Computing Education
A Critical Time for a Critical Literacy

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I fell in love with computing early

My algebra teacher was to blame.

It was 1992; I was 12. He required us to buy TI-82 graphing calculators and showed us how to write (very boring) trigonometry formulas.

At the time, I was in love with my Game Boy and the game Tetris. The TI-82 looked much like a Game Boy, and so even though programming it seemed boring, I was intrigued by the device.
The magical PRGM button

One day, my classmate showed me a version of Tetris running on his TI-82. Using a link cable we mail ordered, he transferred it to my device.

Alas, it was too slow to be playable. I pressed the PRGM button my teacher had showed us, and began to read the thousands of lines of code to find out why.

I’ve been addicted to code ever since...

Amy J. Ko, Ph.D.
My path was stereotypical for an academic in computer science

- I had a personal computer
- I taught myself Pascal, C, and BASIC from print books.
- I had no teachers, but I was lucky to have many informal mentors: a Dutch exchange student who knew C and a 2-year college student who shared his homeworks from his college classes.

This is a story of privilege, as most people have no such access, even today.

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In other ways, my path was quite different

- I was a closeted **transgender girl**, using code to escape from gender dysphoria and bullying
- As a **biracial** Danish and Chinese teen, I didn’t fit in with the white or the Asian kids and was often isolated
- Others who liked to code **boasted** about their obscure technical knowledge, which I found annoying. I just liked sharing my procedural art with friends.

This is a story of **exclusion** and **oppression**.
For me, computing was never about algorithms and data, but expression and refuge.
The duality in my story mirrors the duality in computing in society

Computing is...
- Powerful
- Transformative
- Empowering
- Connecting

It’s reshaping markets, connecting us globally, unlocking knowledge for all.

Computing is...
- Destructive
- Divisive
- Exclusionary
- Oppressive

It is reinforcing racist, sexist, ableist, transphobic, and homophobic ideas in society.
It is a threat to humanity that a technology this powerful and perilous is understood by a less than 1% of us.
We need every person to understand...

That computing can transform our ability to analyze data

That *people* give computers their intelligence, not magic

That computers, just like people, can amplify *progress*

That computers, just like people, can amplify *oppression*
How do we ensure this critical literacy?
We need **computing educators** that can inspire youth to learn it and use it in constructive, just, and mindful ways.

They need resources, time, support, and respect to prepare future generations to use computing in ways that help us all.

*Without teachers, we have no literacy*

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How do we ensure this critical literacy?
We need teacher education programs that prepare inspiring, skilled computing educators.

These programs need faculty, resources, respect, and integration with other subject areas such as math, science, social studies, and humanities.

Universities need to prepare teachers
How do we ensure this critical literacy?

We need computing education research to inform those programs and these educators about what works and why.

This research needs funding, doctoral students, and recognition in both CS and education disciplines.
How do we ensure this critical literacy?
And we need centers like this one that catalyze, amplify, and accelerate this research, shaping how future generations will understand the powers and perils of computing.

These centers need resources, leadership, and support, like this inauguration.

Claus receives the 2020 Education prize.

Amy J. Ko, Ph.D.
Situating this center

Computing education research is a global endeavor, with hundreds of scholars across North America, Europe, Australasia, Asia, and even Africa.

However, few universities have any faculty with such expertise, and those that do only have one.

IT University of Copenhagen has the opportunity to change this status quo, shaping computing education not only in Denmark, but across the world.
Together, we can investigate some of the most pressing questions about computing literacy
How can we connect computing to the lives of youth?
How can we help everyone understand the risks and benefits of computing to society?
How can we educate engineers to resist creating unjust software?
If we can answer these questions, we will create a world in which computation empowers and respects all of us.
Congratulations to IT University of Copenhagen, and held og lykke!