

# CHAPTER 3

## STUMBLING ON H2



### KEY WORDS

#### MELODIC

Pleasant, song-like sounds.

#### RHYTHMIC

A steady repeated pattern of sound, like a drum beat.

**ONE OF THE MOST IMPORTANT** uses Ragnar found **1** for his horn was hunting bison. Bison were very big and extremely dangerous, but loud sounds scared them. Ragnar and the hunters made a plan to confuse and trap the animals. They watched the movements of the bison herds for weeks. One evening, after a storm had passed, Ragnar climbed up a cliff and waited out of sight until the bison neared a mountain pass. Meanwhile, the hunters hid on the other side of the pass, their spears at the ready. As the bison approached, Ragnar took a deep breath and blew his horn as loudly as he could. In the still of the evening, the sound echoed through the valley and alarmed the bison so much that they began a furious stampede. Ragnar could feel the earth trembling as they charged. Most escaped, but Ragnar's friends were able to cut off the stragglers, hurling their spears at them. They were overjoyed! The hunt would provide food for weeks and plenty of materials to make clothing, tools, and shelter.

**2** On the trail home, Ragnar played triumphant, **rhythmic** music on his horn. This kept the hunters in good spirits. It also helped them move together as they carried their heavy load.

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## Summary

In **Chapter 3**, students will learn about the use of early musical instruments for hunting and think about possible origins of rhythmic and melodic music. They will discuss the ability of lip-blown instruments of increasing length to play more notes (overtones) and learn about the harmonic series of the natural trumpet. As students begin to experiment with variables associated with navigating the harmonic series, they will learn how to articulate in both a detached and connected (staccato and legato) manner, enabling them to play song-like and march-like music.

## Objectives

### Students will:

- **Understand** why Ragnar's bison horn was important to the well-being of his group
- **Learn** how to play loudly
- **Consider** how and why the stick trumpet could play two notes
- **Experiment** with the variables associated with moving between notes of the harmonic series
- **Contemplate** the origins of rhythmic and melodic music
- **Learn** how to play (articulate) in a march-like and song-like manner

## Learning Activities

After reading, or listening online to **Chapter 3: Stumbling on H2** (or the accompanying soundscape, "On the Hunt"), ask students the following:

**Q.** How did Ragnar's horn make the bison stampede? **A.** Loud sounds scared them.

**Q.** How do you make a loud sound on the trumpet? **A.** Blow faster or more air.

Demonstrate making a loud sound. First blow air alone, and then into the trumpet. Ask students to repeat- air alone, then trumpet. Is their sound loud enough to frighten a herd of bison?

Ask for volunteers to play loud sounds. It is preferable to have students think about blowing air *faster* as opposed to *harder*.

Discuss the key word **rhythmic** as it relates to Ragnar's story. Ask students to imagine carrying a heavy load through a forest, having them walk together around the classroom playing their trumpets. Use this activity to help prepare students to improvise music for marching home on p. 25 (TE p. 37). Ask students to think of other examples of music that is played while people move together. Examples include a march or music for a processional.

**Q.** How did Ragnar get idea that the stick could be made into a trumpet? **A.** Because it was hollow, like a bone or horn.

## Key Points

- 1 Many modern instruments originated from objects used in hunting. Examples include:  
**Strings:** The string of a hunting bow can be plucked or struck to produce a musical effect, while the bull-roarer, a cord tied to a flat piece of wood used to trip fleeing animals, can be whirled around the user's head to produce a sustained sound.  
**Woodwinds:** Sharp edges of broken bones or chipped stones can produce whistling, flute-like sounds. Blades of grass held between the thumbs and blown were used to call deer, giving rise to single and double reed instruments.  
**Percussion and Brass:** Objects capable of producing loud sounds when shaken, struck, scraped, or blown, can be used to startle game, or to signal over great distances.
- 2 Humans have a unique ability to synchronize their movements with a sense of pulse, beat, or rhythm. Although experts can't explain why this is, they agree that our ancestors used rhythm to coordinate their activities in both work and social environments.<sup>15</sup>
- 3 Traditionally, the Australian *didjeridu* was made from Eucalyptus branches bored out by termites. (TE p. 50-53)
- 4 Although several variables determine the number of overtones that can be produced on an instrument of a given length, generally speaking, the longer the tube, the greater the number of available overtones. (TE p. 8-9)

### DID YOU KNOW?

Conch shells have been used as trumpets since prehistoric times. They are found in coastal areas all over the world, and trumpets made from these have been discovered in ancient sites that were thousands of miles from where conch shells were originally found. The shells with broken-off tips or holes can be blown, and can produce a very loud sound over long distances. We learned how Ragnar got the idea to buzz his lips into a bone, a bison horn, and a hollow stick. How do you think prehistoric people might have come up with the idea to make a trumpet sound with a conch shell?



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Not long into the journey, Ragnar stumbled over a small tree branch lying on the path. As he moved the branch out of the way, he noticed insects falling out of the end. The insects had eaten all the way through the inside, making a hollow center. Ragnar took the branch home with him, and while his friends were preparing a feast to celebrate the hunt, he got to work. Using a sharp stone, he carved the end to make it comfortable for his lips and gave it a blow: **DAAAAAAAAAAAAAAAAAAAA!**

Then he blew his air harder to see how loud he could make it, and suddenly the pitch went up to a much higher sound:

**DAAAAA-EEEEEEEEEEEE!**

He couldn't believe it! This stick trumpet could play two different notes. Ragnar didn't know it, but he had stumbled on the second note of the harmonic series, H2!

**DAAAAAAAAEEEEEEEEAAAAAAAA...DAA DAA DAA DEE DEE DAAAA...** That night after the feast, Ragnar played **melodic** music on his new stick trumpet. Everyone swayed and sang along with the joyful sounds. It was a perfect way to end the day.

## REALITY CHECK!

### What the Experts Say About

## PREHISTORIC HUNTING

Paleolithic people across the globe hunted many different animals including buffalo, horses, bison, wild goats, and deer. Hunting took a great deal of time and patience. Sometimes animals were watched, and then followed, for many miles before they were caught. Experts believe that Paleolithic people used various noise-making objects to call, startle, or confuse their prey.

## Learning Activities, cont.

**Q.** How did Ragnar discover that the stick trumpet could play two notes? **A.** He blew harder to see how loud he could play. Ask students turn to p. 8-9, 'It's All Greek to Me!' and point out that longer trumpets play more notes. (See **Key Points** No.4 above)

Discuss the key word **melodic** as it relates to Ragnar's story, and listen online to the accompanying soundscape. Ask students how melodic music is different from marching music. **A.** **Melodic music is song-like and smooth, with longer and softer sounds.**

Read **Did You Know?** and ask students how prehistoric man

might have discovered that a conch shell could be made into a trumpet. Explain that they probably ate the shellfish they found inside. **A.** They could have broken off the end and tried to blow the shellfish out.<sup>15</sup>

Read **Reality Check!** and explain that most musical instruments had their origins in hunting. Ask students if they can think of any examples of noise-making devices used in hunting and discuss some of the examples listed in **Key Points** No.1 above. Ask students to turn to SE p. 4 (TE p. 4), pointing out that our prehistoric ancestors had to find their food daily in order to stay alive, and that many of their activities would have revolved around collecting food and hunting, which is why we refer to them as "hunter-gatherers."

# CHAPTER 3 PRACTICE CAVE EXERCISES!



## LONG NOTE EXERCISES

- Hold a lower harmonic note for **6-8 seconds**
- Hold a higher harmonic note for **6-8 seconds**

## HARMONIC NOTE EXERCISES

① ② ③ ④

## ARTICULATION EXERCISES

① a. b. ② a. b. ③ a. b.

## MAKE MUSIC!

### IMPROVISE

- Music for marching
- Melodic music with two harmonic notes

### PLAY ALONG

- ① Hunting bison
- ② Marching home
- ③ Signal for a successful hunt
- ④ Melodic music
- ⑤ **Challenge!** Melodic music



### LISTEN & PLAY ONLINE

Sound files for this page are available at [www.practicecave.com](http://www.practicecave.com)

### ARE YOU A MUSIC READER?

Follow along with music notation for these exercises on page 76.

### REMEMBER

GET READY,

GET SET,

PLAY!

## Key Points (review)

### Get Ready, Get Set, Play!

Refer back to SE p. 18-19 (TE p. 28-29) to review "Posture," "Embouchure," and "Count, Breathe, and Blow!"

### Listen & Play Online

Show students how to practice with online resources by using them in the classroom. See **Teaching Tips** on TE p. 39 for suggestions.

### My Weekly Practice Cave

Print from TE p. 132, fill out, photocopy, and send home with students to encourage daily practice.

### Practice Cave Stations

Divide students into groups based on the categories: "Long Note, Harmonic Note, and Articulation Exercises."

Travel between stations to check progress and encourage students to help each other. Rotate groups every 5 minutes.

### Student Self-Evaluation

Ask students to fill out self-evaluation forms either while in their "Practice Cave Stations" or on their own. Ask them to use their forms at home to see if they can improve their scores. Photocopy from TE p. 104.

### Practice to Perform

Practice selected pieces at the end of each class, and be sure to leave time for evaluation and improvement through rehearsal. Refer to TE p. 34.

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## Practice Cave

### Long Note Exercises

Ask students to play long notes while you count aloud.

Encourage them to hold a lower note, then a higher note as indicated.

### Harmonic Note Exercises

Ask students again how Ragnar discovered that the stick trumpet could play two notes (**A. He blew harder**). Ask them to read **What's a Natural Trumpet?** (SE p. 6-7) and **It's All Greek to Me!** (SE p. 8-9) to further examine the harmonic series. Explain that to play any brass instrument, you must learn

how to play these different notes, and because there are no buttons you must use your embouchure, tongue, and air to make them. Discuss the variables involved in changing harmonic notes found in **Teaching Tips** on TE p. 38.

To help students practice changing pitch using tongue position, sing the sound of a siren, moving pitch up and down using the vowels "AH—EE" (low—high). Ask students to sing along with you. A visual cue such as raising and lowering your arm can help students understand the relationship between higher and lower pitches. Demonstrate going from low to high on a mouthpiece, and ask students to repeat. Then try high to low, etc.. Practicing the siren helps students to develop the internal mechanism required for shifting between harmonic notes.

# Teaching Tips

## Navigating the Harmonic Series

Moving between notes of the harmonic series on a brass instrument involves a complex combination of maneuvers using embouchure, tongue position, and air stream. In the early stages, it is often best to focus on tongue position and/or manipulation of air speed. As each student is different, it can be useful to use various strategies to help them develop this important technique. Experiment with one or more of the following variables:

**Tongue Position** - Change vowel sounds as shown below to move between low and high notes.

Low—————High  
"OH—AH—AY—EE"

**Air Speed** - Encourage students to play lower notes with slow air, and higher notes with faster air.

**Aperture** - Experiment between a pinhole size for higher notes, and the size of your little finger for lower notes.

**Embouchure** - Experiment with lip tension: tighter for higher notes and more relaxed for lower notes.

**Mouthpiece Pressure** - (See **Teaching Tips** on p. 29) Ask students to check that mouthpiece pressure is evenly balanced between their upper and lower teeth and jaw. Using variable mouthpiece pressure as a way of navigating the harmonic series should be used with caution. Nevertheless, as playing higher on a brass instrument requires greater air pressure, which in turn requires more mouthpiece pressure to maintain a seal with the embouchure, it may be helpful to suggest this variable to students who struggle using other strategies. In general, students should be encouraged to find what works for them, while making sure goals are achieved with minimal physical force and the best musical results.

# PRACTICE CAVE CHAPTER 3

## Stumbling on H2

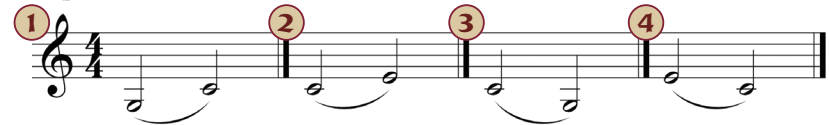
### EXERCISES!

#### LONG NOTE EXERCISES

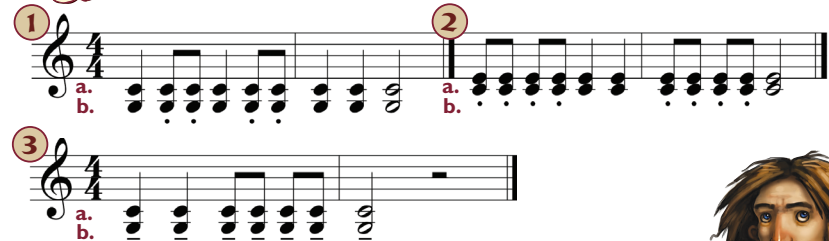
- Hold a lower harmonic note for **6-8 seconds**
- Hold a higher harmonic note for **6-8 seconds**



#### HARMONIC NOTE EXERCISES



#### ARTICULATION EXERCISES



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#### Harmonic Note Exercises, cont.

Sing exercise no. 1 (by yourself, or with the online sound file) using vowels "TAAH-EE," and ask students to repeat it, singing along with you. Then play it on your mouthpiece, again asking students to repeat it. Finally, play the exercise on the trumpet and ask them to repeat it several times.

Do not worry if students are playing the exercise on different harmonic notes at first. The important thing at this stage is

for them to experience the sensation of shifting, both up and down. You may find that some students have difficulty starting on a lower note. In this case, suggest starting the sound with very slow air, and then accelerating the air before changing the vowel sound to "EE." (Consider trying other variables found in **Teaching Tips**) Repeat this process with exercises nos. 3 and 4, singing "TEE-AAH." If students have difficulty starting on a higher note, suggest starting the note with a smaller aperture



## LISTEN & PLAY ONLINE

Sound files for this chapter are available at [www.practicecave.com](http://www.practicecave.com)

## MAKE MUSIC!

### IMPROVISE

- Rhythmic music for marching home
- Melodic music with two harmonic notes

### PLAY ALONG

#### 1 Hunting bison



#### 2 Marching home



#### 3 Signal for a successful hunt



#### 4 Melodic music



#### 5 Challenge! Melodic music



## REMEMBER

GET READY,

GET SET,

PLAY!

and faster air. Demonstrate by blowing the air through a well-formed embouchure (no mouthpiece), combining the variables of air speed and tongue position (fast to slow air with "TEE-AAH" - which sounds more like "TEE-OO" when blowing air alone). Ask students to repeat this and then encourage them to replicate the sensation when playing it on the mouthpiece or trumpet. Repeating this process in the classroom will give students the tools they need to develop at home.

### Articulation Exercises

In this chapter, students will learn how to articulate detached and connected notes (staccato/legato).

Sing exercise no. 1 for the students (by yourself, or with the online sound file) and ask them to sing it back to you:

"TAAAA, TAT, TAT, TAAAA, TAT, TAT, TAAAA, TAAAA, TAAAAAAA"

or "DAAAA, DAT, DAT, DAAAA,....."

## Teaching Tips

### Listen & Play Online

Each sound file is heard four times with a count-in before each repetition. There are many creative ways to use this resource, and using it in the classroom is the best way to show students how to use it at home. Demonstrate as follows:

**1st time:** Listen carefully!

**2nd time:** Sing or blow with air alone

**3rd time:** Play it on the mouthpiece

**4th time:** Play it on the trumpet

If students have difficulty remembering the music, ask them to look at **For Music Readers** while listening and playing. **Goal** Play it 4 times in a row with no mistakes!

### Articulation Exercises, cont.

Then blow it with air and articulation alone and ask them to repeat it. Finally, play on the trumpet and ask them to repeat it several times. For exercise no. 3, use the syllables "DAADAA" and encourage students to keep air moving across the notes for a smooth legato style.

### Improvise

Discuss the prompts as they relate to Ragnar's story and give students some time to improvise together. After a few minutes, ask volunteers to share their ideas. Combine the best ones and write them down on TE p. 157-159, indicating the names of the student contributors. Rehearse them in every class to prepare for a future performance.

### Play Along

Discuss **Listen & Play** pieces as they relate to Ragnar's story and either play them for students to copy, or use the online sound files. Ask students to evaluate how they sound and whether their performance is achieving the goal for each piece. If not, ask them to offer suggestions on how they can improve. For "melodic music to celebrate," first listen to its soundscape on [www.hearragnar.com](http://www.hearragnar.com), and then begin by singing:

"DAA,DAA-EEEE, DADADAA-EEEE...."