!* It was smooth and long. It felt like a warm hug.

The line on the screen rose slowly. It took its time. It was like a gentle hill. It stayed high for a while. It was a long, steady breath. Then it dipped. And it vanished slowly. It seemed to float away.

"This sound builds up," Bloom said. "It stays strong. Then it lets go slowly. Very polite, the violin."

A drum sound came next. *BAM!* It was loud and sudden. It made me jump a little.

A super-fast spike appeared on the screen. It was like a tiny lightning bolt. Then nothing. The line just vanished. Poof!

"That's a quick hit," Bloom grinned. "No holding back. Just *BAM* and done. Drums are direct."

Finally, a bell. *DING-DONG!* The sound shimmered. It hung in the air.

The line shot up again. Then it slowly, slowly faded. It lingered in the air. It was like a long, drawn-out sigh.

"Bells ring out for ages," Bloom whispered. "They like to linger. They say goodbye very slowly. Sometimes you can still hear them when they're gone."

Bloom held up her cards again. They glowed brighter now. "These letters stand for the parts of a sound's shape. They are the secrets of the **envelope**."

She showed the 'A' card. "A is for **Attack**. How fast does the sound start? Does it jump out? Or does it creep in? Think of a drum. It attacks fast. Or a violin. It attacks slowly."

Then 'D'. "D is for **Decay**. After the attack, how fast does it drop to its main level? A piano drops fast. A plucked string decays quickly."

The 'S' card. "S is for **Sustain**. How long does the sound hold its main level? Does it stay strong? Or does it vanish quickly? A violin has long sustain. A drum has almost no sustain."

Finally, 'R'. "R is for **Release**. When you let go, how long does the sound take to completely disappear? Does it vanish fast? Or does it float away? A bell has a long release. A piano has a medium release."

"These four parts," Bloom explained, "make up the whole sound story. The **envelope**."

Bloom went back to the piano sound. She showed its shape on the tracker. "Piano has a fast **Attack**. A quick **Decay**. Almost no **Sustain**. And a medium **Release**."

She showed the violin. "Slow **Attack**. Long **Sustain**. Slow **Release**."

The drum. "Super fast **Attack**. Super fast **Decay**. No **Sustain**. Fast **Release**."

The bell. "Fast **Attack**. Long **Release**."

"See how different they are?" Bloom asked. "Even if they play the same note. Their shapes are unique. That's why they sound different."

She tapped the screen. "It's like they have different personalities. All because of their **envelope**."

"Every sound has a shape," Bloom repeated. Her voice was firm but kind. "This shape is its **envelope**. It's what makes a piano sound like a piano. It makes a violin sound like a violin."

I looked at the tracker. The lines were like little mountains and valleys. Each one was different. Each one told a story. A sound's secret story.

Bloom smiled. Her glow brightened a bit. "It's the secret life of sounds. Once you know their shapes, you can make them do anything. You can even make new sounds. Sounds nobody has ever heard."

"You can use this idea in BeatForge," she added. "To make your drums punchier. Or in HarmonyForge. To make your melodies sing longer."

"Attack / sustain / decay / release," she whispered. "How a sound begins, holds, fades."

I nodded slowly. My mind was buzzing. Sounds weren't just noises. They were tiny, invisible sculptures. Each with its own special shape. And Bloom was teaching me how to see them. It felt like learning a secret language. A language of sound.

Voice register

Careful-firefly-tween. Glow-shaping.

Cultural-sensitivity gate

Story-axis per ADR-016.

Cultural-context note

ADSR pedagogy: standard synthesis textbooks (Eduardo Reck Miranda *Computer Sound Design*).

Layer

*LAYER — *the overtone fingerprint. why violin ≠ flute at same pitch.**

The door slid open with a soft *whoosh*. Inside, the room glowed with a hundred colors I'd never seen before. Some were like rainbows, but others were just... more. They shimmered and danced in the air.

And there was Layer.

Layer was a mantis shrimp kid. They wore a thick, comfy-looking studio tunic. It was covered in paint splatters and glitter. Layer's shell was a warm cream color. It shimmered with soft, iridescent patches. Their many eyes blinked slowly. They seemed to see everything at once. Even the colors I couldn't.

Layer was small. But they moved with a quick, curious energy. They were always looking closely at things. Especially sounds. Layer had a special set of *overtone-cards*. They also had a *timbre-tracker* machine. It sat on a big table.

"Oh, hello!" Layer chirped. Their voice was bright. It sounded a bit like tiny bells. "You're just in time. I was about to show off something amazing."

I walked closer. The room hummed with a quiet energy. Layer picked up a small, shiny card. It had a wavy line drawn on it.

"I am Layer," they said. They held the card up. "The special thing I teach is *timbre*."

I blinked. "Timbre?"

"Yes! It's super important," Layer explained. "It's the sound-science craft of *overtone-fingerprints*."

They tapped the card. "Think of it this way. Every sound has a secret identity. A fingerprint. And that fingerprint is made of *overtones*."

Layer gestured to the table. "Come closer. I'll show you."

I stepped up to the table. The *timbre-tracker* looked like a fancy music player. It had a big screen. Lots of knobs and buttons glowed softly.

"Okay," Layer said. They picked up a small violin. It looked like a toy. "Let's play a note. A simple A440."

Layer drew the bow across the strings. A clear, bright note filled the room. It was a perfect 'A'.

On the *timbre-tracker* screen, a wiggly line appeared. It looked like a mountain range. Some peaks were tall. Others were tiny bumps.

"See that?" Layer asked. Their many eyes focused on the screen. "That's the sound's fingerprint. The biggest mountain is the main note. We call that the *fundamental frequency*."

They pointed to the smaller bumps. "But all these other little mountains? Those are the *overtones*. They're like tiny extra notes. They sing along with the main note."

Layer put the violin down. They picked up a small flute. It was silver and shiny.

"Now, listen to this," Layer said. They put the flute to their lips. They played the exact same note. A perfect A440.

The sound was different. It was softer. More airy.

On the screen, a new wiggly line appeared. It was also a mountain range. But it looked different from the violin's. The main mountain was still there. But the smaller bumps, the *overtones*, were different. Some were taller. Some were shorter. Some were missing entirely.

"See?" Layer exclaimed. Their shell shimmered with excitement. "Same pitch. Same main note. But a totally different fingerprint!"

They pointed to the screen. "The violin has lots of rich, high overtones. That's why it sounds so full. The flute is closer to just the main note. That makes it sound pure and clear."

"So, overtones are what make a violin sound like a violin?" I asked. "And a flute sound like a flute?"

"Exactly!" Layer beamed. "That's the *timbre*! It's the unique sound quality of each instrument. Or voice. Or anything that makes a sound!"

Layer picked up one of their *overtone-cards*. It showed two different wiggly lines. One was labeled 'Violin'. The other 'Flute'.

"These cards help me remember," Layer explained. "Each card is an overtone fingerprint. They show how different instruments make different sounds. Even when they play the same note."

They put the card back in a neat stack. "It's like people. We all have a voice. But your voice sounds different from mine. Even if we both sing the same song. That's because our vocal cords make different overtones."

Layer then slid a small, boxy machine forward. It had a keyboard and many knobs. "This is a synthesizer," they said. "It's super cool. We can actually *manipulate* overtones with it."

"Manipulate?" I asked.

"Change them!" Layer clarified. "We can make a sound that starts like a piano. Then we can twist a knob. And suddenly it sounds like a space alien singing!"

Layer pressed a key on the synthesizer. A clear piano note rang out. Then they slowly turned a knob. The sound changed. It got buzzy. Then it became thin and metallic. It really did sound like a robot trying to sing.

I laughed. "That's amazing!"

"It is!" Layer agreed. "Composers use synthesizers all the time. They create new sounds. Or they make old sounds feel fresh. All by playing with the overtone fingerprints."

Layer tapped the *timbre-tracker*. "This machine helps us see those changes. It shows us the sound's secret identity. The *timbre*."

"So, the move is," Layer said, looking at me seriously, "that *overtones make each instrument itself*. It's the same pitch. But a different fingerprint."

They smiled. Their shell shimmered again. "And once you know about overtones, you'll hear music in a whole new way!"

Voice register

Mantis-shrimp-tween. Multi-perceiving. **Soft-collision: DigQuest Layer (stratigraphic) vs SoundSphere cast Layer (timbre); different domains per rule 3.**

Cultural-sensitivity gate

Story-axis per ADR-016.

Cultural-context note

Timbre + harmonic series: standard acoustics. Mantis-shrimp for multi-perception biomimicry.

Ring

*RING — *space. same sound feels different in bathroom vs stadium vs forest.**

Ring was a whale-kid. Not a giant whale, but a chunky, cartoon-sized one. Their skin was soft grey and warm cream. Ring wore a studio tunic. It had big pockets. Ring always had a listening pose. Head tilted. One ear fin up. Always listening.

Today, Ring was in the main studio. It was a big room. Soundproofed walls kept out all noise. Thick carpets swallowed footsteps. Ring held a small gadget. It looked like a fancy compass. This was their room-acoustic-tracker. It showed how sound moved in *this* room.

"Okay, Ring," a voice chirped. It was Pip, a squirrel-kid with a bright red baseball cap. Pip bounced on their toes. "I need a sound. A really big sound. For the hero's entrance in my new game."

Ring nodded slowly. Their ear fin twitched. "A hero's entrance. Important." Ring tapped a button on a sound pad. A trumpet blast filled the room. *BLAAAT!*

Pip frowned. "Hmm. It's... flat. It just goes *BLAAAT* and then stops. It doesn't feel very heroic."

Ring nodded again. "Exactly. This room is too dry. No reverb."

Pip tilted their head. "Reverb? What's that?"

Ring pulled out a stack of cards. They were called reverb cards. Each card showed a different place. One was a tiny bedroom. Another was a huge cave. A third showed a grand church.

"Sound bounces off things," Ring explained. "When it bounces, it makes echoes. Those echoes are reverb. Hard walls make sound bounce a lot. Soft walls soak it up. Big rooms make sound echo longer. Small rooms make it stop fast."

Ring held up the bedroom card. "Imagine this trumpet blast in a small bedroom. What happens?"

Pip thought for a moment. "It would sound squished. Like it couldn't get out."

"Right!" Ring said. "It would stop fast. No big echo." Ring tapped the sound pad again. The trumpet sounded small. It was muffled. It felt like it was trapped in a box.

"See?" Ring asked. "Same sound. But it *feels* totally different. The room changes everything."

Next, Ring held up the cave card. It showed a dark, dripping cave. "Now, a cave. What do you think?"

Pip's eyes widened. "Oh! It would echo forever! Like a monster was coming!"

Ring smiled, a small, knowing smile. They tapped the sound pad. *BLAAAT-ooooo-ooooom...* The trumpet blast boomed. It bounced off invisible walls. It echoed and faded slowly. It sounded huge. It felt a little scary.

"That's too much," Pip giggled. "My hero isn't a monster."

"Good observation," Ring said. "Too much reverb can make a sound feel spooky. Or lost. Or just messy."

Ring then held up the church card. It showed tall stained-glass windows. Light streamed in. "A church. Not as big as a cave. But still grand. Lots of hard surfaces. Stone, wood."

Ring played the trumpet blast. *BLAAAT-ooooom...* This time, the echo was long. But it was clear. It felt important. It felt... *epic*.

"Whoa!" Pip exclaimed. "That's it! That's the one! It sounds like a hero is about to do something amazing!"

Ring nodded. "The *space* makes the sound feel important. A church has a certain way of making sound feel big. It adds a sense of awe."

"So, how do we get that sound?" Pip asked. "We can't just take our game into a church."

"We don't have to," Ring said. They put away the reverb cards. They picked up a different device. It had lots of knobs and sliders. "This is a digital reverb simulator. It's like a magic box. It can *pretend* to be any room."

Ring started turning knobs. They slid some faders. "We can tell it to be a church. Or a stadium. Or a forest. Or even a bathroom."

"A bathroom?" Pip laughed. "Why would a hero need a bathroom sound?"

"Maybe a hero needs to sing in the shower," Ring said with a straight face. Pip laughed even harder.

Ring adjusted the settings carefully. Their ear fin twitched again. They listened intently. They made tiny changes. They were making the sound *feel* like a grand, echoing church.

"There," Ring finally said. They tapped the sound pad one last time. The trumpet blast rang out. *BLAAAT-ooooom...* It was perfect. It felt powerful. It felt like a hero was truly arriving.

"You did it, Ring!" Pip cheered. "It's amazing! It really feels like a hero is coming!"

Ring gave a small nod. "Every room changes sound. Reverb shapes feel. That is the primitive of *space*." Ring put their tools away. They looked around the studio. It was a quiet room. But Ring knew all the sounds it could pretend to be.

Voice register

Cetacean-tween. Listening + space-aware. Autism-affirming.

Cultural-sensitivity gate

Story-axis per ADR-016.

Cultural-context note

Acoustic-space pedagogy: standard architectural acoustics. Cetacean for echolocation-in-large-spaces biomimicry.

Tune

*TUNE — *combine frequency + envelope + timbre + space → entirely new sounds.**

The door to the SoundSphere studio hummed open. I stepped inside. A soft glow filled the room. Wires snaked across the floor. Knobs and buttons covered every surface. This was Tune's space.

Tune was a honeybee-tween. They hovered near a huge control panel. Their tiny wings buzzed softly. Tune wore a chunky-cartoon studio-tunic. It had pockets for all their gear. Tune was warm-cream with soft-amber stripes. They looked very busy.

"Hello!" I called out.

Tune didn't jump. They just turned their head slowly. Their big, round eyes blinked. "Oh, hello," Tune said. Their voice was quiet. "I didn't hear you come in."

That was a surprise. Tune was all about sound.

"My name is Tune," they continued. "I teach *synthesis*." Tune pointed a small, striped arm at the control panel. "It's the craft of making sounds. Sounds no instrument ever made before."

I looked at the panel. It had so many blinking lights. Little cards were slotted into it. Tune called them "synthesis-cards." A small screen showed squiggly lines. That was their "sound-design-tracker."

"Today," Tune announced, "we will make a sound. A very special sound."

"What kind of sound?" I asked.

Tune paused. They stared at the floor for a long time. Then they looked up. "A sound like a happy cloud," they decided. "A cloud that whispers secrets."

I tried to imagine it. A whispering, happy cloud. It sounded impossible.

Tune floated closer to the panel. "To make new sounds, we combine four pillars," they explained. "Frequency, envelope, timbre, and space."

"Pillars?" I asked.

"Building blocks," Tune corrected. "Like ingredients for a sound recipe."

They picked up a synthesis-card. It had a picture of a wavy line. "This is an *oscillator* card," Tune said. "Oscillators make the basic sound. Think of it like the engine of our sound." They slid the card into a slot. A low, steady hum filled the room. "That's our engine starting."

Tune then grabbed another card. This one had a picture of a sharp peak. "This is a *filter* card," they told me. "Filters shape the sound. They can make it bright or dark. They can make it smooth or rough." Tune adjusted a knob. The hum changed. It became softer, then sharper. It was like sculpting the sound.

"And this," Tune said, holding a third card, "is an *envelope-generator*." This card showed a line that went up, held, then went down. "An envelope tells the sound's story. How it starts, how long it lasts, and how it fades away." Tune slid it in. The hum now had a gentle beginning and end. It wasn't just a flat sound anymore.

"Okay," Tune said, hovering back to the main controls. "First, *frequency*." They pointed to a dial. "Frequency is how high or low a sound is. Like a tiny mouse squeak or a giant elephant rumble." They slowly turned the dial. The hum went from deep to high-pitched. It was like a siren.

"Too sharp for a happy cloud," Tune mumbled. They turned the dial back down. They found a spot that sounded soft and airy.

Next, *envelope*. Tune moved several sliders. "This controls the sound's story," they repeated. "Attack, decay, sustain, release." I watched as they adjusted each one.
"Attack is how fast the sound starts," Tune explained. "Decay is how fast it gets quieter. Sustain is how long it stays loud. Release is how fast it fades out."
They made the sound start very softly. It held for a moment. Then it faded out slowly. It sounded like a breath.

"Now, *timbre*," Tune said. "Timbre is the sound's color. It's what makes a flute sound different from a trumpet. Even if they play the same note." Tune swapped out a filter card. The sound became warmer. It felt rounder.

"Almost there," Tune whispered. "Last pillar: *space*." They tapped a button. "Space makes the sound feel like it's in a big room. Or a small box. Or even floating in the sky." Tune added some echo. The soft, warm, breathing sound now seemed to drift. It filled the whole studio.

"Listen closely," Tune instructed. They closed their eyes. Their antennae twitched. "Do you hear the tiny shimmers?"

I leaned in. I heard the main sound. But then, I focused. There *were* tiny shimmers. Like little sparkles around the edges. I hadn't noticed them before.

"My ears are very sensitive," Tune explained. "Sometimes, everyday sounds are too much. Too loud. Too many at once." They opened their eyes. "But here, in *synthesis*, it's different."

Tune smiled. "My sensitive ears are a superpower here. I can hear every little detail. Every tiny shimmer. I can control everything. I can design the sound perfectly."

They made a tiny adjustment to a knob. The shimmers became clearer. They sounded like tiny bells. Very soft bells.

"There!" Tune exclaimed. "A happy cloud that whispers secrets. It floats. It shimmers. It breathes."

I listened. It was amazing. It really did sound like a happy, whispering cloud. It was a sound I had never heard before. No instrument could make it.

Tune looked at me. Their eyes were bright. "See?" they said. "Combine frequency + envelope + timbre + space → entirely new sounds."

I nodded. I finally understood. *Synthesis* wasn't just about making noise. It was about creating magic. It was about turning sound into art. And Tune, with their sensitive ears, was a master artist.

"That was incredible," I said. "Could you make other sounds? Like a grumpy frog burp?"

Tune giggled. It was a soft, buzzing sound. "Oh, yes," they said. "Any sound you can imagine. We can build it here. And these skills help everywhere else."

"Everywhere?" I asked.

"With BeatForge, you make rhythms," Tune explained. "With HarmonyForge, you make melodies. MotifLab helps with patterns. EffectsForge adds cool layers." They gestured around the studio. "But *synthesis* is where you invent the sounds themselves. The very notes. The very beats."

"So, you can make the exact sound you need," I mused. "For any part of the music."

"Exactly!" Tune beamed. "It's about control. Total control over sound. It's empowering. Especially when the world outside can be so loud." They looked at their sound-design-tracker. The squiggly lines of the happy cloud still danced there. "My ears used to feel overwhelmed. Now, they help me create."

I looked at the panel again. It still looked complicated. But now I saw it differently. It wasn't just buttons and wires. It was a sound-making machine. A magic box. And Tune was its brilliant, buzzing wizard.

Voice register

Honeybee-tween. Hovering + designing. Autism-affirming + auditory-sensitivity-as-creative-strength.

Arc

Closes SoundSphere cast arc.

Cultural-sensitivity gate

LOAD-BEARING autism-affirming + auditory-sensitivity-as-creative-strength. Story-axis per ADR-016.

Cultural-context note

Synthesis pedagogy: Bob Moog; standard synthesizer textbooks; modern DAW education. Honeybee for design-hovering biomimicry.

Wave

*WAVE — *frequency. high vibrates fast, low vibrates slow.**

Wave was a bat. Not a regular bat, but a *bat-tween*. That meant Wave was part bat, part kid, and all about sound. Wave wore a chunky studio tunic. It had big pockets. Inside, Wave kept tiny **frequency** cards. A small Hz-tracker clipped to the tunic too. Wave stood in a special pose. It was an echolocation pose. Head tilted. Ears swiveling. Always listening.

Wave was small. Wave was precise. Wave listened to everything. Wave's fur was warm cream. Soft charcoal wings folded neatly behind. Wave paid deep attention to vibration speeds. Wave loved to say, "Frequency. High vibrates fast, low vibrates slow."

This was important. Wave taught about **frequency**. It was the sound-science craft. It showed that PITCH-IS-VIBRATION-SPEED. Sound is just a vibration. It moves through the air. **Frequency** means vibrations per second. We measure it in Hertz. We call that 'Hz'.

High **frequency** means high pitch. Think of a tiny squeak. Low **frequency** means low pitch. Think of a deep rumble. Humans can hear sounds from about 20 Hz to 20,000 Hz. That's a huge range! Your ears hear pitch in a special way. An octave means the **frequency** doubles.

Wave taught many things. What **frequency** means. How pitch works. The range of different instruments. And a big secret: your ears are a superpower. If you hear sounds others miss, that's a creative strength. It's not a weakness.

Wave often said, "I am Wave. The primitive I teach is **frequency**. The move is *high vibrates fast; low vibrates slow; auditory-sensitivity is creative strength*."

"**Frequency**. High vibrates fast, low vibrates slow."

Pip sat on a wobbly stool. A strange whirring sound filled the studio. It was a high-pitched whine. It made Pip's teeth ache. No one else seemed to notice it.

"It's driving me nuts!" Pip muttered.

Wave floated in. Wave didn't walk. Wave glided. Wave's ears twitched. Wave's head tilted. "What is driving you nuts, Pip?" Wave's voice was soft. It was very clear.

Pip pointed to a stack of old speakers. "That noise! It's coming from over there. It's like a tiny, angry mosquito."

Wave closed their eyes. They listened. Their ears swiveled. "Ah, yes," Wave said. "A very specific whine." Wave pulled out a small card. It had a picture of a squiggly line. "This is **frequency**."

"Huh?" Pip asked.

"Everything that makes a sound vibrates," Wave explained. "It wiggles. Fast wiggles make high sounds. Slow wiggles make low sounds." Wave tapped the card. "This line shows how fast it wiggles."

Wave pulled out the Hz-tracker. It looked like a tiny calculator. Wave held it up. The numbers on the screen jumped. "This machine tells us the wiggle speed. The **frequency**."

Wave pointed the tracker at the speakers. The screen showed: 18,000 Hz.

"Eighteen thousand?" Pip gasped. "That's a lot of wiggles!"

"It is," Wave agreed. "That's why it's so high. And why your sensitive ears pick it up." Wave smiled. "Most people don't even notice sounds like that. But you do."

Pip frowned. "It just makes my head buzz."

"It's a gift, Pip," Wave said. "Your ears are finely tuned. They notice details others miss. That's a creative strength." Wave picked up a small tuning fork. They tapped it gently. A clear, high note rang out. Wave held the Hz-tracker to it. "See? This is 440 Hz. A much lower **frequency**."

"It sounds nice," Pip said. "Not like the mosquito."

"Exactly," Wave said. "The tuning fork vibrates 440 times each second. The speaker whines 18,000 times each second. That's a huge difference in speed."

Wave walked to a big, old piano. Wave pressed a low key. *Booooom.* The sound rumbled deep in Pip's chest. "That's a low **frequency**," Wave said. "Maybe 27 Hz." Wave pressed a high key. *Ting!* It was sharp and bright. "That's a high **frequency**. Maybe 4,000 Hz."

"So, the piano has lots of different wiggle speeds," Pip said.

"Yes!" Wave beamed. "Every instrument has its own range of **frequency**. A bass guitar makes very slow wiggles. A flute makes very fast wiggles."

Wave looked at the speakers again. "Your ears are telling you something important. That 18,000 Hz whine. It means something is not quite right with those speakers. Your sensitivity is helping us find a problem."

Pip tilted their head. They listened past the whine. They focused on the *speed* of the wiggle. It was still annoying. But now, it was also interesting. It was a clue.

"So, my ears are like a super-detector?" Pip asked.

"Precisely," Wave said. "You hear the world in high definition. That's a powerful tool for making music. Or fixing things. Or just noticing beauty." Wave tapped the Hz-tracker. "High vibrates fast, low vibrates slow. And your ears? They're amazing."

Pip smiled. The whine still buzzed. But it didn't feel so bad now. It was just a very, very fast wiggle. And Pip could hear it.

Voice register

Precise-bat-tween. Echolocating + listening. Autism-affirming.

Cultural-sensitivity gate

LOAD-BEARING autism-affirming + auditory-sensitivity-as-strength. Story-axis per ADR-016.

Cultural-context note

Frequency pedagogy: standard acoustics. Bat for echolocation biomimicry.

About Spark & Anvil

Spark & Anvil is a 501(c)(3) public charity. We make educational apps for ages 9-14 — all free, forever; no ads; no tracking; no in-app purchases. Soundsphere is one of 140+ apps in the portfolio.

More chapter books from Spark & Anvil

Each app in the Spark & Anvil portfolio publishes its own illustrated chapter book + audio drama, available free from **spark-and-anvil.com/books**. Highlights include:

- **GambitTales** — chess tactics through Sir Pinwell, Lady Skewer, Queen Vesper, and the Twin Knights of Fork Hill
- **ProofQuest** — formal proof techniques through Direct-Proof Dora and the Lemma Library
- **CuriosityQuest** — Texas geography exploration through Linger, Notice, and the Lantern in the Dark
- **QuillSpell** — spelling craft through the Word Wizard cast
- **SynaForge** — sensory-affirming creative tools through Lull, Soften, and the Quiet that is Also Creating

Methodology

Distributed-narrative pedagogy per Jerome Bruner (narrative-cognition) + Sebastian Habgood (intrinsic-integration in educational games) + SAMHSA TIP 57 (trauma-informed register).

Trauma-informed-design framework per Eggleston et al. (2025) and Stoltenburg et al. (2024).

License

Cover art, chapter illustrations, and chapter text generated and reviewer-cleared per labsmith ADRs 012, 016, 017, 018, 021. Audio drama transcripts available at spark-and-anvil.com/cast.