

The Next Ten Years: Designing for Equity & Inclusion

CS Graduate Seminar
Oct. 9, 2015
Deborah Tatar

- Professor of **Computer Science** and by courtesy **Psychology**
- Member, **Program for Women and Gender Studies**
- Member, **Center for Human Computer Interaction**
- Member, **Program for Peace Studies**
- Fellow, **Institute for Creativity, the Arts, and Technology**

Some things I've done before

- Logo Lab (MIT)
- Educational Software (Wendy Mackay at DEC)
- Textbook on LISP programming language
- PhD: Interpersonal Attention and Pragmatics of Communication (Stanford)
- Colab Project (Xerox PARC, Lucy Suchman)
- Classroom based educational technology research, (SRI International)
- *And lots of other stuff*

Current interests

- K-12 Education and Technology
- Understanding and designing for the influence of technological systems on the dynamics of how we see ourselves and others

- This talk is important for all of you.
- I am looking for the few of you that want to work on this.
- I am teaching a 6000-level seminar this spring on **Designing to Change Power and Authority.**

What is our relationship
to computing?

What should it be in the
future?

The world of computing

The world of computing

*has had a lot of
utopian thinking.*

proponent of the development and use of computers and **computer networks** to help cope with the world's increasingly urgent and complex problems. Engelbart embedded a set of organizing principles in his lab, which he termed "bootstrapping". His belief was that when human systems and tool systems were aligned, such that workers spent time "improving their tools for improving their tools" it would lead to an accelerating rate of progress.



Creating a brilliant world

one project, team, or organization at a time

of **human-computer interaction**, particularly while at his **Augmentation Research Center Lab** in **SRI International**, resulting in the invention of the **computer mouse**, and the development of **hypertext**, **networked computers**, and **precursors to graphical user interfaces**. These were demonstrated at **The Mother of All Demos** in 1968. **Engelbart's Law**, the observation that the intrinsic rate of human performance is exponential, is named after him.

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Utopia Project participatory design

The project came to focus on "design-by-doing", like prototypes, mock-ups, and organisational games - leading the graphic workers to put forward wishes in a concrete way and inquiry about the system; this by actually doing page making and picture processing work in the simulated future environment.

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Object-oriented programming [\[edit \]](#)

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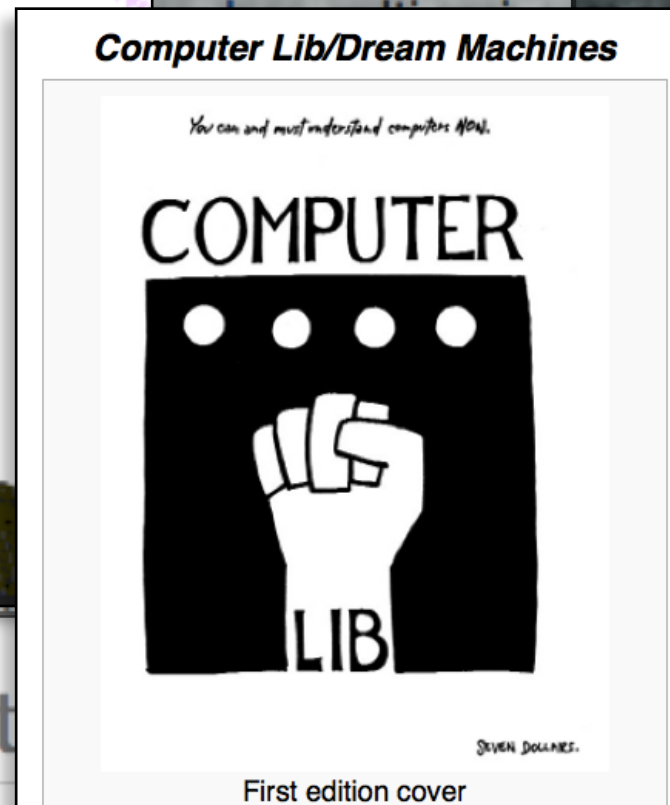
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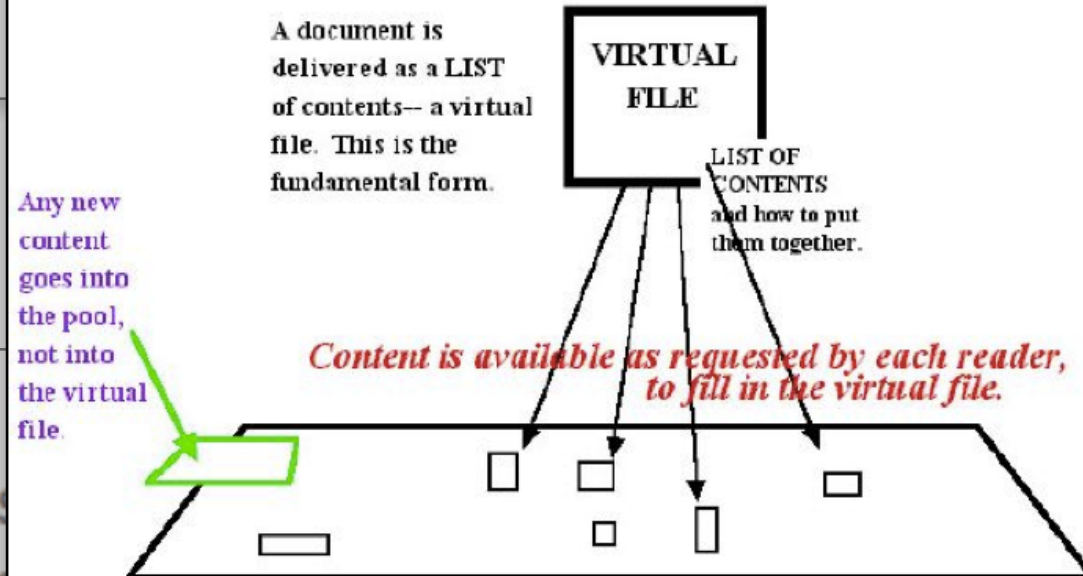
[edit]

Object-oriented

AN AUTHOR-BASED, LITERARY AND CULTURAL DESIGN

The Xanadu Document Model

-- built on the assumption of perpetual change and re-use



AVAILABLE CONTENTS

-- an ever-growing addressable pool, or indexable carpet

Utopia Project

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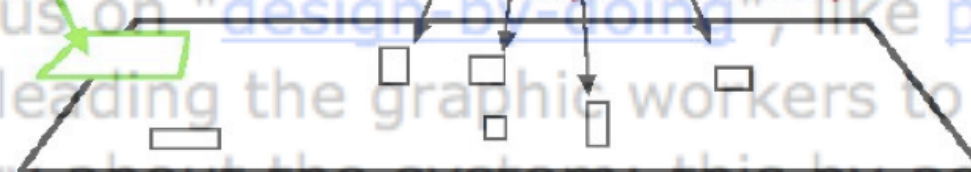
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VIRTUAL FILE

LIST OF CONTENTS and how to put them together.

Any new content goes into the pool, not into the virtual file

Content is available as requested by each reader, to fill in the virtual file.



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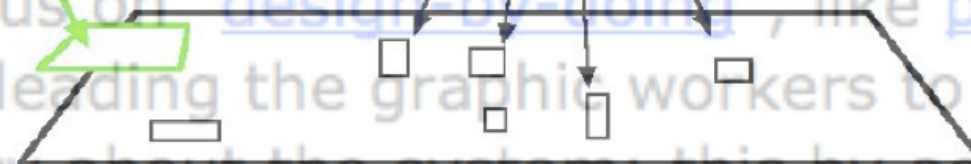
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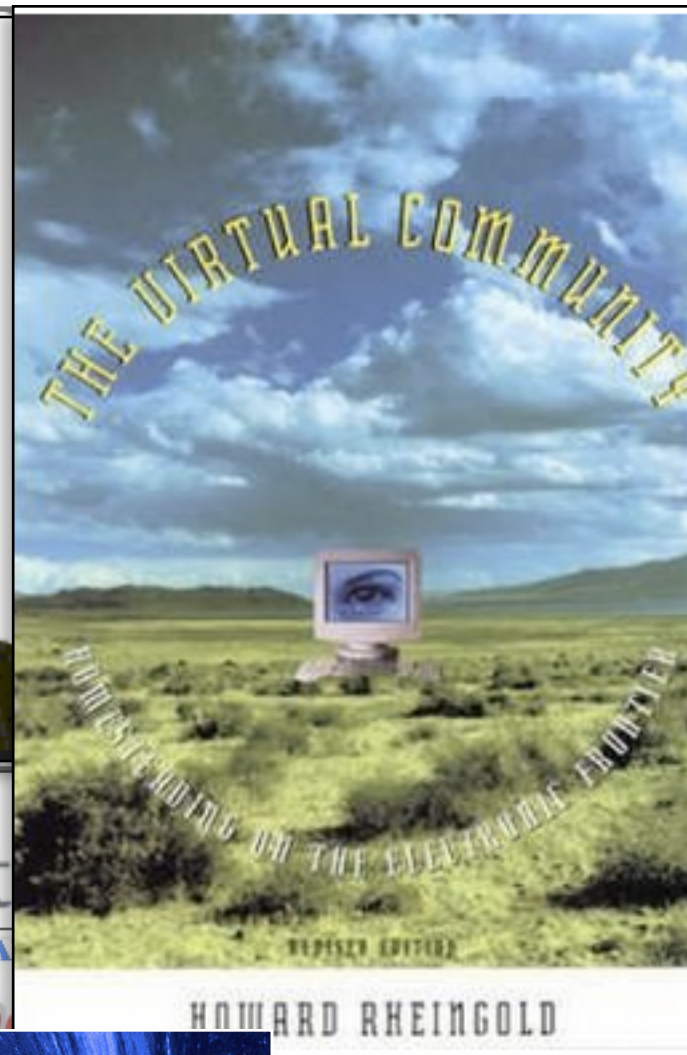
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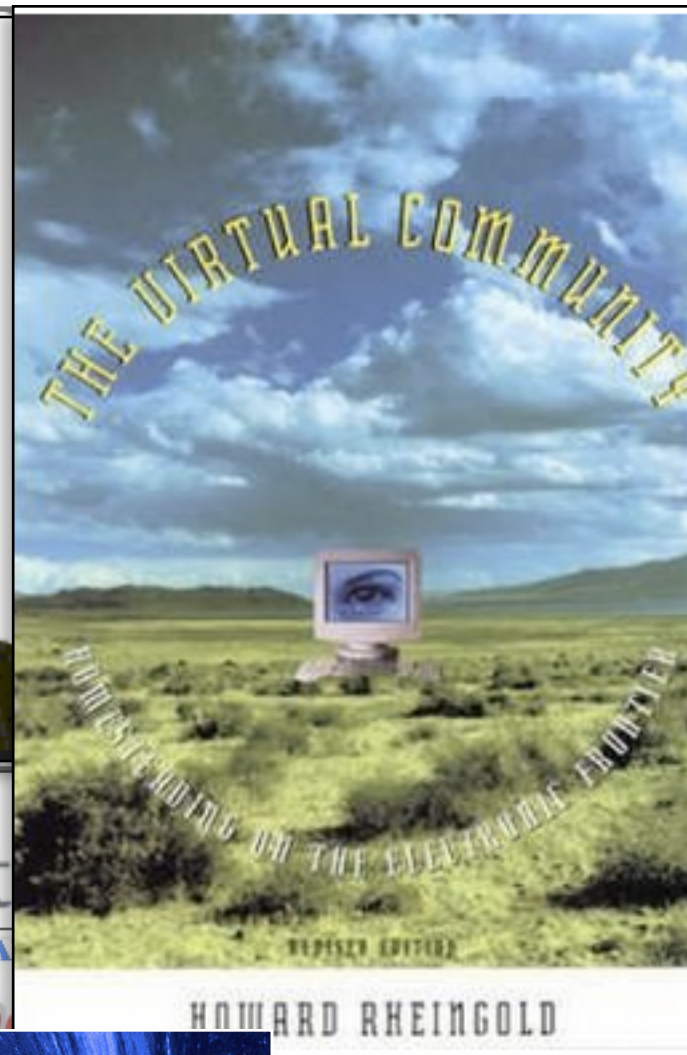


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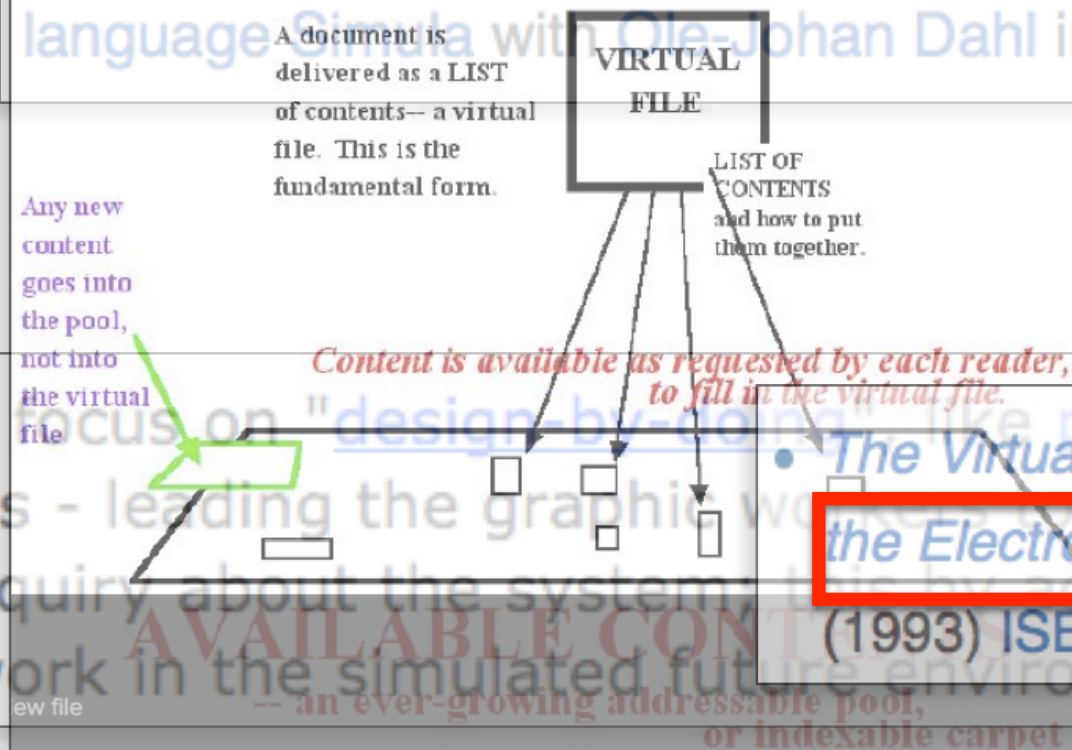
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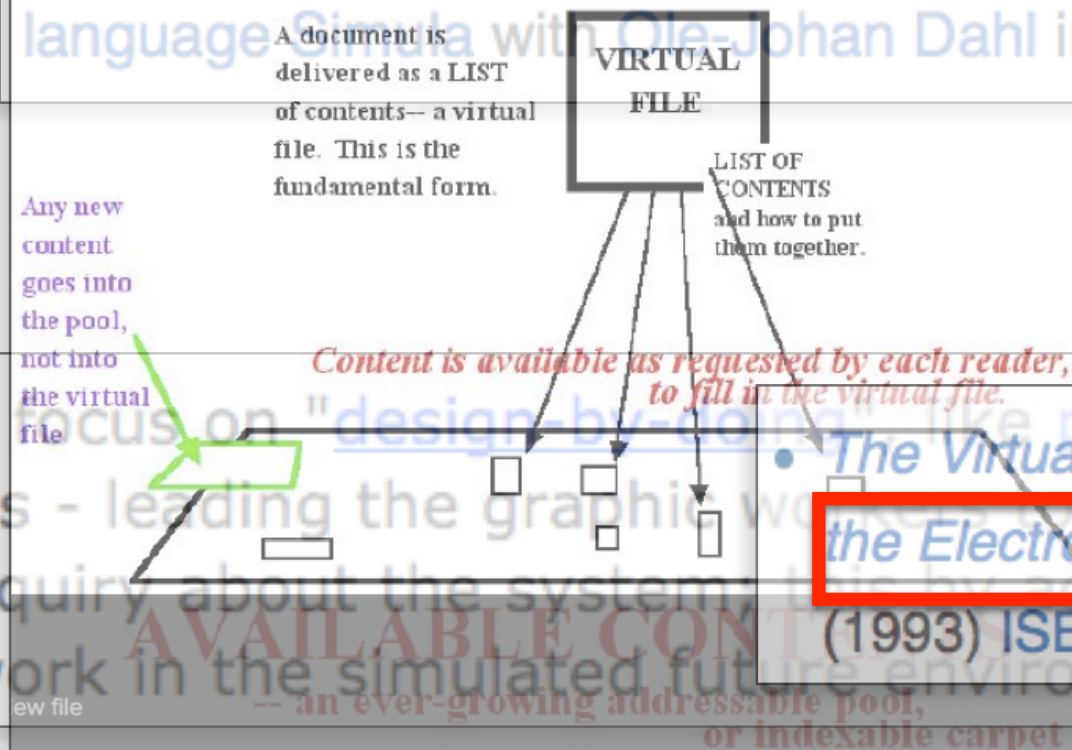
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Computational Utopias

Computational Utopias

- Many of us came into computing because we hoped to improve the world.
- We were reassured:
 - “***The internet promotes democracy!***” Howard Rheingold 1994
 - and by “democracy”, Americans commonly mean a raft of concepts of good: including *equity, inclusion, opportunity, participation, tolerance, and the rule of law.*
- ***Nice!***

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virtually ALL of its
course materials online
for free. You can take
hundreds of college
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free, in your own time.



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(Note: not students in an MIT class,
but “the new middle class in Africa”)

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Mike Chorost: Cyborg

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Figure 4. Playing with memory blocks to build a story and keep it in the Memory Jar

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Technology-Mediated Parent-Child Intimacy: Designing for Ecuadorean Families Separated by Migration

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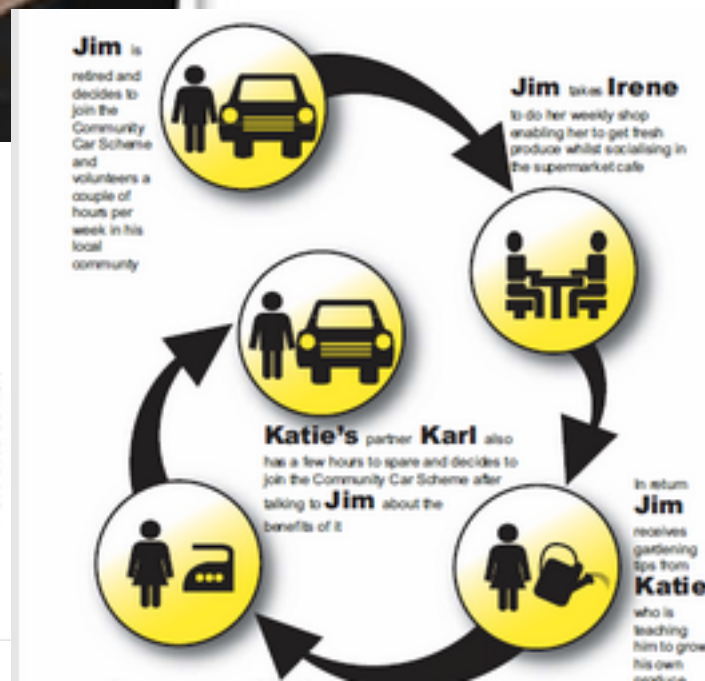
Mike Chorost: Cyborg



Figure 4. Playing with memory blocks to build a story and keep it in the Memory Jar



THE
CAMPUS
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Two current senior HCI Capstone Projects

Computational Utopias

Certainly, the internet can promote democracy and computing leads to all sorts of good things, but is this *inevitable*?

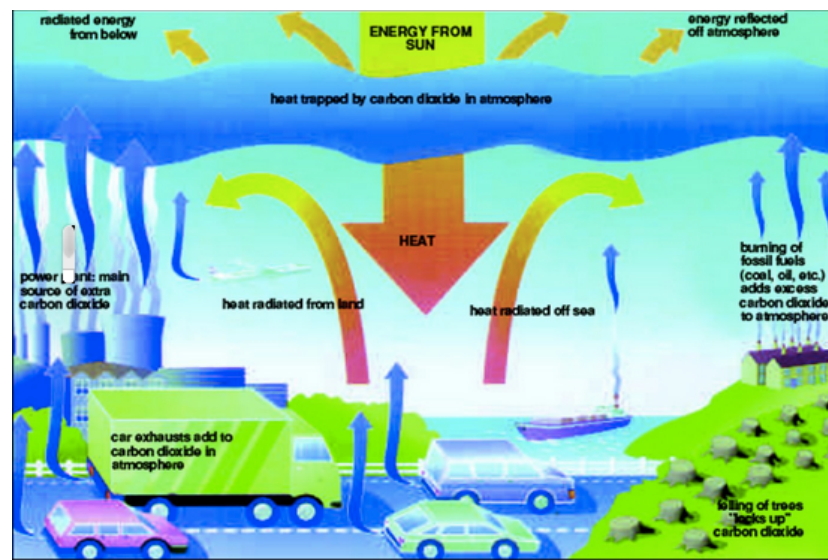
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*“The Enlightenment philosophers who insisted that the world could be improved were right. Voltaire was one of them. **The mistake was to think that, once improved, it couldn’t get worse again.** Voltaire’s point was not that optimism about mankind’s fate is false. It was that, in the face of a Heaven known to be decidedly unbenevolent, it takes unrelenting, thankless, and mostly ill-rewarded work to cultivate happiness here on earth. ... That was the lesson Dr. Pangloss and his students had yet to learn.”*

Gopnik, A. (Sept. 21, 2015) “Blood and Soil: A historian returns to the Holocaust.” *New Yorker*.

Computer Science is like engine design.....

We NOW (mostly) think that car design includes environmental impact.



When we think about the design of our computing systems... we also need to think about their undesirable consequences

and, NOW, would be a good time.

What are some
undesirable
consequences?

What are some
undesirable
consequences?

Inequity in Information
and Control

To understand the consequences of cars, we have to look at the systems in which they are embedded.

To understand the consequences of computers, we have to look at the systems in which they embedded.

Human Systems

- Really complicated!
- An example
- Two (related) theories

Amartya Sen



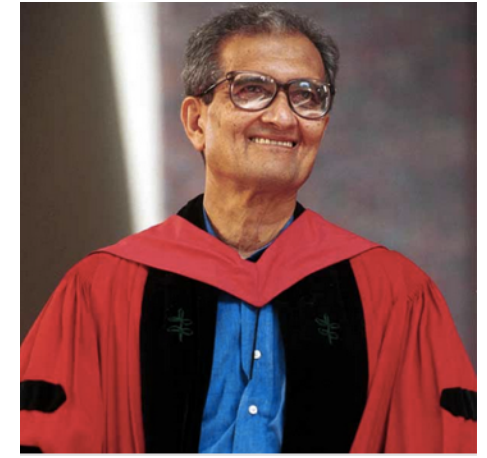
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Identity and Violence:

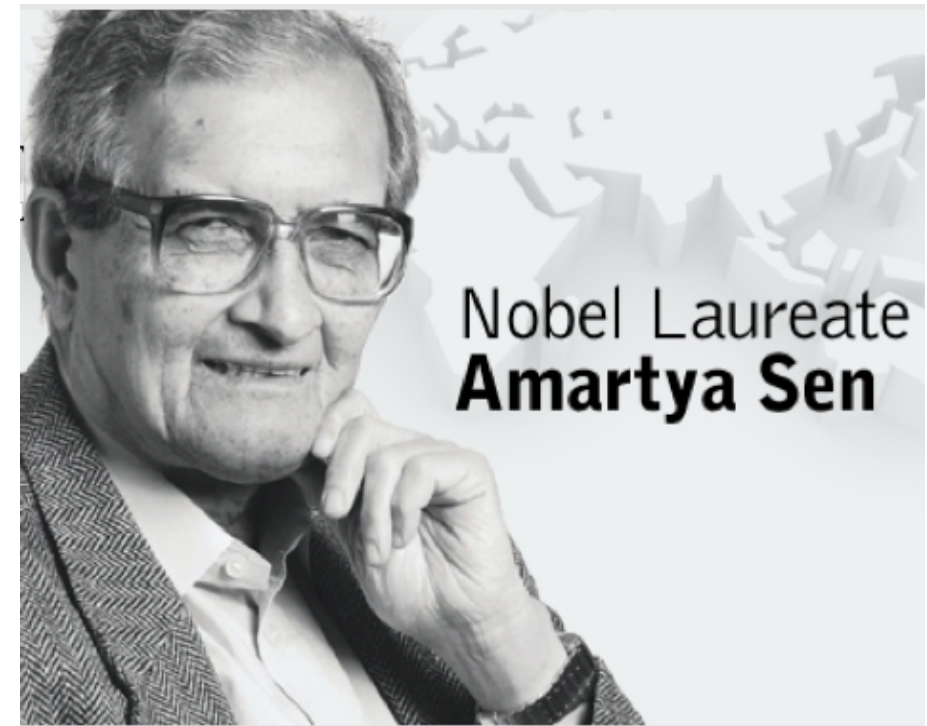
- Central to human life are the responsibilities of choice and reasoning.
- Multiple identities lead to choice.
- Single identities lead to misperception of the target, insistence on singular qualities, and the illusion of lack of choice.
- Confinement to single identities leads to resentment and societal violence.
- **Classification is cheap but identity is not.**

Amartya Sen



Identity and Violence:

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*What does this have to
do with the design of
computer systems?*

Classification is cheap but identity is not

What are you?

☒ African-American

☒ Asian

☒ Hispanic

☒ Native American

☒ Pacific Islander

☒ White

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So, if I am from
the middle east
where do I fit?

Classification is cheap but identity is not

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So, if I am from
the middle east
where do I fit?

So, if I am from India
as compared to China
where do I fit?

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So, if I am from
the middle east
where do I fit?

So, if I am from India
as compared to China
where do I fit?

What if I never fit
anywhere?

Classification is cheap but identity is not

- But this categorization seems so small.
- Can't we just fix it—*after all Facebook just enlarged its gender classifications?*
- And people do this kind of categorization without computers.
- ***So what?***

What are some undesirable consequences?

- One kind: the consolidation and rigidity of power in the system
- We might call this: *Human Malleability & Machine Intransigence*

As computer scientists we like
clean categories and utilizing
the power of the machine.

Undergraduates asked to design learning games are astonished and repelled that a computer-based collaborative crossword puzzle game would fail to tell the players who should go next. **“But the computer can tell you!”** Further, when asked whether strict alternation of turns is important, they are puzzled. One speaks up, **“It’s not fair if people decide who goes next!”** The others chime in with agreement. *The brute fact of the computer’s ability is prioritized over the ability of the people.*

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When asked what is most important about a game, undergraduates say, **“To win.”** When asked whether that is always the most important thing, they reassert this. But when asked how they would **run a footrace with a four-year-old, their view of games and playing changes radically.** Suddenly fun is associated with process, with deliberately not winning. *The ability to shape the interaction, to have social agency, is important but experienced as remote.*

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When cs undergraduates are asked, “If you were to pretend that the computer was a person, what kind of person would it be? What kind of a personality would it have?”, some reply that the computer is **rude and domineering**, but one woman puts her arms around her laptop open on the desk and says, **“I love my computer. It always does what I want it to do.”** *The computer’s compliance is seductive and its shallowness often invisible.*

Human Malleability & Machine Intransigence

But this kind of consolidation and rigidity matter
because

of what ***we*** are like and

what ***computers*** are like.

Part I

- **We treat computers like people.**
(in some sense). Nass & Reeves
- ... the possibility of treating computers like people is what gives computers **their power.** *We can use our notions of interactivity because computers are:*
 - **responsive, linguistic, & opaque.**
Suchman

Part II

Our vision of ourselves is shaped by those
with whom we interact.

Cooley, 1904: *Looking Glass Self*
Suchman, 2007: *Human Machine Reconfigurations*

Part III

- The behavior of most computers most of the time is dominating---**bullying**---even sociopathic.
- At many levels
- We interact with computers more than people.

So, we come to see
ourselves as passive
recipients, defined by the
“gaze” of the computer.

Now consider

Most People's Interactions with Computers are Increasingly Confined to a Few Venues

- “While in **2001**, the top 10 websites accounted for **31 percent of all page views** in America, by **2010** the top 10 accounted for **75 percent**.”
- Google and Facebook are now the first stops for many Americans seeking news — while Internet traffic to much of the nation's newspapers, network television and other news gathering agencies has fallen well below 50 percent of all traffic. Meanwhile,
- **Amazon is now the first stop for almost a third of all American consumers seeking to buy anything.**”

Robert Reich, NYT's, Sept. 18, 2015:

- Users must accept or reject computer systems as a totality.
- And we have no realistic choice about using many systems.
 - Note how VT just moved all list-servs to Google....

Preliminary list of high level principles

- develop ways to **talk back, correct & modify**
- develop ways to **assert ourselves, our boundaries, and our identities in our own terms**
- insist on **reciprocity** and the **unpacking of causation**
- **design un-algorithms / unpack conclusions** even (especially) in the design of harmless systems

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Critisearch: a way of correcting Google without getting distracted

CritiSearch!TeacherStudent

Log In

torgersen

CritiSORT!

Brad R. Torgersen | Blue Collar Speculative Fiction

Sep 5, 2015 ... Blue Collar Speculative Fiction (by Brad R. Torgersen)

Brad R. Torgersen - Wikipedia, the free encyclopedia

Brad R. Torgersen (born April 6, 1974) is an American science fiction author and US Army Reserve Warrant Officer. He was a winner of the 2009 Writers of the ...

Police investigate bomb threat in Torgersen Hall; students ...

www.collegiatetimes.com

Sep 22, 2015 ... A police K-9 unit was called in to investigate a bomb threat at Torgersen Hall. Students, faculty and staff had been evacuated from the building.

Former Virginia Tech President Paul Torgersen dies - Richmond.com

www.richmond.com

Mar 30, 2015 ... Former Virginia Tech President Paul Torgersen, credited with fostering the school's emergence as the 21st century model of a land-grant ...

Torgersen, Dorothea - Roanoke Times: Obituaries

www.roanoke.com

Sep 29, 2014 ... Torgersen Dorothea Dorothea "Dot" Torgersen, 84, of Blacksburg, died Saturday, September 27, 2014 at Roanoke Memorial

Michael Stewart

Critisearch

CritiSearch!

Teacher

Student

Log In

Torgersen

CritiSORT!

Brad R. Torgersen | Blue Collar Speculative Fiction

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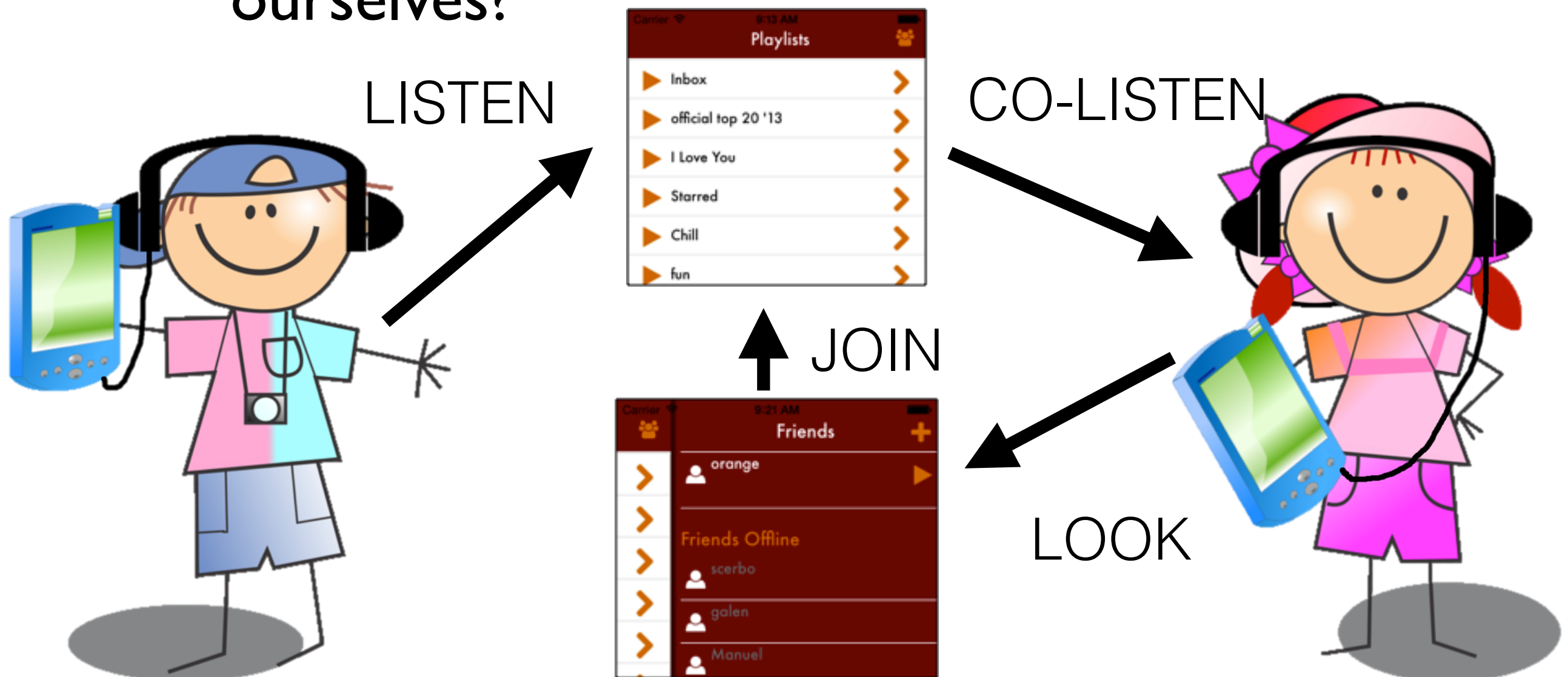
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Called the Advanced Communications and Information Technology Center in the building proposal and during construction, Torgersen includes 30 miles of ...

Michael Stewart

CoListen

- Who is to say that we *have to* listen by ourselves?



Michael Stewart

Preliminary list of high level principles

- develop ways to **talk back, correct & modify**
- develop ways to **assert ourselves, our boundaries, and our identities in our own terms**
- insist on **reciprocity** and the **unpacking of causation**
- **design un-algorithms / unpack conclusions** even (especially) in the design of harmless systems

Shared Calendars: Boundaries

- People will use shared calendars if we set organizational sharing as the default!
- That gets them to use the groupware!
- Now, what happens to parents' careers?
- If parents are *perceived* as more devoted to their children, they suffer career consequences, especially women.

Shared Calendars: Boundaries

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Discretionary Adoption of Group Support
Software: Lessons from Calendar Applications

Leysia Palen
University of Colorado, Boulder

Embracing, Passing, Revealing, and the Ideal Worker
How People Navigate Expected and Experienced
Identities

Erin Reid
Boston University School of Management, Boston University, Boston, Massachusetts

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PDF

Abstract

This paper examines how people navigate organizational pressures to embrace the ideal worker identity that—like the ideal worker image—centers on devotion to work. My consulting firm demonstrated that although some people easily embrace the ideal worker identity for others, it conflicts with their experienced professional identity. I found that people manage this conflict by straying from the expected identity while passing as having a family or revealing their deviance. Analyzing 115 interviews, performance evaluations, and organizational data, I trace how and why people manage their deviance differently across audiences. My findings show the interdependence of these efforts, and illuminate how people are perceived and evaluated. In the firm I studied, although both men and women were more likely than women to pass. Together, these findings highlight the relationship between deviance and its management to people's professional identities, offer new insights into the ideal worker image's relationship to gender inequality, and enrich theories of identity management and revealing.

Keywords : ideal worker; identity; gender; professions; passing; revealing;

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Insist on Reciprocity

- How come “they” can know about “us” but we can’t know about them?

Insist on Reciprocity

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Total Earnings [\(what's this?\)](#)

Rewards You Have Earned	Value
Approved HITs	\$0.20
Bonuses	\$0.00
Total Earnings	\$0.20

Your HIT Status [\(what's this?\)](#)

Date	Submitted	Approved	Rejected	Pending	Earnings
Sep 20, 2007	13	2	1	10	\$0.20

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HIT Totals [\(what's this?\)](#)

HITs You Have Accepted	Value	Rate	HITs You Have Submitted	Value	Rate
HITs Accepted	30	—	HITs Submitted	13	—
... Submitted	13	43.3%	... Approved	2	66.7%
... Returned	4	13.3%	... Rejected	1	33.3%
... Abandoned	3	10.0%	... Pending	10	—

HITs Available to You [\(what's this?\)](#)

Title	Requester	Reward	# of HITs
Create short, interesting video	Ask.com	\$10.00	1
Write a 350-500 word article on property for sale in Larnaca	www.ContentSpooling.net	\$4.00	1
Write a 350-500 word article on webkinz recipes	www.ContentSpooling.net	\$4.00	1
Write a 350-500 word article on see keyword queue	www.ContentSpooling.net	\$4.00	1
Call in your best family travel story!	VoiceByVoice	\$2.00	1
Add numbers to the wikipedia of statistics	Eric J. Silverberg	\$2.00	1
Looking for great success stories ...	VoiceByVoice	\$2.00	1
Have you ever worked for Gold's Gym?	David	\$1.00	1
Have you ever worked for Bally Total Fitness?	David	\$1.00	1
Have you ever worked for 24 Hour Fitness?	David	\$1.00	1

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Insist on Reciprocity

All HITs
61-70 of 1581 Results

Sort by: [Show all details](#)

yelp Reviews Information

Requester: [ReachLocal Presence Grader Prod](#) HIT Expiration Date:
Time Allotted:

Identify the Main Subject Categories for 5 Images

Requester: [Tagasauris](#) HIT Expiration Date:
Time Allotted:

communicativity:		2.64 / 5
generosity :		1.96 / 5
fairness :		3.76 / 5
promptness :		2.76 / 5

[What do these scores mean?](#)

Scores based on [46 reviews](#)
[Report your experience with this requester »](#)

Find a Coupon for

Requester:
Time Allotted:

Edit filtered Zappos product reviews for grammar



Fig. 2: The Turkopticon browser add-on adds information about requesters provided by other workers.

Preliminary list of high level principles

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Personal Data: Thinking Inside the Box

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ABSTRACT

We are in a 'personal data gold rush' driven by advertising being the primary revenue source for most online companies. These companies accumulate extensive personal data about

context dependent [5]. A recent three-year study showed that the more people disclosed on social media, the more privacy they said they desired (*We Want Privacy, but Can't Stop Sharing*, Kate Murphy, New York Times, 2014-10-05). This para-

- **A Databox assists in provision of:**
- **Legibility:** inspect and reflect on “our” data, to understand what is being collected and how it is processed.
- **Agency:** manage “our” data and access to it, enabling us to act effectively in these systems as we see fit.
- **Negotiability:** navigate data’s social aspects, by interacting with other data subjects and their policies

Lots more examples from many sources



<http://www.publicsphereproject.org/patterns/pattern-table-of-contents.php>

Lots more examples from many sources



<http://www.publicsphereproject.org/patterns/pattern-table-of-contents.php>

But not enough

- If we do not explore these paths, who will?
- Who will set boundaries?
- If we do not maintain an active and proactive stance towards the design of technology, we will suffer in our lives.
- And we will be surprised by anger and violence directed against us.

Preliminary list of high level principles

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*... as Jordan Crandall (2005, 3) has argued, the current age of panoptic data processing means that **Western nations** increasingly **wage war through** what he calls “**processual infrastructures**”. Integrating the capabilities of digital sensors to sustain “**strategic seeing**” and “**persistent surveillance**”, military command and control systems increasingly **delegate decisions to track, surveil, and target to the computer algorithms** that connect such sensor systems to computer databases.*

- Utopian principles have guided computer science research in the past.
- And have led to many important, wonderful and beneficial outcomes.
- And we could use some Utopian thinking just about now because

The Enlightenment philosophers who insisted that the world could be improved were right.... The mistake was to think that, once improved, it couldn't get worse again.

The Enlightenment philosophers who insisted that the world could be improved were right.... The mistake was to think that, once improved, it couldn't get worse again.

CS6724 seminar next semester: Designing to Change Power and Authority

Why build a system unless there is something that you want to do differently? Computer Scientists build systems to change things in the world. But as computer systems touch more and more aspects of life, it is not just all about efficiency. It's very easy to design systems that get users to interact with computers in a way that satisfies some set of narrow goals, but the cost may be that we are constrained and even bullied by our systems. As recently 1994, Howard Rheingold claimed that the "internet promotes democracy," yet the ensuing 20+ years have begun to reveal more complex patterns, starting with the observation that we must be concerned now not with "the" internet, but with "this" internet [Dourish, 2015]. In a recent New York Times op-ed, Robert Reich (Former Secretary of Labor under President Clinton) notes that "while in 2001, the top 10 websites accounted for 31 percent of all page views in America, by 2010 the top 10 accounted for 75 percent" [Reich, NYT, 9/18/15]. Likewise, "Amazon is now the first stop for almost a third of all American consumers seeking to purchase anything." As Reich goes on to say, "Talk about power."

But the power of computer technology in society does not just lie at these institutional levels. It also lies in the ways that habitual practices in design result in the creation of computational systems that demand and reinforce ritualized behavior in the users. We can and ought to design differently! We can design to promote equity, inclusion, and freedom of action.

This project-based class designs and implements, taking into consideration such current movements as participatory design, critical design, adversarial design, feminist design, as well as Dr. Tatar's own understanding of the challenges that face the knowledge society in the next ten years. We will design systems to promote equity and inclusion, and we will inform our design activity with (1) an understanding of who and how people are currently marginalized and (2) design propositions about what we can do differently.

Thank you.

- Questions? Thoughts?
- Talk to me: dtatar@cs.vt.edu

