

Inclusive Design

The Big Picture



#knowbilitydesign

Eric Eggert

Accessibility Testing Team Lead &
Web Accessibility Expert

Based in Essen, Germany

- German BIENE Award in 2010
- W3C/WAI (2013–2020)
- Knowbility (since 2016)



Today's Schedule (in Central Time)

From	To	What we'll do
9:30am	10:15am	Part 1
<i>10:15am</i>	<i>10:30am</i>	<i>Break</i>
10:30am	11:15am	Part 2
<i>11:15am</i>	<i>11:30am</i>	<i>Break</i>
11:30am	12:15pm	Part 3
<i>12:15pm</i>	<i>12:45pm</i>	<i>Lunch Break</i>
12:45pm	1:30pm	Part 4

Introduction

What is Inclusive Design?

Jutta Treviranus

Jutta Treviranus is the Director of the Inclusive Design Research Centre (IDRC) and professor in the faculty of Design at OCAD University¹ in Toronto.

Jutta also heads the Inclusive Design Institute, a multi-university regional centre of expertise.

[Bio at OCAD University](#)

¹Ontario College of Art & Design University



Susan M. Goltsman (1949–2016)

Susan Goltsman, FASLA², was an internationally recognized expert in programming and designing inclusive environments for children and families. She created and advocated tirelessly for environments that promote social equity and contribute to healthy human development.

[Obituary at PLAE](#)

²Fellow of the American Society of Landscape Architects



Inclusive Design, a Definition

- Digital technology can *improve* societal inclusion
- A methodology that enables and draws on the *full range of human diversity*.
- Including and learning from people with a *range of perspectives*.
- Inclusive design *doesn't mean* you're designing *one thing for all people*.
- You're designing a *diversity of ways to participate* so that everyone has a sense of belonging.

And just to make this clear:

This is “**store-brand inclusive design**”,
not “name-brand inclusive design”.

Why do I care?



An aerial photograph of a rural landscape in Germany, featuring a dense forest of dark green trees. A small village with red-roofed houses is visible in the center. A red location pin is placed on the village. The entire image is covered with a dark purple semi-transparent filter.

Somewhere in the Forest, Germany

As a kid, I already found that to be
unfair.

I had Asthma until I was 12.

And while that excluded participation in many activities, it allowed me to go to a “regular” school.

This was not a matter of course at the time.

Allergen immunotherapy helped me eventually.

Why did we get treated differently?

- My condition did only require minor adjustments.
- I did not need an accessible building (but it would have helped).
- My parents are German, his are Greeks.

The world³ was not designed for my friend's needs.

- Inaccessible.
- No information available in Greek.
- Segregated Education.

³ Well, Germany in the 80's & 90's.

So, Inclusive Design.

Related Concepts

Inclusive Design
Universal Design
Accessibility

Universal Design

Design an environment so that it might be accessed and used in the widest possible range of situations without the need for adaptation.

“One size – fits all.”

Universal Design

- Based on built environments & architecture.
- Describes the qualities of the final design.
- Great for *physical* objects.







Accessibility

Requirements that are technical and relate to the underlying code rather than to the visual appearance and requirements that relate to user interaction and visual design.

— Accessibility, Usability, and Inclusion (W3C/WAI)

Accessibility

- An *attribute* instead of a method.
- Focuses on accessibility standards.
- A foundation for building inclusive solutions.

Inclusive Design can focus on accessibility and have a universal design as an outcome.

Does the **Average Person** Exist?

AND MEDICAL LABORATORY
AND
E. CHURCHILL
ANTIOCH COLLEGE

SEPTEMBER 1954

Statement A
Approved for Public Release

WRIGHT AIR DEVELOPMENT CENTER

2002 1104059

Thanks Matt!

- On YouTube: Does The Average Person Exist?
- Twitter: @standupmaths

No User
is the Same

Aspects of Human Diversity

1. Language
2. Culture
3. Gender
4. Race
5. Age
6. Ability & Disability
7. Other forms of human difference

One size – fits one.

Inclusive design
doesn't mean you're
designing one thing for
all people.

— Susan Goltsman

**You're designing a diversity
of ways to participate so
that everyone has a sense
of belonging.**

— Susan Goltsman

Beware of your own biases!



Pavel A. Samsonov

@PavelASamsonov



Everyone: the racist, sexist, violent system has failed us

Tech bros: idk, it works on my machine

3:06 PM · Aug 17, 2020 · [Twitter Web App](#)

1K Retweets and comments **4K** Likes



It's easy to generalize from one's own experiences.

And invalidate other's experiences

Aspects of Human Diversity

1. Language
2. Culture
3. Gender
4. Race
5. Age
6. Ability & Disability
7. Other forms of human difference

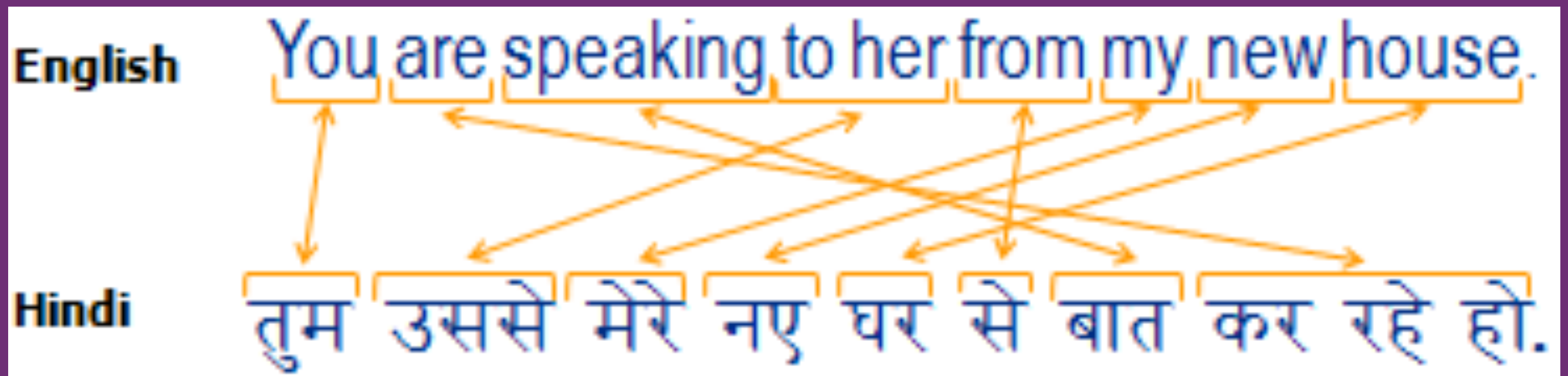
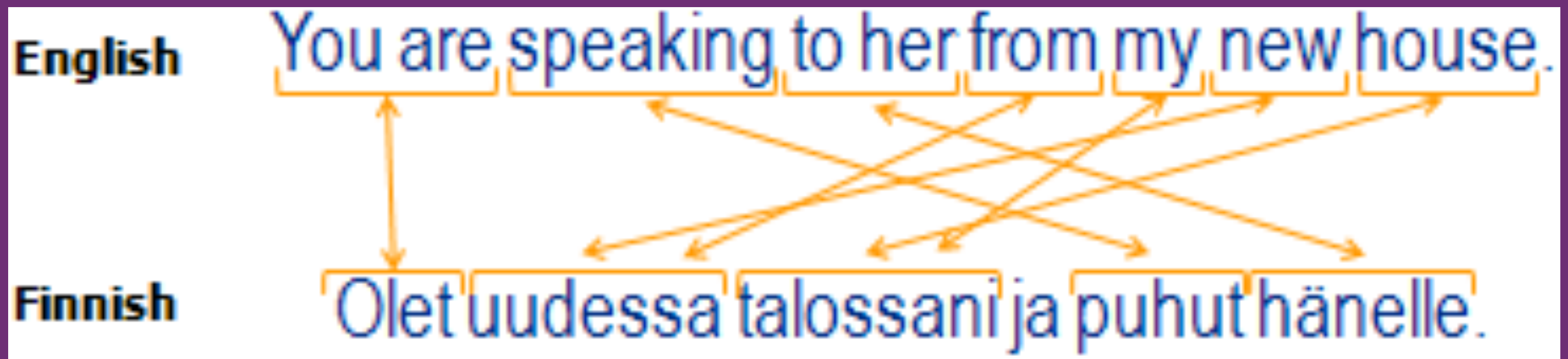
Aspects of Human Diversity

Language

The title is مفتاح معايير الويب in Arabic.



国际化活动、万维网联盟



Language

Awareness for speakers of other languages helps to shape content.

- Do we need text for this?
- Can we support our content with illustrations, animations or videos?
- Can this be written simpler or more descriptive?
- Is there an appropriate symbol?

Aspects of Human Diversity

Culture

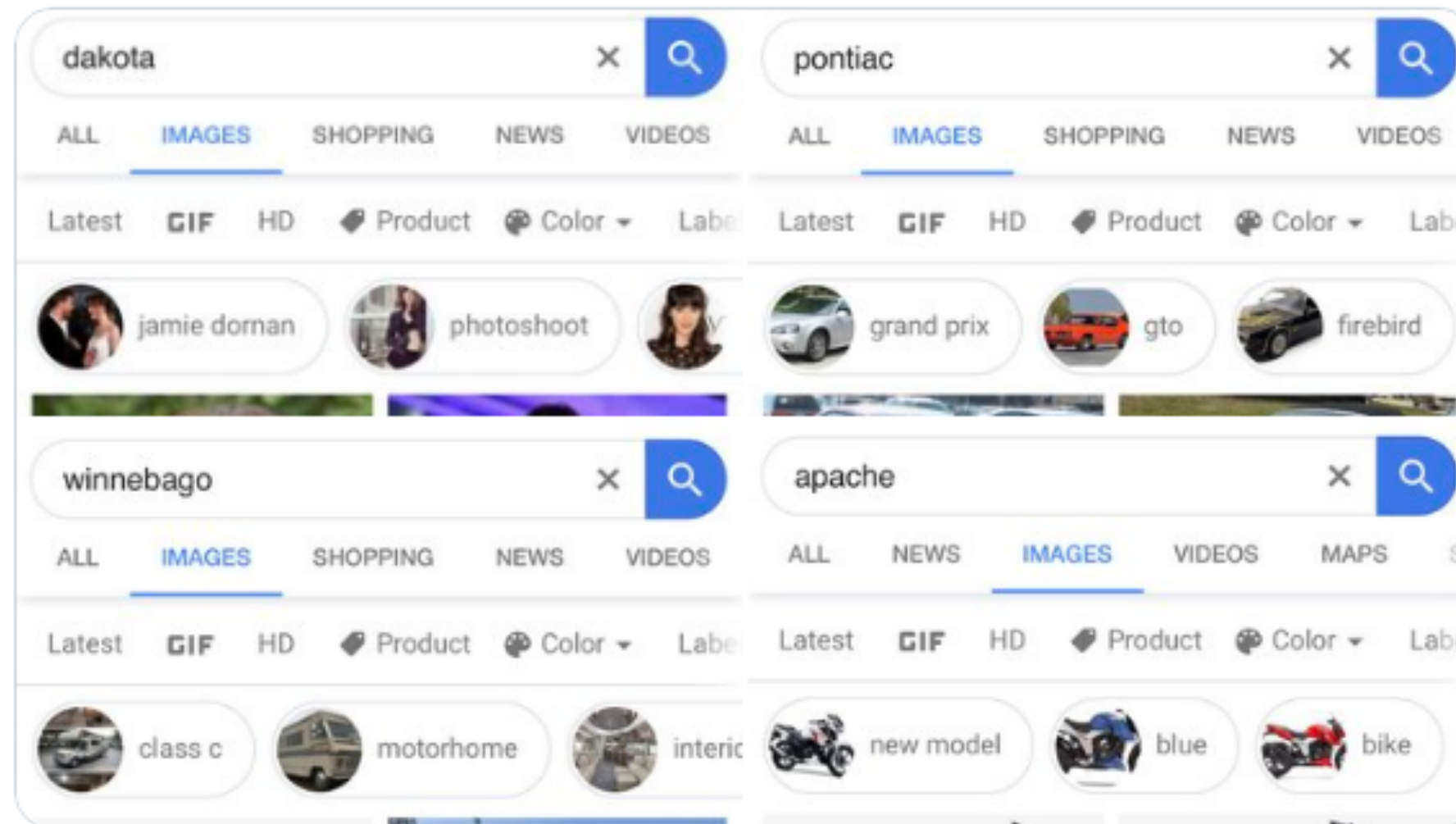


Lucas Brown Eyes

@LucasBrownEyes



Erasure is complete when they say your name and you're no longer remembered.



8:39 PM · Aug 29, 2020 · [Twitter Web App](#)

13.7K Retweets and comments **56.1K** Likes



Cultural insensitivity is actively hurtful.

What does this symbol mean: ✓



COLORS *by Culture*

ORANGE	BROWN	YELLOW	GREEN	BLUE	PURPLE	RED	BLACK
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WESTERN *Culture*

 Harvest Warmth Affordable	 Practicality Comfort Stability	 Happiness Joy Caution	 Luck Jealousy Greed	 Depression Trust Calm	 Royalty Spirituality Wealth	 Love Danger Action	 Intimidation Death Mourning
-----------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------



FAR EASTERN *Culture*

 Happiness Spirituality Adaptability	 Earth Industrious Mourning	 Masculinity Sacred Royalty	 Fertility Hope Life	 Feminine Healing Relaxation	 Wealth Privilege Spirituality	 Prosperity Good Fortune Vitality	 Health Prosperity Stability
---------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------



INDIAN *Culture*

 Sacred Courage Love	 Mourning	 Sacred Auspicious	 Hope Harvest Virtue	 Sports Strength	 Sorrow Comfort Nobility	 Beauty Wealth Power	 Evil Darkness Negativity
-------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------



MIDDLE EASTERN *Culture*

 Mourning Loss	 Harmony Earth Comfort	 Happiness Prosperity Mourning	 Strength Fertility Hope	 Mourning Heaven Spirituality	 Wealth Virtue Royalty	 Danger Caution Evil	 Mystery Mourning Rebirth
----------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------

INTERNATIONAL COLOR SYMBOLISM

BLACK	WHITE	YELLOW	GREEN	BLUE	PURPLE	PINK	RED	ORANGE	BROWN
WESTERN death, evil, sin, funerals, mourning, rebellion, elegance, sophistication, formality, power, control EASTERN wealth, prosperity, health, masculinity, knowledge, mystery, evil, mourning EUROPE mourning, death, evil, formality, elegance, sophistication MIDDLE EAST rebirth, evil, mystery AFRICA age, wisdom, maturity, masculinity BRAZIL sophistication, authority, mourning, religion, formality CHEROKEES problems, death, represents the West CHINA trust, high quality, color for young boys INDIA laziness, anger, intolerance, apathy, evil, darkness, negativity, lack of desirability ITALY death, mourning, humility JAPAN night, unknown, nonbeing, mystery, anger S. KOREA darkness, mystery, mourning THAILAND unhappiness, bad luck, evil AUSTRALIAN ABORIGINES ceremonial color	WESTERN purity, peace, elegance, wedding color, brides, angels, doctors, antiseptic EASTERN death, mourning, funerals, sadness, purity, age, unhappiness, misfortune EUROPE purity, cleanliness, emptiness, neutrality, antiseptic, surrender MIDDLE EAST purity, mourning AFRICA victory, purity CHEROKEES peace, happiness, represents the South CHINA death, mourning, virginity, purity, humility, age, misfortune INDIA creation, rebirth, light, serenity, reincarnation, peace, purity, unhappiness, widow, death, funerals IRELAND leisure, sports, peace ITALY virtue, purity JAPAN death, mourning S. KOREA purity, innocence, morality, birth & death, patriotism THAILAND purity, auspiciousness	WESTERN happiness, joy, hope, optimism, creativity, energy, awareness, hazards, warning, weakness, femininity EASTERN sacredness, sovereignty, earth, power, royalty, sun, happiness, masculinity EUROPE happiness, joy, quality, weakness, hazard, warning MIDDLE EAST happiness, prosperity AFRICA wealth, high rank, religion, ceremony, visibility AUSTRALIA resurrection, rebirth CHINA sacredness, sovereignty, nourishment, royalty, honor, masculinity EGYPT soul, sun, happiness, prosperity, mourning FRANCE summer, joy, jealousy GREECE sadness INDIA merchants, sacredness, auspiciousness, peace, happiness, meditation, mental development JAPAN courage, nobility, beauty, refinement, aristocracy, cheerfulness MEXICO mourning NETHERLANDS food SAUDI ARABIA strength, reliability THAILAND Buddhism, royalty, auspiciousness, color for Monday	WESTERN nature, spring, new birth, regeneration, luck, go, environmental awareness, money, jealousy, greed, Saint Patrick's Day EASTERN eternity, new life, regeneration, family, health, prosperity, peace EUROPE nature, fertility, confidence, jealousy, inexperience MIDDLE EAST Islam, strength, fertility, luck, wealth, prestige CHINA spring, youth, birth, infidelity, exorcism, desirability, disgrace EGYPT hope, spring, fertility INDIA Islam, hope, new beginnings, nature, harvest, virtue, happiness INDONESIA a forbidden color IRELAND Ireland – the Emerald Isle, patriotism, nationalism ISLAM perfect faith ISRAEL bad news JAPAN eternal life, youth S. KOREA youth, energy NORTH AFRICA corruption SAUDI ARABIA wealth, prestige SOUTH AFRICA death THAILAND color for Wednesday	WESTERN trust, loyalty, authority, conservatism, business, peace, calm, depression, sadness, masculinity EASTERN immortality, wealth, self-cultivation EUROPE truth, responsibility, fidelity, serenity MIDDLE EAST safety, protection BELGIUM traditionally used for baby girls CHEROKEES defeat, trouble CHINA immortality, femininity EGYPT truth, justice, virtue, faith, protection, reproduction FRANCE water, reliability, trust INDIA heavens, love, truth, mercy, strength, bravery, manliness, determination INDONESIA sadness IRAN heaven, spirituality, mourning, immortality ISRAEL coat of arms ITALY mourning, heaven, purity S. KOREA integrity, mourning MEXICO trust, serenity, mourning THAILAND color for Friday TURKEY healing, wealth, repels evil	WESTERN royalty, spirituality, faith, wealth, fame, high-ranking positions of authority, luxury, calm, magic EASTERN wealth, nobility, privilege, sorrow, mourning EUROPE royalty, nobility, luxury, power, vanity MIDDLE EAST wealth BRAZIL death, mourning EGYPT virtue, faith FRANCE freedom, peace INDIA sorrow, unhappiness ITALY death, mourning, endurance of suffering, nobility JAPAN wealth, privilege, power, royalty THAILAND death, mourning, widows, color for Saturday	WESTERN love, romance, femininity, childhood, babies, nurturing, sweetness, Valentine's Day EASTERN marriage, femininity EUROPE baby girls, delicate, flirtation, sensitivity, serenity, femininity BELGIUM traditionally used for baby boys JAPAN spring, femininity, youth, good health, well-liked by both males & females S. KOREA trust THAILAND color for Tuesday	WESTERN stop, danger, anger, blood, energy, excitement, action, adventure, love, passion, Valentine's Day EASTERN prosperity, good fortune, happiness, worn by brides, celebration, communism EUROPE visibility, cheapness, loudness MIDDLE EAST danger, caution, evil AFRICA death, mourning CHINA good fortune, happiness, celebration, summoning, vitality, prosperity, long life, wedding color ENGLAND power, authority, government FRANCE passionate love, lust, virility INDIA purity, love, sensuality, fertility, beauty, wealth, power, wedding color, married woman, fear, fire ITALY light, fidelity JAPAN life, fertility, passion, strength, anger, danger, self-sacrifice S. KOREA good fortune, passion NETHERLANDS nature, government, royalty RUSSIA communism, revolution, wedding color THAILAND Buddhism, color for Sunday TURKEY death	WESTERN energy, vitality, excitement, adventure, creativity, caution, construction, harvest, autumn, affordability, Halloween (with black) EASTERN love, happiness, spirituality, humility, good health, immortality EUROPE purity, cleanliness, good MIDDLE EAST mourning, loss AUSTRALIA animals BRAZIL environment FRANCE earth INDIA the most sacred color, purity, courage, sacrifice, religious abstinence, death, rebellion IRELAND religious color for Protestants, appears on the Irish flag along with white for peace & green for Catholics JAPAN love, happiness, courage NETHERLANDS royalty, color of the Dutch royal family THAILAND color for Thursday	WESTERN comfort, stability, practicality, wholesomeness, dullness, fertility, organic, earthiness, poverty EASTERN earth, mourning EUROPE masculinity, earth MIDDLE EAST earth, comfort AFRICA earth AUSTRALIA color of the land BRAZIL nature CHINA earth INDIA color of mourning INDONESIA earth JAPAN earth, strength, durability NICARAGUA disapproval

[... R]ed is lucky for Chinese people.
[...] Thai people will be offended if you
print their name in red — it's the color
that monks employ to write names on
coffins, so to write someone's name in
red is to “wish them dead”.

— Bruce Lawson, Notes on Designing Websites for the Asian Market

Cultural Identity

- The identity or feeling of belonging to a group.
- Group of people sharing the same cultural identity or upbringing.
- Heavily impacted by a person's *cultural arena*, the place where a person lives.
- Immigrants adjust to the culture of the country they immigrated to linearly over time.
- It is possible to have the ability to obtain competence within two cultures without losing one's sense of identity or having to identify with one culture over the other.

Cultural Identity

Issues can arise when...

- ...the majority culture is assumed by default.
- ...designs created in one cultural environment get transplanted into a different environment.



Shirley
@shirleywu



My last name isn't valid because two letters.

The irony of this... is someone who is Asian probably built parts of this app. How did they not catch this..?

Patient's first name

Shirley

Patient's last name

Wu

Enter a valid last name.

2:55 AM · Sep 1, 2020 · [Twitter for iPhone](#)

730 Retweets **149** Quote Tweets **5.2K** Likes



Hello
my name is

St  phanie

Aspects of Human Diversity

Gender

Gender is the range of characteristics pertaining to, and differentiating between, masculinity and femininity.

— Wikipedia

Depending on the context, these characteristics may include biological sex, sex-based social structures (i.e., gender roles), or gender identity.

— [Wikipedia](#)

Tatiana Mac

Tatiana Mac (she/they) is an independent American engineer and open source maintainer who created and is building *Self-Defined*, a modern dictionary about us; and *Devs of Colour*, a database that will prioritise finding undiscovered Black/brown talent through a thoughtful search algorithm.

As a consultant, she works directly with organisations to build clear and coherent products and design systems.

She believes the *trifecta of accessibility, performance, and inclusion* can work symbiotically to improve our social landscape digitally and physically. When ethically-minded, she thinks technologists can dismantle exclusionary systems in favour of community-focused, inclusive ones.





Act III

Our Own

***GENDER**

Select ...

Select One

Male

Female

Gender *

☐ Male

☐ Female

Gender* ?

✓ Select gender

Male (M)

Female (F)

Unspecified (X)

Undisclosed (U)

Gender •

✓ Select your gender

Male

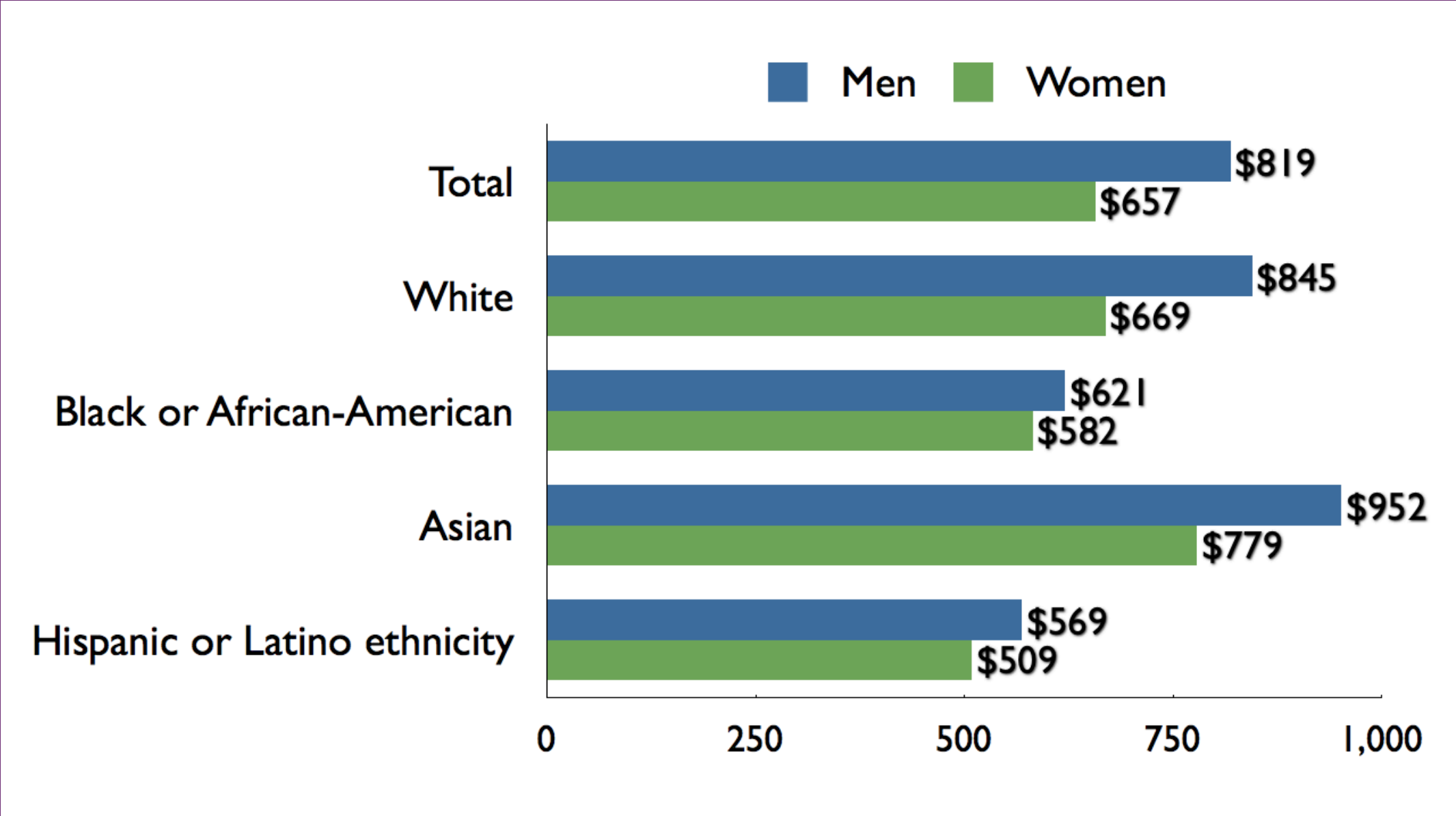
Female



Perpetuated Exclusion*

*unintentional

Gender Pay Gap



Aspects of Human Diversity

Racism



On the word “Race” in modern Germany

- Basically unused in day to day life.
- No biological basis for “races”. Sometimes people considered “one race” have more genetic variability than people of “different races”.

Und doch existieren „Menschen-
rassen“ tatsächlich. Nicht als
biologische Fakten, sondern als
– unbewusste – Denkstrukturen
und Urteile in unseren Köpfen.

— Ulrich Kattman (Bundeszentrale für Politische Bildung)

And yet “human races”
actually exist. Not as biological
facts, but as – subconscious –
thinking structures and
judgements in our minds.

— Ulrich Kattman (Bundeszentrale für Politische Bildung)

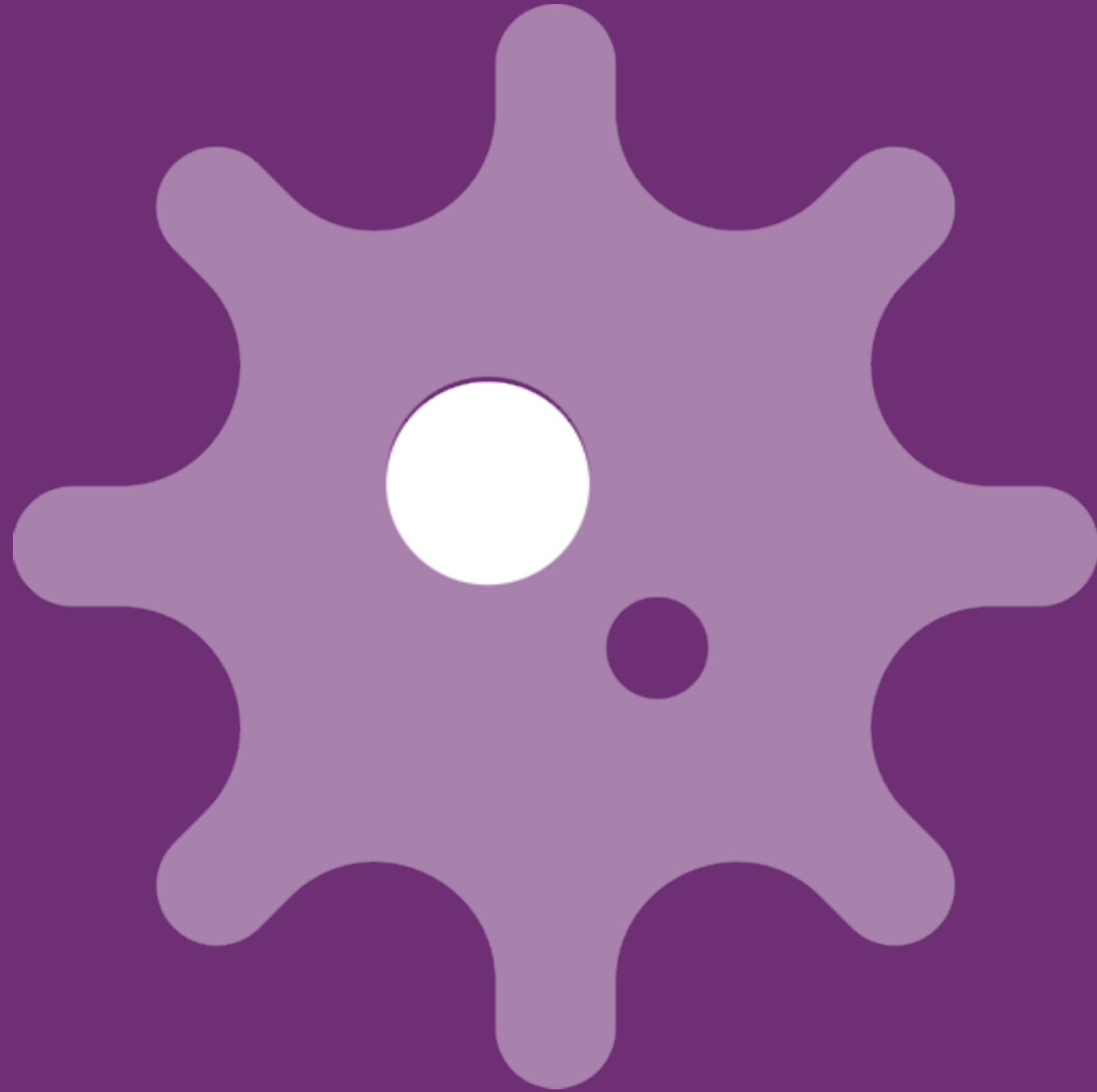
Many in Germany use words like “extreme right-wing” or “xenophobic” instead of “racist” because it is seen more as an ideology.

That means that racist acts are often not acknowledged as being racist.

That's a problem.

How does racism apply to inclusive design?

- Racism usually means a continuous, systematic discrimination.
- What can your product, your design, do to counteract that discrimination?
- Can you offer stipends or free tickets for members of groups that are targeted by racists?





ms_mamie89 • [Follow](#)



ms_mamie89 My mom sent me this picture today. These 2 young girls were looking for a place with WiFi to do their school work so they sat near Taco Bell to connect to the free WiFi. A lot of us don't have to worry about having a proper WiFi connection or a quiet place to work from home. Every student from preschool through college should have free access to reliable WiFi especially now. What can we do as a community to pull together for students who need something as simple as WiFi in order to succeed? Please share and tag people in our community who can help.
UPDATE: THE GIRLS WERE IDENTIFIED BY THEIR SCHOOL DISTRICT AND GIVEN HOTSPOTS! I'M SURE THERE ARE OTHER CHILDREN IN NEED, I AM



67,137 likes

4 DAYS AGO

[Log in](#) to like or comment.

[...] These 2 young girls were looking for a place with WiFi to do their school work so they sat near Taco Bell to connect [...]. A lot of us don't have to worry about having a proper WiFi connection or a quiet place to work from home. Every student from preschool through college should have free access to reliable WiFi especially now. What can we do as a community to pull together for students who need something as simple as WiFi in order to succeed? [...]

Update: The girls were identified by their school district and given hotspots! I'm sure there are other children in need, I am hoping they all get the tools they need! If local businesses would like to donate their space to set up outdoor internet cafes, please let me know. I would love to help rally up supplies and man power!

Aspects of Human Diversity

Age

Ageism is discrimination because of your age.

The stereotypes and infantilization of older and younger people by patronizing language affects older and younger people's self-esteem and behaviors.

— Wikipedia

After repeatedly hearing a stereotype that older or younger people are useless, older and younger people may begin to feel like dependent, non-contributing members of society. They may start to perceive themselves [...] in the same ways that others in society see them.

— Wikipedia

Studies have also specifically shown that when older and younger people hear these stereotypes about their supposed incompetence and uselessness, they perform worse on measures of competence and memory.

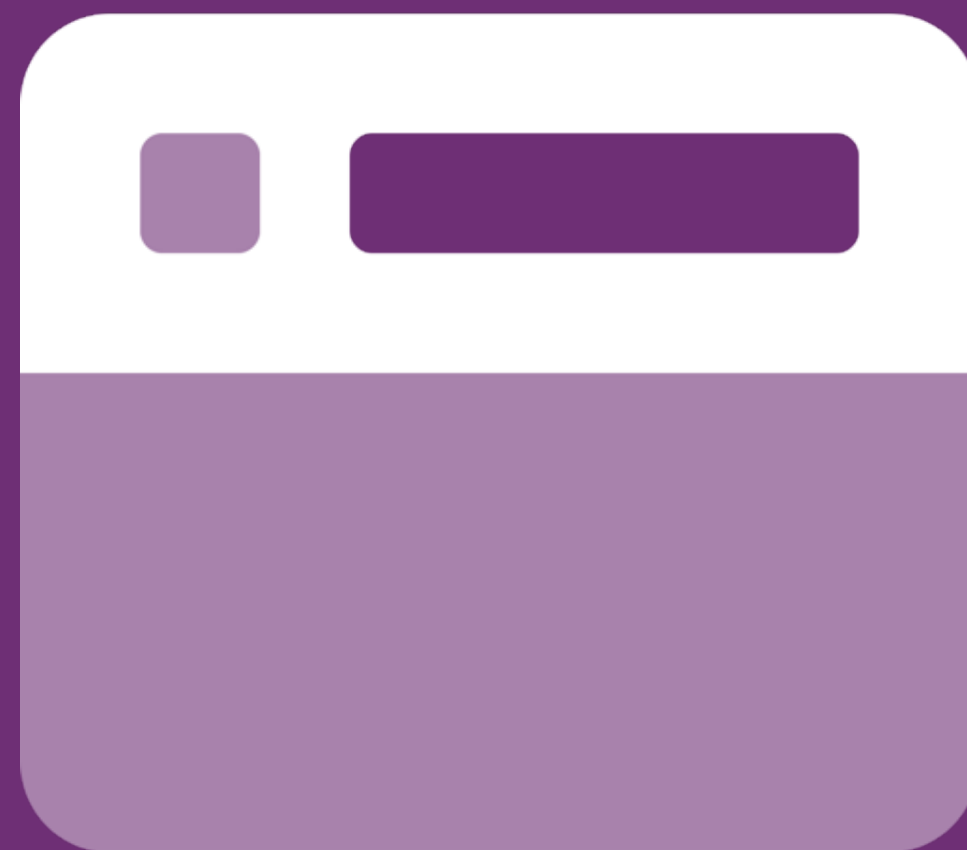
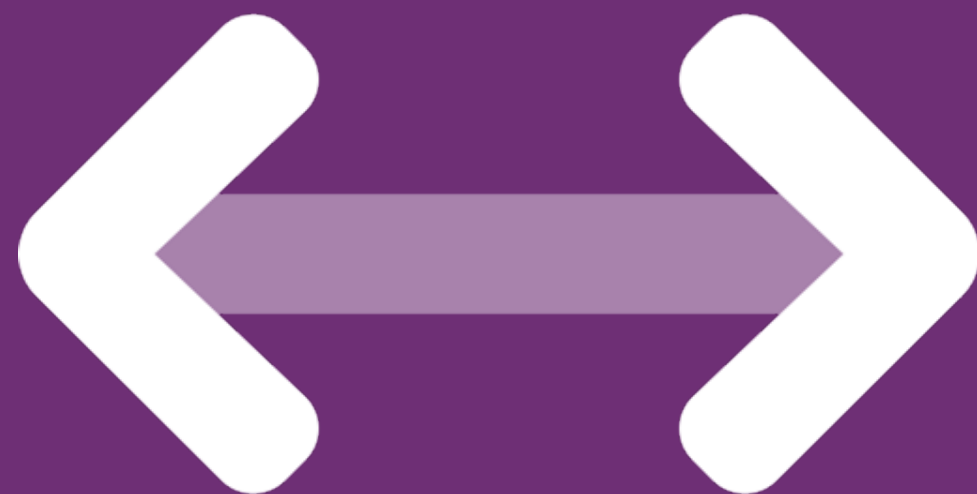
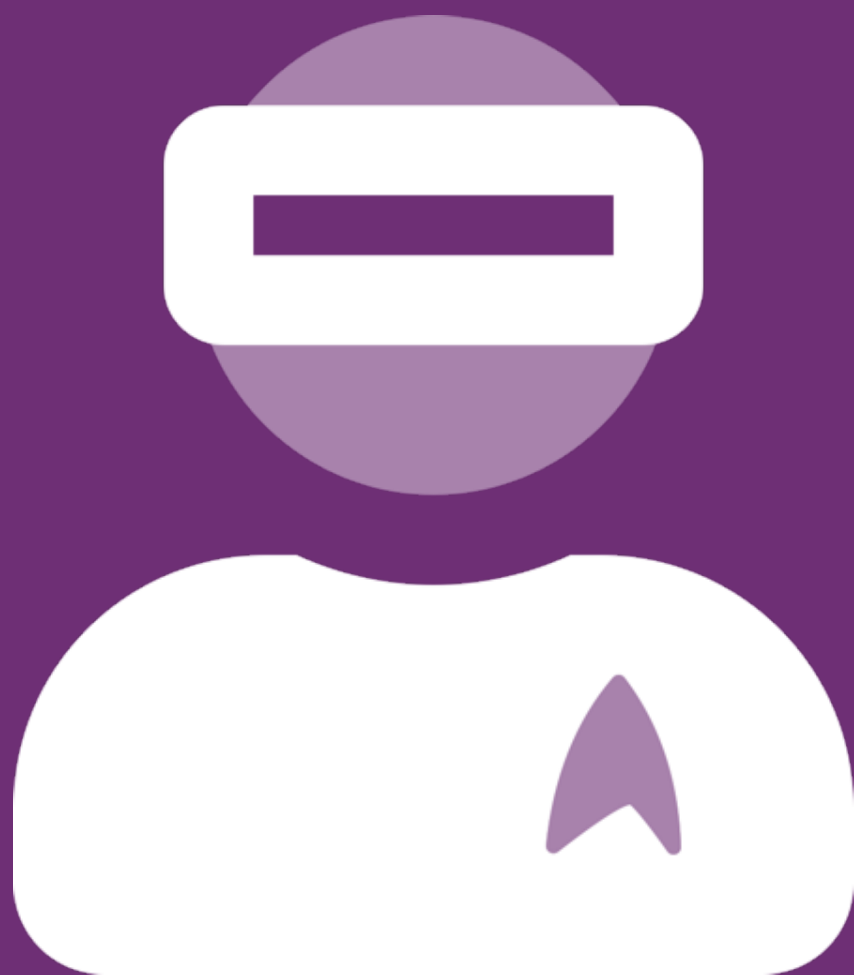
— Wikipedia

Common ageist assumptions:

- The person is too young to understand the big picture.
- The person is too old to handle technology.
- Millennials have it easy.
- Ageism is also inadvertently embedded in the ways that we generate statistics, for example through data collected based on large age categories (e.g., '60+') foisting anyone over 60 into “the grey zone” which obscures differences. ([Wikipedia](#))

Aspects of Human Diversity

Ability & Disability



You cannot talk about **accessibility**
without talking about **disabilities**.



E.J. Mason (#GithubDropICE)
@codeability



Love 2 b called "differently abled" because it suggests that I have some kind of paranatural ability beyond the ken of mortal man.

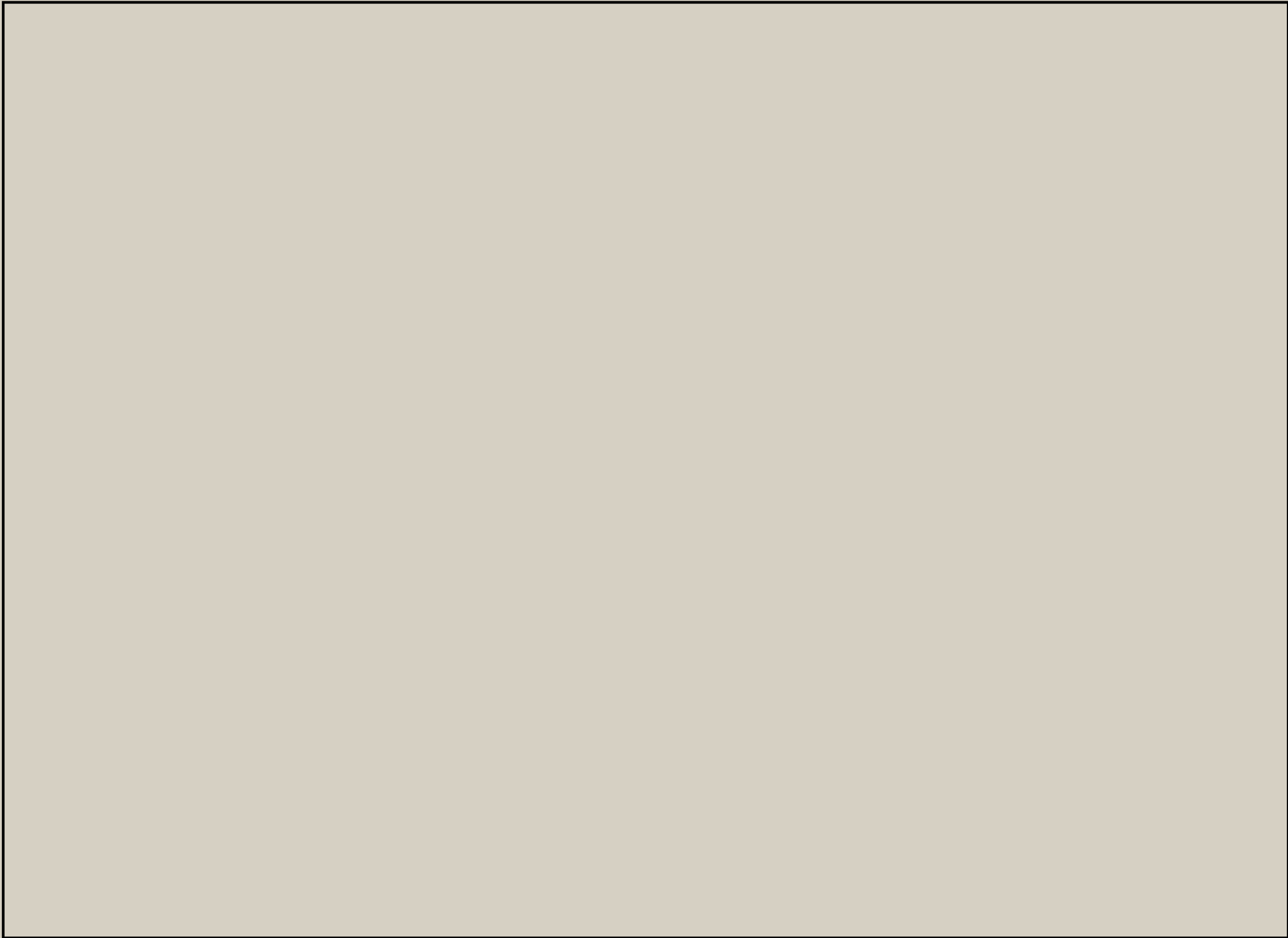
And I do, but you can still just call me "disabled". Promise.

11:39 PM · Nov 15, 2019 · [Twitter Web App](#)

10 Retweets **102** Likes







Talking & Planning

Talking & Planning

Graphic Design (of an image of a website)

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

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Content

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS

Content
Iterations

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS Performance
Content
Iterations

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS
Content
Iterations
Hotfixes

Performance
Security

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS

Content

Iterations

Hotfixes

Security
Data protection

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

CMS

Content

Iterations

Hotfixes

Quality Control

Accessibility

Security
Data Protection
etc.

Talking & Planning

Graphic Design (of an image of a website)

HTML/CSS/JavaScript

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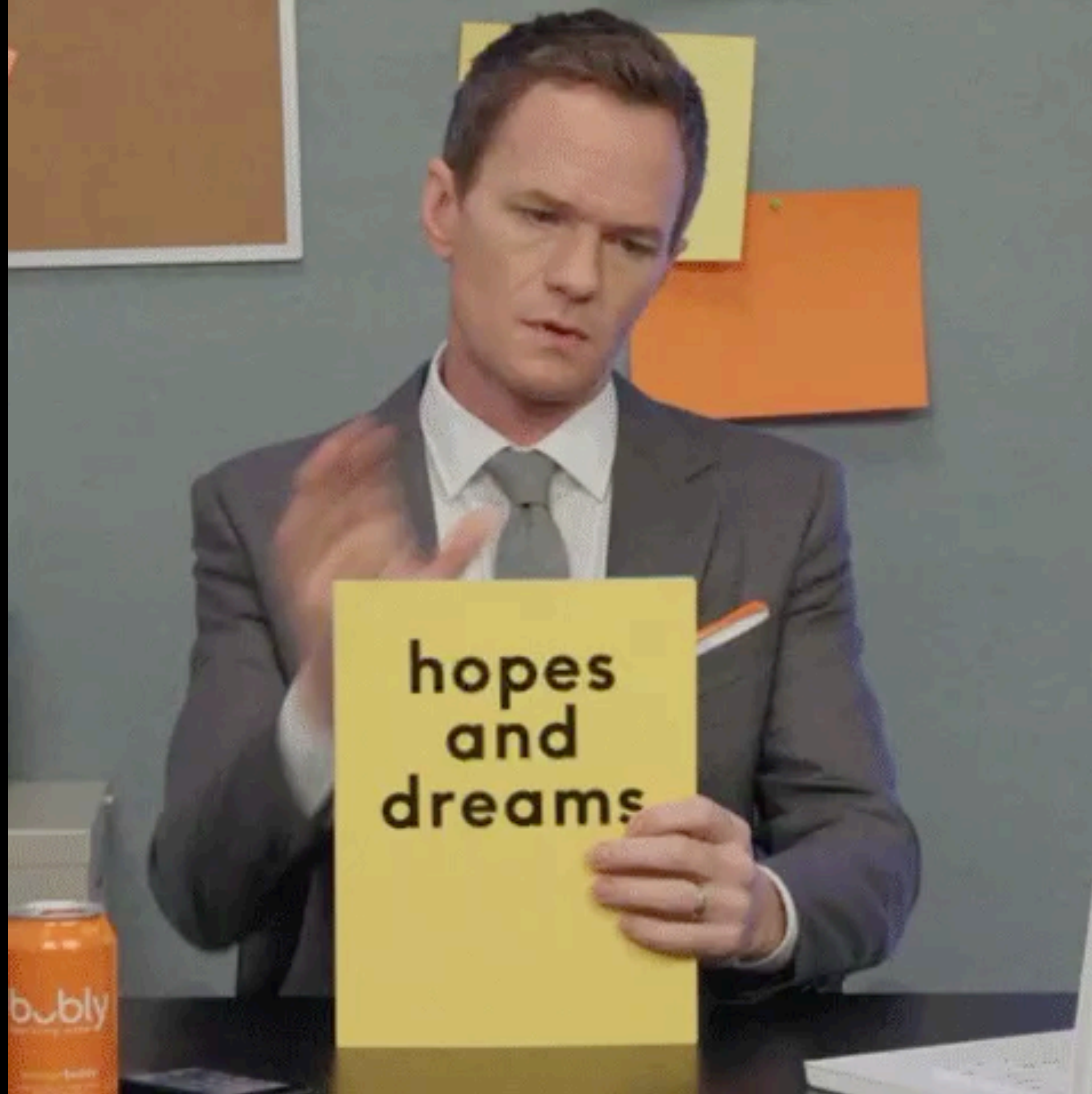
Security
Data Protection
etc.

Accessibility is a sign of good quality.

Designing inclusive software results in improved usability and customer satisfaction.

— Microsoft's app developer guide

Accessibility must be a
foundational value



Accessible Web Development is Complicated

WebAIM Million Study

- **60%** of the 1 million home pages had **ARIA present**.
- Home pages **with ARIA** present averaged **11.2 more** detectable **errors** than pages without ARIA.
- Pages with a valid **HTML5 doctype** had significantly **more page elements** (average of 844 vs. 605) **and errors** (average of 61.9 vs. 53.3) than those with other doctypes.
- **2.1M layout tables** were detected compared to only 114k data tables.

More Complex = **Less** Accessible

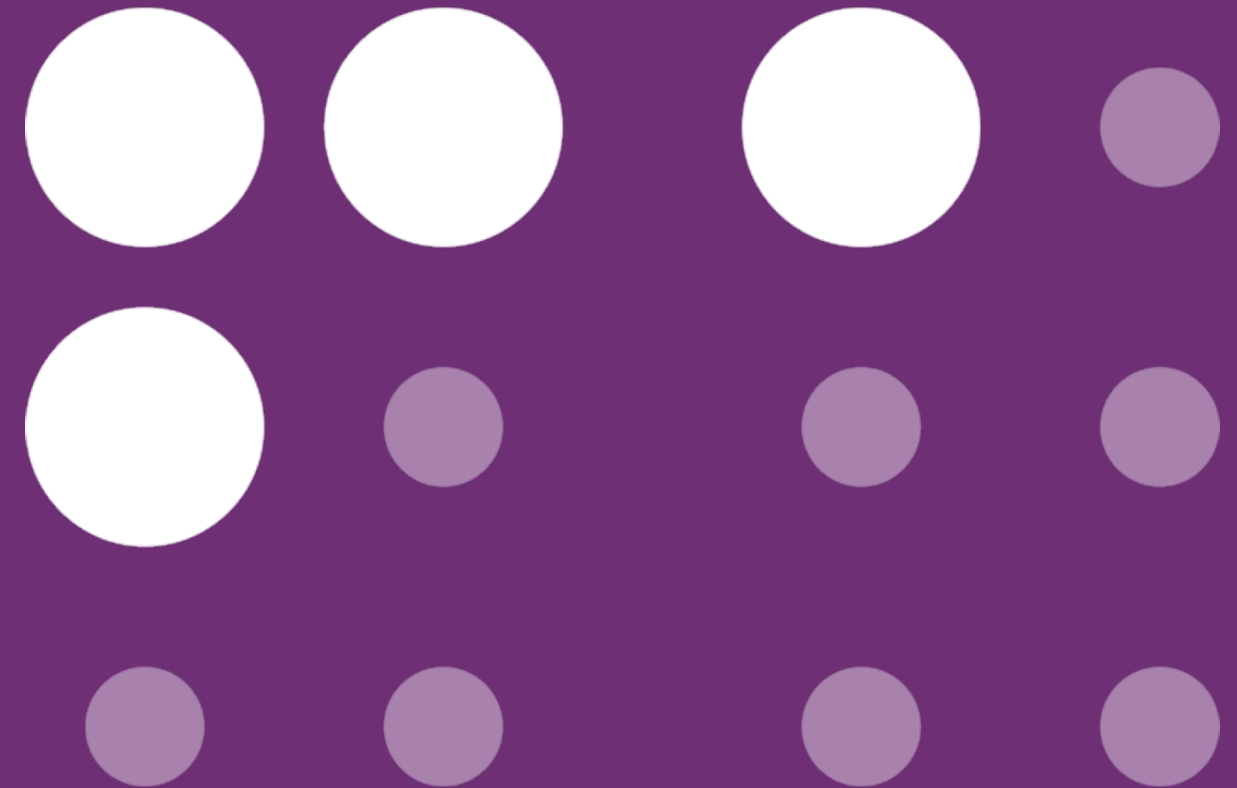
Taming complexity often comes with
even more complexity



I'm too nice.

BBC
AMERICA
RICA

Screen Reader **Differences**



VoiceOver and Safari
remove list element
semantics when
list-style: none is used.

— Scott O'Hara: "Fixing" Lists

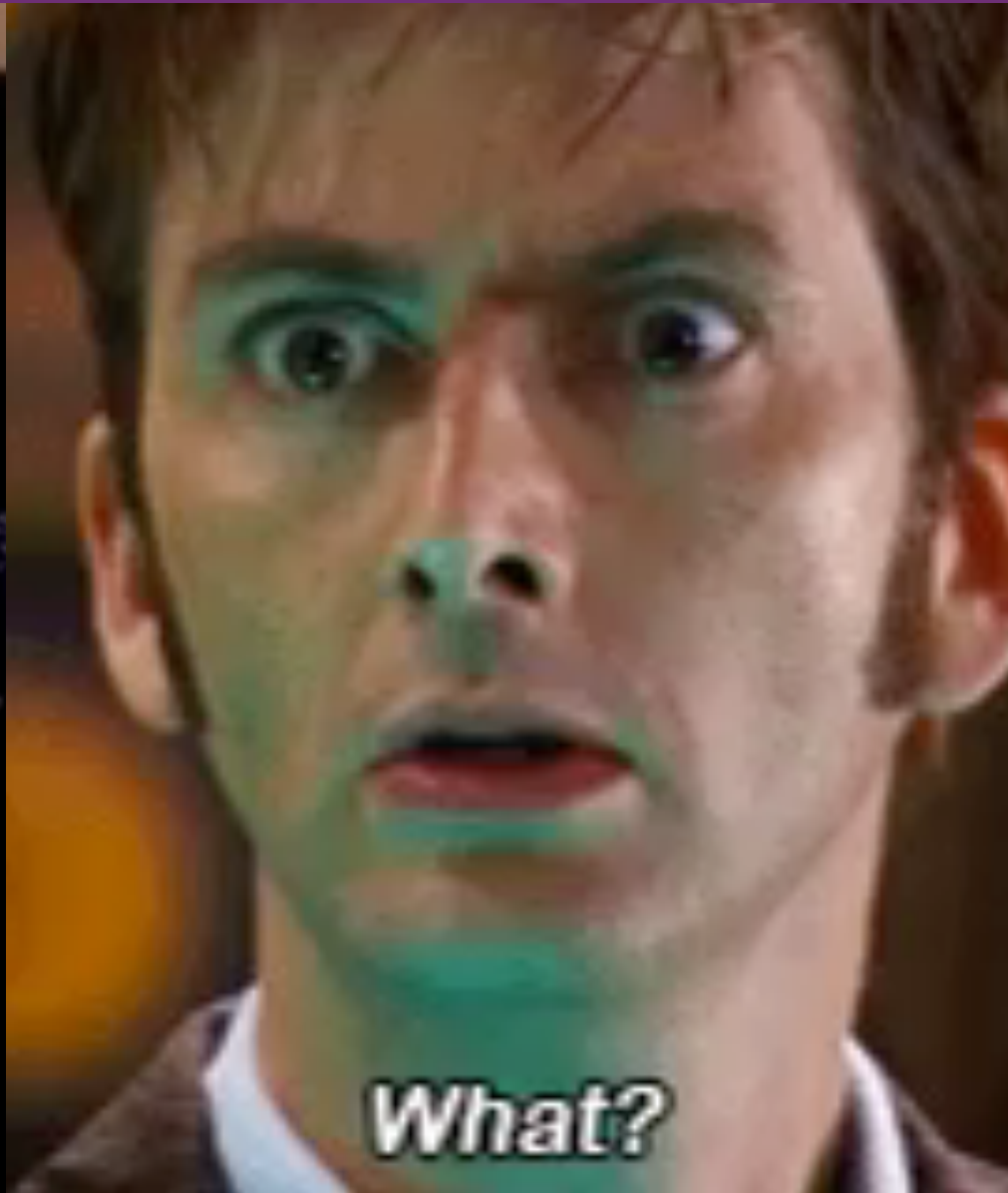
- Lorem ipsum dolor, sit amet consectetur adipisicing elit. Ex tempora omnis asperiores autem delectus necessitatibus iure illo. Beatae odio error recusandae vitae? Rerum aperiam porro cumque, maiores ducimus quae nulla.
- Eaque ea vitae voluptatum repudiandae reprehenderit magnam repellendus deleniti, quos voluptates autem odit assumenda ducimus corrupti nam ratione dolorem voluptatem dolore ipsam doloremque veniam. Quibusdam recusandae ipsam quae nihil quod?
- Ipsam, numquam provident explicabo, labore enim laborum iste soluta ad architecto ex fugit et quasi reprehenderit recusandae voluptatum temporibus placeat odio nemo commodi doloribus officia nisi. Aliquid est voluptates ab.

Lorem ipsum dolor, sit amet consectetur
adipiscing elit. Ex tempora omnis asperiores
autem delectus necessitatibus iure illo. Beatae
odio error recusandae vitae? Rerum aperiam
porro cumque, maiores ducimus quae nulla.

Eaque ea vitae voluptatum repudiandae
reprehenderit magnam repellendus deleniti, quos
voluptates autem odit assumenda ducimus
corrupti nam ratione dolorem voluptatem dolore
ipsam doloremque veniam. Quibusdam
recusandae ipsam quae nihil quod?

Ipsam, numquam provident explicabo, labore
enim laborum iste soluta ad architecto ex fugit et
quasi reprehenderit recusandae voluptatum
temporibus placeat odio nemo commodi
doloribus officia nisi. Aliquid est voluptates ab.

Web Developers



This was a purposeful
change due to rampant
“list”-itis by
web developers.

— James Craig, Apple, bugs.webkit.org



What? No, hang on a sec!

What does it mean for me, as a web developer, that Safari is not reading lists, when they don't look like a list?

— John Doe-veloper

Nothing.

A Time Line

- **2014:** First Commit
- **2015:** Additional Code
- ...
- **2019:** The Web Notices

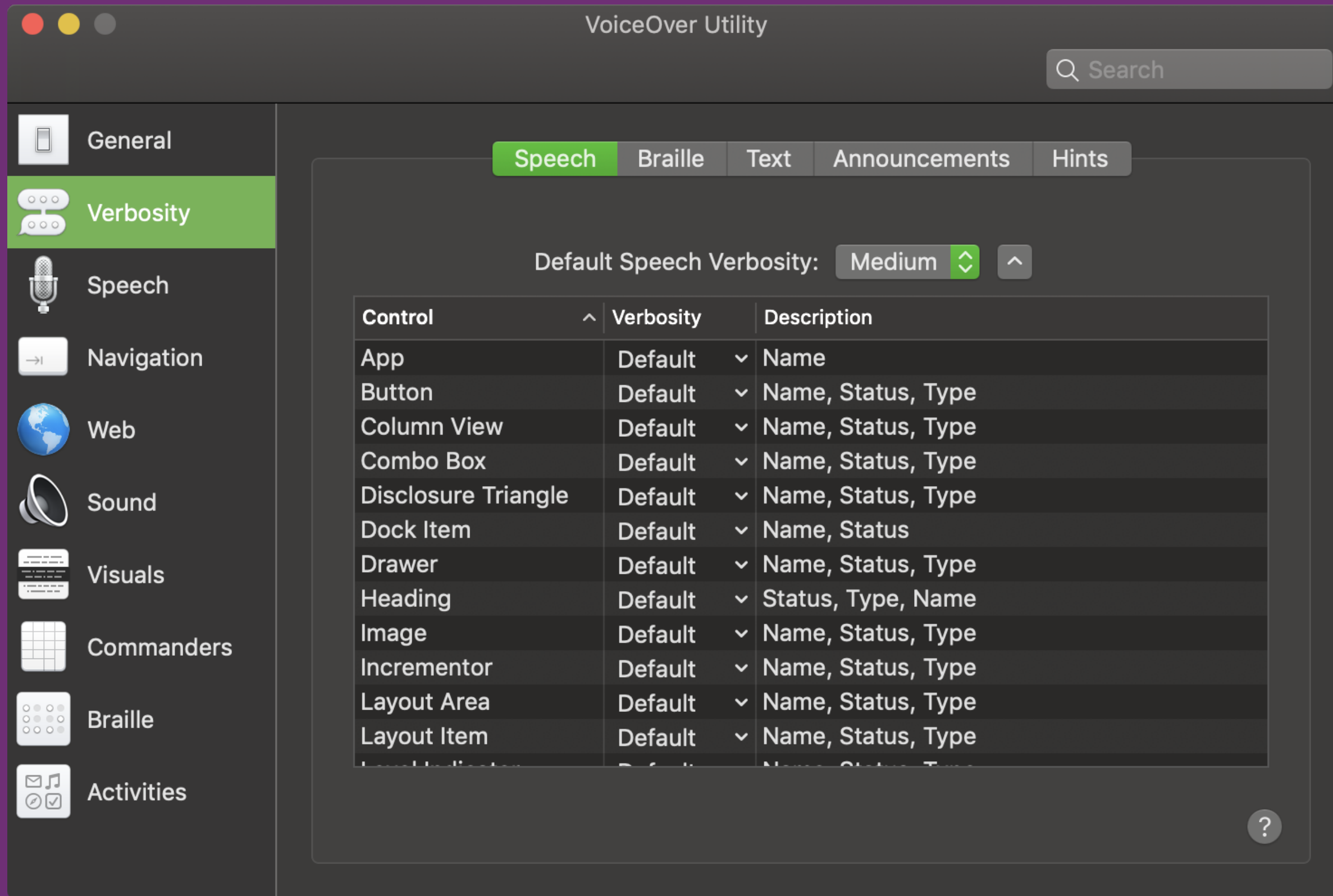
Customers seem much
happier in the 3 years
since this change
went in.

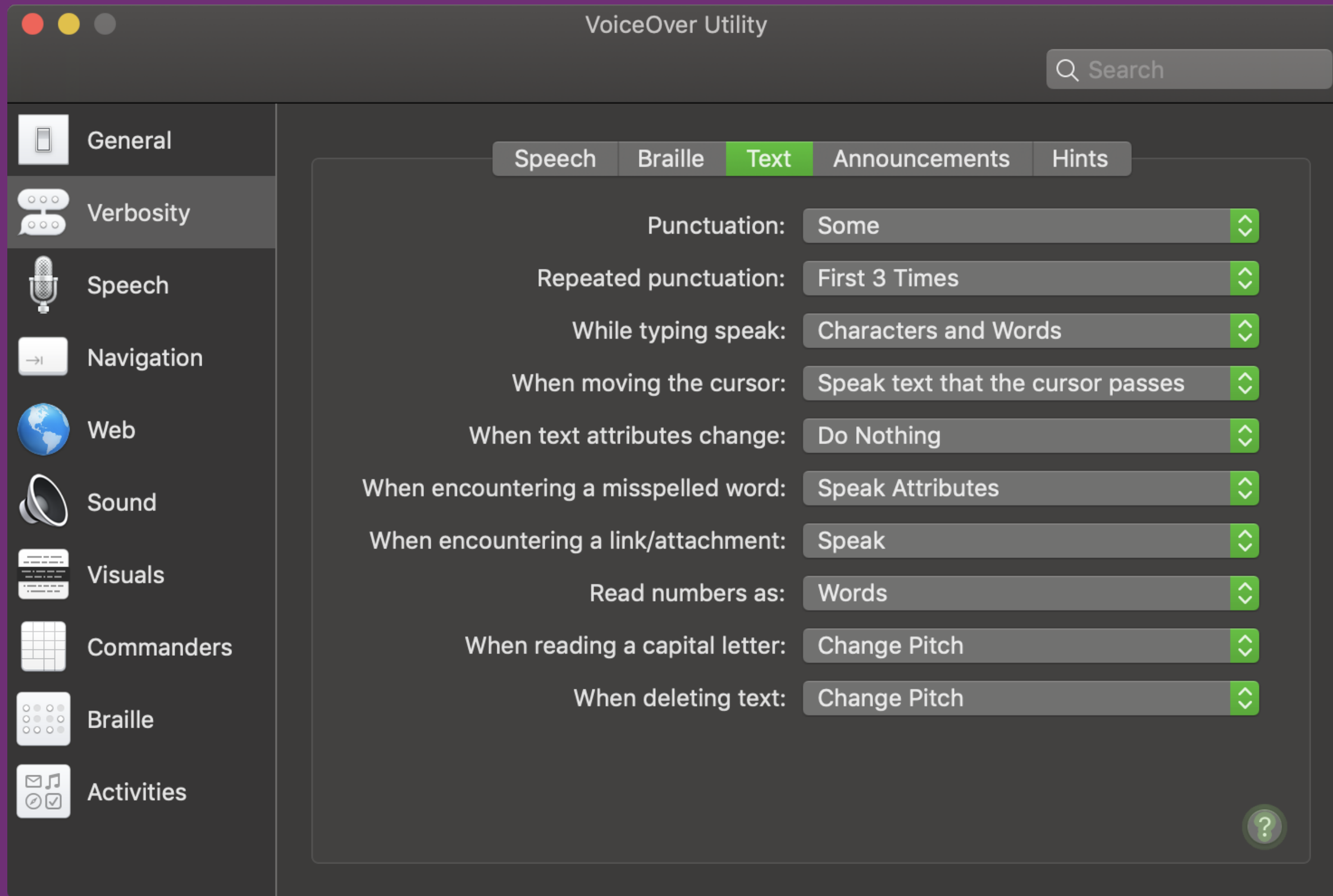
— James Craig, Apple, bugs.webkit.org

No!!



The same is true for screen readers:
They don't all need to produce the same output.





VoiceOver Utility

Search

General

Verbosity

Speech

Navigation

Web

Sound

Visuals

Commanders

Braille

Activities

Voices

Pronunciation

Text	Substitution	Application	Ignore Case
:(trown	All Apps	<input checked="" type="checkbox"/>
:)	smiley	All Apps	<input checked="" type="checkbox"/>
!	exclaim	All Apps	<input type="checkbox"/>
?	question	All Apps	<input type="checkbox"/>
"	quote	All Apps	<input type="checkbox"/>
(leftparen	All Apps	<input type="checkbox"/>
)	rightparen	All Apps	<input type="checkbox"/>
&	and	All Apps	<input type="checkbox"/>
<	less	All Apps	<input type="checkbox"/>
>	greater	All Apps	<input type="checkbox"/>
802.11b	8 oh 2 dot eleven b	All Apps	<input checked="" type="checkbox"/>
802.11g	8 oh 2 dot eleven g	All Apps	<input checked="" type="checkbox"/>
GIF	giff	All Apps	<input type="checkbox"/>
GUI	gooey	All Apps	<input type="checkbox"/>
qty	quantity	All Apps	<input checked="" type="checkbox"/>

+

-

?

121

There is **no control.**

ARIA can help,
but not in every situation.

Accessible Rich Internet Applications

Accessibility is **not** only Screen Readers

Most **non-screen reader** assistive technology does not work well with ARIA.



High Contrast Mode

I'm a real link | As am I

I'm a placeholder link (no href)

I'm an ARIA link made out of a div

I'm an ARIA link made out of a button

I'm a **paragraph of text** with an ARIA link within me. Where I be?

I'm a real link | As am I

I'm a placeholder link (no href)

I'm an ARIA link made out of a div

I'm an ARIA link made out of a button

I'm a paragraph of text with an ARIA link
within me. Where I be?

Normal Button

aria-disabled button

Actually Disabled Button

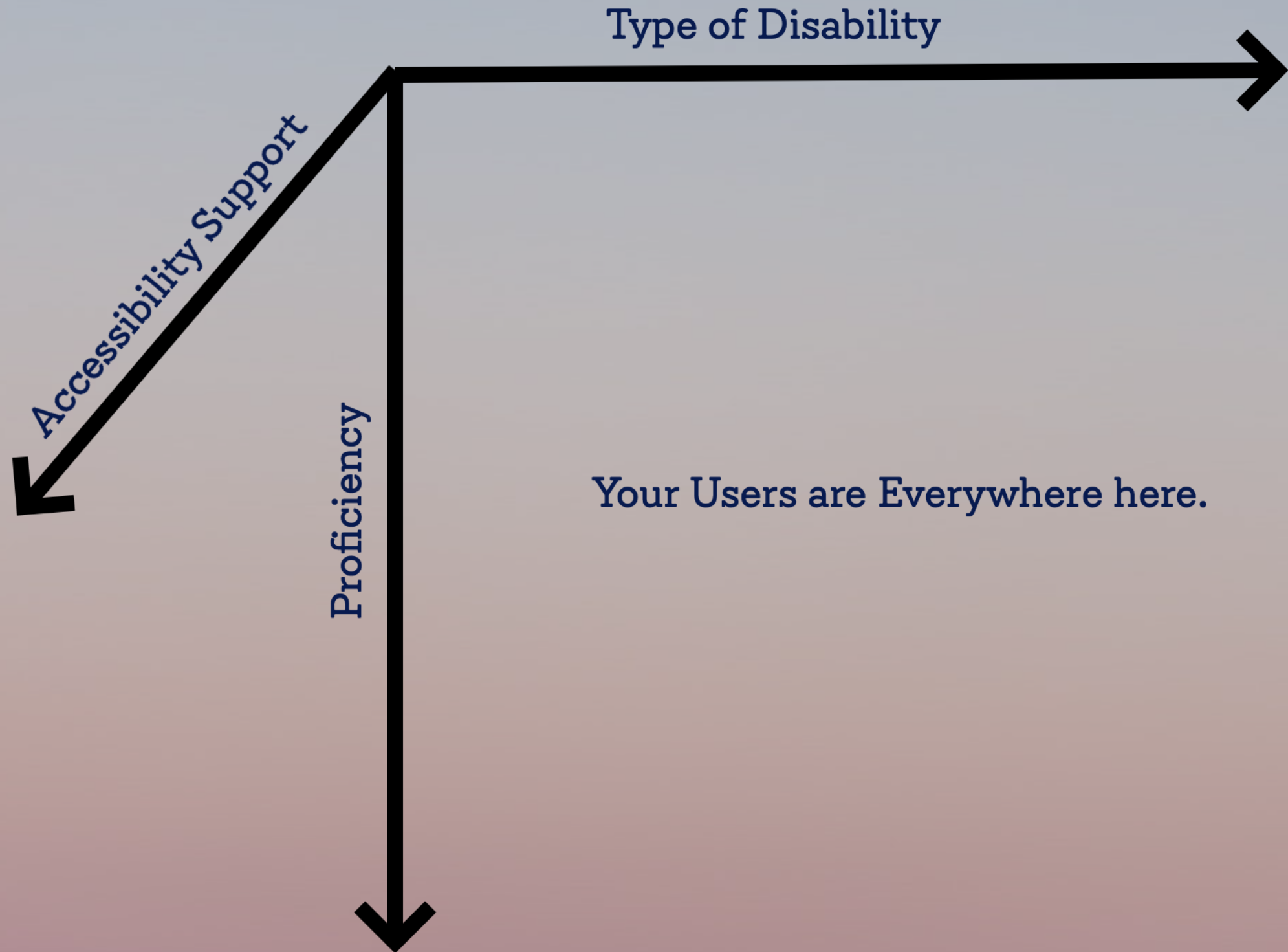
Difference of Tool Knowledge

Users often **don't know** what their computers can do for them.

Other users **hack** their assistive technology to work with inaccessible sites.

Some users **write CSS and JavaScript** to change websites to their needs.

User =
Disability Type ✕
Proficiency ✕
Accessibility Support



Test with Diverse Users

Give Users **Agency**

Allow use of assistive technology that
suits a particular **user's needs**.

Try not to **prescribe** how to use a component.

Use HTML to **describe** elements.

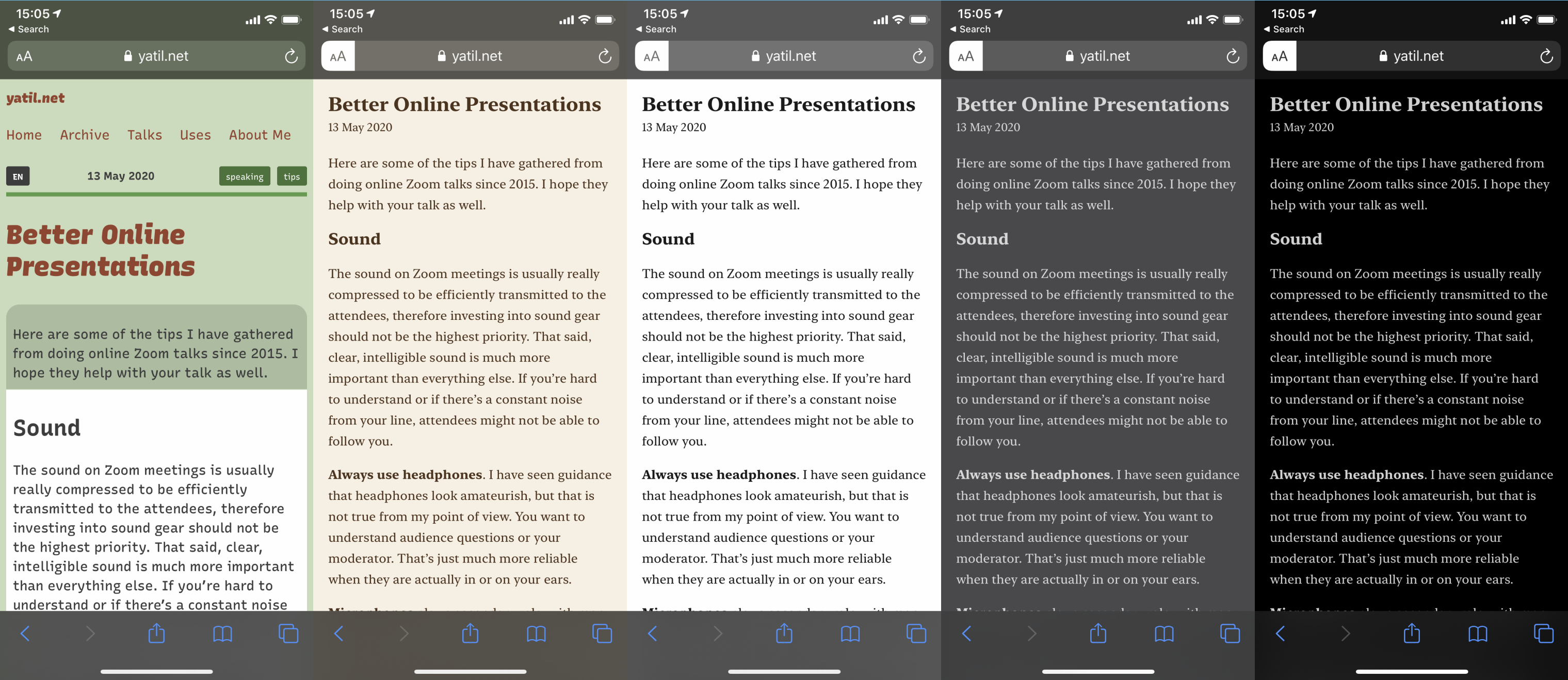
Don't expect **any** proficiency from users.

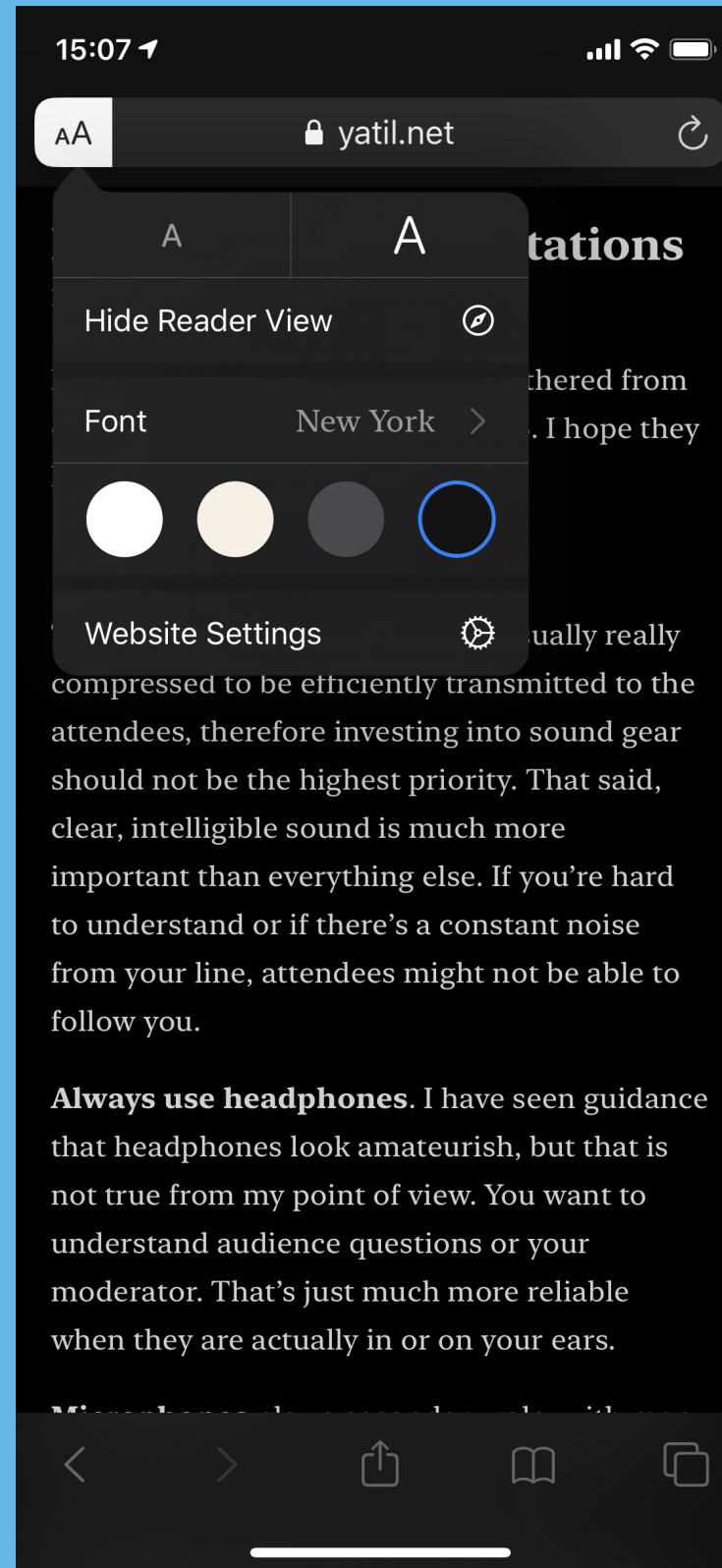
Don't break conventions!

Users get a lot more tools to use!



Reader Mode





Reader Mode

Native Support:

- Safari (since 2010, can set to default since 2015)
- Firefox (2015)
- Edge (2015)
- Chrome (soon????)

w3.org

New Tab

< >

https://www.w3.org/WAI/fundan

[Icons]

Aa [Icon] [Icon]

⏮ ⏹ ⏭

🐢 ————— 🦘

Voice: Default ▾

7-9 minutes

Web Accessibility

Page Contents

Accessibility in Context

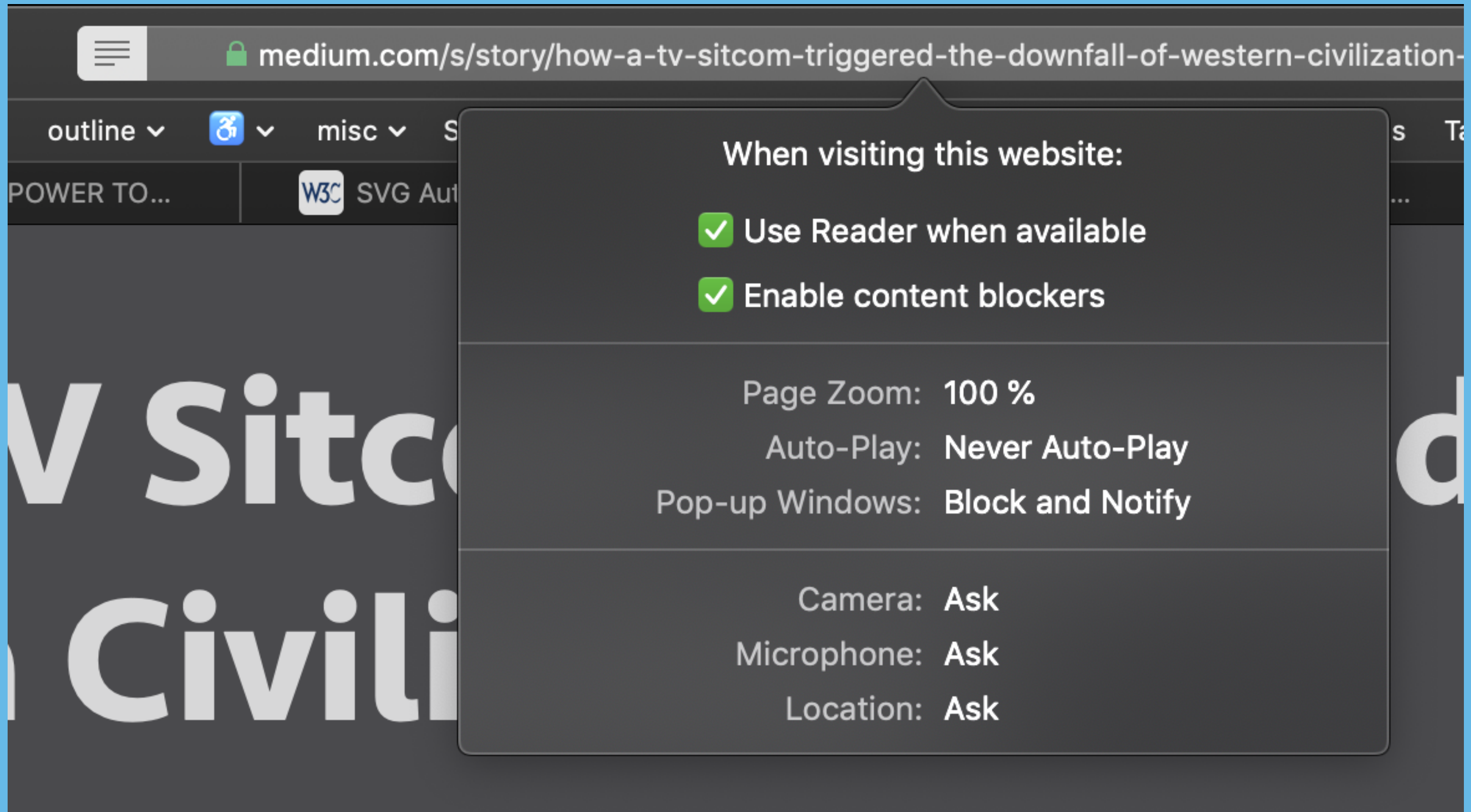
The power of the Web is in its universality.
Access by everyone regardless of disability is an essential aspect.

The Web is fundamentally designed to work for all people, whatever their hardware, software, language, location, or ability. When the Web meets this goal, it is accessible to people with a diverse range of hearing, movement, sight, and cognitive ability.

Thus the impact of disability is radically changed on the Web because the Web removes barriers to communication and interaction that many people face in the physical world. However, when websites, applications, technologies, or tools are badly designed, they can create barriers that exclude people from using the Web.

Accessibility is essential for developers and organizations that want to create high-quality websites and web tools, and not exclude people from using their products and services.

More Website Settings



When visiting this website:

- ☒ Use Reader when available
- ☒ Enable content blockers

Page Zoom: 100 %

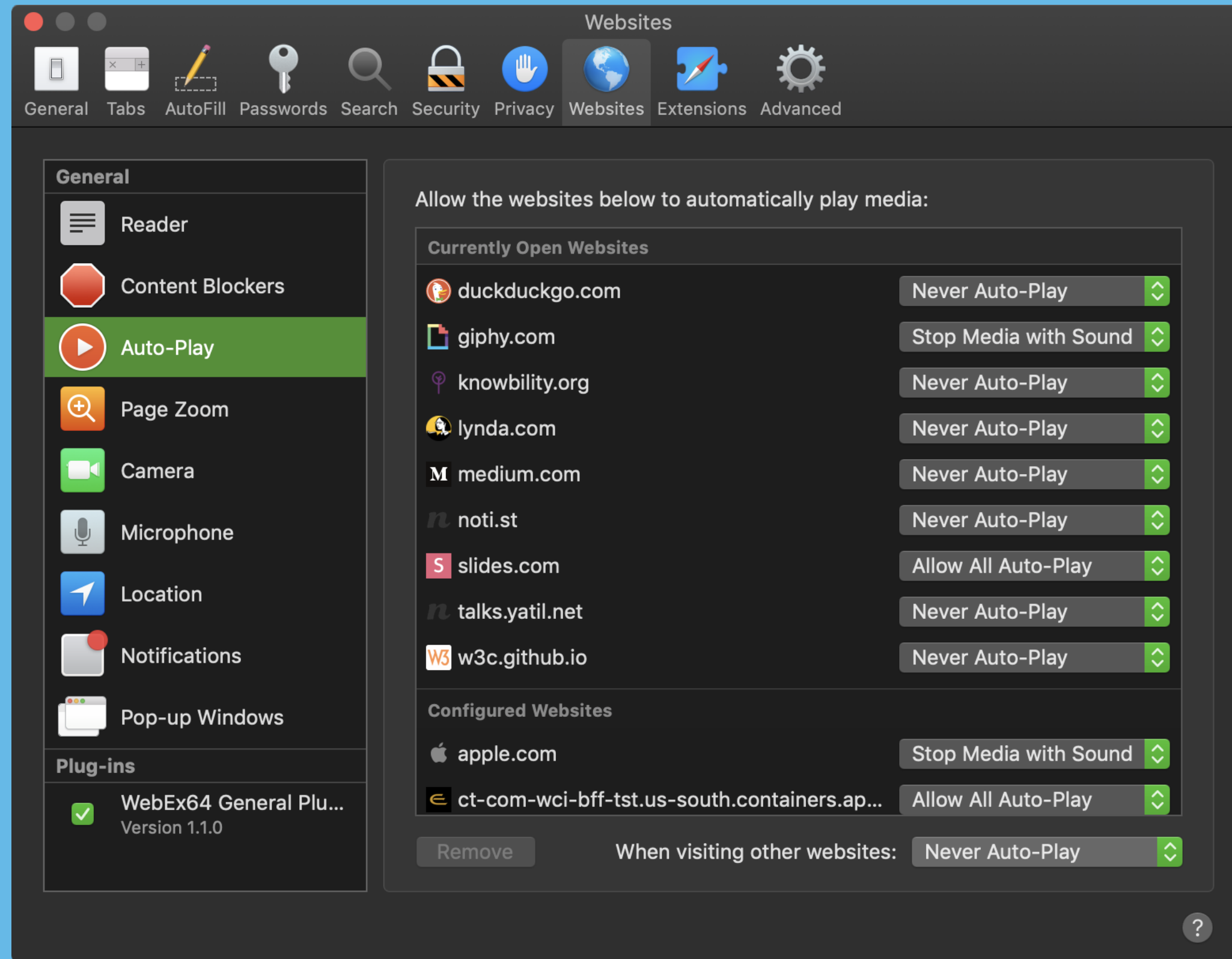
Auto-Play: Never Auto-Play

Pop-up Windows: Block and Notify

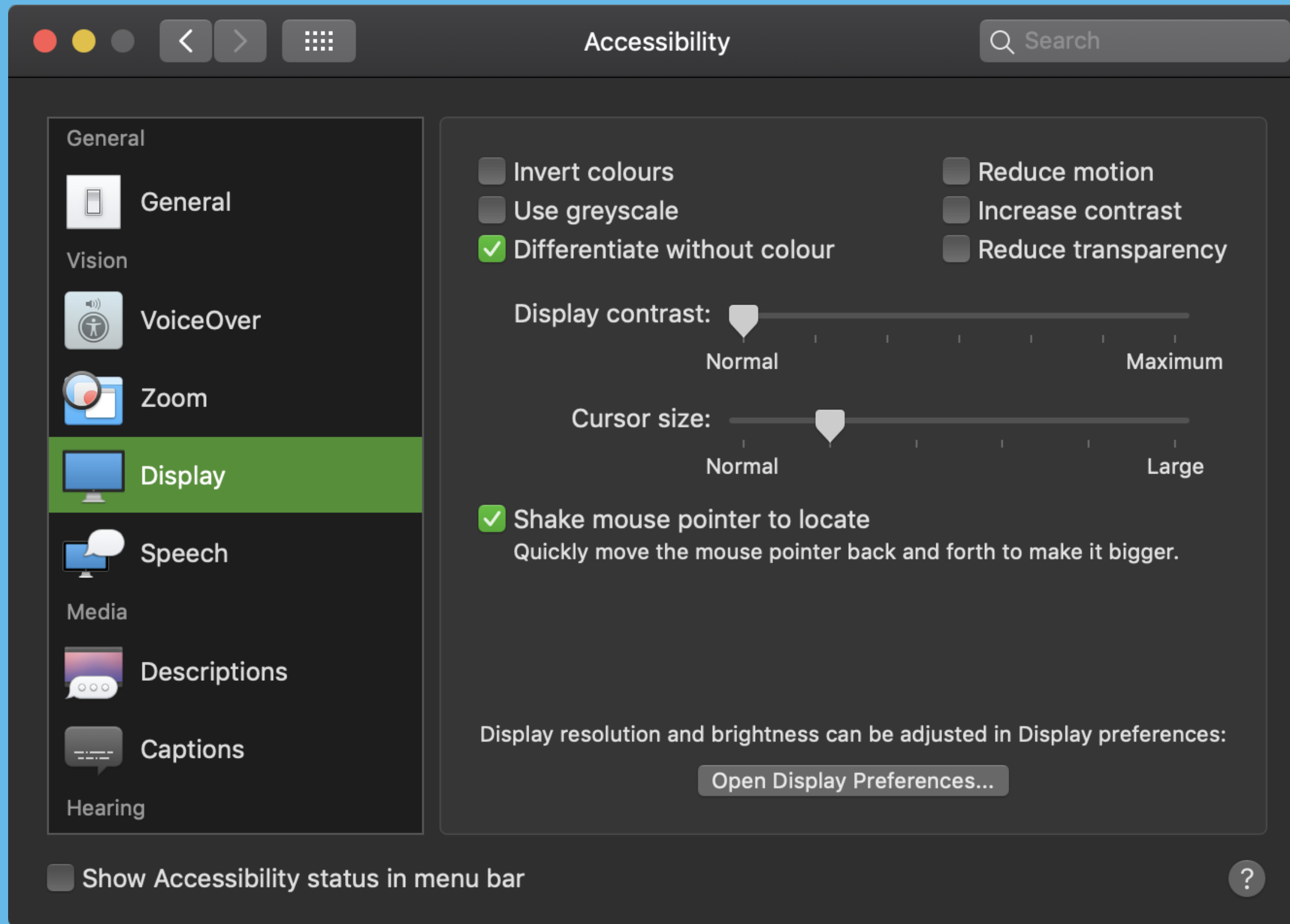
Camera: Ask

Microphone: Ask

Location: Ask



Leveraging Preferences in the Operating System



prefers-reduced-motion
Media Query

```
@media (prefers-reduced-motion: reduce) {  
  * {  
    transition: none !important;  
    animation: none !important;  
  }  
}
```




Respecting Reduced Motion



Or, better, progressively enhance:

```
@media (prefers-reduced-motion: no-preference) {  
  /* All animation code */  
}
```

Support

prefers-reduced-motion media query

CSS media query based on a user preference for preferring reduced motion (animation, etc).

IE	Edge	Firefox	Chrome	Safari	iOS Safari	Opera Mini	Chrome for Android	Android Browser	Samsung Internet
9	18	72	78	12	13.1			4.4	9.2
10	79	73	79	12.1	13.2			4.4.4	10.1
11	80	74	80	13	13.3	all	80	80	11.1
		75	81	TP					
✓	✗	Partial Support							
Global: 84.05% + 0% = 84.05%									

Data from caniuse.com | Embed from caniuse.bitsofco.de

12 March 2020

On Windows ... it's complicated

Short note on prefers-reduced-motion and puzzled (Windows) users

Patrick H. Lauke @ TPG Blog

prefers-color-scheme

Media Query

```
:root {
  --color: #333;
  --bgcolor: #eee;
}

@media (prefers-color-scheme: dark) {
  :root {
    --color: #eee;
    --bgcolor: #333;
  }
}

html {
  color: var(--color);
  background-color: var(--bgcolor);
}
```

**We⁴ also get a lot
more tools to use!**

⁴ Web Developers & Designers

Media Queries Level 5(?)

- `inverted-colors`
- `prefers-reduced-transparency`
- `prefers-contrast` (`no-preference/high/low`)
- `forced-colors` (`none/active`)

How to tackle **Inclusive Design**?

80% of Success
is Showing Up

— Woody Allen

This also applies to inclusive design thinking.

- Keep an eye out for people who might be negatively affected by a design decision.
- Integrate minoritized groups into your
 - stories
 - personas
 - QA process
 - design/develop/project teams

Cards for Humanity

How can you meet their needs?

Mike Blandford, 75
is very independent



🕒 View needs

🔄 Swap card

Deal new pair



**and is not very
confident when using a
computer**

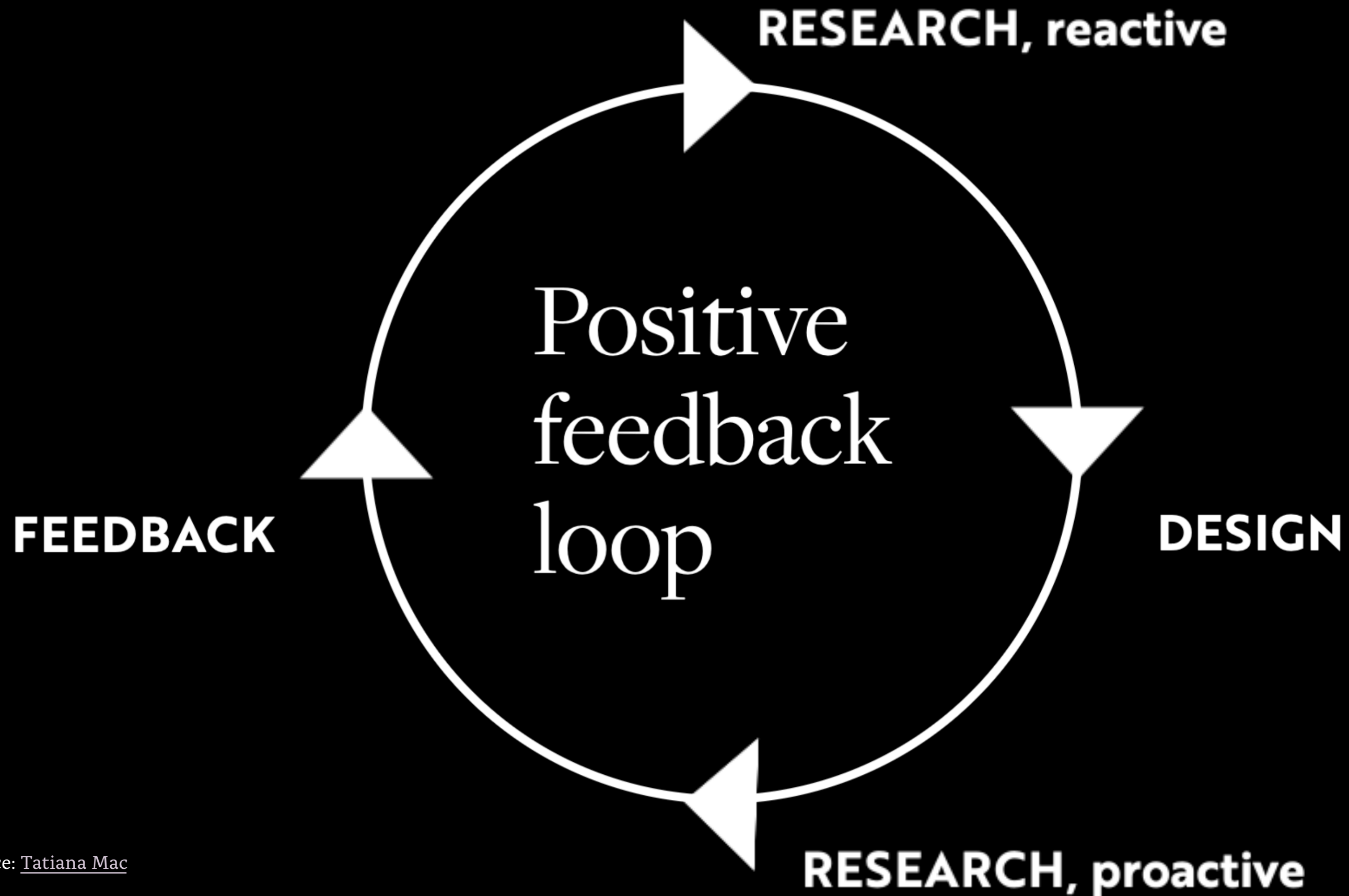
🕒 View needs

🔄 Swap card

Nothing about
us, without us.

— Disability Rights Motto

As long as **workplaces** are
not inclusive, their **products**
won't be truly inclusive.

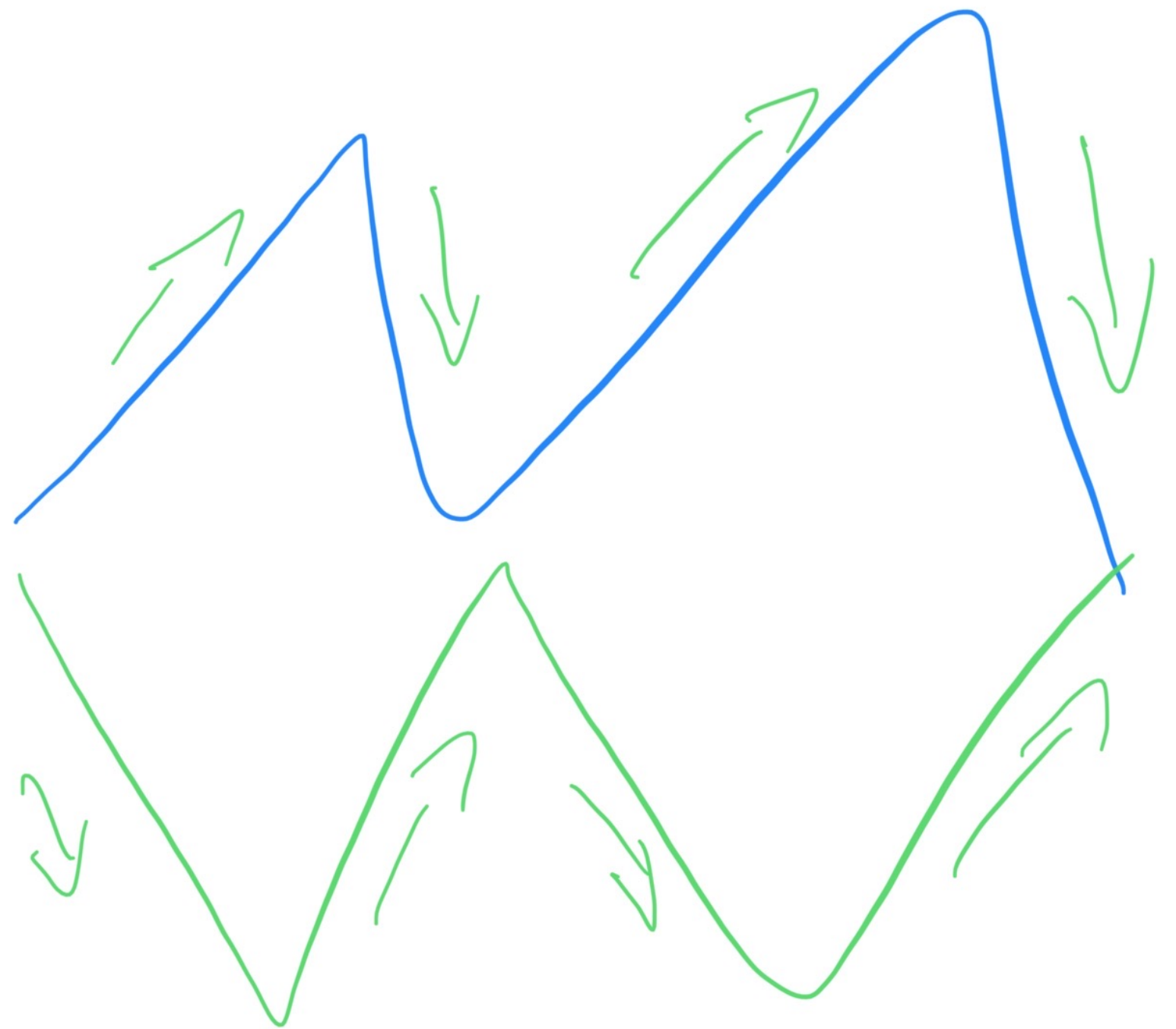


Question design decision as a habit

You **cannot** solve Inclusive Design in code alone.

Brainstorm the feature.

Brainstorm the
implementation.



Conclusion

- Do not make assumptions about users and the tools they use
- Prepare your content and design for different circumstances
- Embrace the uncertainty

Thank You!

Eric Eggert

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E-Mail: mail@yatil.net

Social: [@yatil](#)

Never be cruel, never be cowardly. And never ever eat pears! Remember – hate is always foolish... and love, is always wise. Always try, to be nice and never fail to be kind. [...] Laugh hard. Run fast. Be kind.

— 12th Doctor