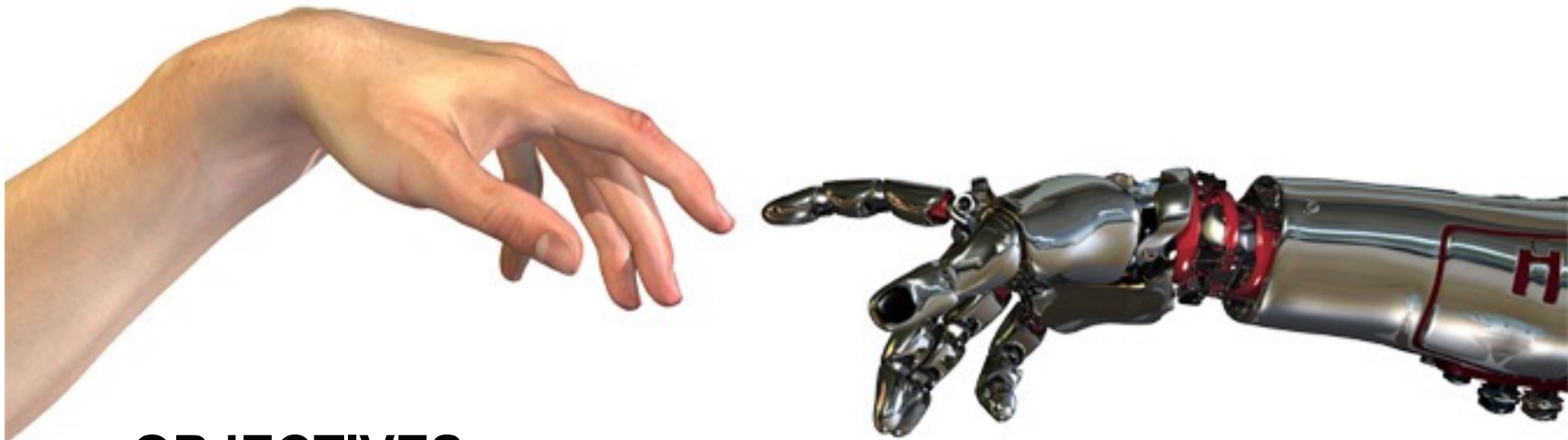# HUMAN-COMPUTER INTERACTION
UNIVERSAL PRINCIPLES OF HUMAN-COMPUTER INTERACTION DESIGN

OBJECTIVES

*1.)* Universal Principles of Design – *Signal to Noise Ratio, Typography, Uncanny Valley*

SIGNAL TO NOISE RATIO

The ratio of relevant to irrelevant information. Good designs have high signal-to-noise ratios.

- In communication, the form of the information —*the signal*—is sometimes degraded, and extraneous information—*the noise*—is added.

- Signal degradation occurs when information is presented inefficiently: unclear writing, inappropriate graphs, unnecessary elements, or ambiguous icons.

- Signal strength occurs when information is presented simply and concisely, using redundant coding, and highlighting of important elements.

- Maximize signal-to-noise ratio in design. Increase signal by keeping designs simple.

Consider enhancing key aspects of information through techniques like redundant coding and highlighting. Minimize noise by removing unnecessary elements, and minimizing the expression of elements.

Babies Named Alice Per Million Babies


Babies Named Alice Per Million Babies
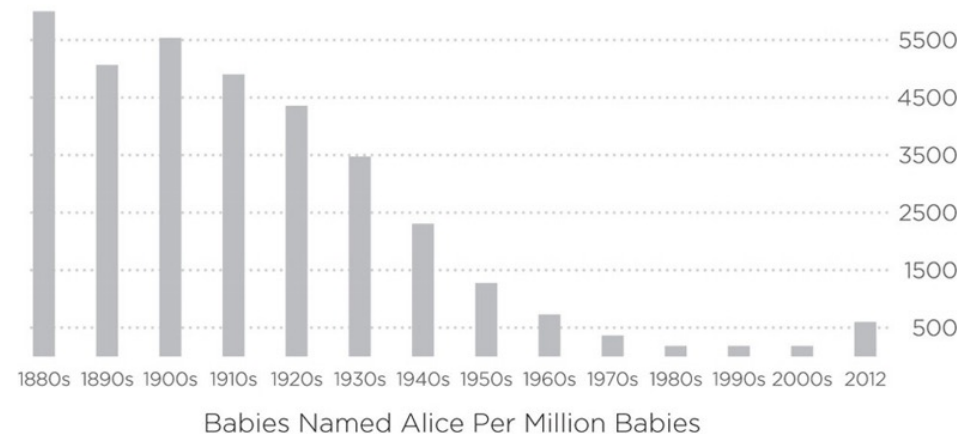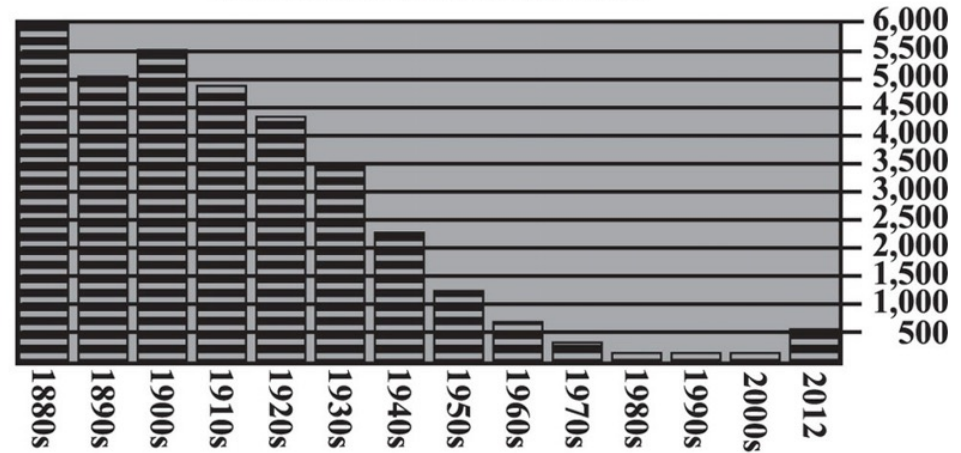
Reduce noise in graphs by removing unnecessary elements and quieting the expression of necessary elements.

TYPOGRAPHY

Every sentence you read on a screen uses a font. It controls the mood and visual appearance

- Is powerful!

- Typographic choices can significantly impact the way users interpret the language you use, helping enhance or suppress the message.

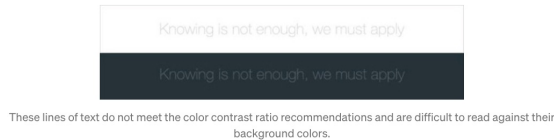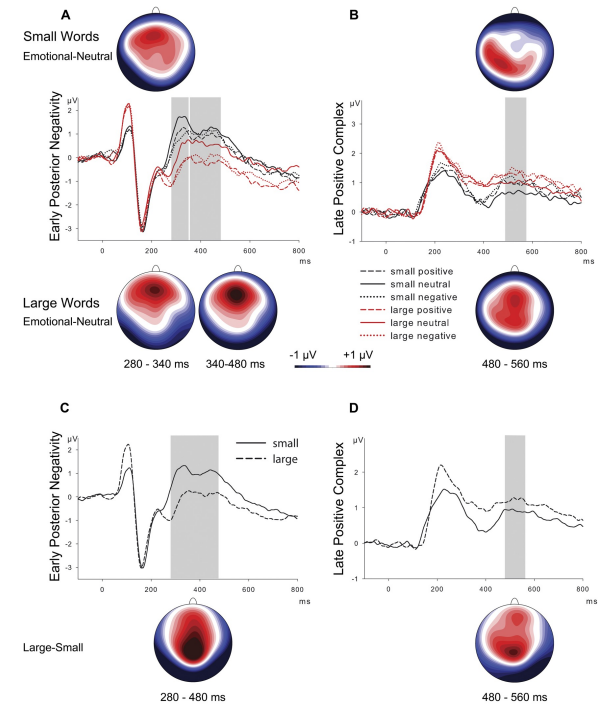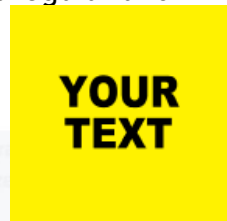- It can improve accessibility and make the design more user-friendly as you consider a typographic hierarchy.
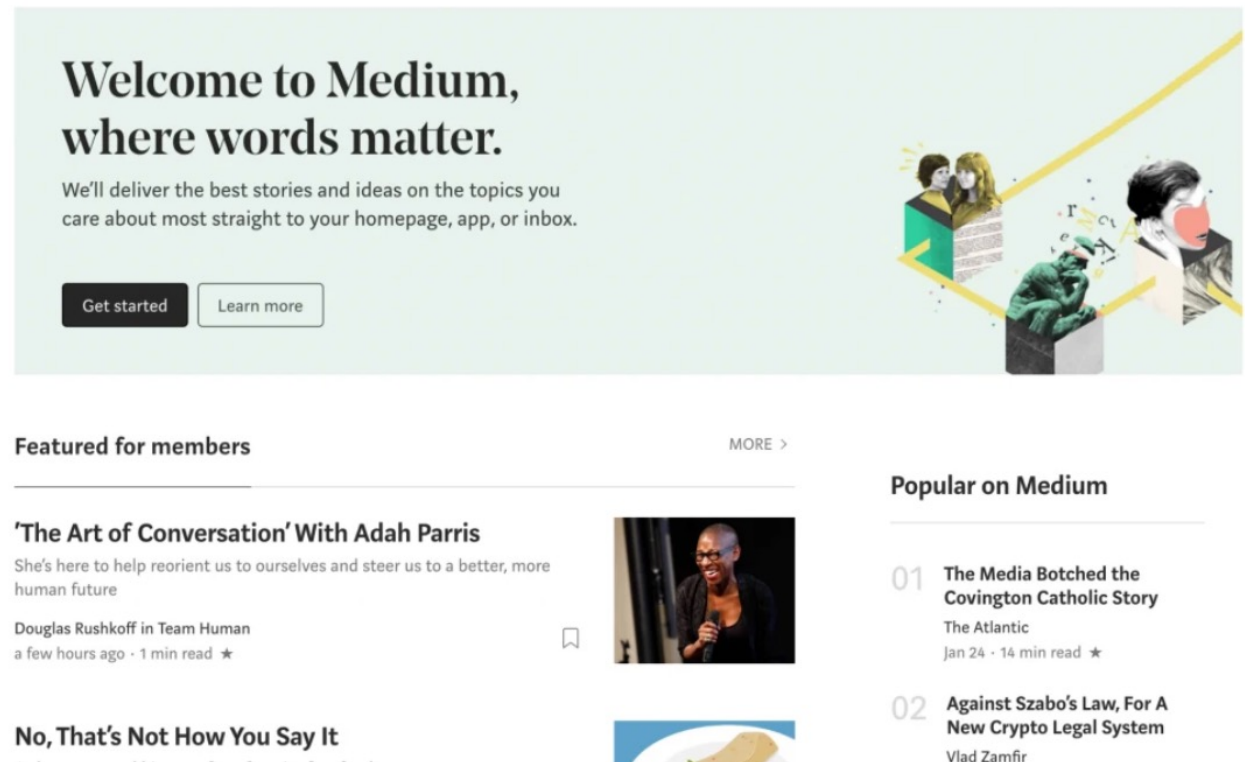
Medium uses specific typography to make its content more readable.

GENERAL TIPS ON FONTS

- [Research studies](#) show that large font size evokes stronger feelings and convey meaning.

- Consider Eye Strain

- Change the primary heading to 180–200% of the body text. If you have a secondary heading, modify it to 130–150% of the body text.

- **Keep The Number of Fonts Used At a Minimum.** limit the number of font families to a minimum (two is plenty, one is often sufficient) and stick to the same ones through the entire website

- Use Standard Fonts – like [Google Web Fonts](#) or [Typekit](#)

- Make Sure You Have Sufficient Color Contrast. *Small text* should have a contrast ratio of at least *4.5:1 against its background*. *Large text* (at 14 pt bold/18 pt regular and up) *should have a contrast ratio of at least 3:1 against its background*.

- Avoid blinking text-can trigger seizures and just plain annoying.

These lines of text do not meet the color contrast ratio recommendations and are difficult to read against their background colors.

Knowing is not enough, we must apply

These lines of text meet the color contrast ratio recommendations and are easy to read against their background colors.

YOUR TEXT

Before - 12px
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.
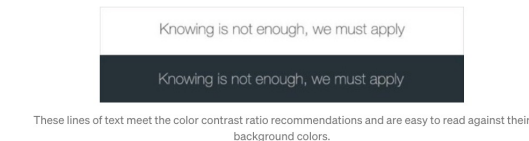
After - 15px
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

Before - 12px Header 1
The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

After - 30px Header 1
The Boy Who Lived
Mr. and Mrs. Dursley, of number four, Privet Drive, were proud to say that they were perfectly normal, thank you very much. They were the last people you'd expect to be involved in anything strange or mysterious, because they just didn't hold with such nonsense.

Oh dear
When you use **too many fonts**
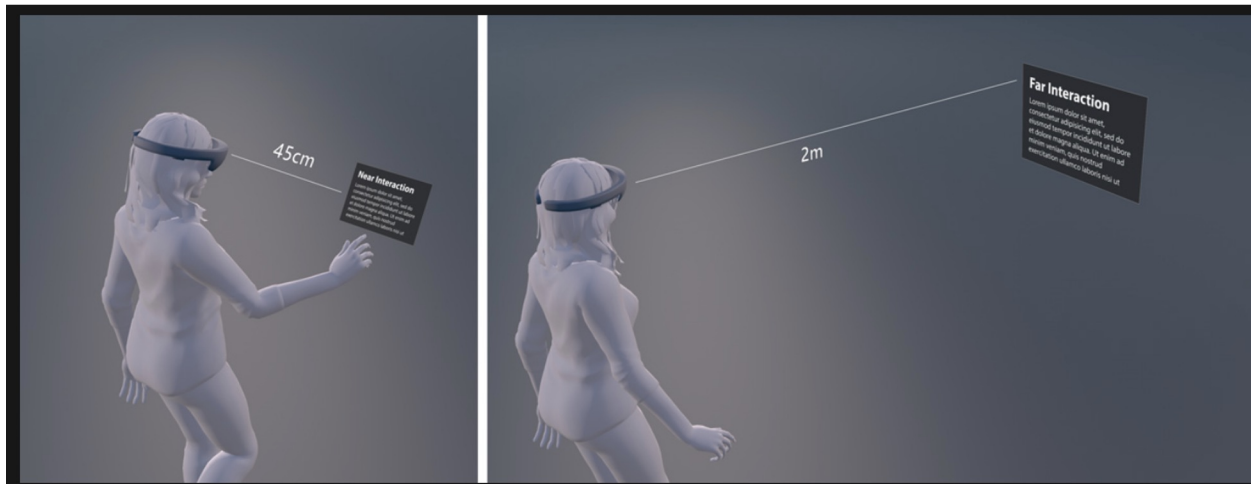**see** how they **all fight** for attention

https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0036042

FONTS IN OTHER CONTEXTS
MIXED REALTY MICROSOFT'S HOLOLENS

The minimum legible font size

Distance	Viewing angle	Text height	Font size
45cm (direct manipulation distance)	0.4°-0.5°	3.14–3.9mm	8.9–11.13pt
2m	0.35°-0.4°	12.21–13.97mm	34.63-39.58pt

The comfortably legible font size

Distance	Viewing angle	Text height	Font size
45cm (direct manipulation distance)	0.65°-0.8°	5.1-6.3mm	14.47-17.8pt
2m	0.6°-0.75°	20.9-26.2mm	59.4-74.2pt

Cre8ivepark. (n.d.). Typography - Mixed Reality. Retrieved December 09, 2020, from https://docs.microsoft.com/en-us/windows/mixed-reality/design/typography

MIXED REALITY TYPOGRAPHY

Typography:

- Limit the number of fonts
- Create clear Hierarchy
- Avoid using thin fonts
- Microsoft recommends using white text on dark or colored back plate
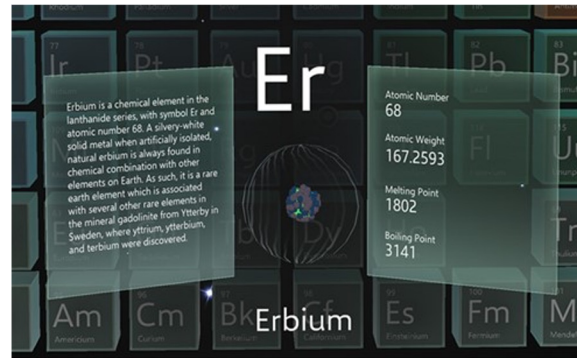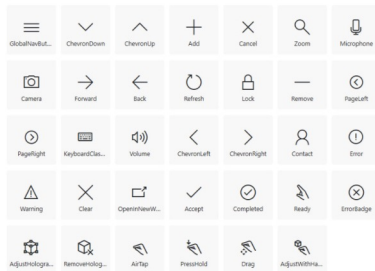
Resources

Segoe fonts

(Zip file)

HoloLens font

(Zip file)

Image: The HoloLens font gives you the symbol glyphs used in Windows Mixed Reality.

Cre8ivepark. (n.d.). Typography - Mixed Reality. Retrieved December 09, 2020, from https://docs.microsoft.com/en-us/windows/mixed-reality/design/typography

UNCANNY VALLEY

- In aesthetics, the **uncanny valley** is a hypothesized relationship between the degree of an object's resemblance to a human being and the emotional response to such an object.
  - That is, humanoid objects which imperfectly resemble actual human beings provoke uncanny or strangely familiar feelings of eeriness and revulsion in observers.[2]
  - "Valley" denotes a dip in the human observer's affinity for the replica, a relation that otherwise increases with the replica's human likeness.[3]

- The uncanny valley hypothesis predicts that an entity appearing almost human will risk eliciting cold, eerie feelings in viewers.[4]
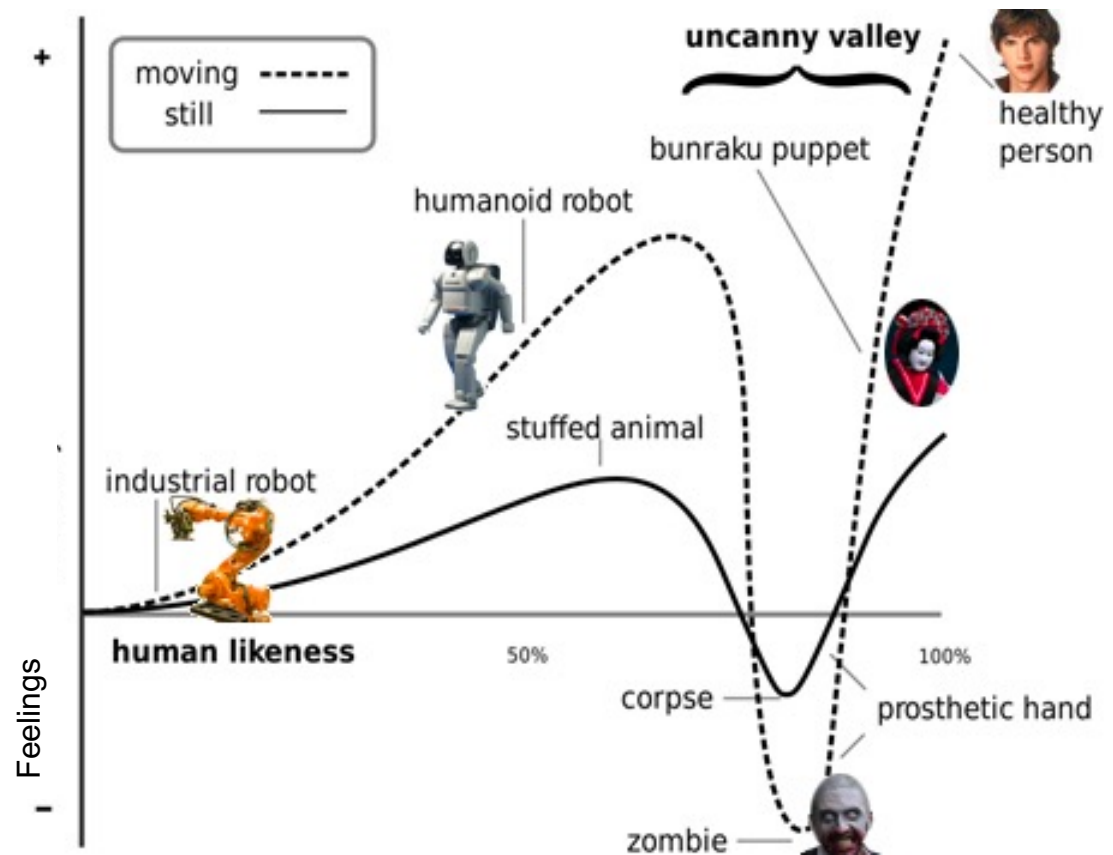
Bunraku

From Wikipedia, the free encyclopedia

This article is about the traditional form of Japanese puppet theatre. For the 2010 film, see Bunraku (film).

Bunraku (文楽), also known as *Ningyō jōruri* (人形浄瑠璃), is a form of traditional Japanese puppet theatre, founded in Osaka in the beginning of the 17th century. Three kinds of performers take part in a bunraku performance: the *Ningyōtsukai* or *Ningyōzukai* (puppeteers), the *Tayū* (chanters), and *shamisen* musicians. Occasionally other instruments such as taiko drums will be used.

REMEMBER ANTHROPOMORPHISM?

SOCIAL ROBOTS - SOPHIA

https://www.youtube.com/watch?v=G-zyTIZQYpE&feature=emb_logo
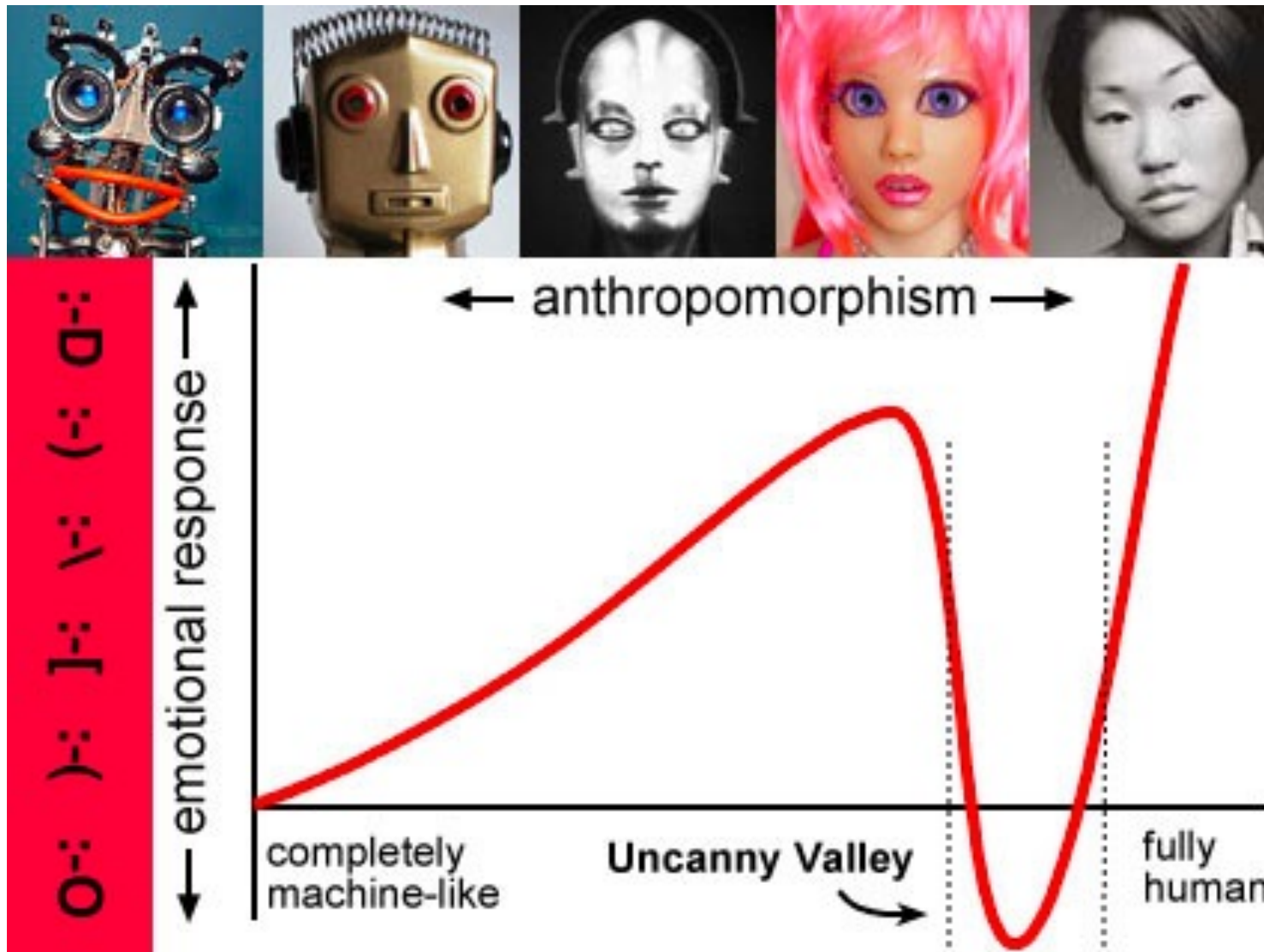
POLAR EXPRESS- THE ANIMATION WASN'T A HIT WITH EVERYONE.


CLASSIC TRAILER

- Motion capture has become a popular technique in high-budget films that blend CGI and live action, but it failed to take off in animated features. One reason may be that human characters animated in a hyper-realistic style tend to border on the slightly creepy side.

- Critics described the human characters in *The Polar Express* as dead-eyed and zombie-like.

11

OUR OWN RESEARCH – CREEPY?

"I am here with you, concentrate on your breathing...let us stay in the present."

Cognitive Behavioral Therapy (CBT) AI-Driven Holographic Therapist Companion
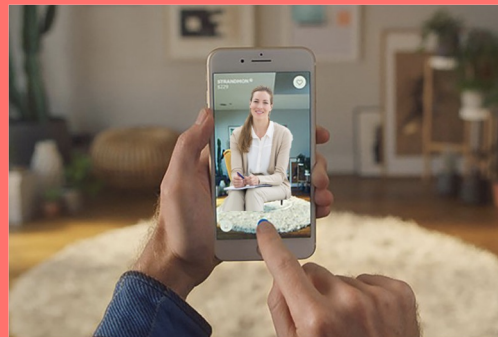
Cognitive Behavioral Therapy (CBT) via an AI-Driven Therapist Companion

Use of Metahumans and Natural Language Processing to deliver AI-Driven Therapists of the future from our sponsor

Affords for gender, sex, racial selection and a more natural dialogue between user and therapist.