

A Symphony Orchestra

Zuri and Friends

Made for Tlaloc

With love from the Faust book maker

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Zuri, Teo and Juno were friends. Pip, their owl, came too. They sat on a balcony. Below, an orchestra played soft music. Then, BOOM! A giant boom shook the hall! "Let's find what made it!" said Zuri.



An orchestra is many players making music together. "Which one went boom?" asked Juno. The concert was later that day. "I'll point at the boom then!" said Teo.

Teo puffed at a tuba, a coiled horn. “Will it go boom, boom, BOOM?” A low note hummed. Zuri said, “Shaking lips shake the tuba's air. That isn't our boom.”

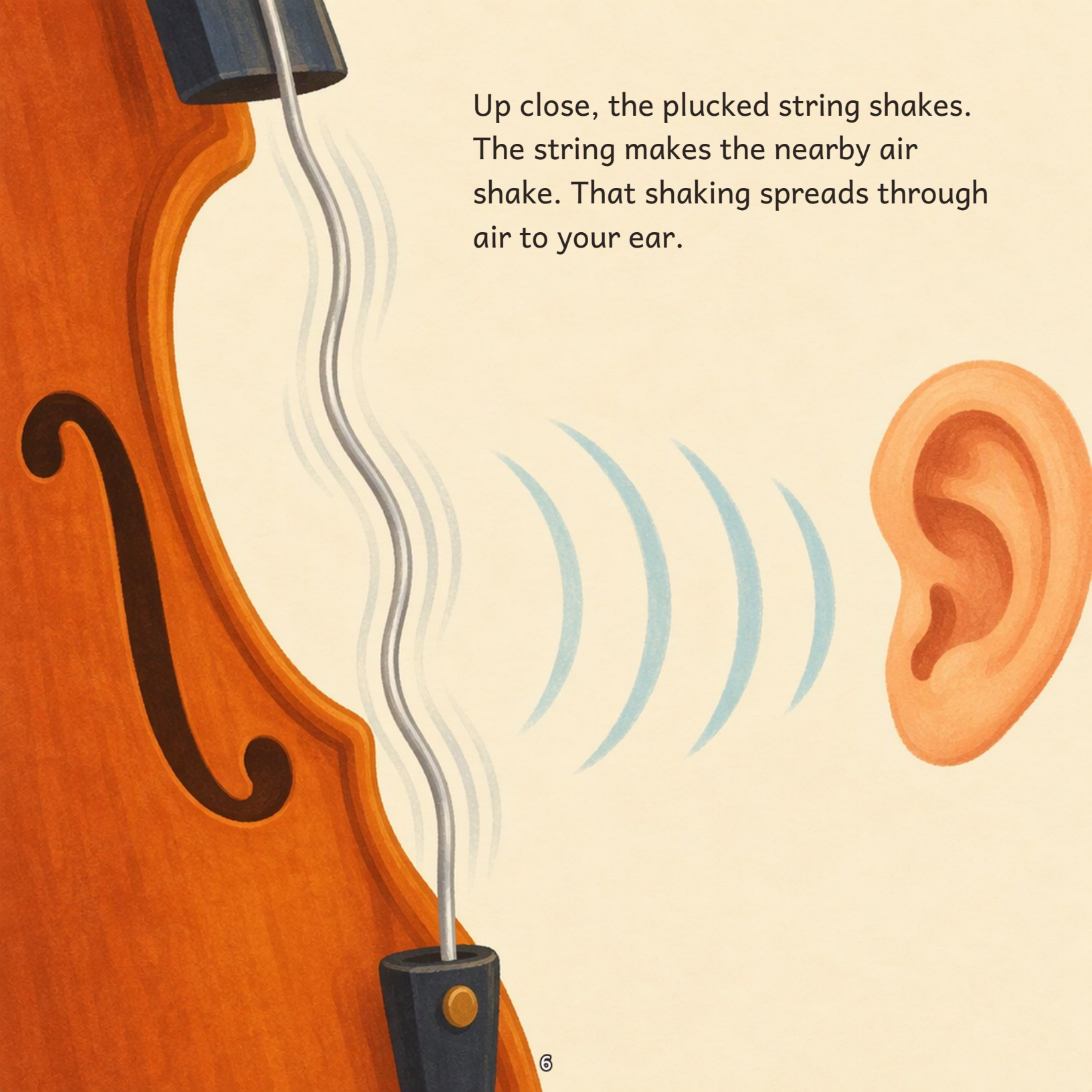


Teo followed the piano's quick notes. He pointed the wrong way. His finger found his own nose! Zuri said, "That isn't our boom!"



A plucked string went plink. Juno pointed. “Okay… let's look closer,” said Zuri. “That string vibrates: it shakes back and forth. Let's watch what moves!” The clock ticked on.





Up close, the plucked string shakes. The string makes the nearby air shake. That shaking spreads through air to your ear.

The small violin squeaked high. The double bass, its bigger neighbor, hummed low. Zuri said, "Longer, thicker strings usually shake slower. They make lower sounds." Teo lowered his hand.

> **Did you know?** A double bass is often taller than a grown-up. Its long strings make the lowest notes.



A flute whistled. A trombone's slide moved. Zuri listened. "Blowing across its hole shakes the flute's air. Neither sounds like our boom." Teo watched the clock.

Did you know? A trombone's slide can stretch about as long as your arm. The longer air path makes lower notes.



Juno spotted two big copper drums. Their tops were stretched skin. A player hit one with a stick. BOOM! "Kettle drums made our boom!" said Zuri.



Above the hollow bowl, the stretched skin shakes. The shaking skin makes the nearby air shake. The bowl helps the sound ring out.



At last, the concert began. The conductor raised both hands. Zuri whispered, "Those hands show when to play." The music was the Surprise Symphony. The soft song began again.

> **Did you know?** Joseph Haydn wrote this music over 230 years ago. He put the big boom in on purpose.



BOOM! went the kettle drum. Teo pointed right at it. "Boom, boom, BOOM!" cheered the friends. Then they swayed to the gentle song. Pip hooted along. They found the boom!



For grown-ups

Haydn's "Surprise" Symphony (No. 94) is famous for a soft tune that suddenly goes boom. Listen to the second movement together: the boom comes about half a minute in, with the kettle drum. Orchestras include string, woodwind, brass, and percussion. Sound travels as tiny changes in air pressure; the air itself does not travel. Kettle drums are also called timpani and often have pedals that change the note.