caption

Connecting the Deaf and Hearing Communities

Cody Jackson

WNM 349: Visual Design 3

The Hard Reality:
Being alone
doesn't mean
no one is
around.

Meet the Deaf Community

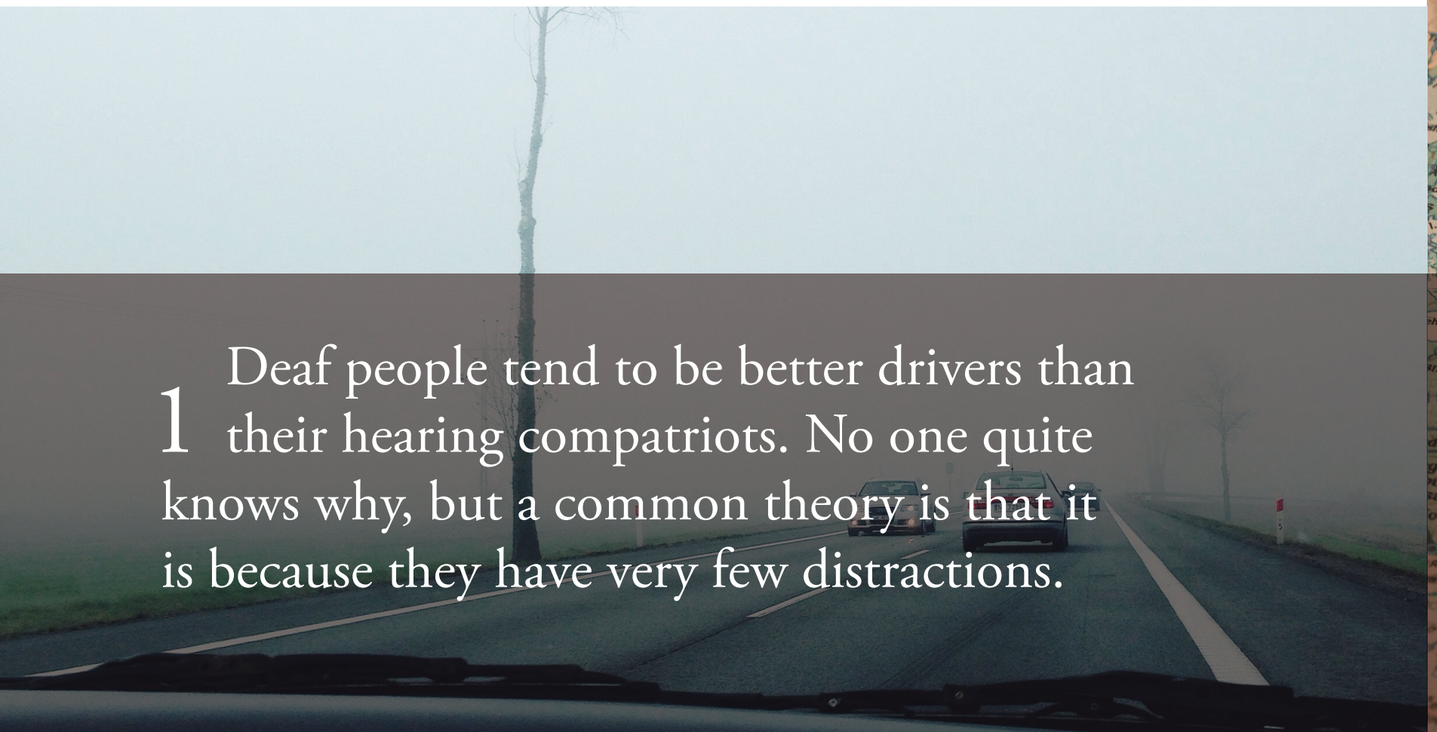
...And, yes, it's okay to use the term "deaf." In fact, it's preferred.

Deaf people see themselves as part of a close-knit group and interconnectedness is a highly valued commodity.

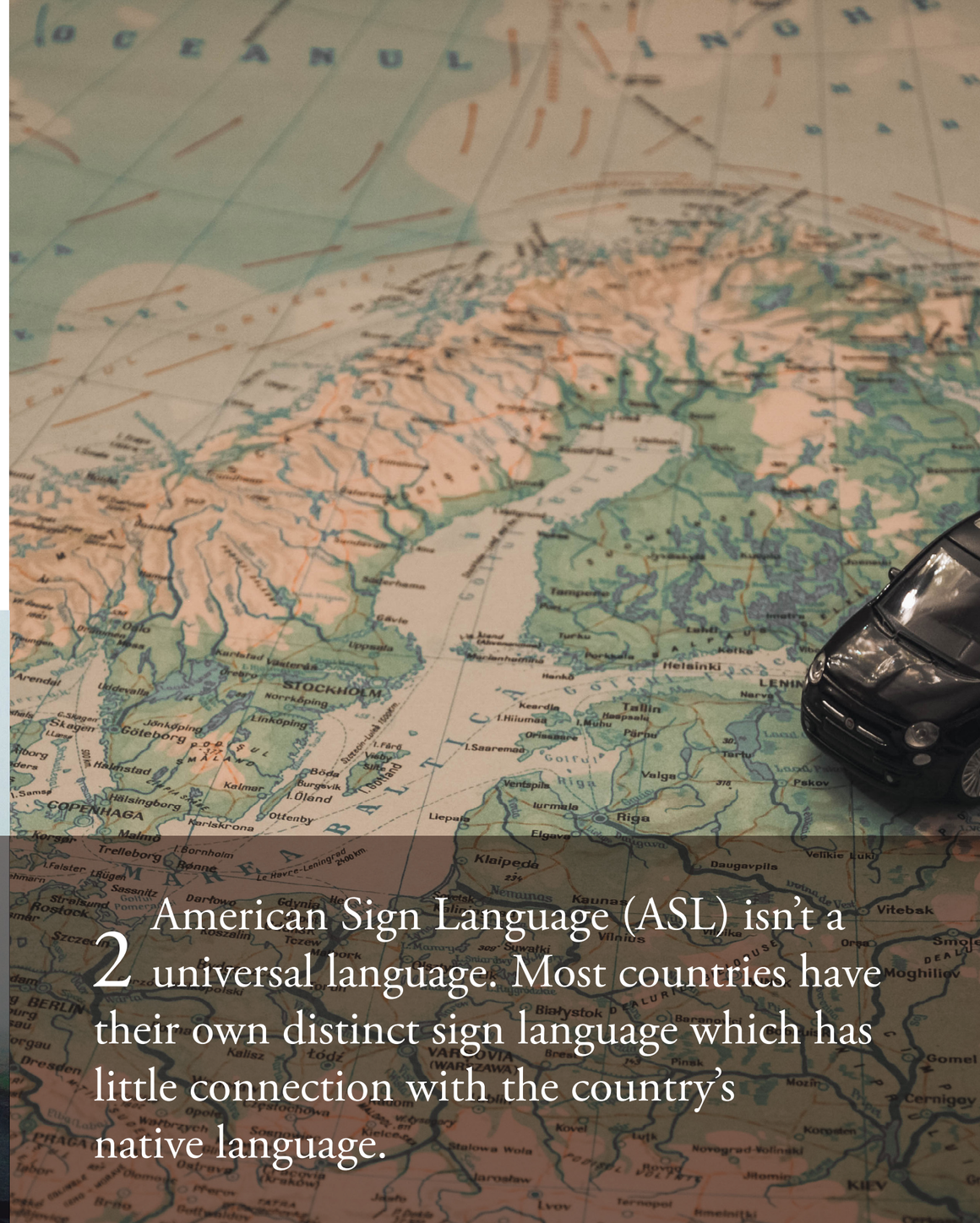
A Few Key Facts

There are many misconceptions about deaf culture and how they live their lives.

Here are a few common ones which may surprise you:



1 Deaf people tend to be better drivers than their hearing compatriots. No one quite knows why, but a common theory is that it is because they have very few distractions.



2 American Sign Language (ASL) isn't a universal language. Most countries have their own distinct sign language which has little connection with the country's native language.

3 People who are born deaf tend not to read as well as hearing people because much of our vocabulary (and thus reading ability) comes from what we hear other people saying.

4 Although many hearing people might think deaf people would look at each other's hands when talking, the correct way to sign is to look at the other person's face. It is equally important to see facial expressions (which show emotion) as it is to see the hands.

What is Conversation?

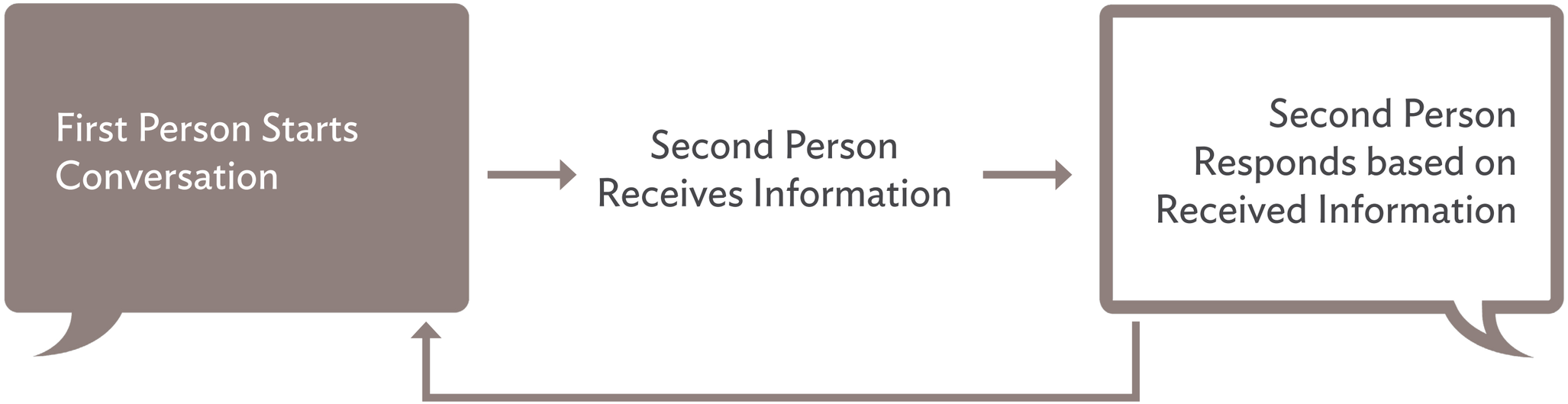
Conversation can do everything from start a war to foster feelings of love. It is a necessity if you wish to have a healthy life. Humans are made to communicate. We want to be with each other. This is why, when we are cut off from that stimulus, we don't do well.

"Everyone has their own ways of expression. I believe we all have a lot to say, but finding ways to say it is more than half the battle."

– Criss Jami, *Salomé*

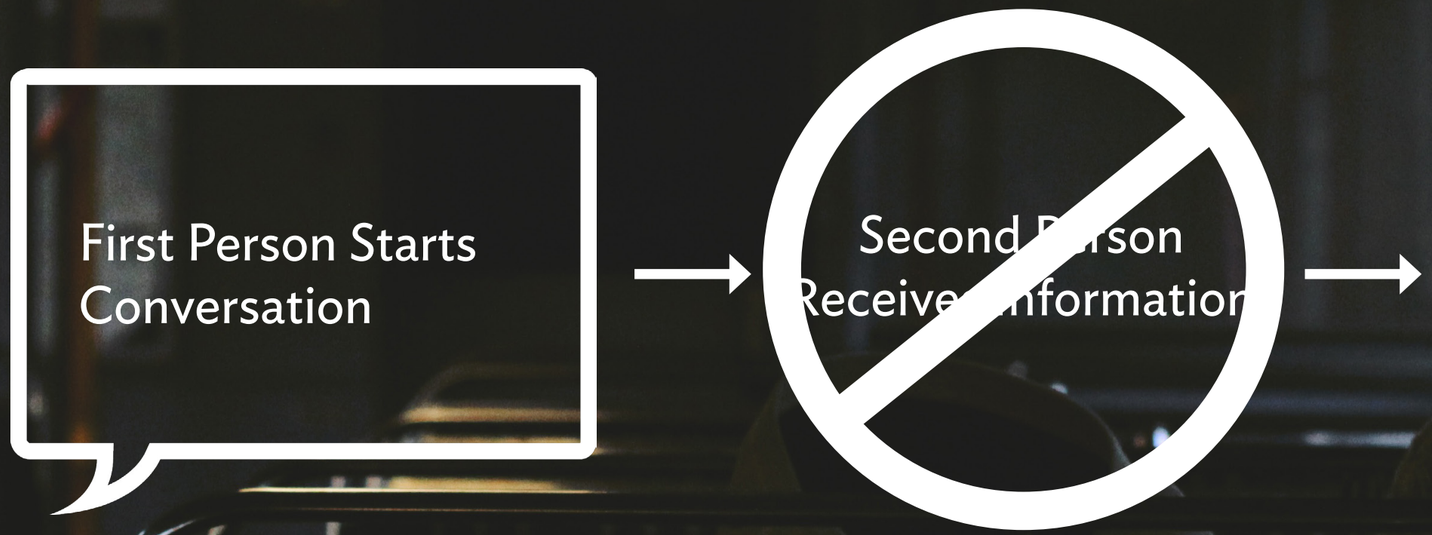
Breaking It Down

Conversation can be broken down into two essential steps which repeat over and over.



Conversation for the Deaf

For deaf people, the conversation never gets past the first step.

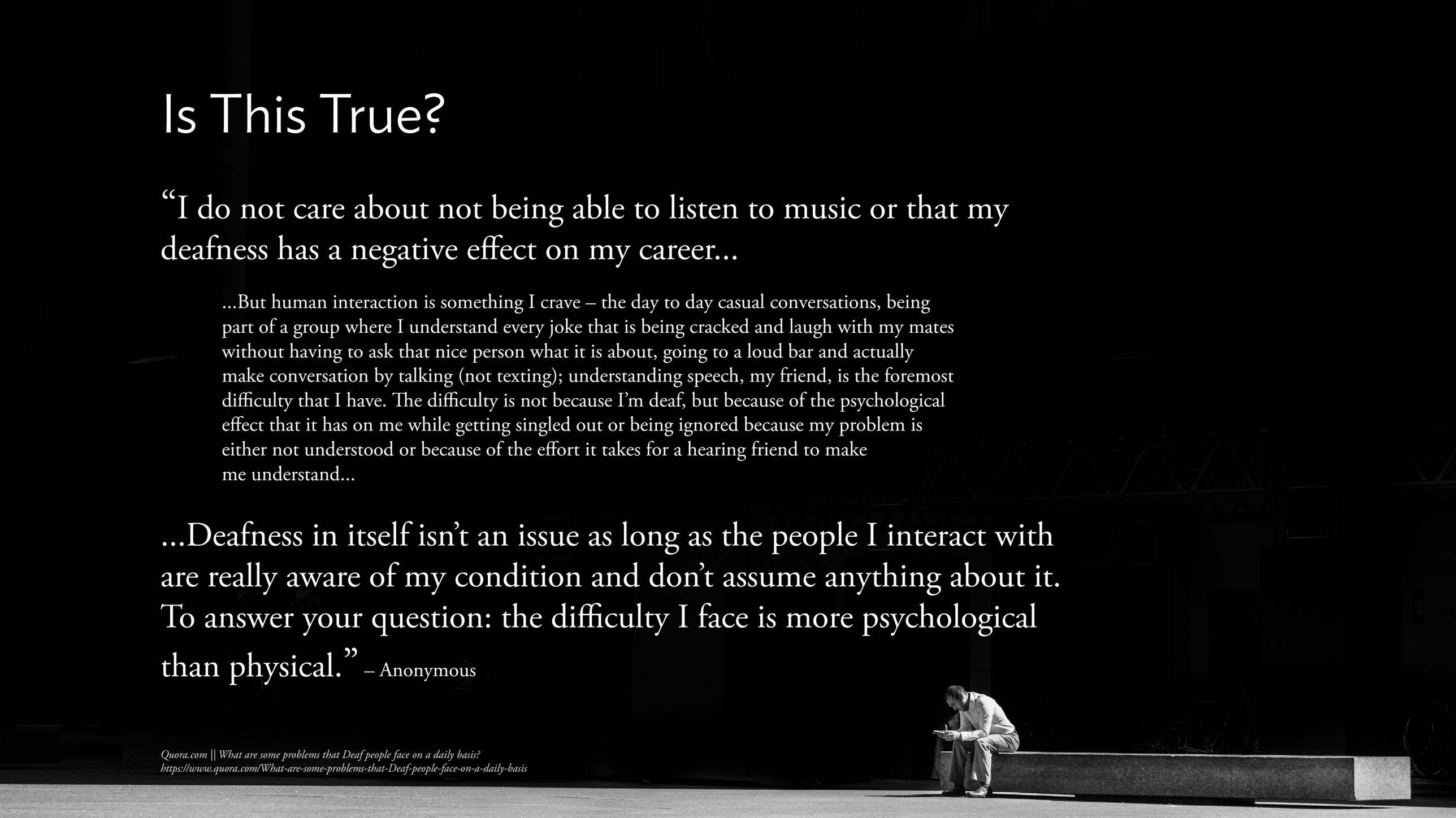


Is This True?

"I do not care about not being able to listen to music or that my deafness has a negative effect on my career...

> ...But human interaction is something I crave – the day to day casual conversations, being part of a group where I understand every joke that is being cracked and laugh with my mates without having to ask that nice person what it is about, going to a loud bar and actually make conversation by talking (not texting); understanding speech, my friend, is the foremost difficulty that I have. The difficulty is not because I'm deaf, but because of the psychological effect that it has on me while getting singled out or being ignored because my problem is either not understood or because of the effort it takes for a hearing friend to make me understand...

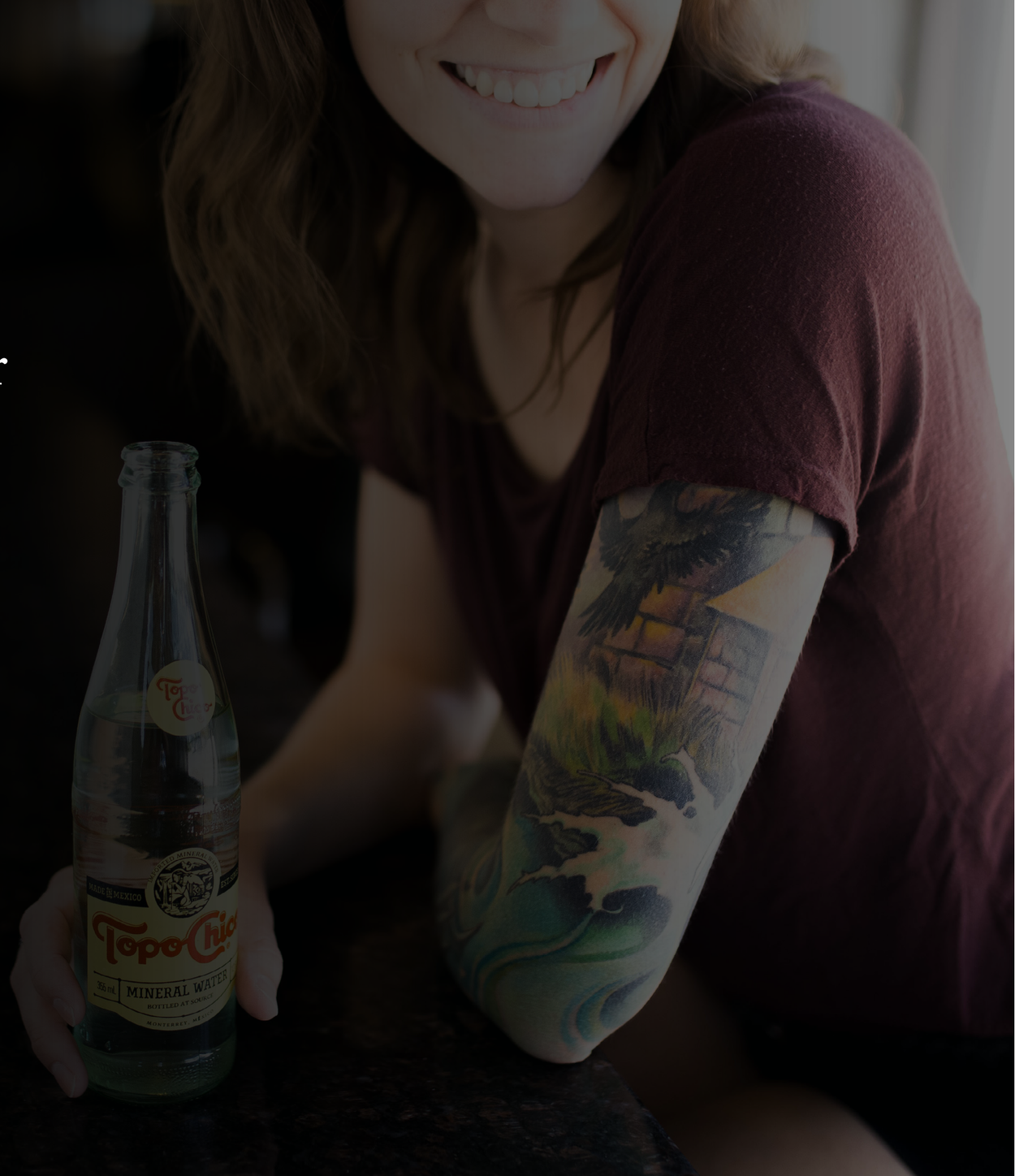
...Deafness in itself isn't an issue as long as the people I interact with are really aware of my condition and don't assume anything about it. To answer your question: the difficulty I face is more psychological than physical." – Anonymous



Quora.com || What are some problems that Deaf people face on a daily basis?
https://www.quora.com/What-are-some-problems-that-Deaf-people-face-on-a-daily-basis

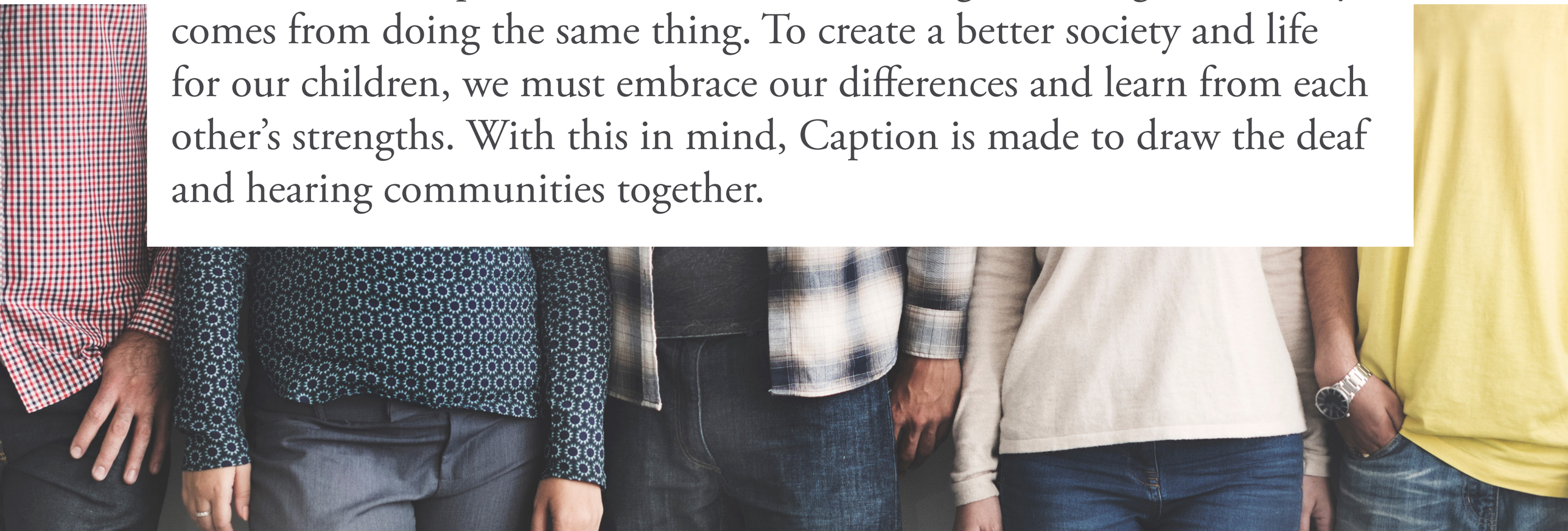
Mission Statement

Caption's goal is empowering the deaf community to break the barrier of isolation which surrounds them and expand their community to include our own.



Why Should This Exist?

Caption came into being because our society only seems to see people who are like ourselves. We tend to be friends with people of like mindsets and dispositions. This is all well and good, but growth rarely comes from doing the same thing. To create a better society and life for our children, we must embrace our differences and learn from each other's strengths. With this in mind, Caption is made to draw the deaf and hearing communities together.



Why Is Caption Unique?

Caption serves the deaf community by facilitating conversation between hearing and deaf people regardless of their knowledge of ASL.

It uses inroads made into neural-networking between our brains and computers to allow the device to “speak” the user’s thoughts out loud.

Target Audiences

The Lonelyheart

CEO
DBL Deaf Basketball League
Single

Needs:
Find a soulmate.

The Breadwinner

Lawyer
Department of Homeland Security
Washington, DC

Needs:
Negate the possibility of misunderstandings.

The Parent

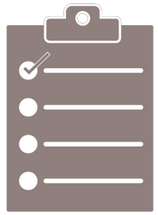
Pupil Personnel Services Director
California School for the Deaf
Fremont, CA

Needs:
Children to learn to speak and read English.

Journey Map

Part 1

1



Geoffrey is happy in his career and now he is looking to get back into the dating scene.

2

He is concerned that it will be awkward to try and get to know girls from the hearing community who don't already speak ASL.

3

Most of all, he wants the girls he meets to be able to feel like they can get to know him rather than being scared off immediately by his deafness.

Journey Map

Part 2

4

Geoffrey gets on Facebook and asks some of his friends who are close to the deaf community if they have heard of anything that might help.

5

His friends tell him about a new communication system called Caption.

Technical Advisor

Amanda Legge

Principal UI/UX Designer
Master's Degree in Cognitive Neuroscience

Thesis project was on cognitive theories of autism.

Key Feedback

"People felt that you made an assumption when you said: 'it's life' [on the second page of the slideshow] when you have no experience as a 'deaf person.'"

"I don't know how the words would be translated into SEE, PSE, ASL, because Sign language is not just hands: it is a lot about facial expressions, hands' position toward the face, body, direction, and so on."

Decisions Based on Feedback

I will look for a new metaphor or quote to back up the first slides.

Translation will be from speech to text only.

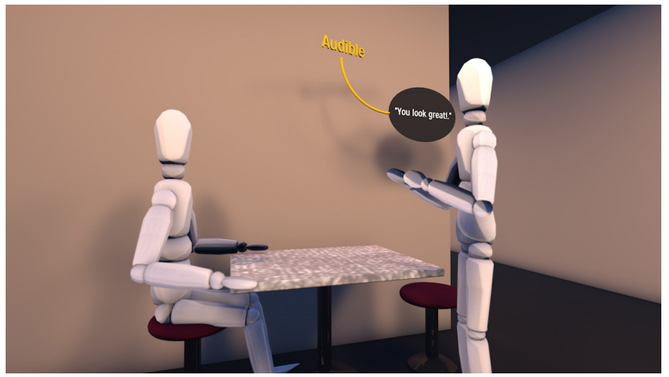
Link to Caption Interview Slideshow

Storyboard Scenes 1-6

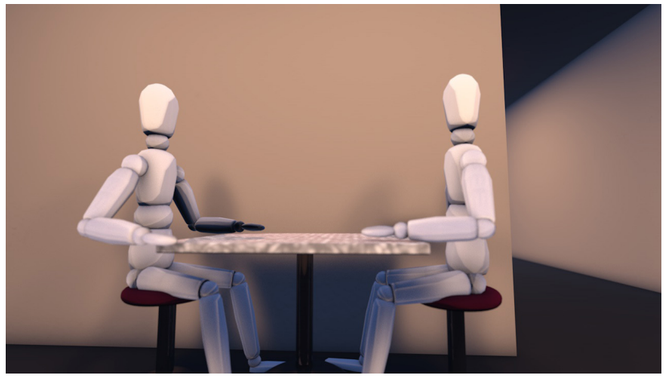
User Story and Primary Task Flow

1) User enters shop

2) User sees person they are meeting

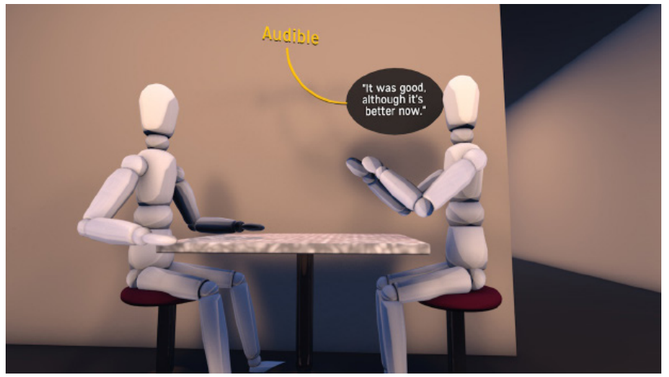


3) User greets person by pressing Speak button



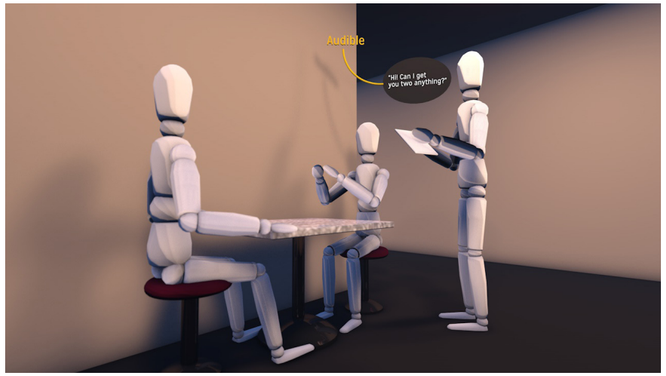
4) User sits down

5) Person asks user a question
Device translates into text



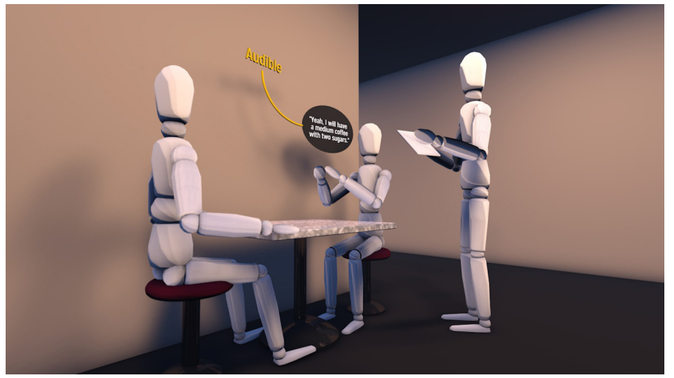
6) User signs response
Device speaks response

Storyboard Scenes 7-12

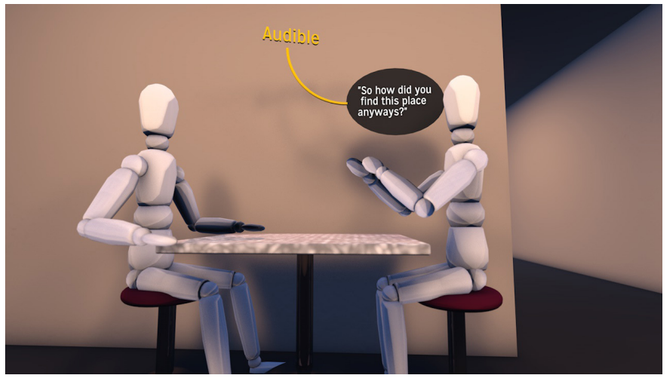


7) Waiter asks question from behind user

8) Device indicates direction of speaker and switches to them



9) User orders a drink



10) Waiter leaves and user asks a question

11) Person begins responding Scene blurs

12) Logo and tagline reveal

Design Language

Color Specifications

#8f807c

#47474b

Type Specifications

Ideal Sans

Adobe Garamond Pro

Logo Variations

caption

Connecting the Deaf and Hearing Communities

Full Logo

Uses: Presentation front page, Website Header

caption

Condensed Logo

Uses: On products

Caption Glasses

[Link to Proof of Concept]

What's Next

1. Create a system which allows users to track the flow of conversation between multiple people.

2. Explore other gesture types to signal the device to start speaking (ie: eye movement).

3. Apply these alternative gestures as a more precise way of talking with multiple people.

Sources

https://www.quora.com/What-are-some-problems-that-Deaf-people-face-on-a-daily-basis

http://www.livestrong.com/article/131312-difficulties-deaf-people-face/

https://answers.yahoo.com/question/index?qid=20130819133047AAxAqwq

http://abcnews.go.com/Technology/scientists-transmit-thoughts-brain/story?id=25319813

http://www.dailymail.co.uk/sciencetech/article-1392139/Reading-mind-New-research-finds-words-formed-brain.html

Thank You

Appendix

Competitive Analysis

EMOTIV

Emotiv has created a headset that allows users to control many things — from the movement of remote-controlled cars to moving a character around in a computer game — with only your mind.

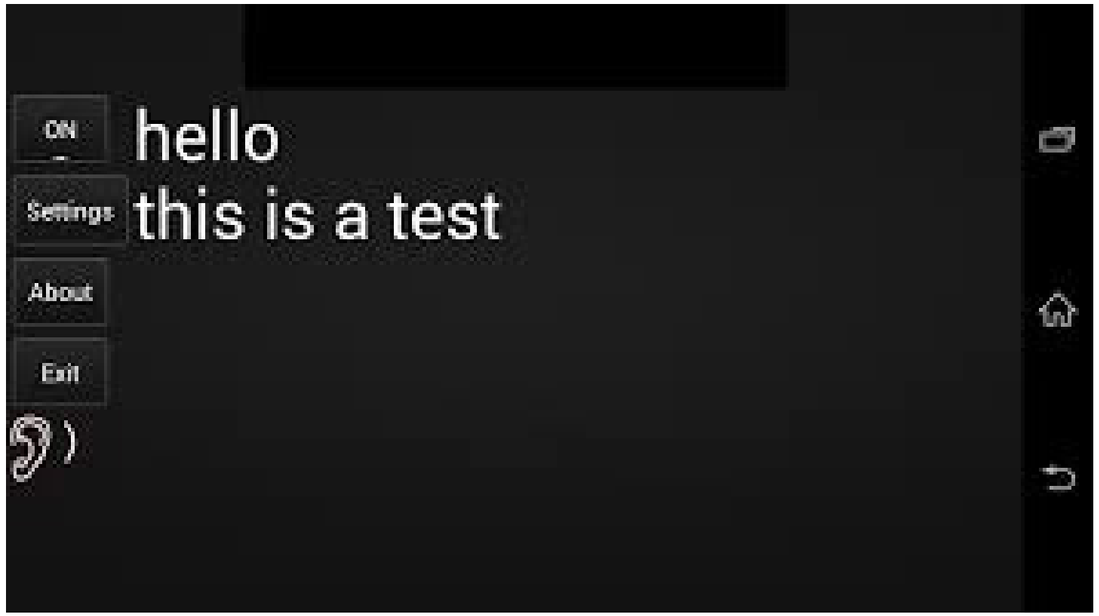
Direct Competition:
Uses brain-wave sensors to control electronics with your mind. However, Emotiv has yet to combine this technology with any thought-to-speech systems which are in development. The Emotiv does have the ability to read the emotions of the user which could impact the speech.

Competitive Analysis

Deaf Helper App

Deaf Helper allows users to press a record button to capture spoken words. The words are then displayed on screen as text. According to the reviews, if the words are spoken slower than normal, it is pretty accurate.

Direct Competition:
Uses spoken word-to-speech technology which allows deaf people to communicate a little more freely.



Potential Technology

Teams of researchers across the globe are working with the idea of thought-to-speech. They have worked out a way to implant a device which will allow the person wearing it to think specific words or phrases and then have the device print the words on a page. The issue they are currently having is that the only current way to gather the brainwave data they need is for electrodes to be implanted in the patient. These electrodes have a risk of infection and do not last for more than 2 – 3 years.

There are quite a few types of emotion detection available. Sonic recognition analyzes recorded speech for both word and tone content to distinguish the intent of the statement. Good Emotions and Vokaturi are both algorithms that can distinguish emotion from spoken word. Audeering allows call centers to monitor the moods of the callers and employees to decipher where issues might take place.

All of these various technologies are works-in-progress, but put together in the right way, they could work.

SWOT Analysis

Strengths

• Allows for nearly natural communication between hearing and deaf people regardless of the knowledge either side possesses

• Subtle design makes it easy to wear without being self-conscious

• Fits into life seamlessly

• Creates opportunities for hearing people to experience the deaf community without having to learn ASL

Weaknesses

• The system may not simulate a natural conversation completely and people seeing it for the first time may be confused

• Costly

• Could allow for words which were said in the user's head (and not meant to be heard) to be spoken aloud

Opportunities

• Deaf people could interact with the hearing population on a scale never seen before

• The opportunities available in the workforce could drastically increase

• Hearing people could gain insight into deaf culture and find inspiration in their community

• The technology used could be applied in many other ways, including producing speech for people who have lost that ability, or as a native translation application

Threats

• The deaf community may not accept it

• It could be misinterpreted as a way to avoid the fact that the user is deaf and many deaf people are proud of that fact

Market Research

According to a study conducted by the National Institute on Deafness and Other Communication Disorders in 2014, the use of devices that augment the life of the deaf is on the rise.

At the time of the study,

42,600 adults and 28,400 children
had received cochlear implants.

There is still a large number of people within the deaf community who don't want the ability to hear even though it continues to make them more isolated.

Receiving View

1. The large circle indicates which member of a group is currently speaking.

Receiving View

2. The inner color represents intonations the speaker is using (sarcasm) that are difficult for deaf people to understand.

Receiving View

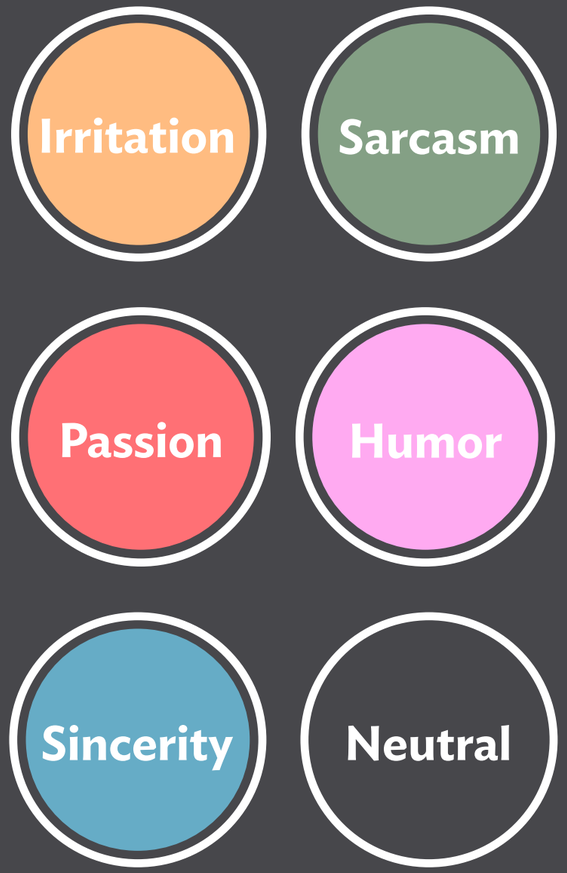
3. The empty circles let the user know which people they can listen to. Users can switch manually between speakers or set it to automatic.

The Visual Aspect

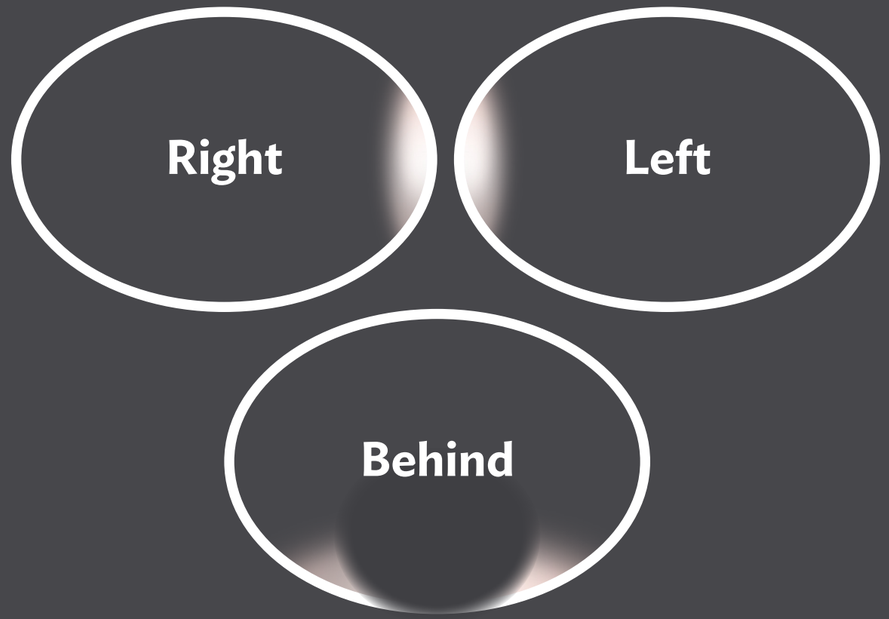
ASL Interface

The ASL Interface allows the user to see what the speaker is saying as it is translated into ASL. It is very similar to the video translation which is provided on some television programs.

Inflection Clues



Speaking Indicator



The Speaking Indicator appears in the user's peripheral vision as a soft light indicating that someone has said their name and which direction to turn to see them.

ASL Interface

The color of the ASL Interface indicates if the speaker is using any inflection which might not be easily read from the facial expressions of the speaker.

Speaking Indicator

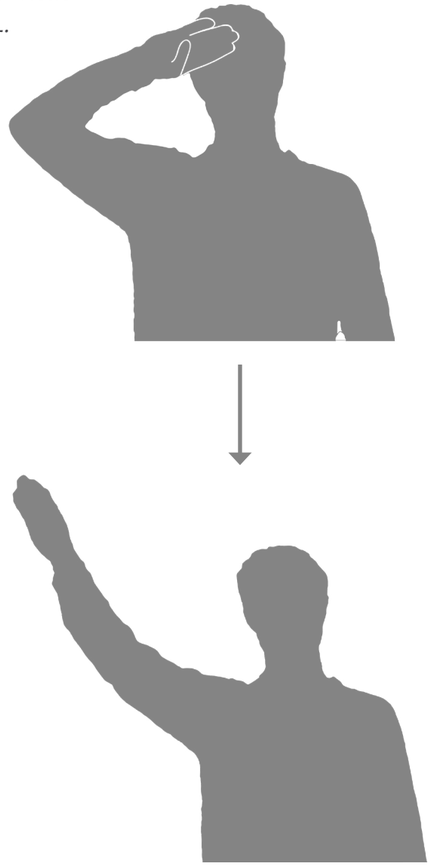
The Audible Aspect

The sending side of the conversation is a bit different. Attached to the earbuds are sensors that detect the changes in the Broca's area of the user's brain. The subtle changes can be translated into synthetic "speech" which is projected by speakers within the earbuds. To initiate this sequence, the user simply has to make a pre-defined gesture and hold it until they are done speaking. The only thing the user need do is think the sentences they want to say and they are spoken audibly from the earbuds

Gesture Definitions

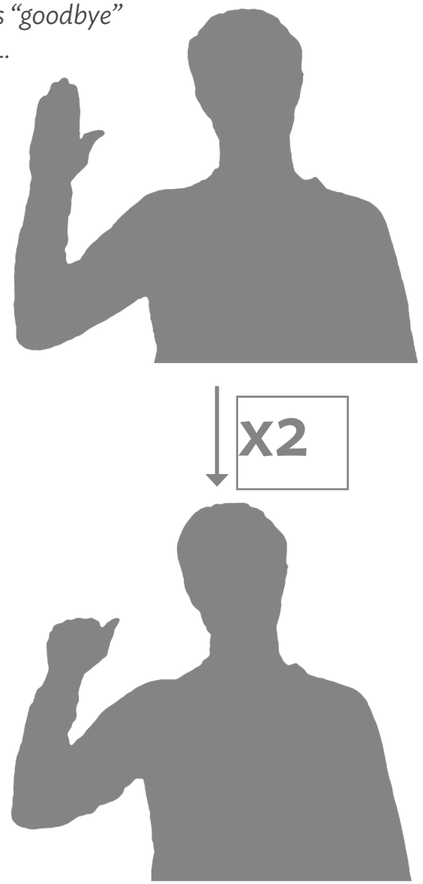
ON – Tells Caption that the user is going to start a conversation.

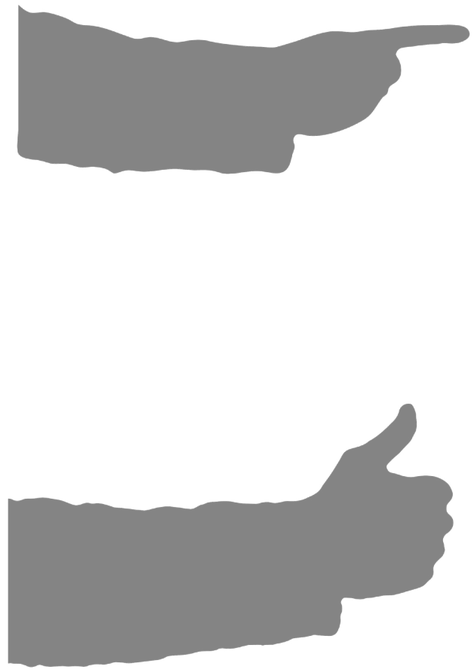
This gesture means "hello" in ASL.



OFF – Tells Caption that the user is finishing a conversation.

This gesture means "goodbye" in ASL.



BEGIN – Tells Caption to read the user's next thoughts and speak them.

This gesture is user defined, but some possibilities are: