



MAKING PROGRAMMING INCLUSIVE

CS279 Embedded EthiCS module

WHO AM I?

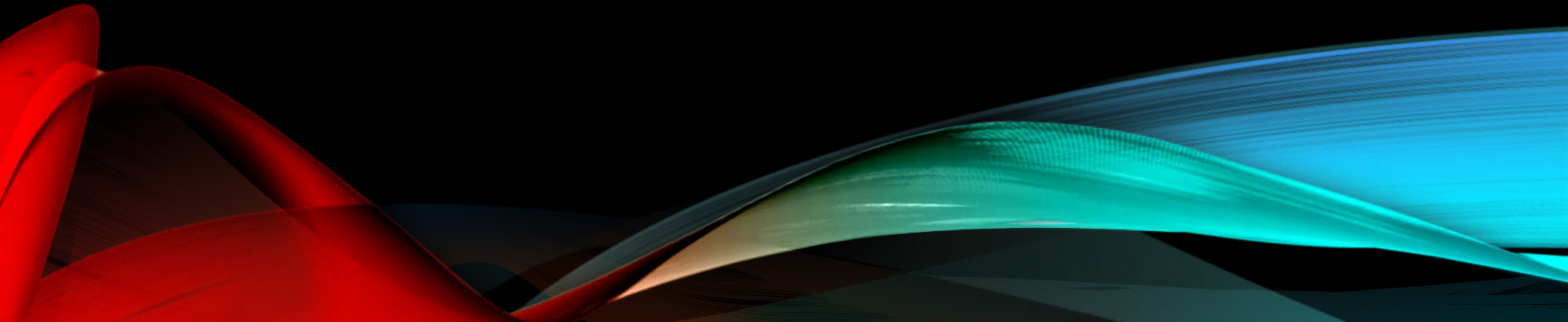
- Cat Wade, philosophy graduate student
- Contact: cmcdonaldwade@g.harvard.edu
- Office hours: by appointment!



ON THE AGENDA

- **WHAT** is inclusive design?
- **WHO** do we design inclusively for?
- **WHY** should we design inclusively? (1)
- **HOW** do we design inclusively?
- **WHY** should we design inclusively? (2)
- **HOW** do we design inclusively... inclusively?

WHAT IS 'INCLUSIVE DESIGN'?



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“Inclusive Design is a methodology, born out of digital environments, that enables and draws on the **full range of human diversity**. Most importantly, this means including and learning from people with a range of perspectives.”

Microsoft Design

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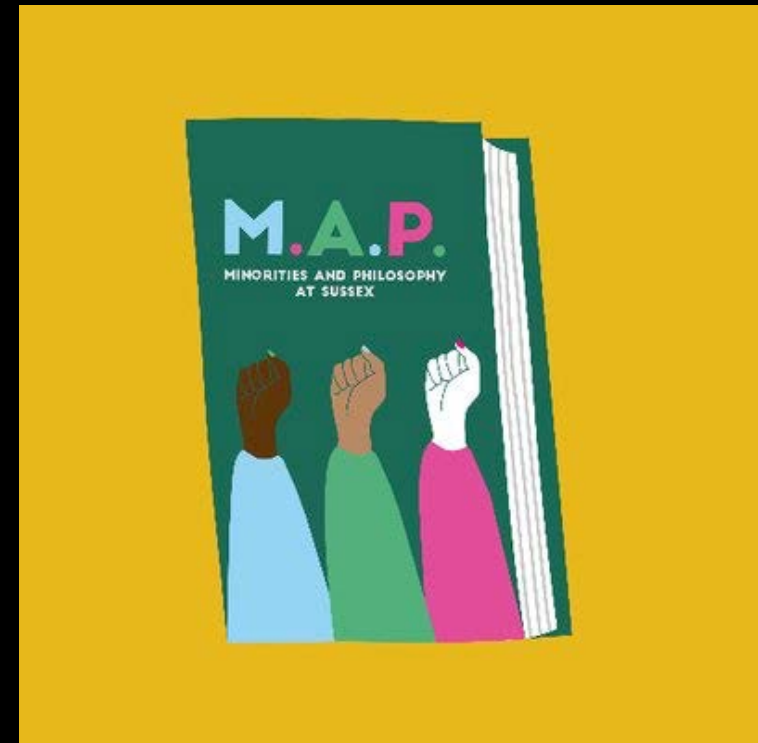
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Enables



Draws on



SPOILER

ALERT!

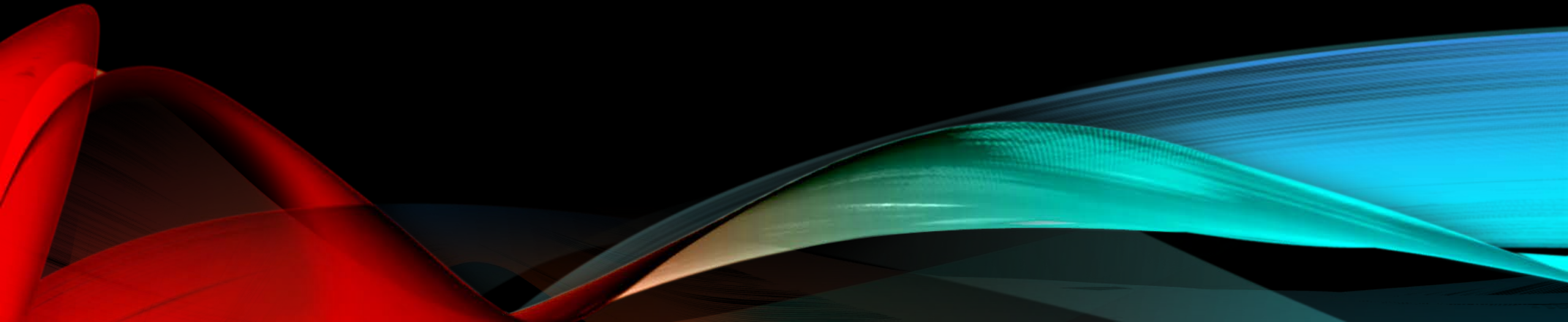
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WHO DO WE DESIGN INCLUSIVELY FOR
AND WITH?



WHO DO WE DESIGN INCLUSIVELY FOR AND WITH?



TWO MODELS OF DISABILITY

Medical Model

- The limitations facing the disabled are due to their physical or mental impairments
 - *"You can't see the film because your tourettes will be disruptive."*
- Disability as an abnormality, deficit or lacking
 - *"Being quadriplegic means you cannot walk, you are without the use of your limbs."*

Social Model

- The limitations of the disabled are due to a mismatch between their needs and the environment
 - *"You can't climb at our facility because we don't have the resources we need."*
- Disability is not an abnormality or something to be 'overcome', it's at most a difference between bodies and minds that is exacerbated by society and environments catering to the needs of some but not all bodies and minds

What are some pros and cons of each model?

WHO DEFINITION OF DISABILITY

“Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions.”

- Impairments
- Activity Limitations
- Participation Restrictions

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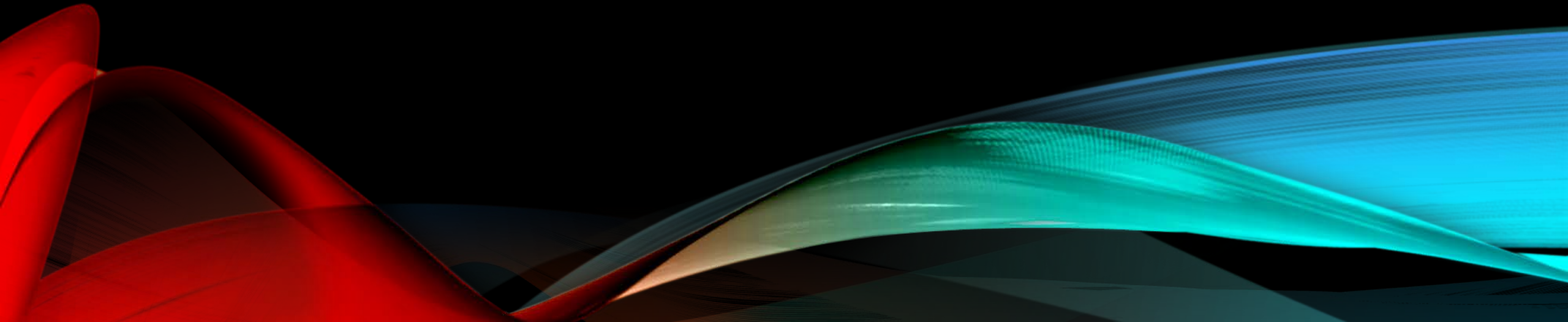


WHO DEFINITION OF DISABILITY

- “disability is a...dynamic interaction between health conditions and environmental and personal factors.”



WHY SHOULD WE DESIGN INCLUSIVELY? (1)





WHY SHOULD WE DESIGN INCLUSIVELY?

- ENABLE THOSE WITH DISABILITIES
- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES

WHY SHOULD WE DESIGN INCLUSIVELY?

- ENABLE THOSE WITH DISABILITIES
- In the US in 2016, 35.9% of people with disabilities ages 18-64 living in the community were employed. The employment percentage was more than double for people without disabilities, 76.6%.
- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES



WHY SHOULD WE DESIGN INCLUSIVELY?

- ENABLE THOSE WITH DISABILITIES
- In 2016, the median earnings of people with disabilities ages 16 and over in the US was \$22,047, about two-thirds of the median earnings of people without disabilities, \$32,479.
- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES



WHY SHOULD WE DESIGN INCLUSIVELY?

- ENABLE THOSE WITH DISABILITIES
- The poverty percentage gap, or the difference between the percentages of those with and without disabilities, has been between 7.4 and 8.3 percentage points over the past 8 years.
- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES



WHY SHOULD WE DESIGN INCLUSIVELY?

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WHY SHOULD WE DESIGN INCLUSIVELY?

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- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES
- Unique and differing experiences give rise to innovative thinking and novel perspectives



WHY SHOULD WE DESIGN INCLUSIVELY?

- ENABLE THOSE WITH DISABILITIES
- DRAW ON THE EXPERIENCE AND EXPERTISE OF THOSE WITH DISABILITIES
- Economic and productivity related reasons are often cited to hiring managers

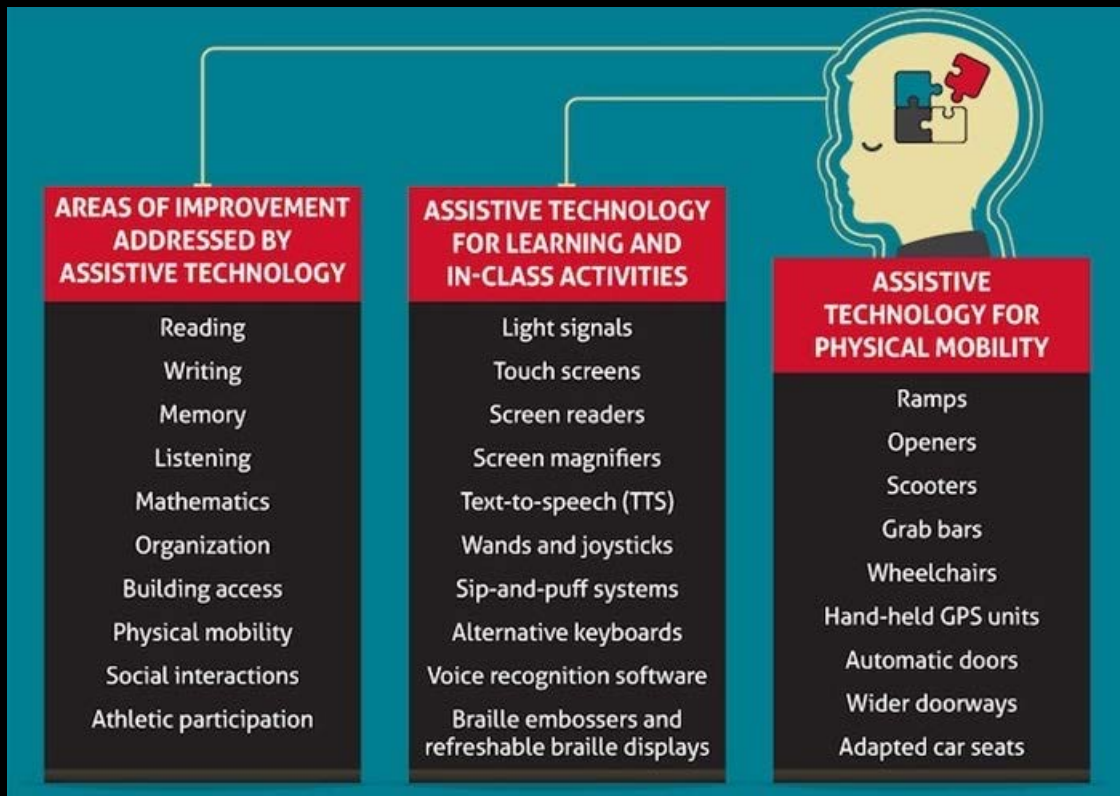


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- ENABLE THOSE WITH DISABILITIES
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- When designing so as to **enable** the disabled community... you must hear from, work with and employ people from the disabled community

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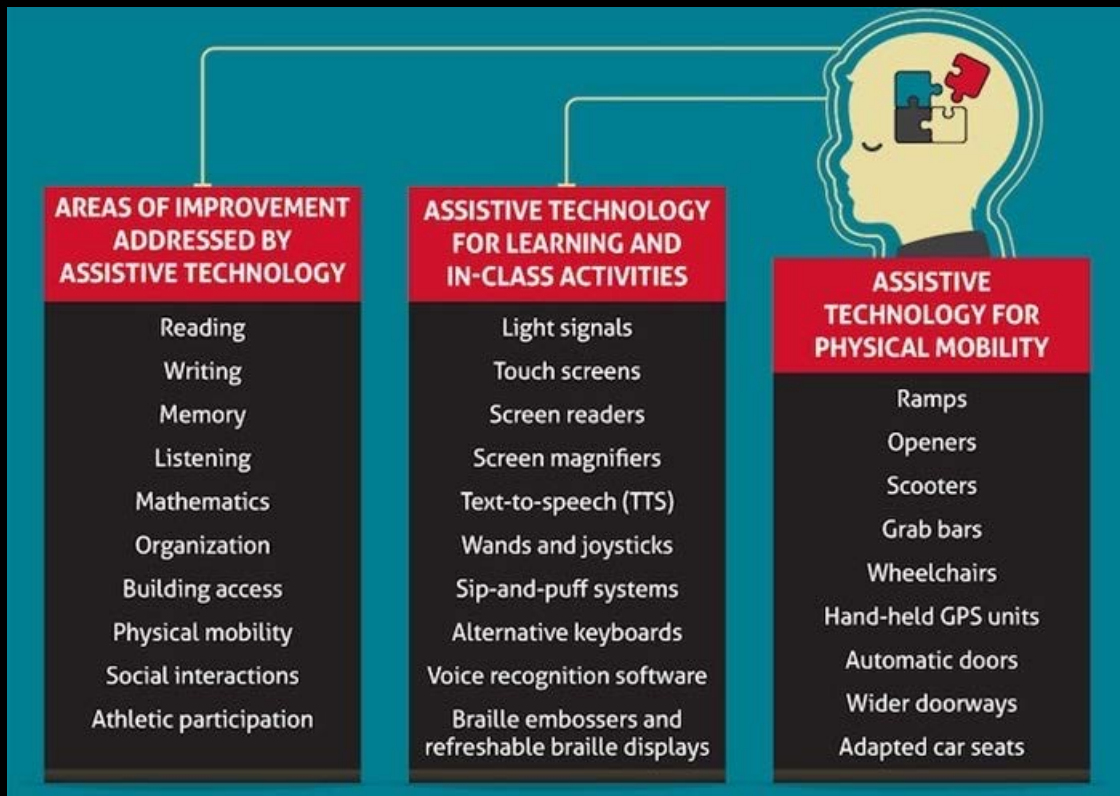
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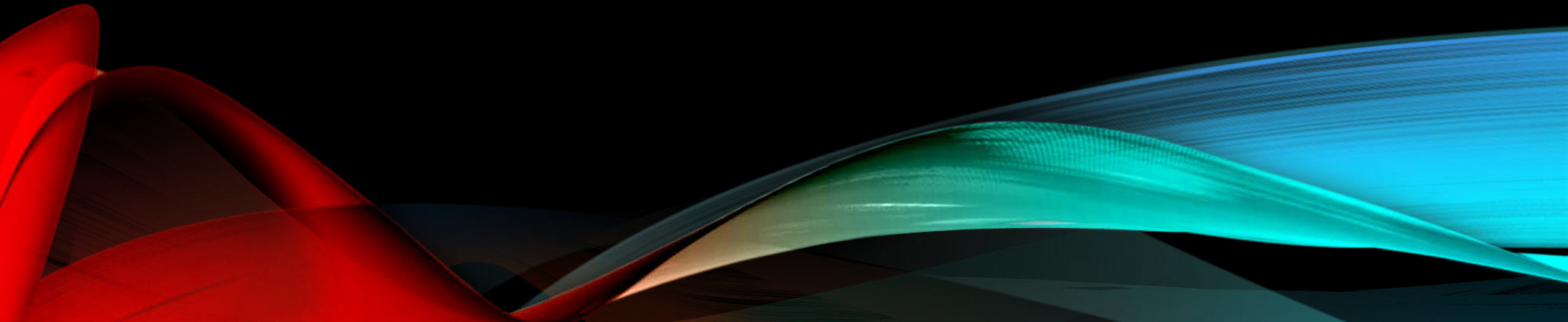
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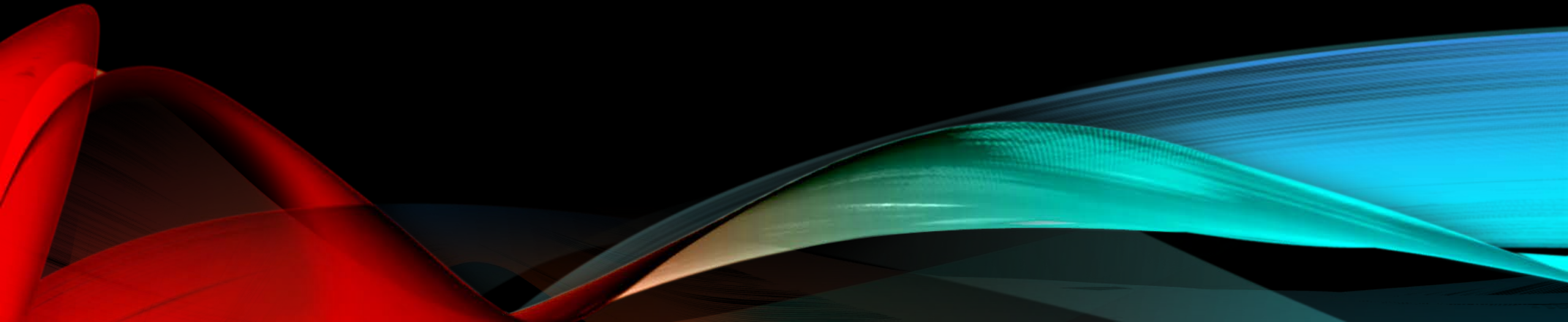
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HOW DO WE DESIGN INCLUSIVELY?



WHY SHOULD WE DESIGN INCLUSIVELY? (2)



ETHICAL PERSPECTIVES ON DESIGN THAT ENABLES

- A. **RIGHTS BASED (1):** individuals have **both** positive and negative rights, including the right to equality of opportunity
- B. **RIGHTS BASED (2):** individuals have only negative rights, including the right to be free from interference/theft/bodily harm.
- C. **HARMS-BASED:** we should strive to do things that will cause the least amount of harm/the most amount of pleasure possible

HARMS VS. RIGHTS

Positive Rights TO certain things



Negative rights FROM certain things



HARMS VS. RIGHTS

Positive Rights TO certain things



Negative rights FROM certain things



NON-NEGOTIABLE!

she
protec



she
attac



but most
importantly....

she let
u sit on
her bacc



HARMS VS. RIGHTS

Promoting goods!
Preventing harms!

IF you subscribe to a rights
account, then rights can trump
goods and harms

ETHICAL PERSPECTIVES ON DESIGN THAT ENABLES

RIGHTS BASED (1):

individuals have **both** positive and negative rights, including **the right to equality of opportunity**

RIGHTS BASED (2):

individuals have only negative rights, including **the right to be free from** interference/theft/bodily harm.

HARMS-BASED:

we should strive to do things that **will cause the least amount of harm/the most amount of pleasure possible**

Which of these perspectives would give us ethical reasons to design inclusively, in the sense of creating design that enables?

HOW DO WE DESIGN INCLUSIVELY... INCLUSIVELY?

- Answer: by drawing on the expertise of those with disabilities

Chieko Asakawa





HOW DO WE DESIGN INCLUSIVELY... INCLUSIVELY?

- Answer: by drawing on the expertise of those with disabilities

Chieko Asakawa

“Everyone has a different perspective and different experiences,” she says. “For me, my blindness has been an advantage for my research... It’s just different. And these differences have been very helpful. So I think diversity is the key to innovation.”



ETHICAL PERSPECTIVES ON DESIGNING INCLUSIVELY, INCLUSIVELY

PRESERVATION OF COMMUNITY AND CULTURE

- Deaf **community** and **culture** is **highly valuable**
- Without including them in design decisions and policies the risk of erasing deaf culture is greatly increased

STAYING NEUTRAL RE: MODELS OF DISABILITY

- Importantly – deafness can be too easily understood as a **deficit to be fixed** rather than a **difference to be celebrated**



CONCLUSION

1. Inclusive design is comprised of two things:
 - i. Designing products that enable
 - ii. Drawing on the experience and expertise of all people, but especially those who are marginalized and ESPECIALLY those for whom enabling design is intended to facilitate
2. Disability is understood in different ways, but a model that emphasizes the interaction between physical and mental differences and environmental mismatches is more sensitive to the complexity of disability
3. Inclusive design for disabled persons is supported by strong ethical reasons (as well as economic reasons)
 - i. Enabling design: 3 ethical perspectives all give us reasons to design (especially technology) that enables disabled people
 - ii. Drawing on experience and expertise: perspectives of the disabled are needed to challenge the 'medical model' of disability, and, crucially, to respect and maintain the culture of disabled communities

CONCLUSION

Thank you!

cmcdonaldwade@g.harvard.edu

SURVEY: “<http://bit.ly/f19cs279ethics>”

RESOURCES

- <https://www.microsoft.com/design/inclusive/>
- <https://plato.stanford.edu/entries/disability/#ModDis>
- <https://www.who.int/topics/disabilities/en/>
- https://disabilitycompendium.org/sites/default/files/user-uploads/2017_AnnualReport_2017_FINAL.pdf
- <https://elearningindustry.com/use-of-technology-in-special-education>
- <https://www.myhandicap.com/en/information-disability-chronical-illness/school-and-employment/employment/diversity-management-advantages-enterprise/>
- <https://thegroundtruthproject.org/one-programmer-used-disability-advantage/>