



Smithsonian

*National Museum of American History Kenneth E. Behring Center*

## Guide to the Elwood Norris Innovative Lives Presentation and Oral History

NMAH.AC.1108

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## Collection Overview

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|--------------------|---|
| <b>Repository:</b> | Archives Center, National Museum of American History  |
| <b>Title:</b>      | Elwood Norris Innovative Lives Presentation and Oral History  |
| <b>Date:</b>       | March 10, 2007  |
| <b>Identifier:</b> | NMAH.AC.1108  |
| <b>Creator:</b>    | Jerome and Dorothy Lemelson Center for the Study of Invention and Innovation. (Creator)<br>Norris, Elwood (Interviewee)<br>Rosenthal, Paul R. (Interviewer) |
| <b>Extent:</b>     | 0.15 Cubic feet (1 box)   |
| <b>Language:</b>   | English .   |

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## Administrative Information

### Immediate Source of Acquisition

Audio and video recordings created by the Innovative Lives Program of the Jerome and Dorothy Lemelson Center for the Study of Invention and Innovation, March 10, 2007.

### Processing Information

Collection is unprocessed.

### Preferred Citation

Elwood Norris Innovative Lives Presentation and Oral History, March 10, 2007, Archives Center, National Museum of American History.

### Restrictions on Access

Unrestricted research access on site by appointment.

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## Biographical / Historical

Elwood "Woody" Norris began his training in electronics by repairing broken radios as a child and learning all he could about the field. A classic independent inventor, Norris is self-educated, self-funded and self-motivated. With inventions spanning fields from acoustics to aviation to medicine, Norris is changing technology for the better. His achievements have earned him the 2005 Lemelson-MIT Prize.

Devoid of a woofer and tweeter, Norris' HyperSonic Sound (HSS®) system consists of an emitter measuring as little as one-sixteenth of an inch thick, digital processor and amplifier. Designed to control the direction of sound emitted, HSS is focused like a laser beam. When aimed directly at a listener it has the effect of

wearing headphones, almost like a voice inside one's head. It projects high-frequency sound in the air, which produces ultrasonic waves that can also be made to bounce off walls or other objects, unlike conventional speakers which are larger and typically require a box. The sound is clearer and remains at the same level for all listeners over great distances, since it does not radiate in all directions like a conventional speaker. HSS has been used for targeted messaging and capturing customer attention with sound, with additional applications targeted for the future, such as surround sound in home theaters. A side benefit of HSS is that people can move aside from the sound beam if they don't want to listen.

In 1967, inspired by Doppler radar, Norris created a sonar tool to isolate different movements inside the human body. This Transcutaneous Doppler system, which sends ultrasound through the skin, was designed to listen to targeted sounds, and was a precursor to the sonogram.

Mostly computer operated with handlebar assistance, Norris's AirScooter® invention is a personal transportation vehicle that weighs just over 250 pounds. The AirScooter has two counter-rotating blades with two pontoons, and Norris plans to offer an optional GPS navigational system in the future. While originally envisioned for recreational users, it has also sparked the interest of law enforcement officials and general commuters.

In the mid-1980s, Norris created a hands-free ear-mounted speaker/microphone device operating on the principle that sound travels through the bones in a person's head. The device was designed at the request of NASA, as a replacement for the built-in microphone in helmets used by astronauts. Norris's patents were sold to the Danish audio company, JABRA Corporation who produced a commercial version of the cell phone headset.

Another invention by Norris is Flashback® the first handheld recording and playback device that eliminated audio-tape. It uses non-volatile flash memory and is totally solid state—no moving parts.

Norris founded and served as Director and President of Parametric Sound Corporation, now known as Turtle Beach Corporation, and also served as Chief Scientist at Turtle Beach. He also founded LRAD Corporation and was the Chairman of LRAD Corporation's Board of Directors before retiring in 2010.

Most recently, Norris has been working on BolaWrap, a handheld, non-lethal restraining device, currently being used by hundreds of law enforcement agencies. The small device works like a lasso, designed to detain people without causing severe injury. Norris expects to offer a range of new product solutions to "help meet the challenges of modern policing."

Norris, who grew up in Cumberland, Maryland, attributes some of his success to his high school drama group which developed his public speaking and confidence and even earned him a national thespian award. Norris has garnered over 100 U.S. patents in the fields of electrical and acoustic engineering. He currently serves as Chief Technology Officer for Wrap Technologies Inc.

### **Source**

Lemelson-MIT Program (<https://lemelson.mit.edu/award-winners/elwood-woody-norris> last accessed on April 21, 2021)

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## **Scope and Contents**

Presentation of Elwood ("Woody") Norris, the inventor of HyperSonic Sound (HSS) at the Arlington Public Library in Arlington, Virginia; and oral history interview with Lemelson Center staff member Paul Rosenthal. Norris discusses his life and inventions.

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## **Arrangement**

1 series.

## Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

### Subjects:

- Inventions -- 21st century
- Inventors -- 21st century
- Sound

### Types of Materials:

- Compact discs
- Interviews -- 2000-2010
- Oral history -- 2000-2010

### Preferred Titles:

- HyperSonic Sound*
- Innovative Lives Program (NMAH public program series)*