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Raven Hill Discovery Center, incorporated in 1991,
is a 501(c)(3) tax-exempt corporation.

Open year-round on weekends – noon to 4pm Saturdays and 2pm to 4pm Sundays.
Between Memorial Day and Labor Day, hours expand to include weekdays from
10am to 4pm. The Center is also open other times, including holidays, by appointment.

MISSION: to provide a place that enhances hands-on and lifelong
learning for all ages by connecting science, history and the arts.

WHERE **SCIENCE****HISTORY****AND****ART** CONNECT

To: Raven Hill friends

From: Cheri

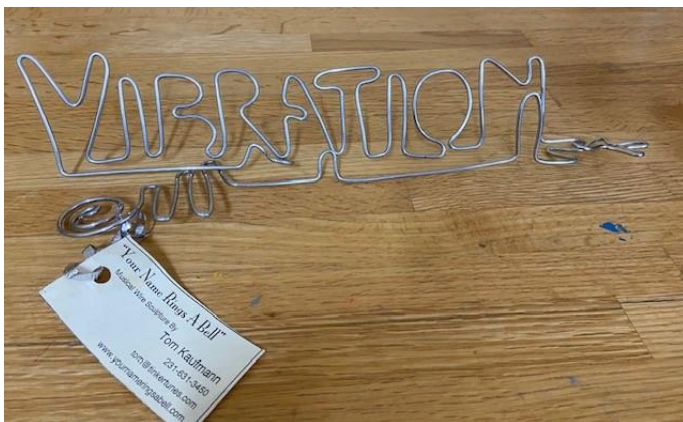
Date: February 10, 2024

Re: Sound, Slinkies and Star Wars?!

You really need to come **hear** our latest donation! Raven Hill Discovery Center was recently gifted a thunder drum. If you have never heard one, you are in for a treat, but the only way to get the full effect is to come check it out in person. Thunder drums or thunder tubes have been used worldwide by Indigenous people in ceremonies for centuries. Traditional thunder drums use membranes made from animal skins (rawhide) stretched over a frame or a tube. Today's thunder drums often use synthetic materials like Mylar or other durable plastics for the drumhead. A metal spring attaches to the membrane. The vibrating spring's **sound** is amplified by the mylar, creating the "rumble" reminiscent of the **sounds** of thunder.



Paige is moving the thunder drum to simulate the **sound** of thunder. You can easily see the gourd drum, and the spring coil. Between the two, on the cut part of the gourd, is a mylar membrane that vibrates to create the thunder **sound**. Come be your own thunder god soon!



Artist and musician, Tom Kaufmann, uses wire to create unique **sound** sculptures. He is well known for "Your name rings a bell" wire sculptures. Holding one end and gently hitting the formed wire against your palm will create **sound** vibrations.

As with any **sound**, vibrations from the thunder drum transfers energy. These vibrations reach our ears, causing our eardrums to vibrate our ear bones. The brain interprets these vibrations as **sound**, when the vibrations travel through any matter, including solids, liquids and gases. In fact, because the particles in solids are closer together, there are more particles vibrating making the **sound** louder.



The compressional waves that transfer vibrations and sound become visual with a slinky. This sound slinky is extra long for demonstration purposes.

Slinkies are fascinating. Engineer Richard James accidentally invented the Slinky. In 1943, he was working with springs to keep sensitive ship equipment steady at sea. After accidentally knocking some samples off a shelf, he watched as they “walked” down instead of falling. During the Vietnam War, soldiers would sometimes use a Slinky as a portable, extendable antenna for their radios, fastening one end to themselves and tossing the other end over a tree branch to get a clear signal. Slinkies were also used in the Star Wars movies. Sound designer Ben Burtt twanged and manipulated a small diameter slinky to create the iconic sound of the light sabres, because they quickly realized that it was strange to watch “silent” light sabre fights. “Space phones” are commercially available and it really sounds like you are in a Star Wars movie. Be sure to come and experience some new sounds at Raven Hill soon!

Remember, our weekend hours are noon to 4pm on Saturdays and 2pm to 4pm on Sundays or call 231.536.3369 to make an appointment for any other time. Meanwhile, have a good week!

A stretched-out slinky can demonstrate compressional sound waves. When you compress a few coils at one end of the slinky and then release it, it creates a “wave” that travels along the coils to the other end. Imagine one end as a mouth speaking and the other end as the ear listening. This visual wave shows how invisible sound waves travel through the air or other materials, with molecules vibrating and transferring energy from one place to another.



Slinkies are one of the iconic children's toys from World War II era. You will see one on display in the Evolving Technology Building and can ask to play with one inside the main building.



Space phones create wonderfully random sounds and make you think you are part of a Star Wars movie. Ask for a demonstration next time you are at Raven Hill.

Cheri