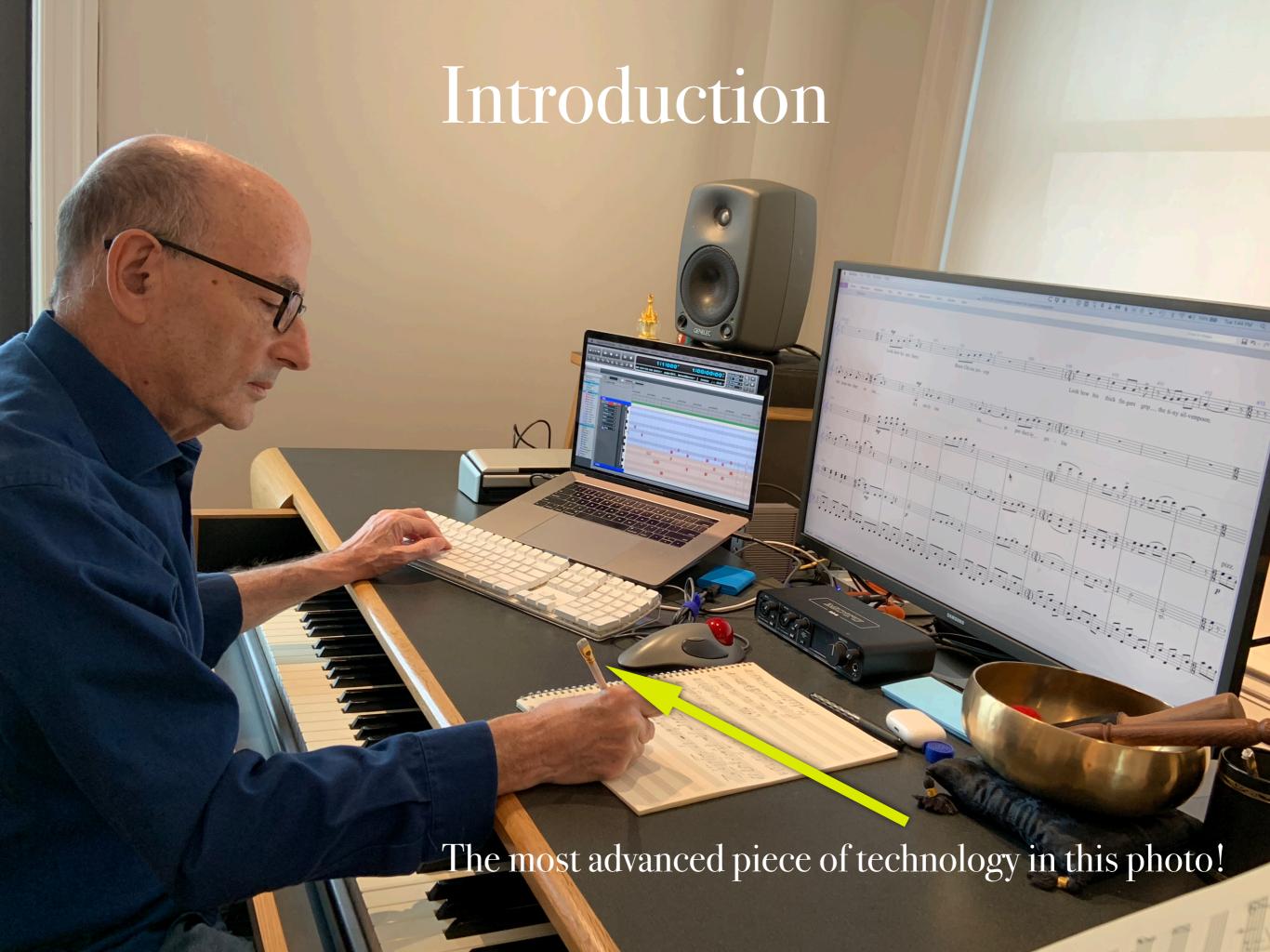
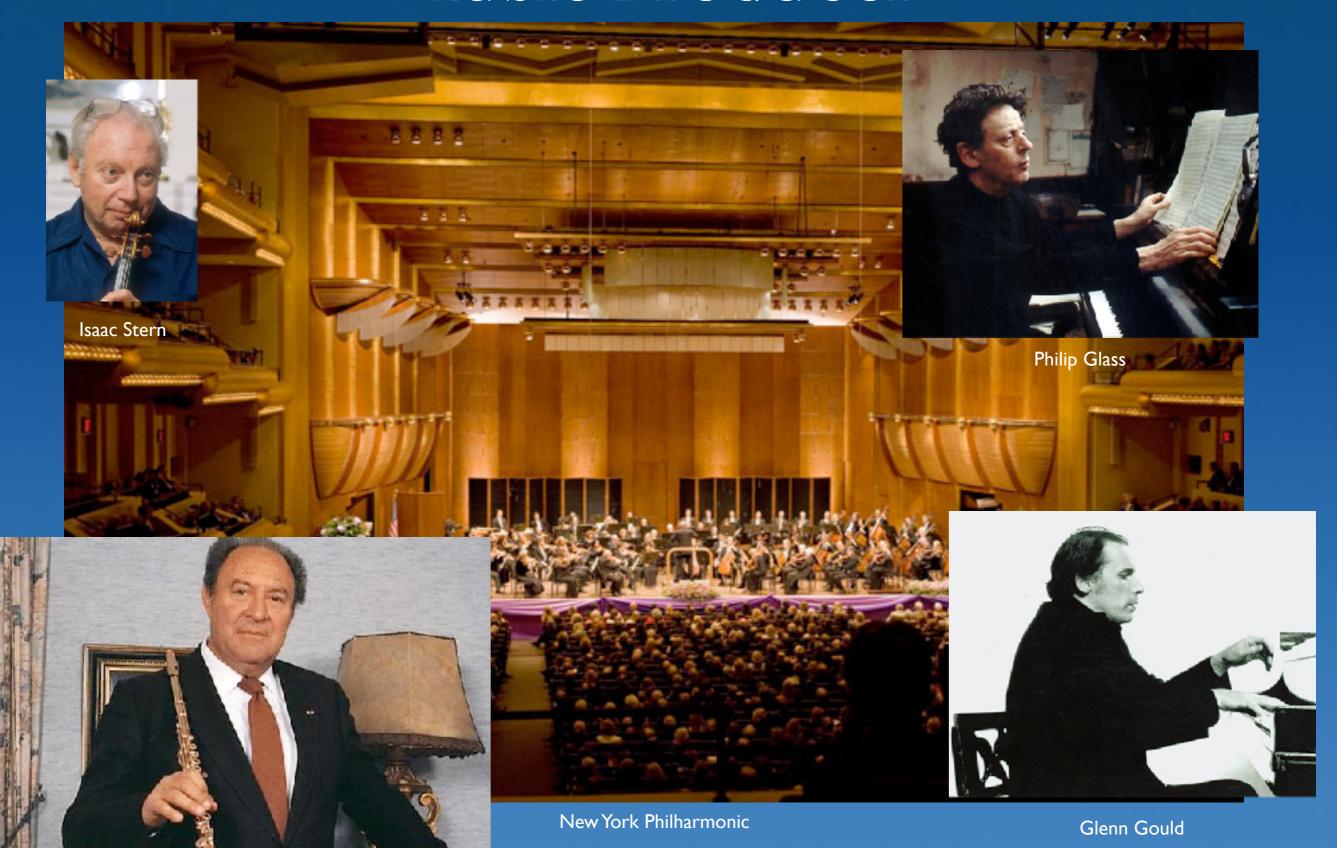
# Assistive Hearing Tech Tips, Apps and More





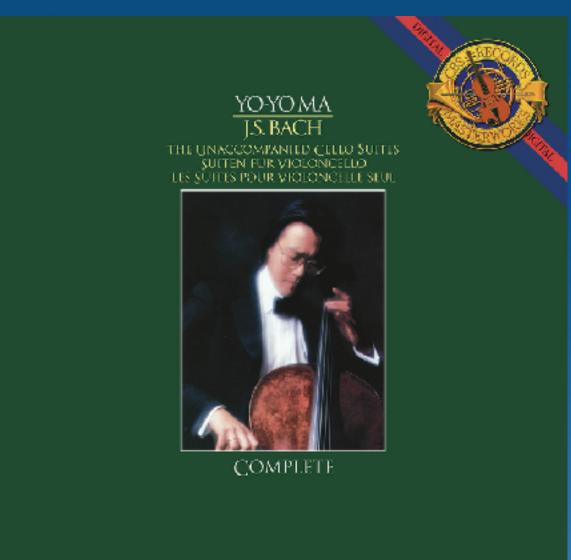
#### Music Producer



Jean-Pierre Rampal

#### Music Producer





**Grammy Winner** 

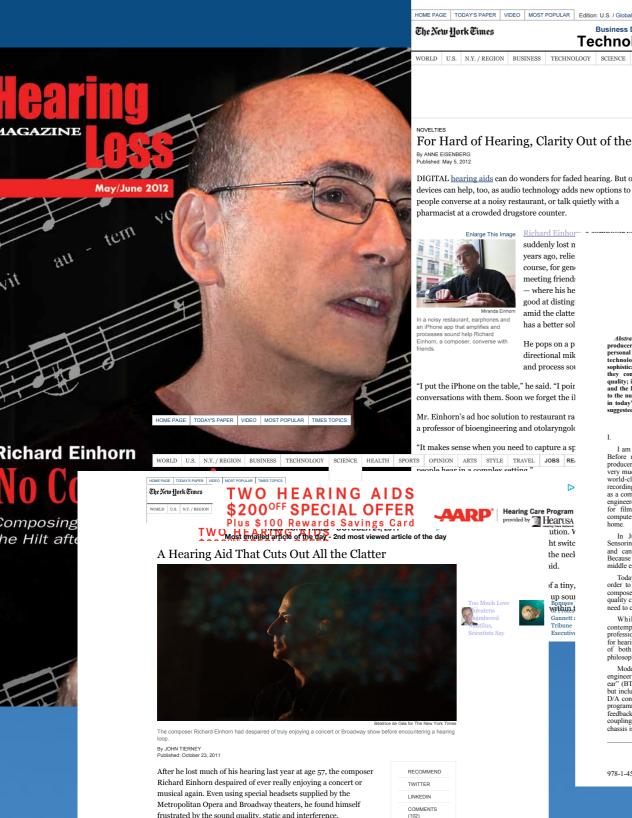


# Sudden Hearing Loss June 10, 2010



Lenox, Massachusetts

#### Advocate/Consultant





#### Modern Hearing Aid Technology - A User's Critique

Subscribe: Digital / Home Delivery amsinger

R. Einhorn, Einhorn Consulting LLC

Abstract—A user with an extensive background as a record producer, composer, and hearing loss advocate provides a personal perspective on contemporary hearing aids and related technology. While modern hearing aids are extremely sophisticated devices, the author identifies three broad reasons they continue to under-perform: less than optimal sound quality; ineffective mic placement for high signal to noise ratio; and the lack of means way to connect hearing aids varieties. and the lack of an easy way to connect hearing aids wirelessly to the numerous audio devices that a typical person encounters in today's connected world. Some general design changes are suggested to address these issues.

INTRODUCTION

I am a user of hearing aids with an atypical background. I am a user of nearing aids with an atypical background.

Before my hearing loss, I worked as a classical record

producer (30 recordings, including one Grammy winner) and

very much enjoyed the exceptionally high quality sound that

world-class professional audio equipment and careful

recording techniques could provide. I have also been active as a composer of both electronic and instrumental music and gineered numerous recording sessions of my music, mostly film projects. For most of my life, I've owned a mputer-based composition and music project studio in my

In June of 2010, I experienced idiopathic Sudden Sensorineural Hearing Loss (NIDCD, 2015) in my right ear and can no longer hear comprehensible sound from it. Because my left ear had severe pre-existing ofosclerosis - a middle ear loss - I went functionally deaf overnight.

Today, I rely entirely upon audio amplification devices in order to stay connected to the world. While I continue to compose via an elaborate computer music setup and a high quality custom in-ear monitor, I wear hearing aids whenever I need to communicate with people. (Einhorn, 2012).

While I am impressed with many aspects of contemporary hearing aid design, my background in professional audio - coupled with my unusually sudden need for hearing assistance - has made me aware of the limitations of both the hardware design and sound reproduction philosophy of contemporary hearing aids.

Modern digital hearing aids are marvels of sophisticated engineering and miniaturization. A typical "behind the ear" (BTE) hearing aid is quite small - roughly 3 cm long but includes an array of two or more microphones; A/D and D/A converters; digital signal processing (DSP) that can be programmed for an individual's hearing loss to suppress programmer of an individual's ficaling loss to suppress feedback; a telecoil for both phone and induction loop coupling; and amplifiers. Also included in the hearing aid chassis is a a battery half the size of a fingernail that provides

up to 4 days of power for the device. In addition, some hearing aids provide wireless reception of FM assistive listening devices such as remote microphones and transmitters for television audio. Recently, two major hearing aid manufacturers have released "made for iPhone" hearing

However, in the US, only between 16 to 30 percent of people with hearing loss use hearing aids (HLAA, 2015) despite extraordinary advances in both the science of hearing and hearing aid technology over the past 60 years. While there are many reasons for the under-usage of hearing aids, including their high cost (Abrams & Kim. 2015) and stigma I believe that a third reason may be that hearing aids simply do not work very well in many noisy environce they are needed the most.

In this paper, I will describe, from my perspective as an In this paper, I will describe, from my perspective as an experienced user of audio technology who also has a serious hearing loss, three reasons why hearing aids may be underperforming. First, the sound quality of even the best hearing aids is very low. Secondly, the placement of microphones in or near the ear provides a less than optimal signal to noise ratio (SNR) in all but the quietest environments. And third, direct audio connectivity to the numerous amplified audio sources a person with hearing loss might encounter in a typical day is remarkably cumbersome, unreliable and crude.

In a final section, I will also suggest some overall approaches to the design of hearing assistance technology that I believe could lead to dramatic improvements in effectiveness.

MSNBC 0

In my audiologist's quiet office, after I was fitted with my first hearing aid, I was delighted that the amplification it afforded enabled me to hear his voice without strain. However, I immediately noticed significant (and far from subtle) clipping in the signal when either he or I spoke at even a slightly louder level than a normal conversational tone. I pointed this out to him but he assured me the aid was tone. I pointed this out to him but he assured me the aid was adjusted to spec. Nevertheless, because much of the external sound environment of New York City is, in fact, often louder than conversational speech, my new hearing aid distorted a significant amount of the sound I heard during a typical day. The distorted sound is both unpleasant to listen to and highly fatiguing. It also reduces my ability to comprehend speech in noise.

One reason why the clipping in my hearing aid was so extreme even at normal volumes may be because the input gain structure before the A/D converter of all but the mos recent digital hearing aids clips any signal higher than about



I believe that for

many people with

maximizing the

bearing lose,

Practical approaches for maximising signal-to-noise ratio for music and other applications

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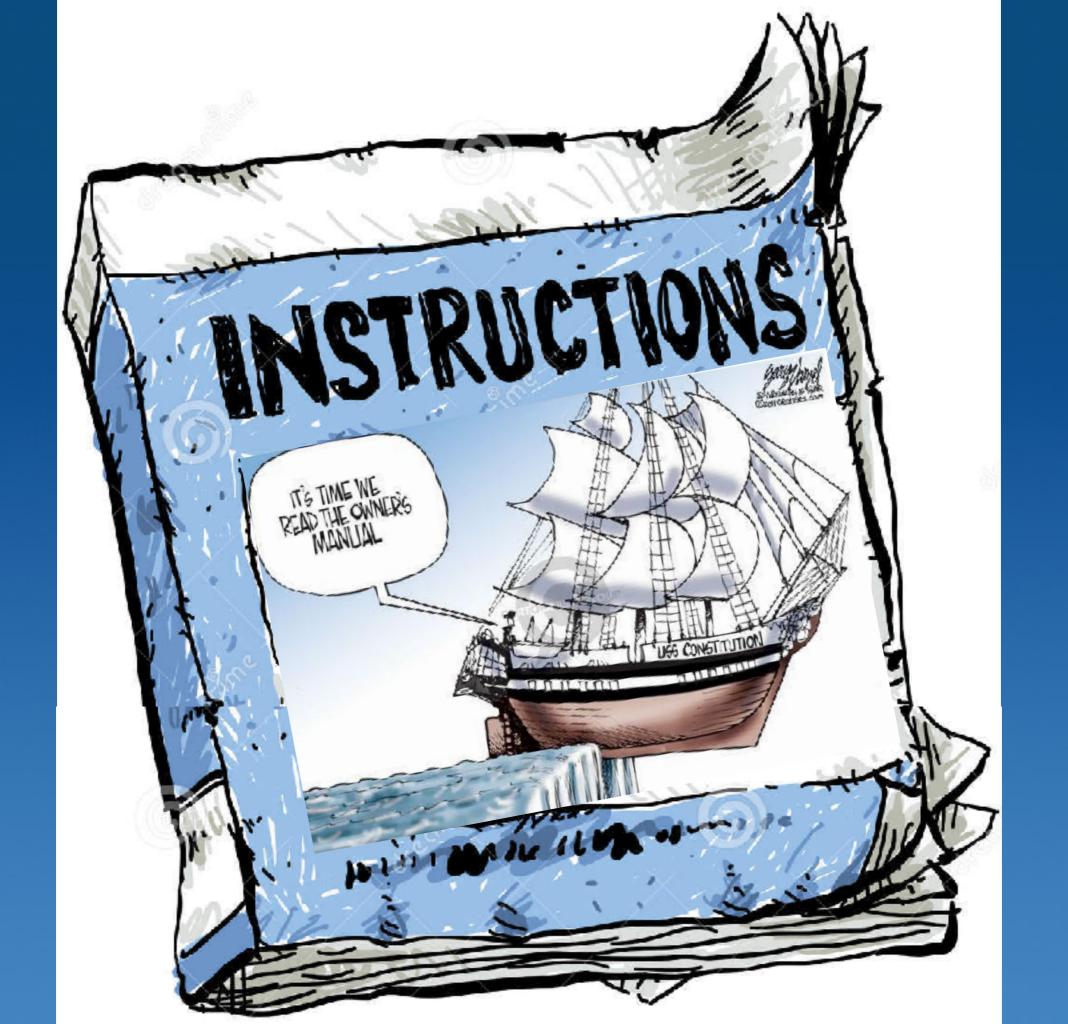
#### Disclosures

- I both advocate for people with hearing loss and consult with numerous companies on hearing technology
- When/if I mention tech from a company I consult for, I will disclose it and, if possible, discuss a competitor's product
- I do not endorse any company's products.



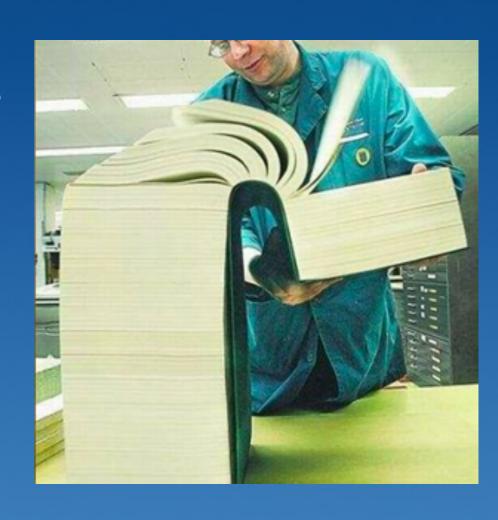
- It's not your fault
- Treat it like a game
- Use Google
- Ask your kids
- Practice!
- And, very important...

I DON'T UNDERSTAND ANYTHING.



#### How to Read a Manual

- Turn every page, from cover to cover
- Look carefully at the Table of Contents
- Look carefully at the Index
- Ignore any and all hype
- When you need the info, read slowly
- And...



# Google is your Friend



hearing loops

: | '

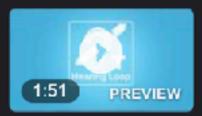
2

http://www.hearingloop.org

#### **Hearing Loop**

Thanks to the refinement of "induction **loop"** systems--which magnetically transmit sound to **hearing** aids and cochlear implants with telecoils (T-coils)—that ...

#### Videos



How Hearing Loops Work: What is a Hearing Loop and how ...

YouTube · OTOjOY Jun 15, 2015



How does a Hearing Loop work (induction loop, T-loop or ...

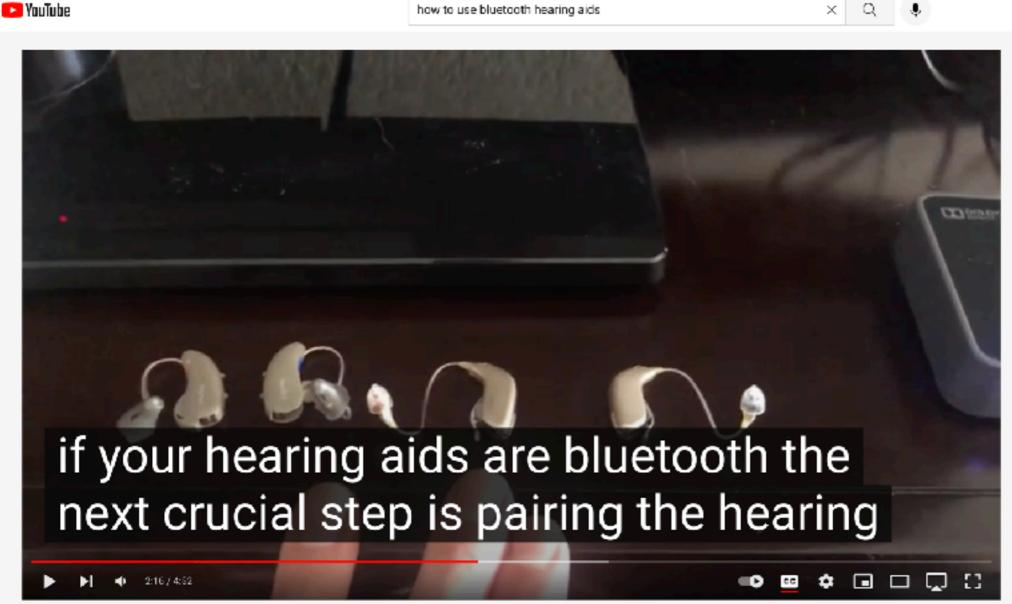
YouTube · Ampetronic Jun 1, 2016

2 key moments in this video





#### YouTube Is YourFriend



How to connect your hearing aids to your TV box.

WorthHearingCenter

29 subscribers

16,243 views · Apr 3, 2020 ☆ 70 

√ 2 

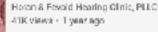
⇒ SHARE 

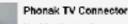
=+ SAVE 

…









Audio Equipment

Miracle Ear

29K views - 3 years ago.

2.4K views + 5 months ago

Oticon TV+App Tutorial Expert Hearing Care, Las Cruces, Ne.

"Utterly Delusional" - Jonathan Karl On No. 45's Mental State...

The Late Show with Stephen C., . .

How to use your Oticon TV

Expert Hearing Care, Las Cruces, Ne. .

7. Dithering Explained - Digital

444K views · 2 days ago.

5.5K views - 1 year ago

Audio Fundamentals

Akash Murthy 4.6K views - 1 year ago

Adaptor

3K views - 1 year ago

Related

How to Pair the TV Streamer to Your Hearing Aids | Miracle-Ear

Oticon TV Adapter 3.0 | How to set up your Oticon TV Adaptor... Applied Hearing Solutions, Phoenix

Pairing a Signia Streamline TV with your Bluetooth Hearing... Big Horn Basin Hearing and Speech 3.5K views + 1 year ago



#### How to Troubleshoot

Stay calm

Define the problem

Consider simple solutions first

Are the batteries dead?

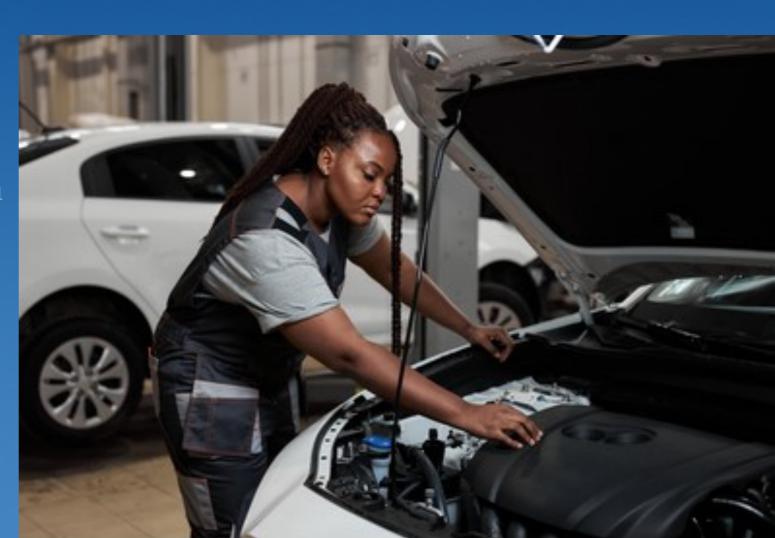
Is it unplugged?

Turn devices off, wait 5"+ and turn them on

**GIYF/YTIYF** 

If nothing works, try to work around it

Stay calm



# General Hearing

# Hearing Aids/Cochlear Implants



#### Hearing Aids/Cochlear Implants

#### Some Important Assistive Features

- Access to a great audiologist (by far the most important!)
- Presets
- Volume control
- Left/Right balance control
- Telecoil for hearing loops
- Bluetooth for phone calls, video calls, and other audio (aka Made for Smartphone)
- Has useful, easy to use remotes and TV adapters

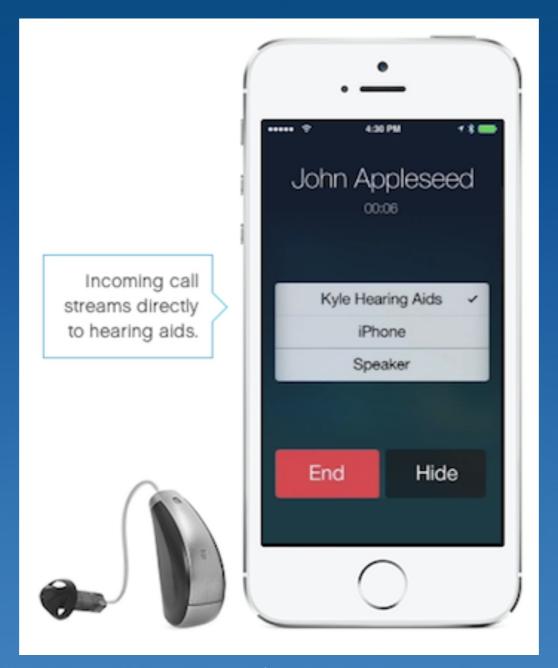
# Hearing Aids and CIs Have Limitations



### Situations

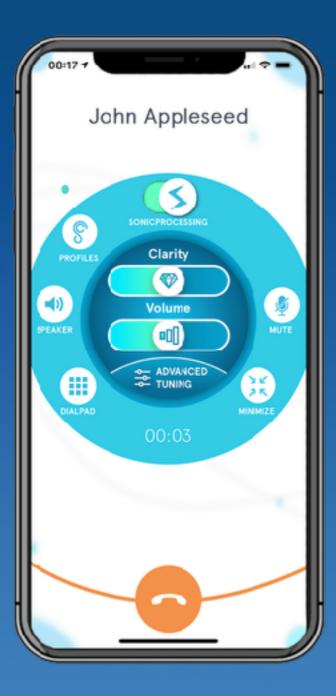
- Phone calls
- Video Calls, webinars, etc
- TV
- Restaurants
- Music





# Made for Smartphone

\$9.99/mo



### SonicCloud



Phone Adapters



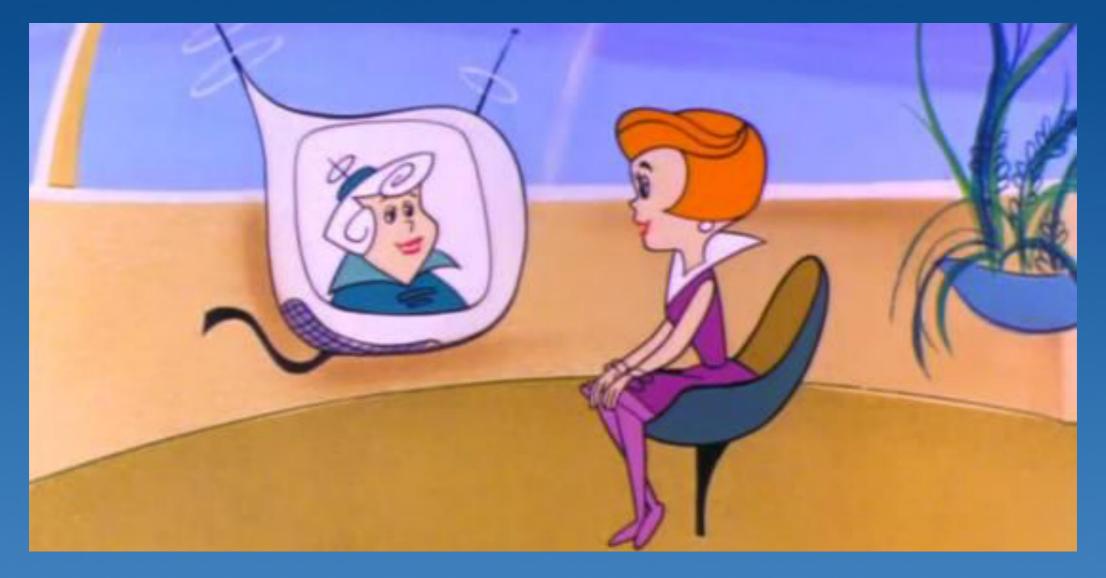
Telecoil



Amplified Phones



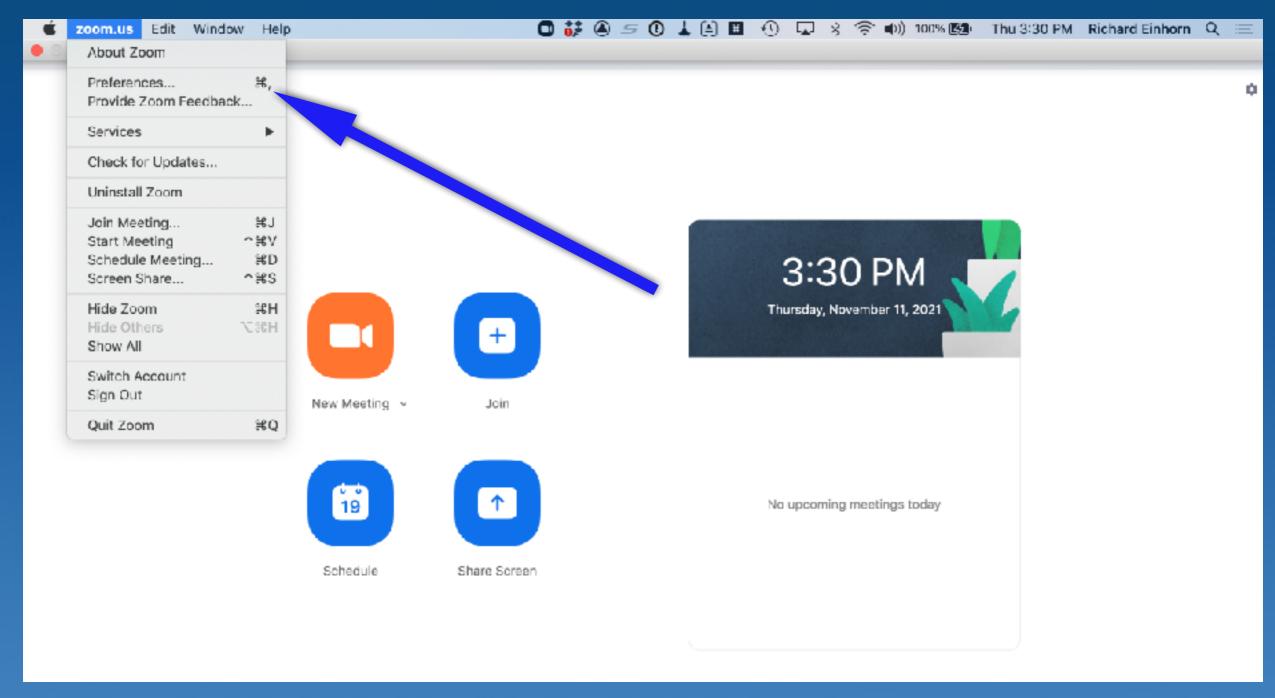
# Captioned Phones



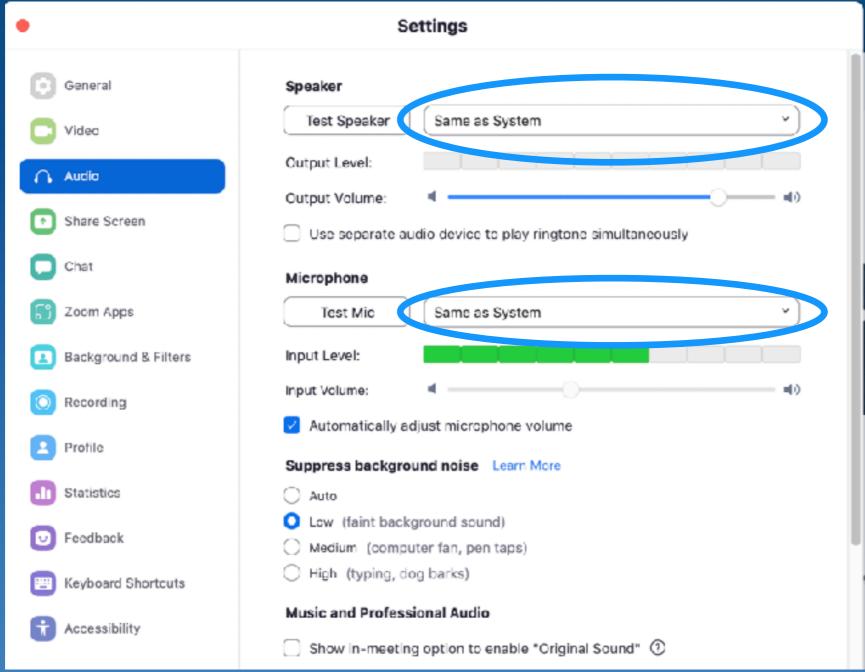
Tips

- Try going to the settings or preferences for the program you're using
- Then look for the video and audio (sound) settings and adjust them
- Be sure that the volume is turned up!

#### When in trouble



Look for "Settings" or "Preferences"



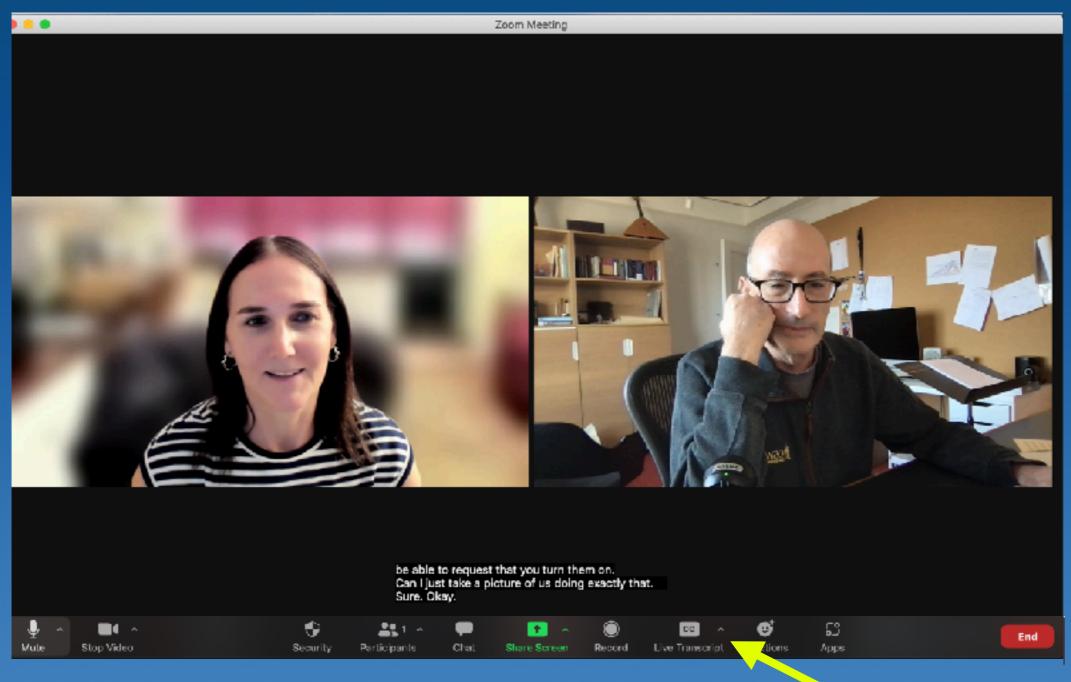
Choose Speakers and Mic

- Sit close to your computer or phone
  - Easier to see you
  - Better sound pickup
- Speak in a normal tone, maybe a little bit slower
- Adjust the lighting for clarity (Google "how to light a video call")
- Be patient with technical problems. If they're really bad, just hang up and reconnect

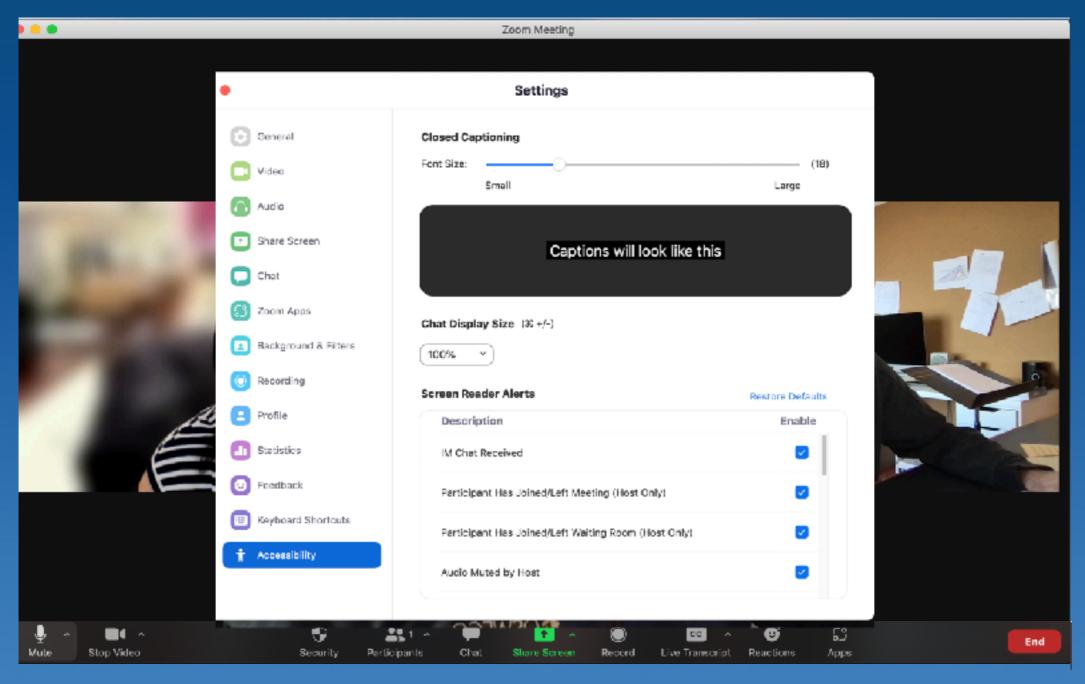
#### Basic Tips for Better Video Calls

- Use a headset with a boom mic
  - And ask your family/friends to use one (they make nice gifts!)
- Blur the background
- Use SonicCloud for Zoom
- At least one hearing aid works with a computer
- Use a remote mic like the Resound Mini-Mic
- Use an Ethernet cable more reliable than Wi-Fi

# Advanced Tips







# Captions

#### To set up Zoom Captions

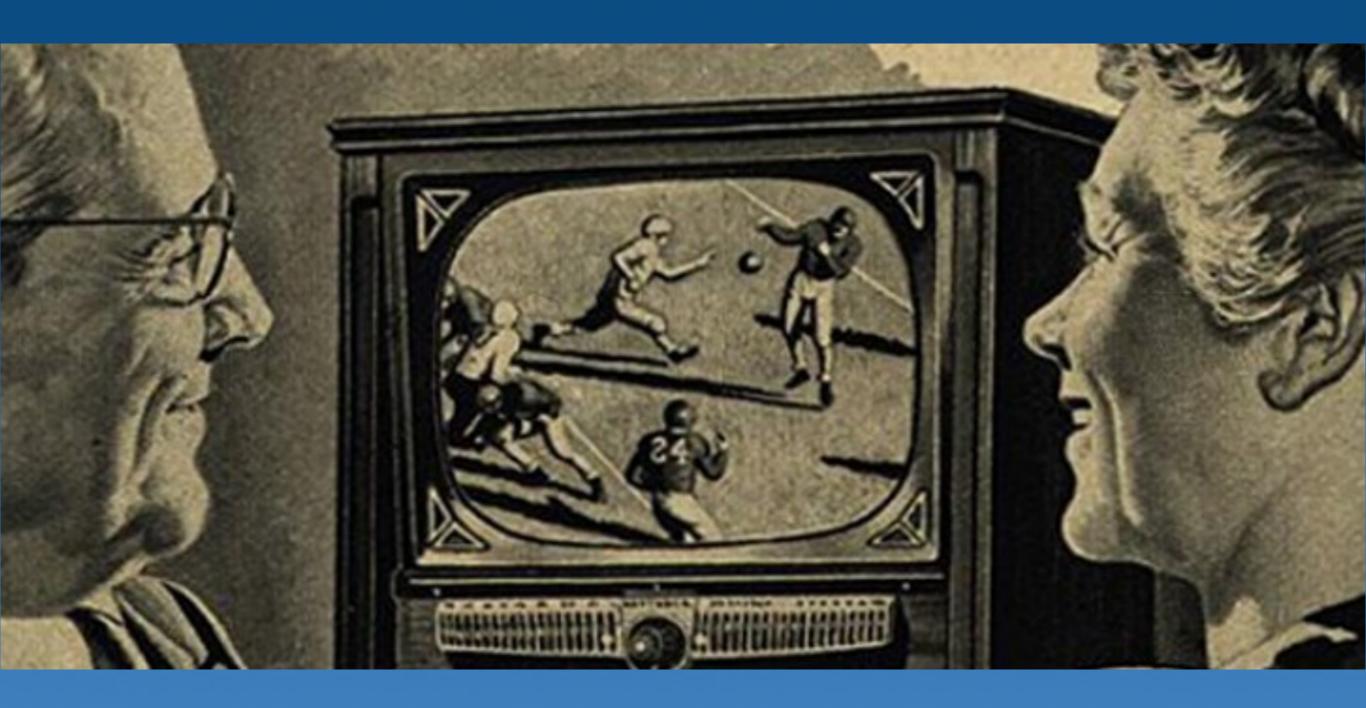
Zoom: Enabling or disabling closed captioning and live transcription

https://support.zoom.us/hc/en-us/articles/4409683389709-Enabling-or-disabling-closed-captioning-and-live-transcription-services

Zoom: Managing closed captioning and live transcription services

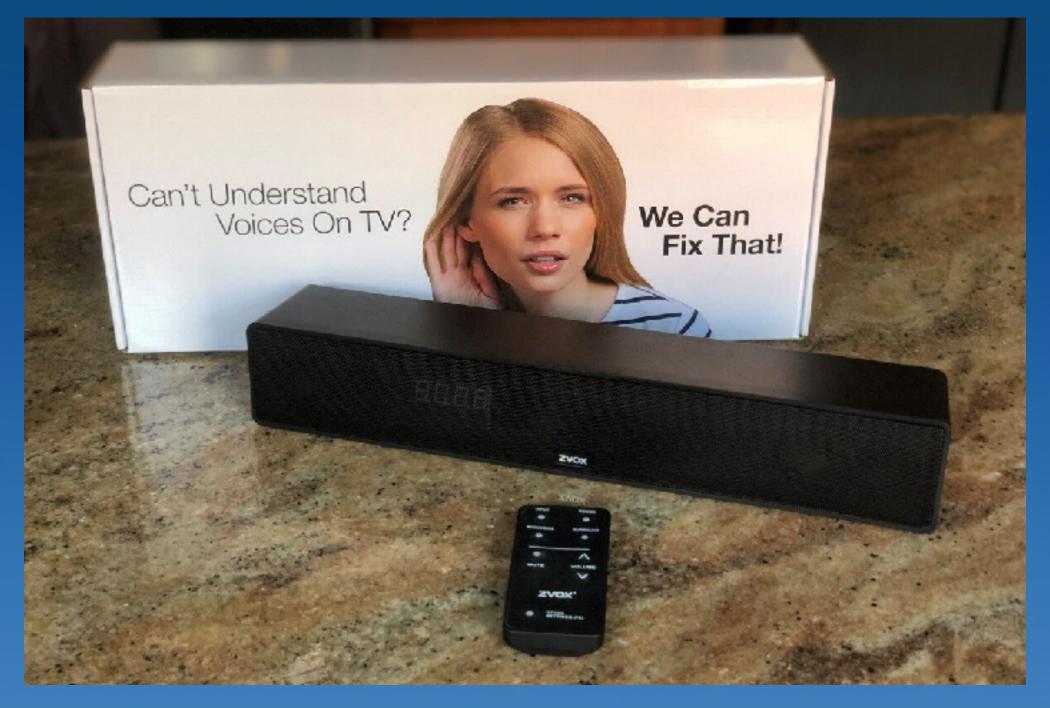
https://support.zoom.us/hc/en-us/articles/207279736-Managing-closed-captioning-and-live-transcription

# Captions





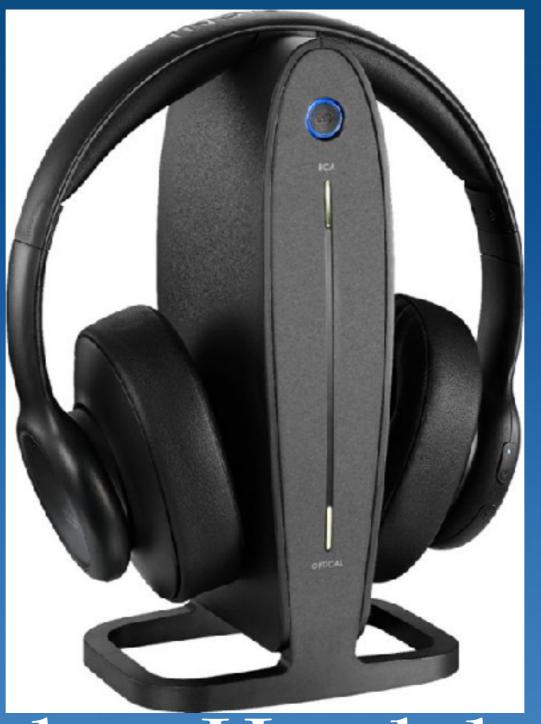
## Soundbar



# Dialogue-enhancing Soundbar



# TV Adapters



Wireless Headphones



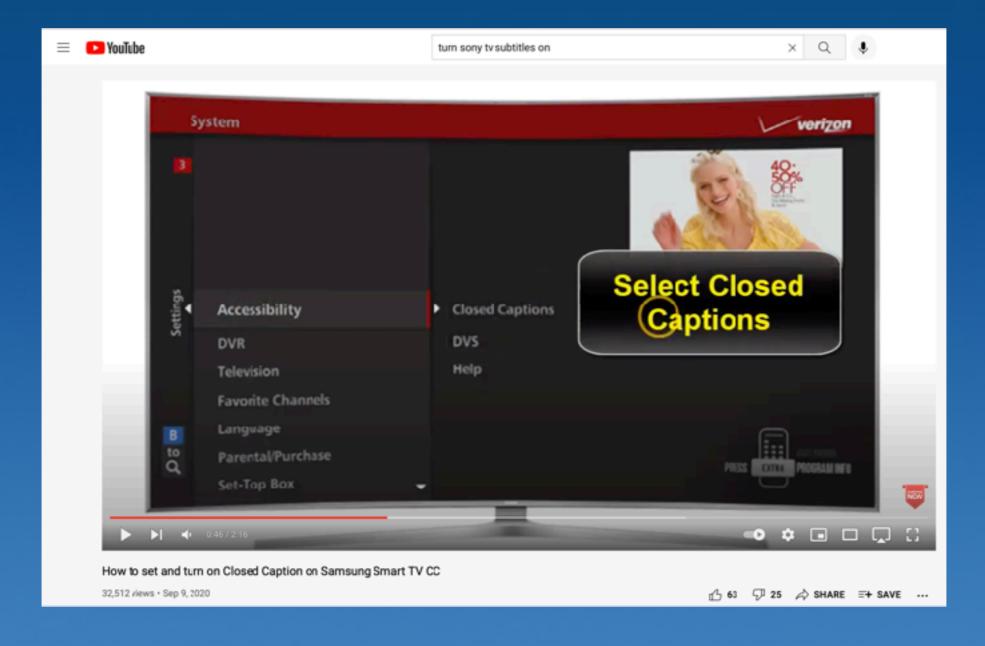
Telecoil required



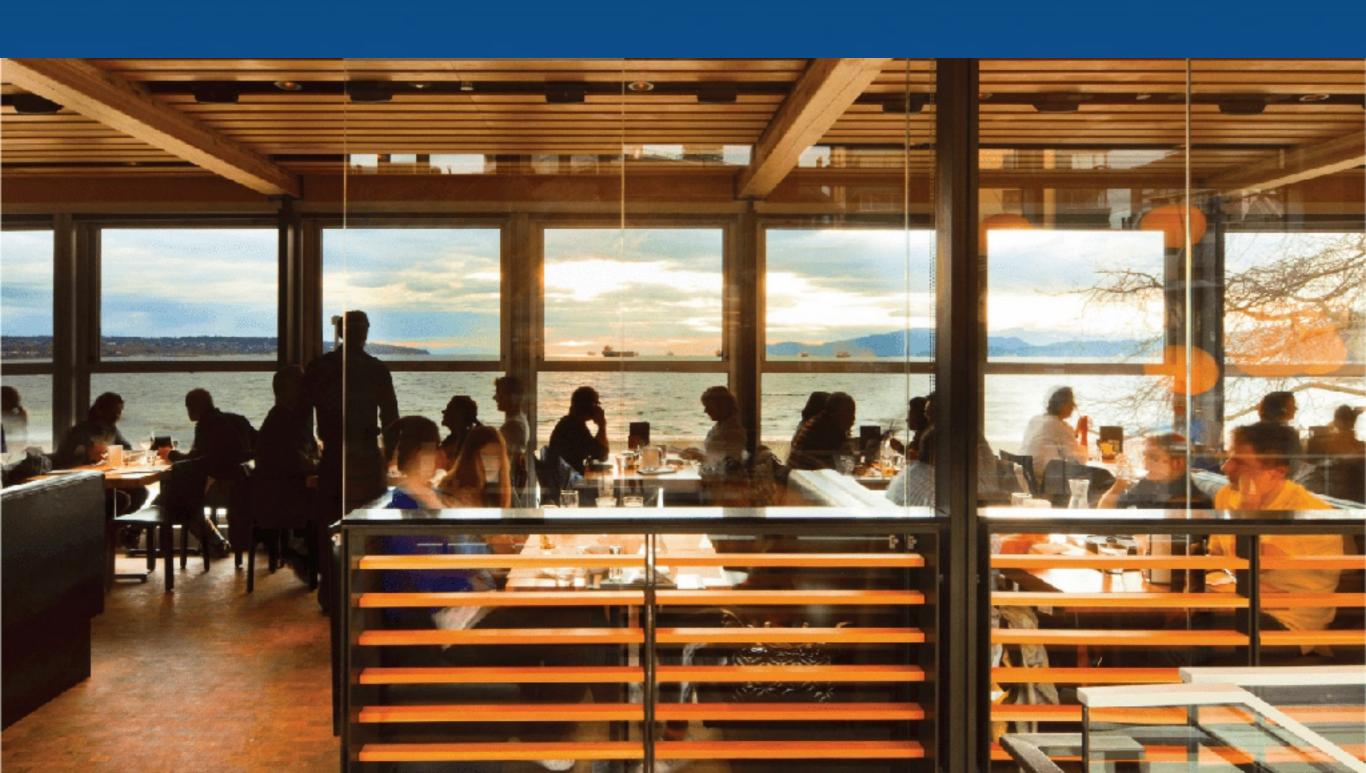
# Personal Hearing Loop

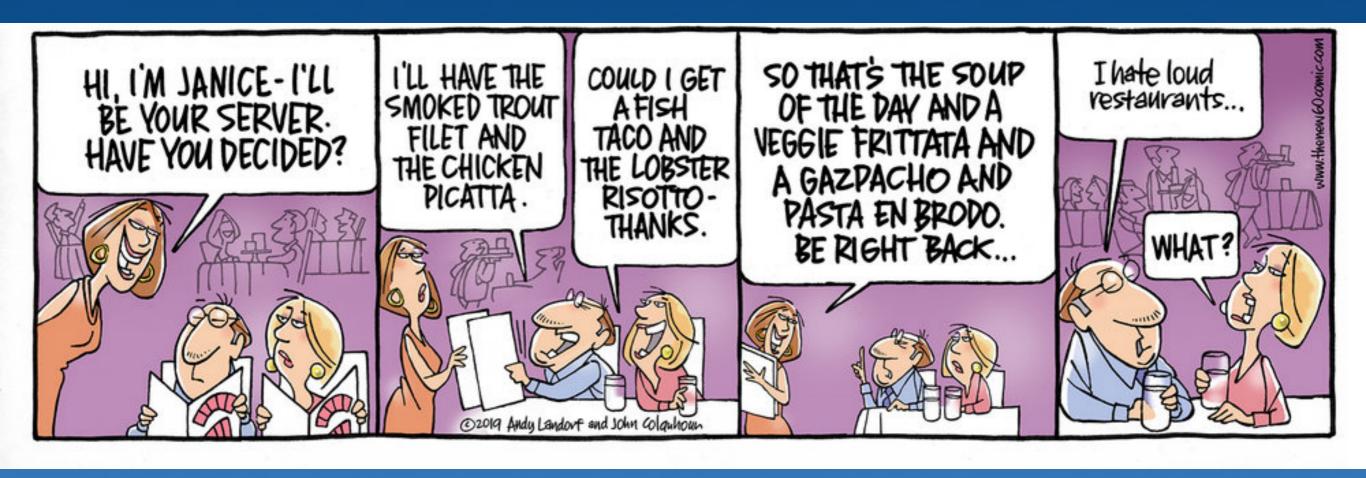
#### Every TV System is different

#### YouTube is YourFriend



## Captions



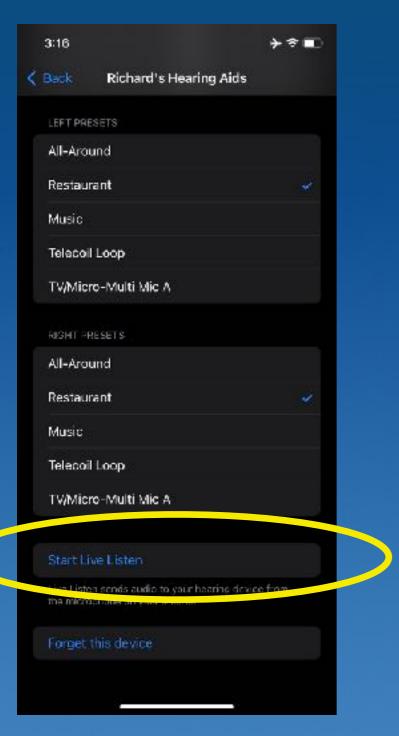




## Hearing Aid/CI Presets



## Remote Mic from HA Companies

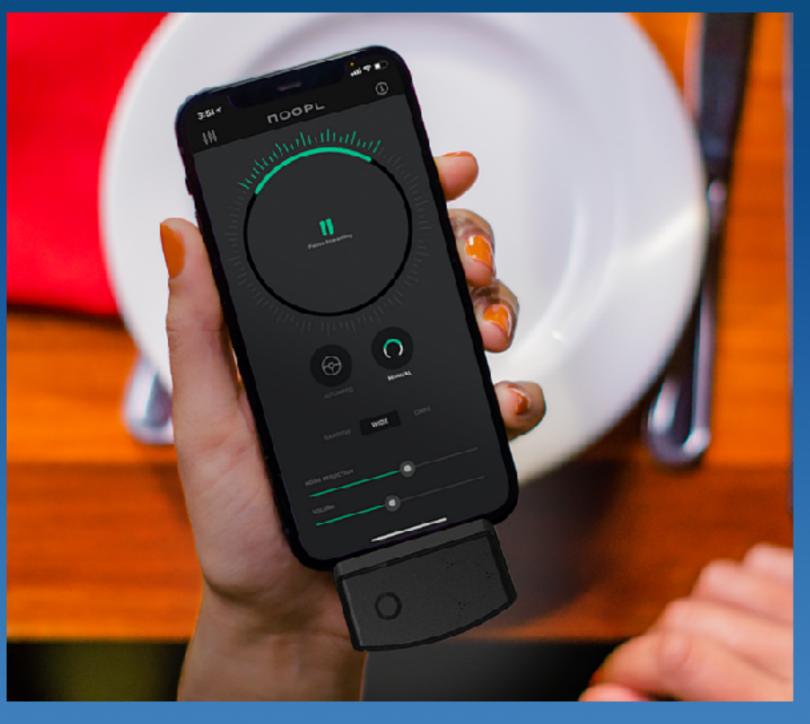


Settings > Accessibility>Hearing Devices>Your Hearing Device, then scroll to Live Listen

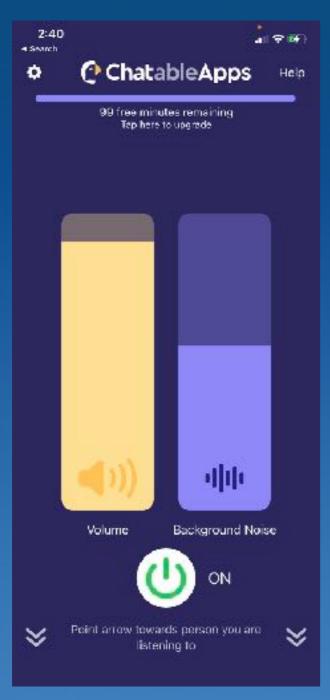
Tip: It is often helpul to mute your live microphones

## Live Listen (iOS)

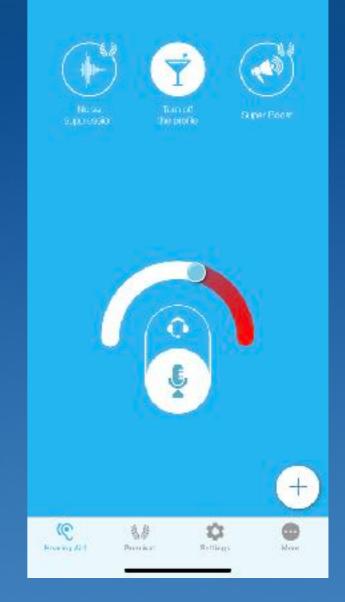
Phonak and Unitron not compatible



Noopl (iOS, Android coming)



Chatable

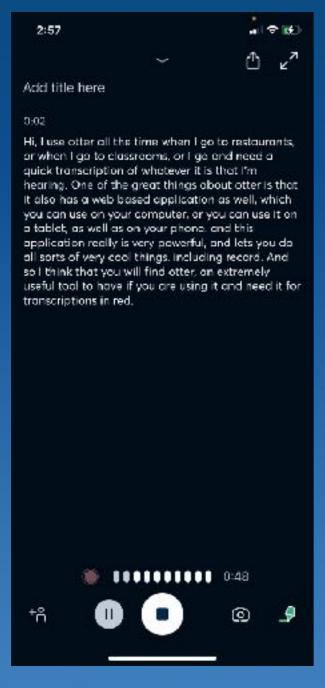


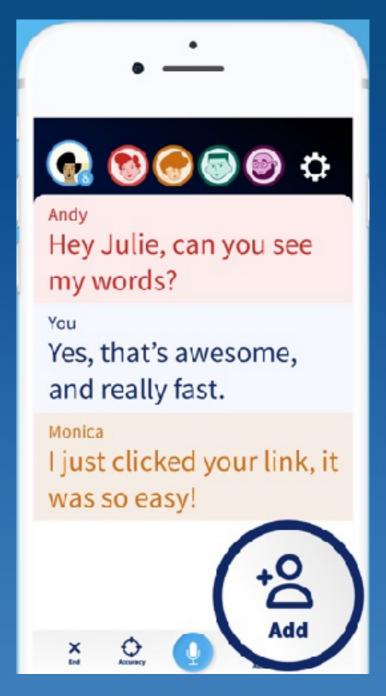
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2:46

Petralex

Apps





Otter Speech to Text

Ava



Wireless Keyboard/Tablet



Music Program on your ha/ci





For amplified music, wear musicians' earplugs

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Listening personalization settings on smartphone



Good Headphones



Familiar Music



Some recordings are easier to hear



Music program





Tuning app



Custom in-ear monitors



Learn percussion?

## In Conclusion

- Before buying anything new, make sure you know the tech you already have
- Don't carry around too much (smartphones may suffice)
- Experiment and practice
- Read the instructions/manual!
- Don't get frustrated/intimidated

# Thank you!



richardein@mac.com