

Information Behavior

Part I

INFO 200



Information Behavior 1

agenda

- ❖ why does information behavior matter?
- ❖ fundamental concepts
- ❖ information seeking
- ❖ ways of thinking about it
- ❖ kinds and examples
- ❖ categories
- ❖ an exercise

aspects of information

- can be times and places when information is the most important thing you can imagine: verdict, waiting to hear about a loved one's surgery, making a critical decision, who won the game?, tip of the tongue
- isn't always good
- more isn't always better than less
- can make things worse, better, confuse, delight, send down a blind alley (red herring)
- can overload
- can change your mind, or not
- can't define it well, but everybody knows what it is
- can give it away, still have it ("nonrivalrous"); can be worth more (or less) if shared; can be lost, destroyed—or

- sit around for centuries waiting to be (re)discovered
- can't be worn out from overuse
- can be obsolete but not depleted
- can be lost (*Love's Labour's Won, Cardenio* by Shakespeare)
- can be hidden, lied about, made up
- can mean nothing to you/not even informative
- tangible, or not/entity with no mass
- could be potentially anything
- far more a presence in the moment-to-moment of everyday life than before
- **is power...**if you can find it, get at, read/view/listen/understand/use it
- **means to an end**

information behavior

Case calls seeking and using information “common and essential human behaviors,” “basic to human existence” **Why?**

information: “any *difference* you perceive, in your environment or within yourself” **Cf. Buckland?**

information need: “recognition that your knowledge is inadequate to satisfy a goal” **comments?**

information seeking: “conscious effort to acquire information in response to a need or gap in your knowledge” **comments?**

So...what is the most frequently used source to seek out information?

information behavior: “information seeking as well as the totality of other *unintentional* or *passive* behaviors...as well as purposive behaviors that do not involve seeking....”

information seeking

active

decision-making

buying something, choosing courses/majors, picking paper topic

task completion

creating a web site

broad background

environmental scanning

passive

information encountering

information grounds

good enough

information seeking variables

seeker

situation (context)

main motivation

sources of information

time pressure

degree of thoroughness

From Case, Table 2.3

Table 2.3: Comparison of six case studies.

Seeker(s) and situation	Main motivation	Sources of information	Time pressure	Degree of thoroughness
Julie: car purchase Leslie: library research	Optimize functionality and value Class assignment; earn credit/grade	Friends, Web pages, salespeople Online catalogs, books, journals, professional advice (on how to search)	Low (months) Moderate (weeks)	Low Moderate
Hospital ICU team members: caring for an accident victim	Work assignment; desire to help others	Observation of patient, paper and electronic records, monitoring devices, medical manuals, hospital employees	Very high (hours or days, based on patient improvement)	High
Joe: horse race wager	Desire for thrill; to win money	Special journals, observation, intuition	Very high (minutes)	High
George: legal research	Work assignment; help relatives	Special databases and publications, professional advice	High (days)	High
Maria: information on cancers	Curiosity; preemptive information search	Web pages, books, brochures, friends, experts	None (lifetime)	Moderate

categories of information behavior

information seeking

needing

creating

sharing

encountering

avoiding

withholding/censoring/destroying

evaluating, choosing, acting on/using/not

etc....others?

(also, potential ideas/sources for final project problems...)

exercise

observe, reflect, think about examples of information behaviors
online, offline

**creative, thoughtful, interesting, unusual (esp. ones we haven't
discussed)**

- information seeking
- needing
- creating
- sharing
- encountering
- avoiding
- withholding/censoring/destroying
- evaluating, choosing, acting on/using/not
- etc

second part of lecture to debrief and discuss

Information Behavior

Part II

INFO 200



W

Information Behavior 2

agenda

- ❖ debriefing the exercise
- ❖ researching/investigating information behavior
- ❖ questions to ponder
- ❖ values
- ❖ why does information behavior matter?

categories of information behavior

information seeking
needing
creating
sharing
encountering
avoiding
withholding/censoring/destroying
evaluating, choosing, acting on/using/not
etc....others?
(also, potential ideas/sources for final project problems...)

gossip → process/position
hanging up 2 banner, reading it (taking down, creating new)
voiding Starbucks line - too long
tourists looking @ campus
voiding eye contact ~~@ class~~ w/people talking
deciding compost/recycle/trash
watching people watching info behavior
asking friend what emoji to send to girlfriend
looking @ flags - why half mast?
Snapchatting dog/walked into lecture
people @ tables/booths, Red Square
research @ lib, browsing on phones
deleting emails
(streaming?)

posting fliers, people
sign advertising session/encountering
taking pictures/swing
phone/encountering, seeking (new)
moss/encountering, session
recalling/memory
ATM PIN/protecting
phone & laptop/multitasking
tearing up paper/destroying
club recruitment/sharing
class looking for IBs
mips/seeking, asked for help
watching Family Guy on computer in OUGL
headphones/encountering, holding
none of your business
(info cf. behavior)
access by UWNet ID

examples of information behavior

information seeking
needing
creating
sharing
encountering
avoiding
withholding/censoring/destroying
evaluating, choosing, acting on/using/not
etc....others?

but not the same as information, information objects

researching/investigating IB

so much of IB is unique, individual, idiosyncratic, situational,
contextual...how do you generalize?

so much of IB is internal, cognitive, personal...how do you observe?
or know that what you're observing is "real", "true"?

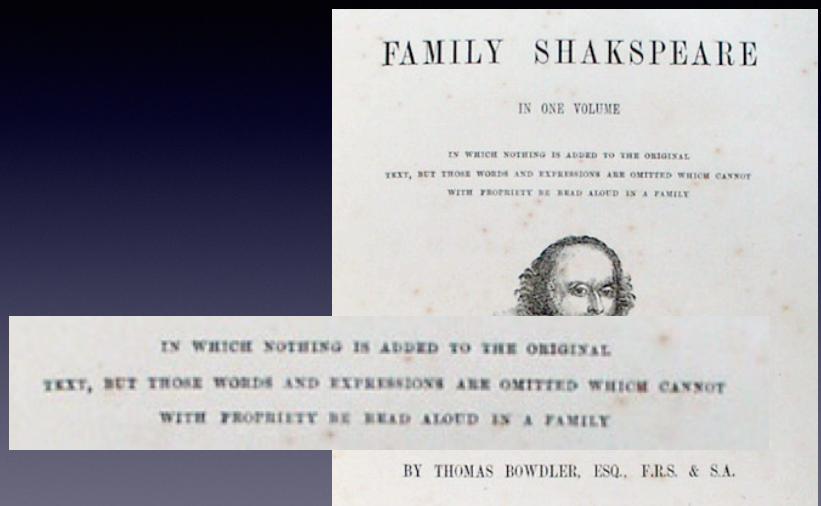
ultimately, how much can we really understand about "IB" in
general?

"information behavior" questions to ponder

as forms change and evolve, what happens to how we seek it, use it,
organize it, produce it, avoid it, censor it?
can information behave?

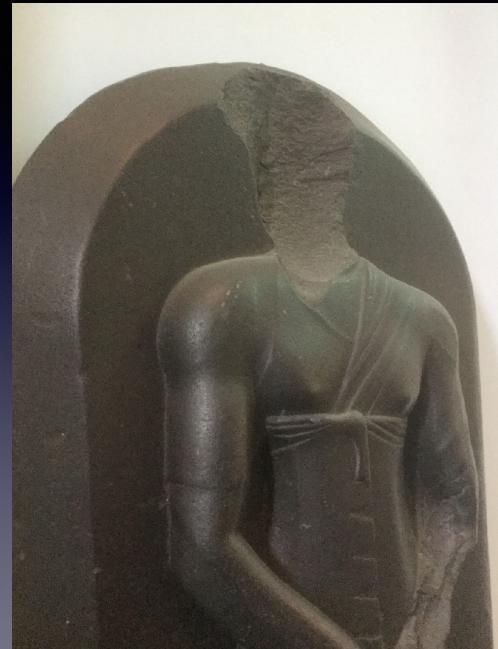
The Family Shakspeare [sic]

1807 9th ed London 1847



sarcophagus lid/damnatio memoriae

343-332 BCE



defaced coin of Germanicus/damnatio memoriae

ca 40 CE



ClearPlay

2004

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Turkish government destroys more than 300,000 books

The Guardian

Regime says it is cracking down on anything linked to Fethullah Gülen, the Muslim cleric it blames for 2016's attempted coup

Library at Alexandria

ca 300 BCE



Boston Public Library

1854



Google

1997 "Backrub" 1996

Google!

Search the web using Google!

10 results I'm feeling lucky

Index contains ~25 million pages (soon to be much bigger)

[About Google!](#)

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Get Google! updates monthly

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Copyright ©1997-8 Stanford University

User Research

INFO 200



Joseph Janes
Associate Professor, Information School

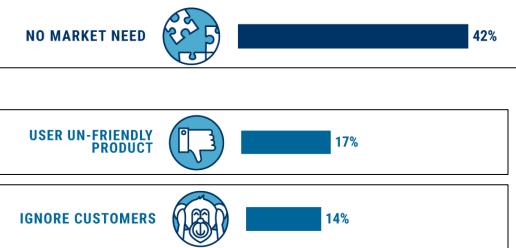
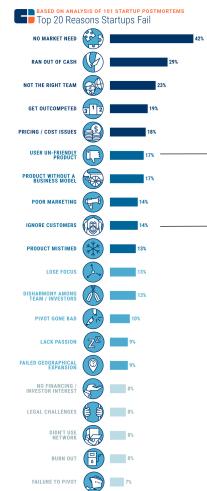
User Research agenda

- ❖ why do user research?
- ❖ types and methods
- ❖ assessing how people use designs
- ❖ issues & challenges
- ❖ a counterpoint view

user research

why do research?

- you are not them, they are not you (“people will like this” ≠ “I like this”); **don’t design for yourself**
- design **“defines the human world”** and must be “sufficiently novel” and “fit into each user’s **existing** world”
- identifying patterns and developing empathy
- understanding of context(s), **in context** (cf. lab, surveys, guesswork) in lieu of assumptions regarding physical environment, mental models, habits, relationships
- “assumptions are insults”
- a means of enhancing inclusiveness
- **many methods and types**



From “The Top 20 Reasons Startups Fail, Nov. 2019,
<https://www.cbinsights.com/research/startup-failure-reasons-top/>

literature reviews/prior work

why reinvent the wheel? what's already been done/what is already known?

library sources www.lib.washington.edu including librarians, research guides (including Informatics), etc

Start Your Research Online

The screenshot shows a navigation menu with 'Online Resources' and 'Research Help' sections, and a 'Chat with a librarian' feature.

- Online Resources**
 - Articles & Research Databases
 - E-journals
 - Encyclopedias & Dictionaries
 - E-Newspapers, Media, Maps & More
 - Course Reserves
 - Collections & Archives
 - Mobile Search Tools
 - Streaming Video
- Research Help**
 - Research Guides
 - Evaluating Information
 - Citation Styles & Tools
 - Research Data Services
 - Off-Campus Access & Technical Support

Chat with a librarian
Connect to our 24/7 real-time, online question service. This service is staffed by UW Librarians, but at peak service times or off-hours you may be chatting with a librarian from another academic library.
[Click to chat now with a librarian!](#)

ethnography/ethnographic design research

"understand and document the activities and mind-sets of a particular cultural group who are observed going about their ordinary activities in their habitual environment"

challenges in that?

don't ask people what they want - why not? (even worse: "Don't you want this?"); social desirability effect

people don't know what they don't know

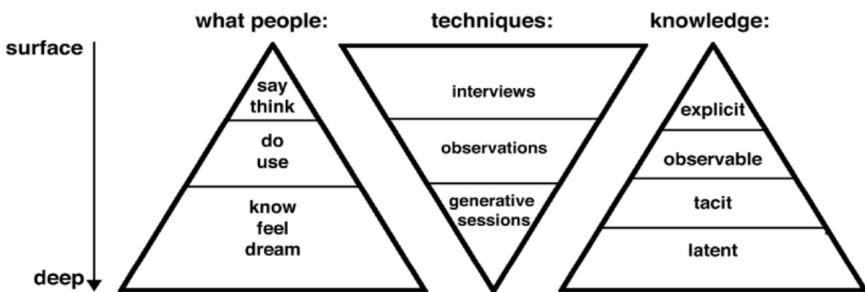
people don't know what an "information problem" is
try "tell me about a typical day in your current job," "a problem that came up you had difficulty solving," "how you got stuck and couldn't move forward"

quantitative methods

surveys, polls, existing data sets, census records

+ statistical analysis (not necessarily "big data"), graphs, etc

often can give you the **what** and **who** but rarely the **why** or **how**, good up to a point



Vissers, Stappers, Van der Lugt & Sanders (2005)

ethnography/ethnographic design research (4 D's)

deep dive (qualitative v. quantitative)

daily life (holistic, naturalistic, diaries), incl. participant observation

data analysis (with the aim of fuller understanding)

“drama” (narrative, storytelling, personas)

what's wrong with focus groups?

understanding of people in *their* contexts with *their* questions/issues/problems that then *you* can try to design solutions and assistance for

hence, don't start at the end

and then

techniques for assessing prototypes and designs:

- **usability testing** for ease of use, performance metrics
- **A/B testing** to compare 2+ candidate designs, incl. on whether users are doing what you want them to do
- **usage analysis** to track user data, metrics (page views, clicks, engagement time, unique visitors)

participatory design/co-design

challenges

can there be too much user research? other issues?

- users may not anticipate the unfamiliar, be able to break out of what they think is possible, expected, feasible
- or focus too much on their own individual, specific circumstances
- or want everything (feature bloat)

so the designer has to weigh the value of user research with the rest of the context of design methodology

Who is this and why is he important?

Jonny Ive, former Apple Chief Design Officer
(left June 2019 to start his own company)

Hired by Steve Jobs in 1997

Designed the iMac, iPod, iPhone, iPad, MacBook Air, Apple Watch, AirPods, portions of the iOS user interface

Were his designs driven by user research?

Users - Yes. User Research - No.

"We don't do focus groups. They just ensure you don't offend anyone and produce bland inoffensive products"

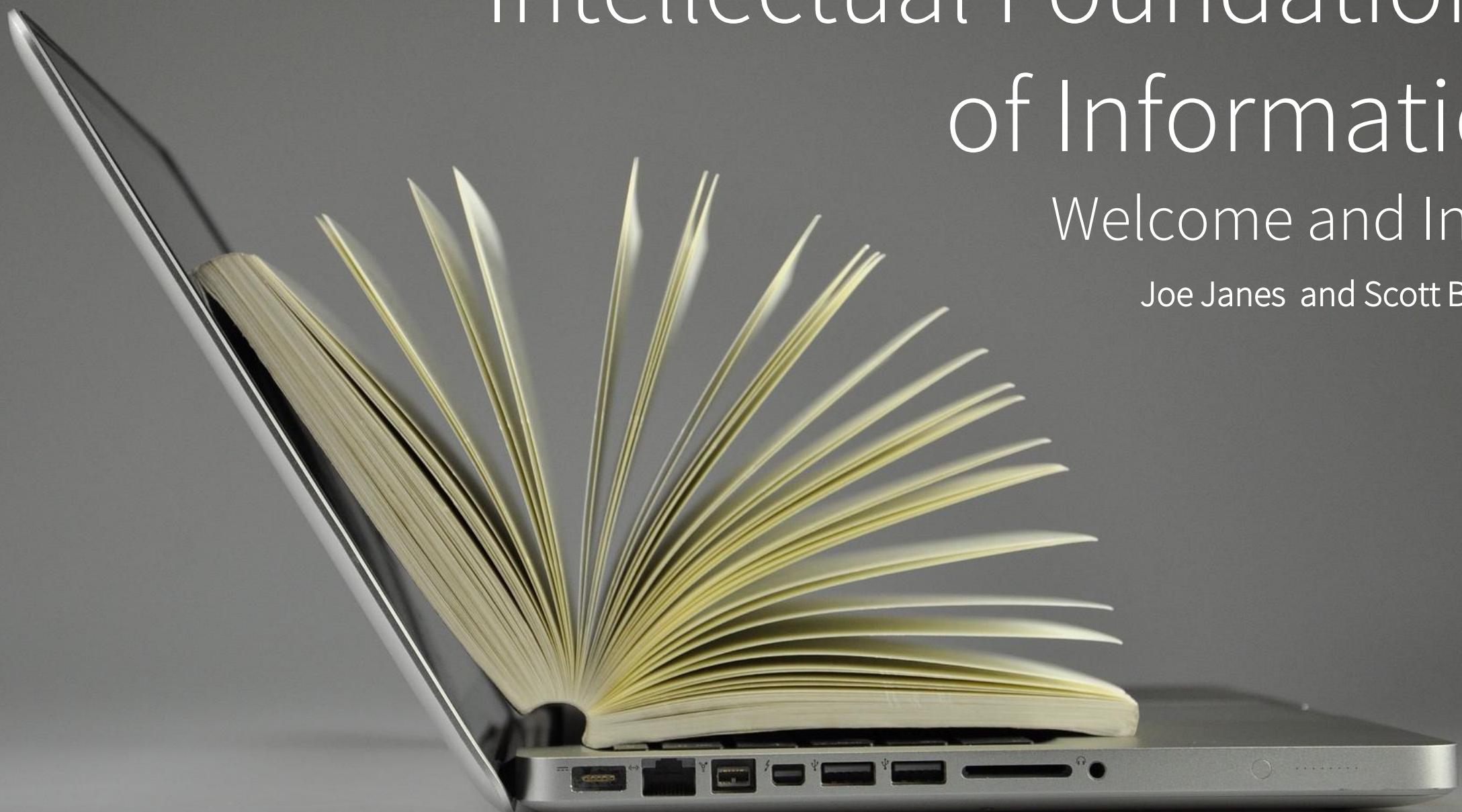
In fact, he often made decisions that were not what users desired because he felt he had a bigger or longer-term vision



Intellectual Foundations of Informatics

Welcome and Intro

Joe Janes and Scott Barker



Two instructors?





INFO 200 is a “survey course”
It introduces you to the core concepts
perspectives
methods
and debates
that make up the field of informatics

It also surveys career opportunities
clarifies how informatics differs from other technology areas of study
and provides a foundation for future courses in the field

It will orient you...





...and prepare you

Informatics Major and Minor

INFO 200

Intellectual Foundations

Broad overview

Creative and Critical Thinking Skills

INFO 201

Technical Foundations

Data Science and Computation

Data analysis and visualization skills

But first a few stories...

Navigation Apps Are Turning Quiet Neighborhoods Into Traffic Nightmares

By LISA W. FODERARO DEC. 24, 2017

The New York Times



Traffic on Irving Street. Melissa Soesman, who lives on the street, said she has had to plead with motorists to make room for her to pull out of her driveway. Nanci Makroulakis

AMIT KATWALA, WIRED UK

BUSINESS 08.15.2020 10:00 AM

An Algorithm Determined UK Students' Grades. Chaos Ensued

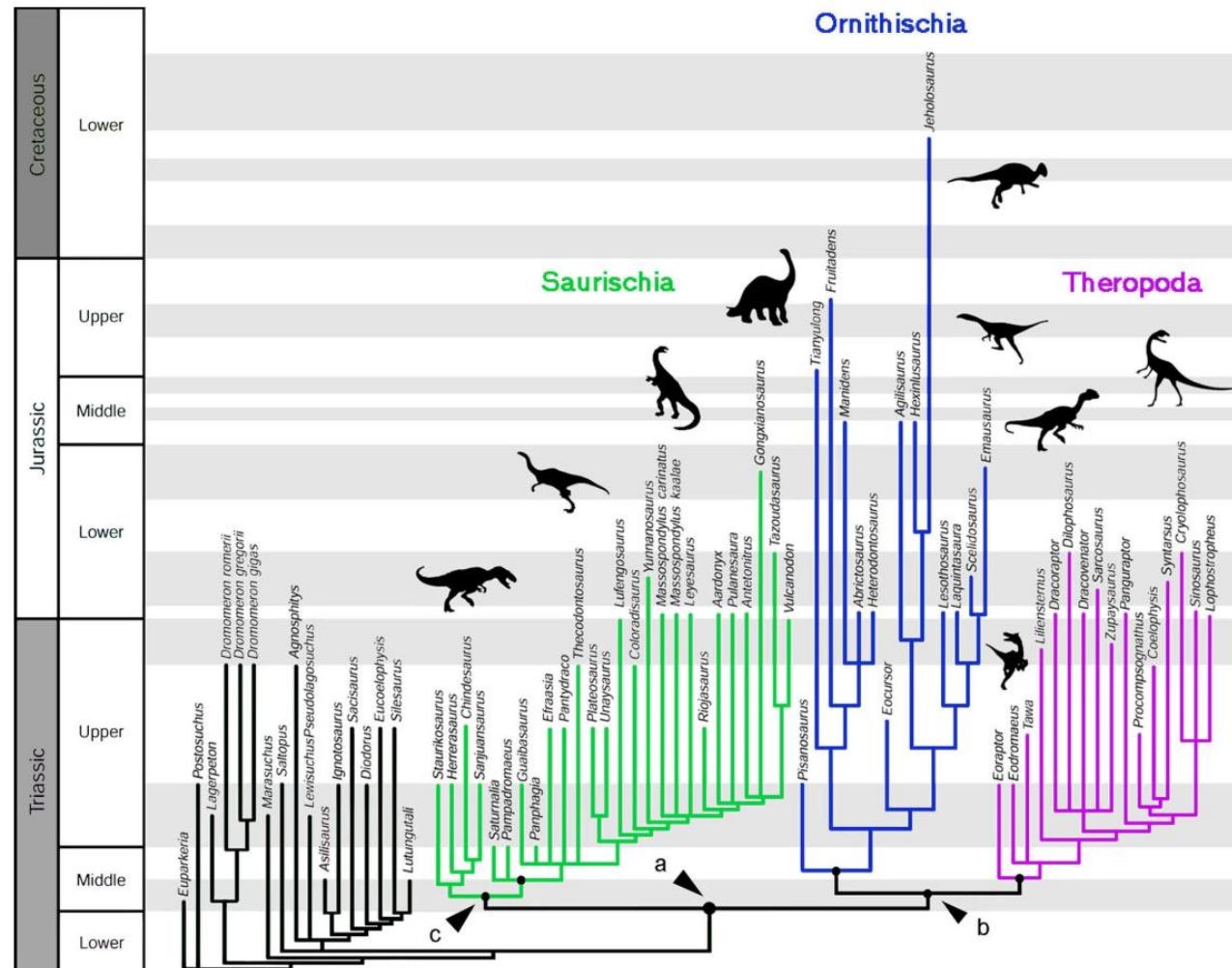
This year's A-Levels, the high-stakes exams taken in high school, were canceled due to the pandemic. The alternative only exacerbated existing inequities.



PHOTOGRAPHY: TOLGA AKMEN/AFP/GTET IMAGES

Shaking Up the Dinosaur Family Tree

The New York Times



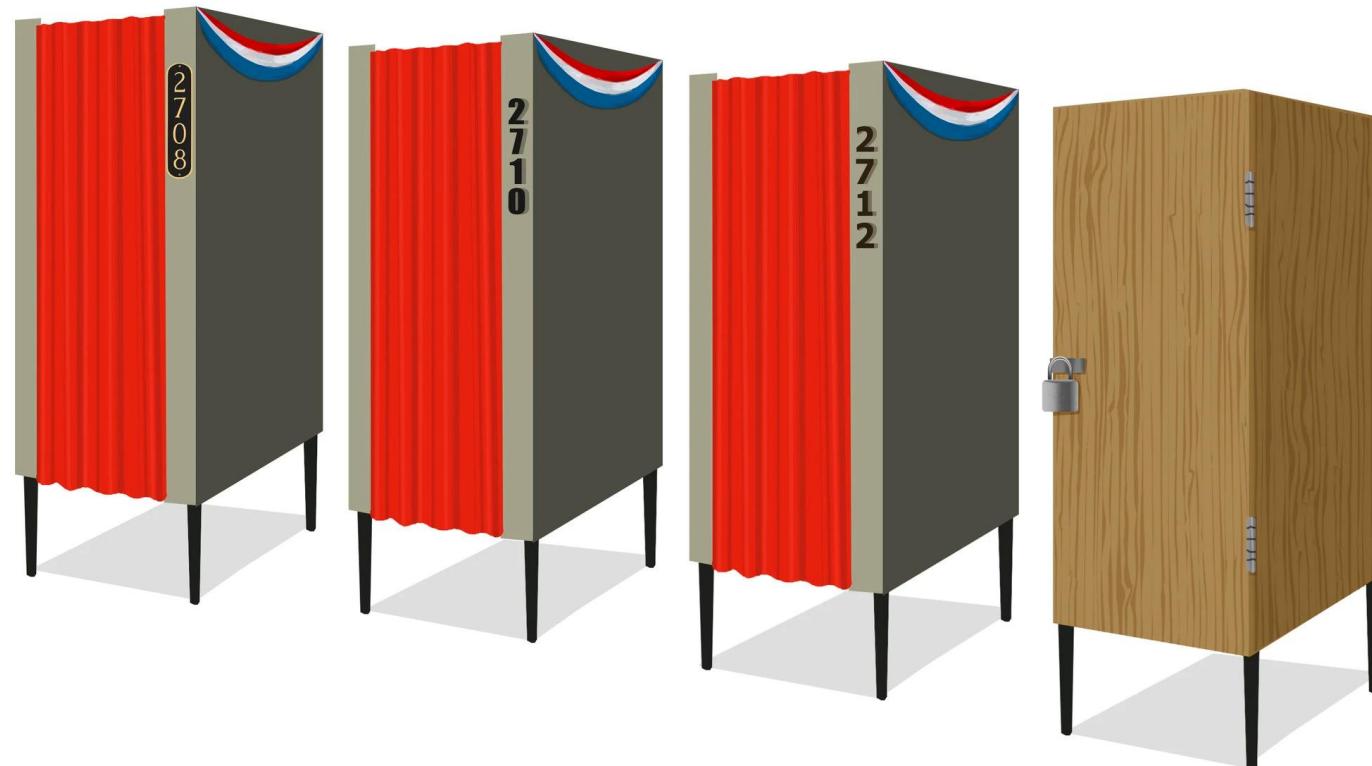
The proposed new family tree of dinosaurs. The group to the left is for close relatives but not true dinosaurs. The old tree grouped the theropods, purple, with the Saurischia, green, and viewed the Saurischia and the Ornithischia as the two major branches of the tree. The scale to the left shows the placement of the tree in geological time. A is the branchpoint that includes all the dinosaurs, B represents the joint ancestor of Ornithischia and the theropods, and C is the joint ancestor of Saurischia and an early group known as herrarasurs. Baron et al./Nature

Where the Streets Have No Names, the People Have No Vote

The Enlightenment gave us street addresses and ushered in democracy. The Age of Un-Enlightenment is using addresses to usher it out.

By Deirdre Mask

Ms. Mask is working on a book about street addresses.



Recently Deciphered 4,500-Year-Old Pillar Shows First Known Record of a Border Dispute

The marble stele, held in the British Museum's collections for 150 years, also includes the first known use of the term "no man's land"

Smithsonian.com



Canada's Project Naming: Identifying the unidentified

By Jessica Murphy
BBC News, Toronto

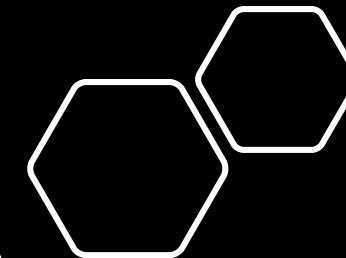
© 26 December 2016 | [US & Canada](#)

Share



Bella Lyall-Wilcox carrying her sister, Betty Lyall Brewster

A photo identifying effort by Canada's national archives that started in the country's remote north is helping name indigenous Canadians in archival images - and bringing the country a step closer to reconciliation by correcting historical wrongs.





Canada's first and only Indian Air Cadet Unit, "No. 610 Sqdn. RCAC" (Royal Canadian Army Cadets), Abbotsford, British Columbia [Back row: the surname of the boy on the far left is Sampson, and Jack Wycotte is second from the left. Front row: the surname of the boy third from the left is Wycotte].

Source: Library and Archives Canada MIKAN no. 3198218

A Master Work, the Ghent Altarpiece, Reawakens Stroke by Stroke

By MILAN SCHREUER DEC. 19, 2016



These interior wooden panels, featuring Adam and Eve (holding a citrus fruit), and the iconic “The Adoration of the Mystic Lamb,” have yet to be restored. For many years, the inside panels were only displayed on feast days.

Credit Hugo Maertens, Lukas-Art in Flanders/St. Bavo Cathedral

Meet your instructors...

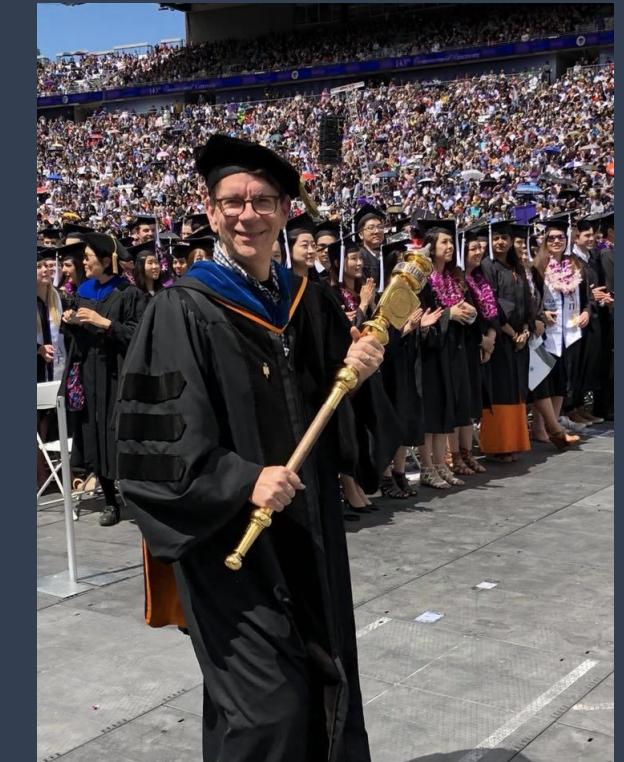
Joseph Janes

Associate Professor, 2019-20 Chair, UW Faculty Senate
Previously Chair of MLIS Program, Associate Dean for Academics

A.B., M.L.S. and Ph.D. in Information Transfer
Syracuse University

21 years at UW, iSchool – previously at University of Michigan
5th time teaching INFO 200
Scholarly interest: how documents and genres get the way they are, how they work (or don't), social and cultural impacts
Podcast – Documents that Changed the World

University Marshal – funnest job ever
Love sports, cooking, classic (old) movies
1st generation college student



Scott Barker

Associate Teaching Professor

former Chair of Informatics 2007-2017, Director of IT, iSchool

B.S. in Computer Science, M.S. in Information Resources Management

Syracuse University



Grew UW Informatics from 35 students to 210 per year

Increased applications from 70 to 800

Chaired admissions committee, revamped curriculum, INFO admissions committee chair this year

Created the original vision of this class, 10th time teaching it

Manage Information School (iSchool) IT with a staff of 6 employees

34 years experience working in IT, 21 years at the iSchool

Support the administrative, research, and instructional technology needs of the iSchool

Big college basketball and football fan (especially Syracuse!), love to travel

Many fabulous TA's!

They will introduce
themselves to you in a
separate video



Some of you have or are taking CSE 142.

Great! However programming is a necessary
but insufficient skill for long-term success

Tech skills change rapidly, often can be learned “on the job”

*You also need to learn how to design, analyze, think critically,
manage projects, consider organizational and social implications,
present your ideas, and work with people*

These “soft skills” last a lifetime

What is Informatics?

The science of **human-centered** information interaction:

- how we create and capture information
- how we store, organize, manage, and protect it
- how we find information when we need it
- how we manipulate information
- how we share and communicate information
- how we get rid of it
- how we make information work for people



Why this photo?





Informatics
sees the world
through
Information
colored
glasses

Mathematics: The science of numbers, quantity, and space

Physics: The science of matter and energy

Linguistics: The science of language

Economics: The science of economy and wealth

Politics: The science of government and statecraft

Informatics: The science of...?

“Elevator pitch” definition

*“Informatics is a high-tech, high-touch field
that uses information and technology
(computers, the Internet, and devices) to
make things better – at work, in society, and
to improve our individual lives”*

A divided world

The world desperately wants STEM majors, and warns you (yes you!) that if you don't pursue STEM, you won't get a good job

Meanwhile, it *stigmatizes* students who study humanities (as if technology has nothing to do with people)



This division is artificial, unjust, and untenable

Technology is *not enough*

Humanities is *not enough*

Algorithmic bias, misinformation, privacy, security, accessibility, ethics, automation are the issues defining our modern world

Neither technology or humanities can address them alone

The world needs *translators* who understand both

We need people who understand both
people and technology

Who can explain *people* to engineers

Who can explain *technology* to everyone else



Credit: [Zonaspace](#)

Two critical skills in tech translation

Analyzing technology: understanding and communicating its failings and flaws, so we can identify ways to improve it.

Designing technology: deciding *what* software should do (not just how), so that it improves lives, organizations, and society, rather than just having more functionality.

These are at the core of Informatics

Informatics Variations

- [Medical Informatics](#)
- [Biomedical Informatics](#)
- [Health Informatics](#)
- [Nursing Informatics](#)
- [Social Informatics](#)
- [Community Informatics](#)
- [Crisis Informatics](#)
- More...

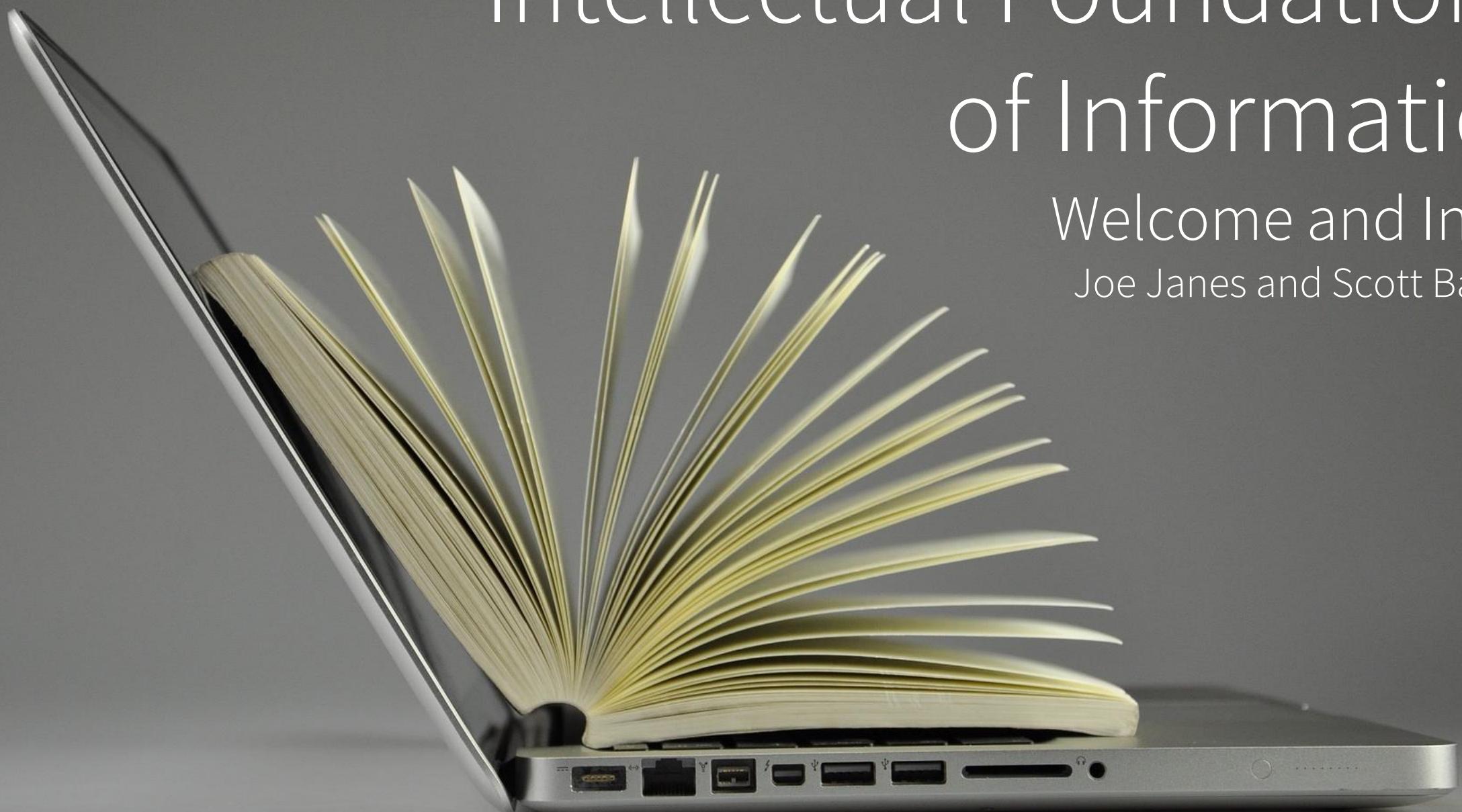


All analyze and apply technology within a domain/field to solve problems and make lives better

End

Intellectual Foundations of Informatics

Welcome and Intro
Joe Janes and Scott Barker



UW Information School Quick Overview

- History back to 1911
- A “school”, not a department (tip for your application!)
- Current school started by Dean Emeritus Mike Eisenberg in 1998
- Now 60 faculty (35 tenure-track, 25 lecturers)
- 50 administrative staff
- 1,100 students across five academic programs:
 - PhD in Information Science – 60 students
 - Master of Library and Information Science – 375
 - Master of Science in Information Management – 225
 - Bachelor of Science in Informatics – 450, looking to grow
 - Minor in Informatics – started Autumn 2017, over 400 minors in first 6 months

Informatics Major Quick Overview

Currently 450 students, two year program

Core classes in Design Thinking, Data Management, Systems Analysis, Web Development, Ethics and Policy, Research Methods

Includes three Computer Science requirements including two programming classes plus Data Structures and Algorithms

Final capstone culminating project with awards for Commercial Potential, Social Impact – some leading to startups

Students say a “strong and caring community” within the major is a strength

Competitive/Capacity constrained major with **new twice per year** (spring and fall) application/admissions process this year

Most recent cycle ~ 860 applications, 186 admitted

Hope to expand with more students soon

Informatics Details

Options/Concentrations in:

Human-Computer Interaction (HCI)

Information Architecture (IA)

Information Assurance and Cybersecurity (IAC)

Data Science (DS)

BioMedical Informatics (new, just approved)

Most students don't select an option and do a "custom" program based on their interests

Most technical program in the iSchool, likely the most technical undergrad program at any iSchool world-wide (now over 100 of them!) See: ischools.org

Term “iSchool” began here at UW

First undergrad program in the U.S. to use the term “Informatics” – although in other parts of the world the term is more widely known (in some European countries it is used instead of Computer Science)

Last year over 2,200 UW students took an INFO “intro” class (INFO 101, INFO 102, INFO 200, INFO 201)

Starting salary range for grads 60K-90K, some over 100K, often with signing bonuses



Typical Job Roles

User experience designers

2014 Informatics
alum Lea Kim



Leah Kim • 2nd

UX Designer

Greater Seattle Area

Connect

InMail

More...



MAQ Software



University of Washington



See contact info



285 connections

Information architects

2013 Informatics
alum Ari Ashkenazi



Ari Ashkenazi • 2nd

Information Architect
Seattle, Washington

Connect

InMail

More...

 Woot!, Inc.

 University of Washington

 See contact info

 183 connections

Product managers

2016 Informatics
alum Allison Amaral



Allison Amaral • 2nd

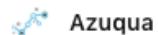
Product Manager at Azuqua

Seattle, Washington

Connect

InMail

More...



Azuqua



University of Washington



See contact info



500+ connections

As a product and program manager, I believe my greatest strength lies in my ability and willingness to wear a variety of hats. On a daily basis, I'm tasked with the typical responsibilities of a PM - defining product goals, designing product features, and working closely with developer teams to ensure thos...

Software developers



2016 Informatics alum
Nadav Ashkenazi

Nadav Ashkenazi • 1st

VR Software Engineer at Google
New York, New York

[Message](#)

[More...](#)

 Google

 University of Washington

 See contact info

 See connections (500+)

Software Engineer • 2+ years of experience with C, C++, C#, Java • Proficient in the semantics and syntax of HTML5, CSS3, Javascript, PHP, and SQL • Proficient in several different IDE's including Eclipse and Visual Studio, XCode • Experienced in 2D and some 3D game programming in the XNA F...

Security analysts



2012 Informatics alum
Andrew McKenna

Andrew McKenna • 2nd

Principle Security Engineer at Security Innovation
Greater Seattle Area

Connect

InMail

More...

 University of Washington

 University of Washington

 See contact info

 327 connections

University of Washington graduate with degrees in Informatics and Political Science. I have experience in the field of Information Technology both as a developer and a senior security penetration tester. I have knowledge and experience testing a wide range of technologies and frameworks for security vu...

Data scientists

2009 Informatics alum
Barrett Rodgers



Barrett Rodgers • 1st

Product Management
Seattle, Washington

[Message](#)

[More...](#)



Zillow



University of Washington



See contact info



See connections (500+)

-
- Respected team leader. Known for providing leadership, guidance and support to enable team members to meet and exceed established objectives.
 - Strategic thinker. Recognized for keen ability to understand project objectives, foresee potential solutions, and develop plan for selecting and impl...
-

Entrepreneurs

2010 Informatics alum
[Kabir Shahani](#)



Kabir Shahani · 1st in

CEO at Amperity. Helping people use data to serve the customer.

Greater Seattle Area · 500+ connections · [Contact info](#)

Message

More...

Amperity

University of Washington

IT managers and chief information officers

UW's Chief Information Officer, Aaron Powell



Aaron Powell has been named Vice President for UW Information Technology (UW-IT) and Chief Information Officer, effective immediately. The appointment was announced by UW Executive Vice President for Finance and Administration Jeffrey Scott on Thursday, November 16, 2017, after a six-month national search.

Powell has been serving as the interim VP for UW-IT and CIO for the past year.

"Aaron has provided outstanding leadership, overseeing significant enhancements to the University's IT infrastructure in support of the University's academic mission and operations," Scott said. "In particular, he successfully guided the HR/Payroll Modernization program through go-live of the new Workday system and the launch of the Integrated Service Center."

Researchers invent information technologies and investigate how they're shaping society.

[Amy Ko](#)
Current Informatics Chair



Amy Ko · 1st

Associate Professor at the University of Washington, Co-founder & Chief Scientist at AnswerDash

Seattle, Washington · [500+ connections](#) · [Contact info](#)

[Message](#)

[More...](#)

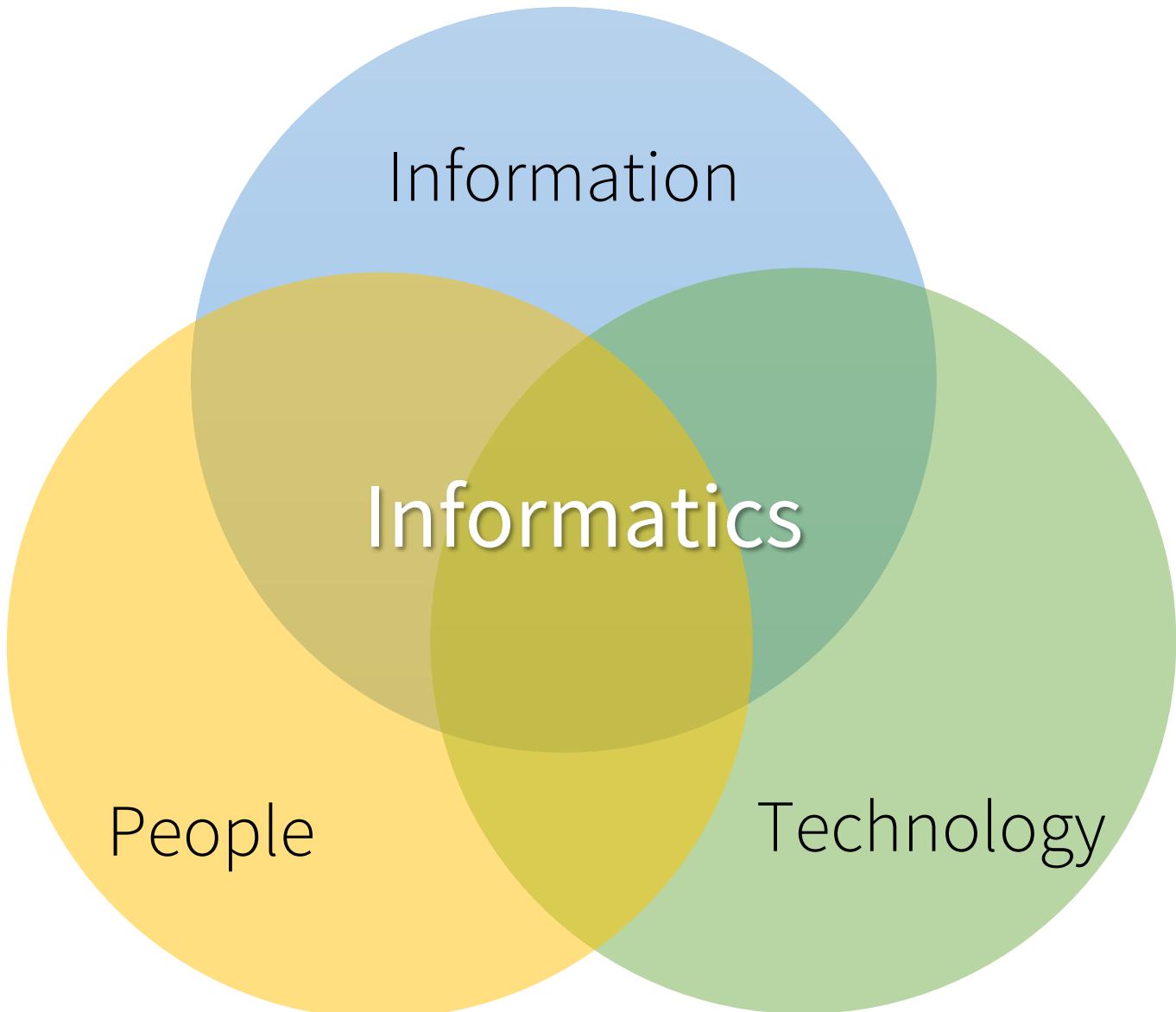


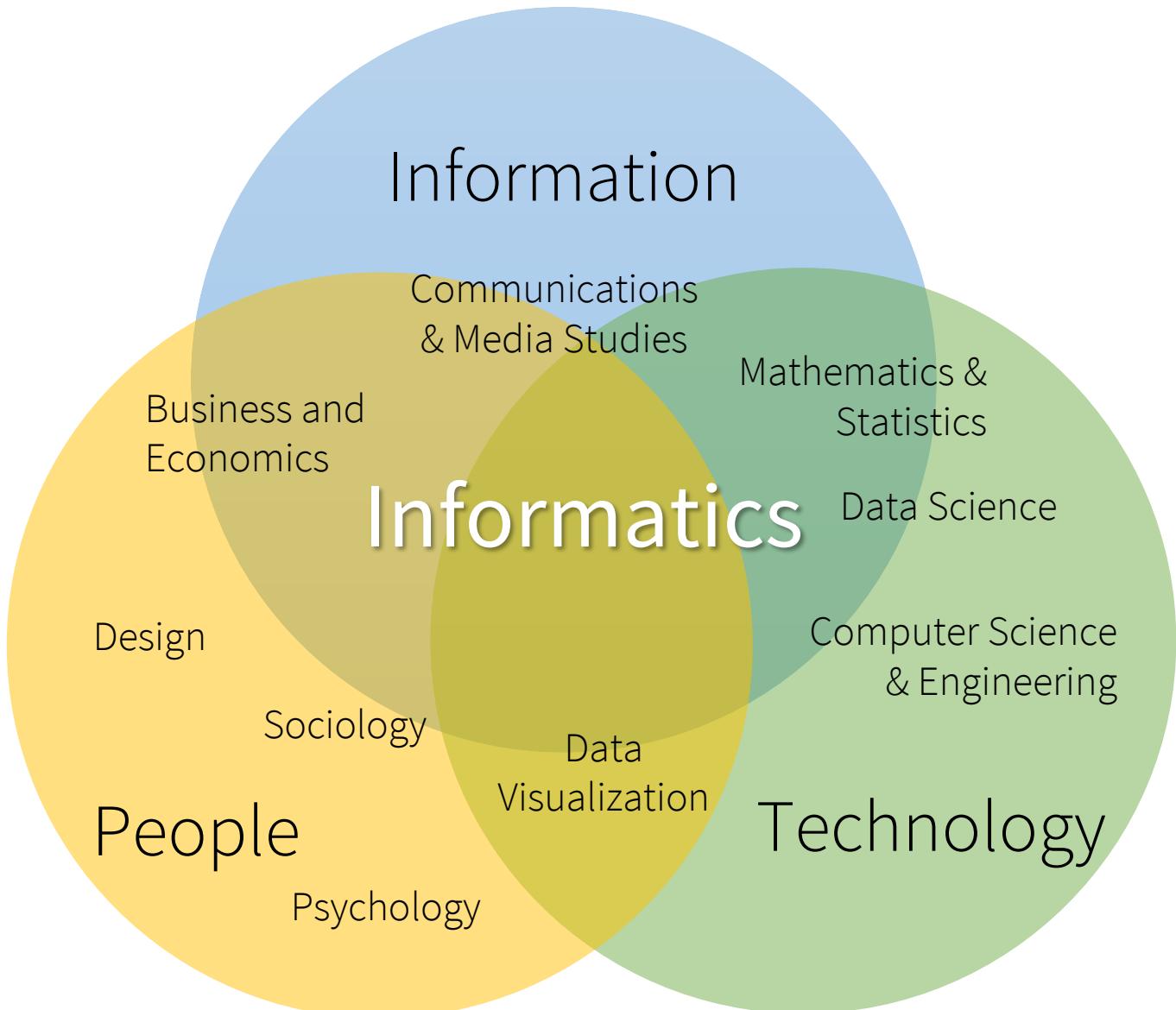
AnswerDash



Carnegie Mellon University

Informatics prepares you for all of these
and more





OK I got it but...
my (mom, friend, partner, future employer) doesn't
know what Informatics is.

Isn't that a problem?

What if you asked people not

What is Informatics?

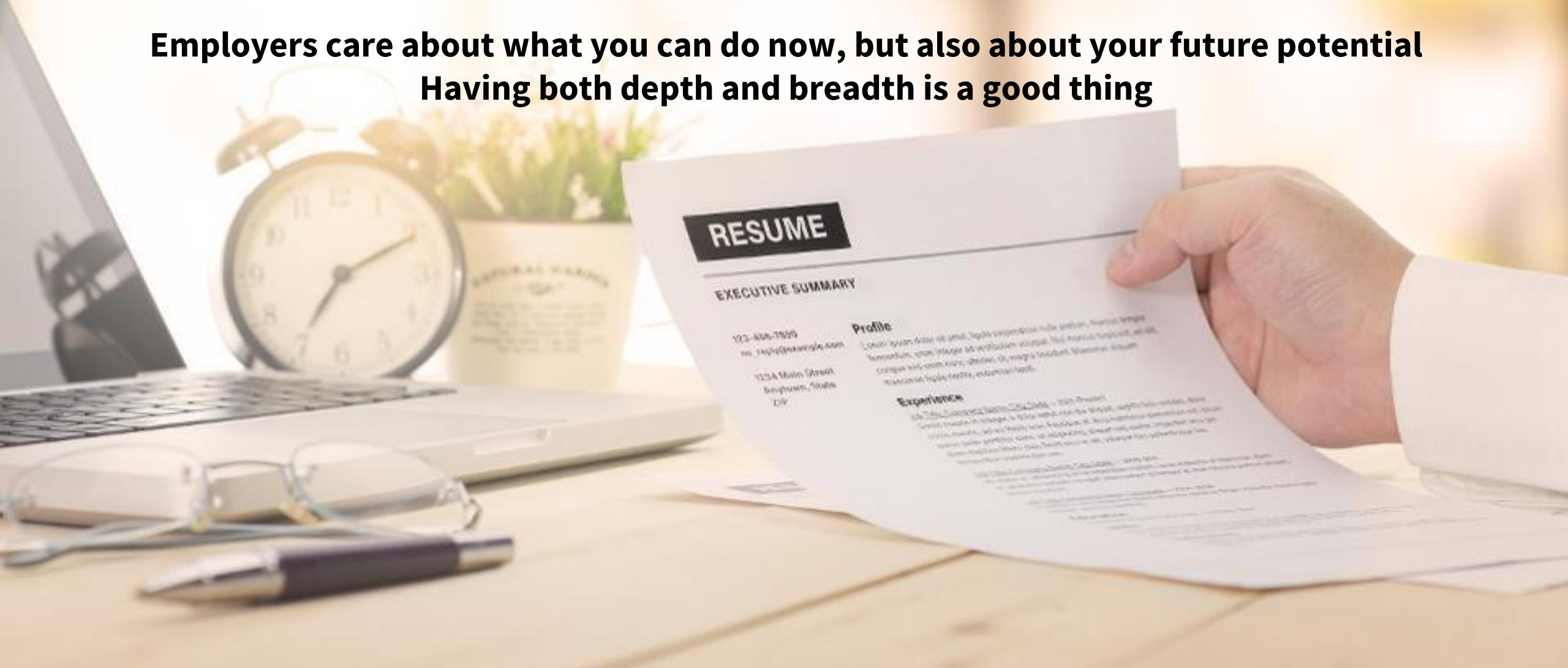
but

What is Computer Science?

What do you think they would say?

**Many fields are difficult to define
People often have very superficial understandings
Can potentially use to your advantage**

**Employers care about what you can do now, but also about your future potential
Having both depth and breadth is a good thing**



INFO 200 is about the “big picture”

It will present **big ideas** about information, reshaping how you view tech

Reveal **information professions** that are key to ensuring technology is valuable and ethical

Give you **skills** in *analyzing* and *designing* information technologies (yes, apps and websites, but also many other technologies). These are fundamental skills in any technology career.

Shows **pathways** toward academic programs and careers related to information and technology – Informatics, but also many other degrees

INFO 200 will *not*...

...give you deep skills with a particular technology

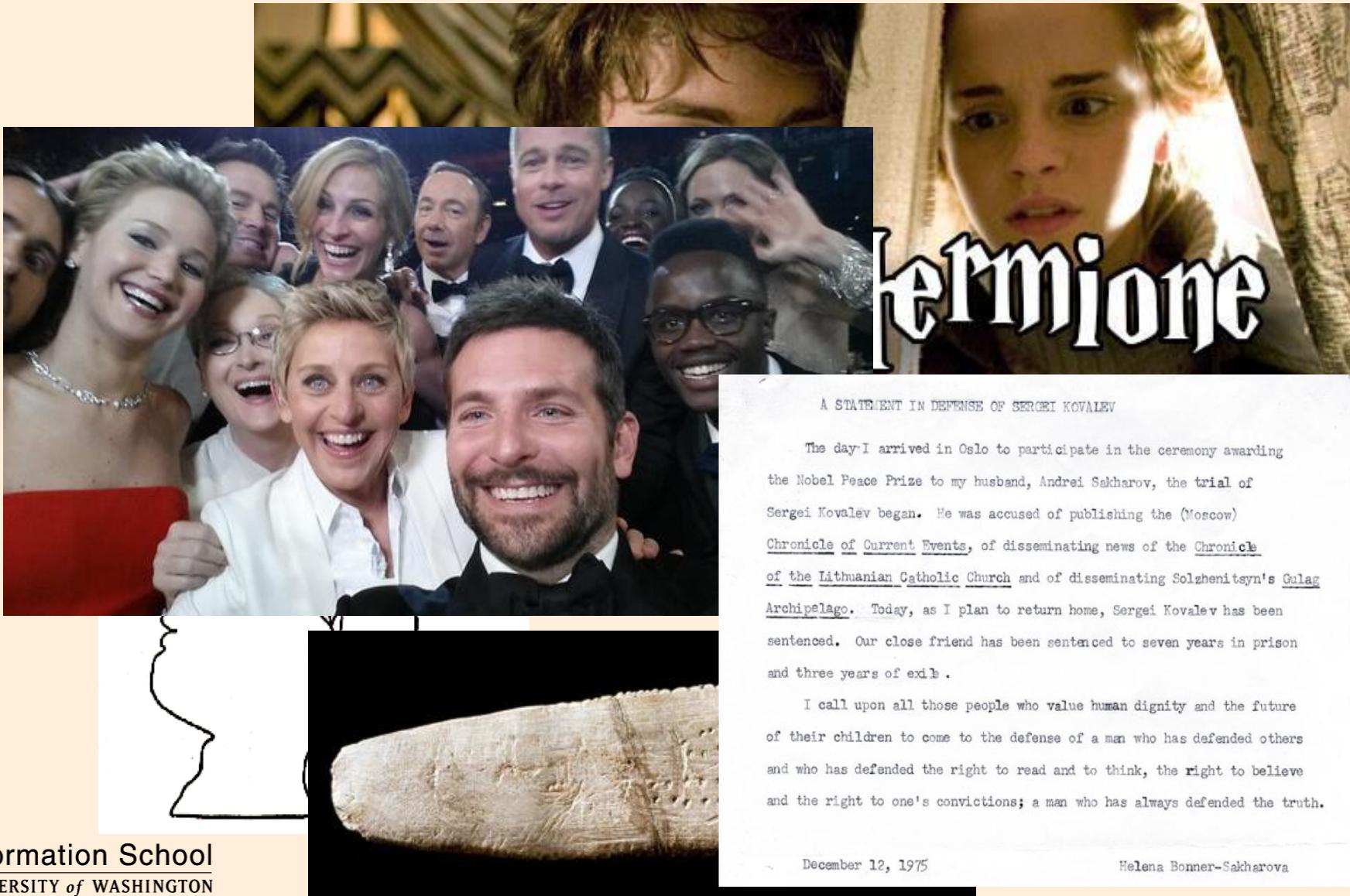
...give you deep skills in design or development

If you want programming skills, take INFO 180, INFO 201, CSE 142, INFO 330 etc.

Instead INFO 200 teaches you the strengths and limitations of technology, its role in society, and how to harness its power to make things better.

So why do we care about Information?

we can't help it



Cueva de las Manos, Argentina

9500-13000 ya



World's 'oldest figurative painting' discovered in Borneo cave

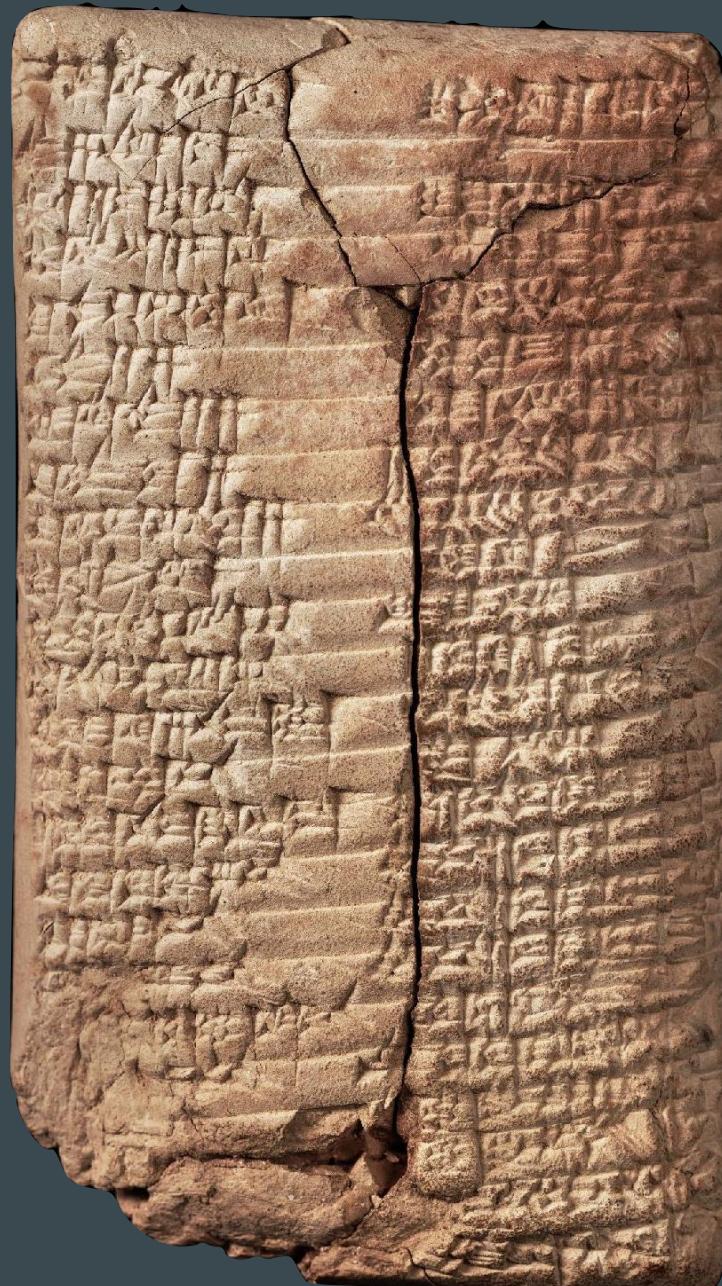
The Guardian





"Exaltation of Inanna"

c2300 BCE



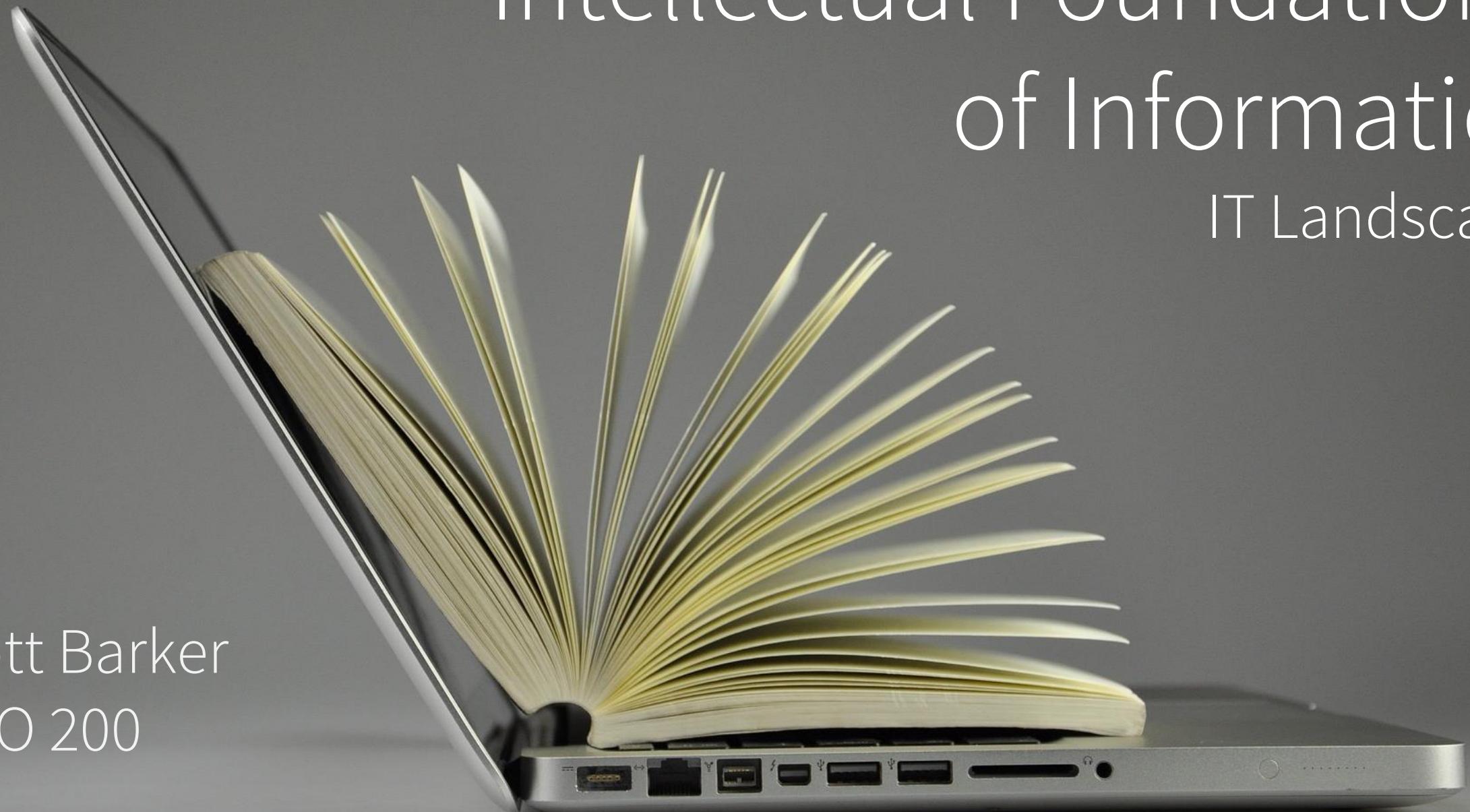


Thank you!

We're glad to have you in INFO 200!!!

Intellectual Foundations of Informatics IT Landscape

Scott Barker
INFO 200



The Information Technology (IT) landscape is vast and wide,
with many career options

Where do you want to go?



Opportunities exist everywhere...

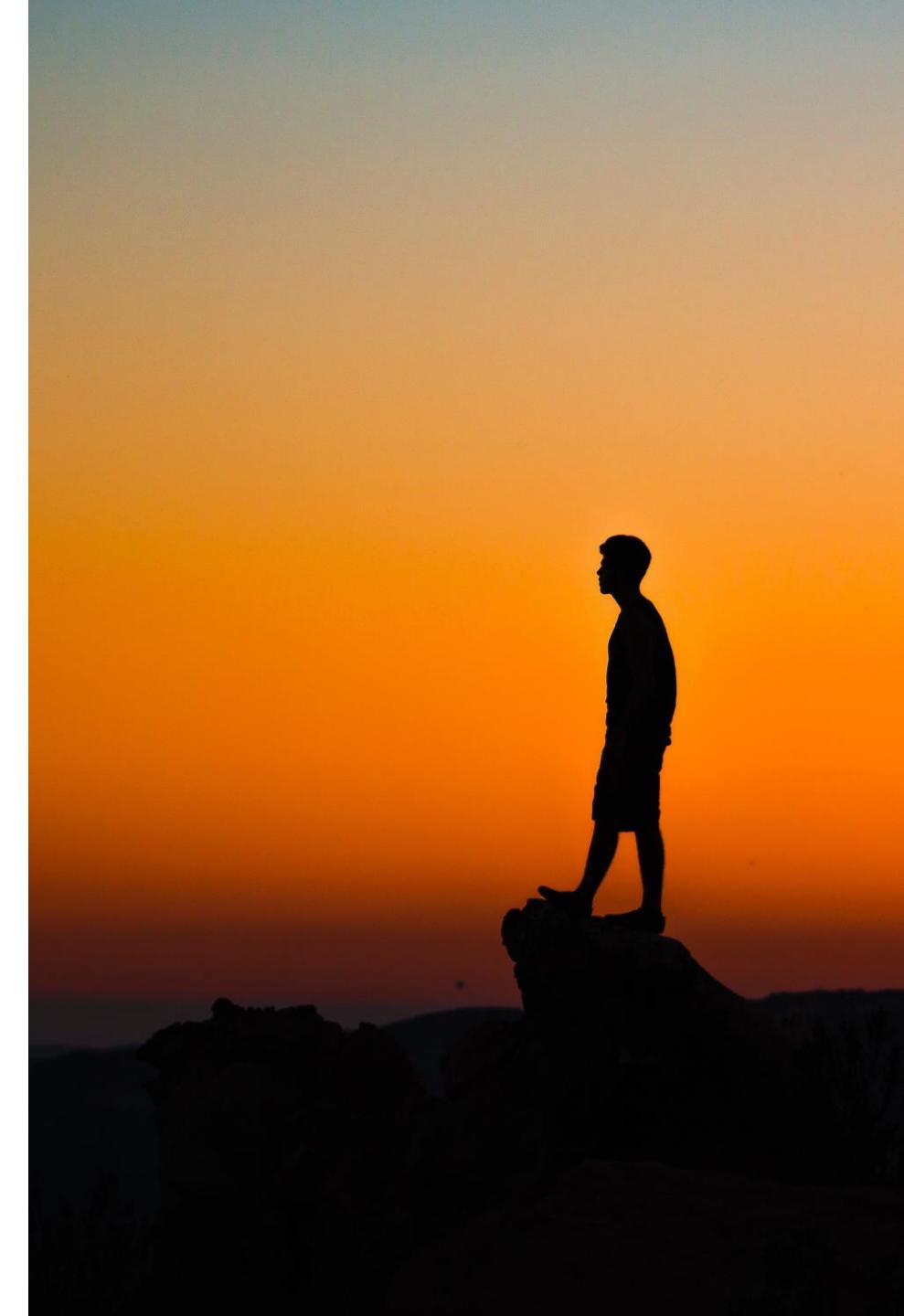
- Tech – Microsoft, Google, Cisco, ExtraHop, IBM, HERE Technologies
- Retail – Amazon, Costco, Nordstrom, Starbucks (13 iSchool interns last summer!)
- Manufacturing - Boeing
- Consulting - Deloitte, Ernst & Young, Avanade, Accenture, West Monroe, Slalom
- Airlines - Alaska Airlines
- Finance - BECU Credit Union
- Design – Point B
- Libraries - UW, Seattle Public, King County, Pierce County, ProQuest, OCLC
- Non-Profits - Bill and Melinda Gates Foundation
- Universities/Schools – UW, local elementary and high schools
- Government – City of Seattle, State of Washington



All these organizations and more are Information School
Advisory Board Members looking to hire grads

Common motivations to major, minor, or seek a career in tech

- Passion for technology
 - Strong job prospects and salaries
 - Improve society or change the world
 - Interest in starting your own company
 - Parents, other pressure
 - Other
-
- What about you?



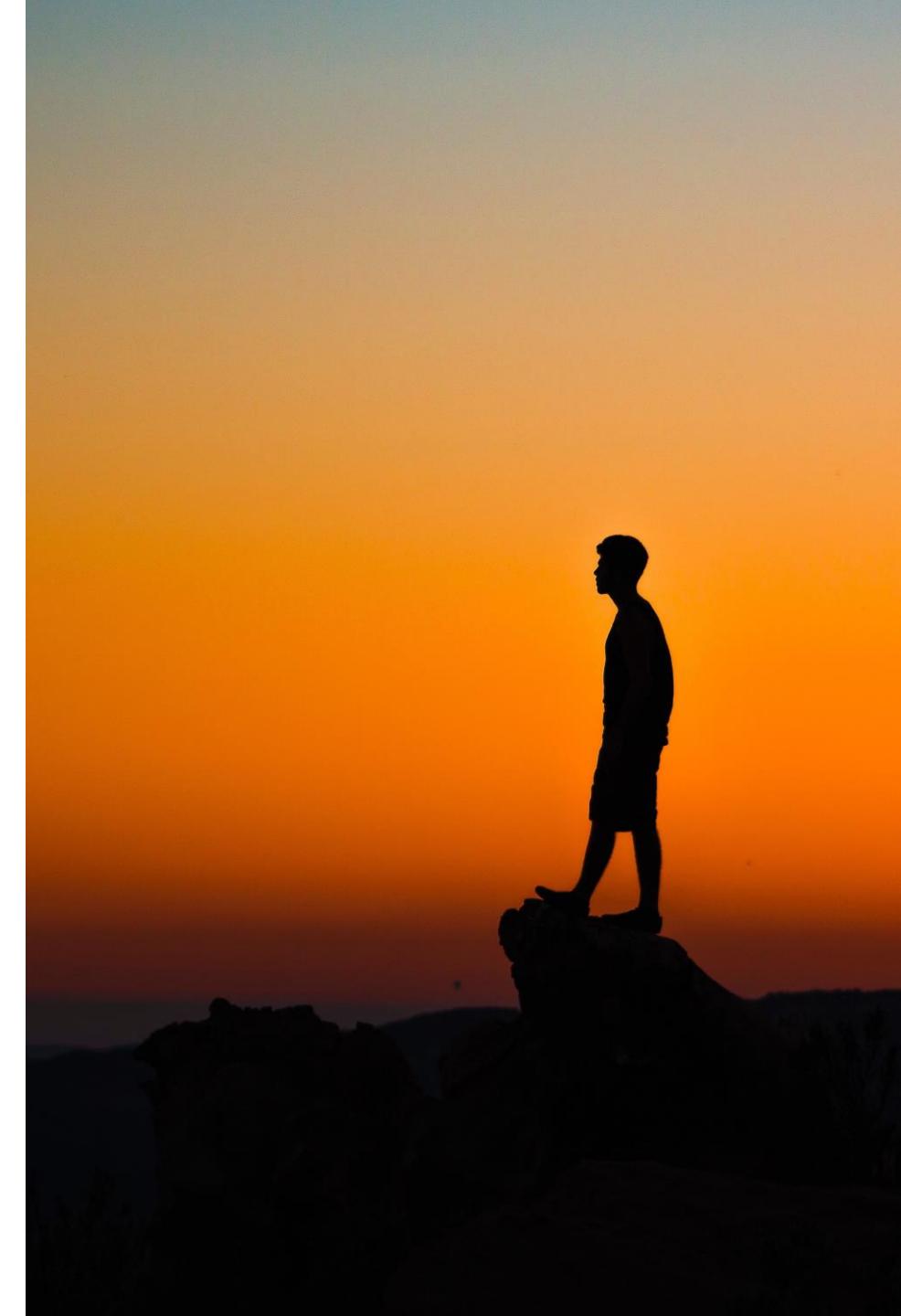
Think for a minute....

What are your motivations for obtaining a tech major or minor (if that is a goal)?

Is there a type of company, organization, or type of position/role you are aiming for?

Do you have a role model?

Other than taking classes, do you have a plan for how you will reach your goal?



Developers, developers, developers...

Who was that guy and why is he so passionate about developers?

- Most common career students interested in “tech” are aware of
 - Sometimes the only option students are aware of
 - Employers typically look for CS majors, but Informatics as well (especially Web and Mobile Developers)
 - Fundamentally developers “build stuff”
 - Critical to have developers on board to support your eco-system
- alternative titles (links to average salaries):
 - [Programmer](#), [Software developer](#), [Software engineer](#)
- Primary duties involve writing, debugging, and testing code
- Strong skills in a variety of programming languages (C, C++, Java, HTML, CSS, JavaScript, Python, PHP, SQL) and tools to manage code (GitHub), various IDE's, strong knowledge of data structures and algorithms
- May be specialized such as:
 - [Web developer](#), front-end web developer, back-end web developer, [full-stack web developer](#)
 - [Mobile developer](#)
 - [Database developer](#)



The Good and the Bad



Good:

- Currently high demand with strong salaries
- Generally good working environments
- Potentially able to work with a flexible schedule or remotely
- Can be very creative and rewarding

Other:

- Frequent change
- Need to continually learn on your own to keep-up

Bad:

- Possible lack of interaction with people, users, customers
- May be writing code from a spec, sitting at a computer all day
- “Loaner” or “Geek” stereotypes
- Possible concerns with outsourcing
- Can be very competitive
- Only 18% of CS grads nationally are women - depending on the company there may be a “bro culture” that is not welcoming to women, we will talk more later

IT and Stereotypes

Information Technology (IT) is of vital importance to nearly every organization, whether they are a “tech” company or not.

Many/most organizations have an internal IT group that employs people in many different roles besides “developers”.

There are issues and stereotypes here too.



“The IT Crowd”, UK TV Channel 4

So what really does IT do?

- Helps make the company or organization **as a whole** more effective or more profitable by...
- Insures the organization has appropriate, well designed and well managed **infrastructure** (systems, servers, networks)
- Insures that data, information and secrets are protected from disaster and secured against hackers/malware/attack
- Insures that the organization is legal, compliant and socially responsible
- Utilizes “business intelligence” and data to support better decision making by managers
- Establishes hardware and software standards for improved efficiency and to facilitate collaboration
- Facilitates procurement/purchasing, repair, licensing, and system deployments
- Makes “buy vs. build”, cloud, or outsourcing decisions
- Provides end-user support, help, ticketing, and documentation
- Develops and maintains “line of business” systems
- Insures systems are well designed - easy to use and navigate, information is well organized
- Manages technology or software development related projects
- Improves customer experiences and interactions (for example through an organizational web presence/store)
- **Overall, IT works strategically to ensure that technology has a positive impact on the organization as a whole
(Sometimes what is best for an individual is not what is best for the organization)**
- Each bullet may take one or many people in varying jobs/roles to achieve, not just developers

Sample tech job titles that are not “developers”

- CIO – Chief Information Officer
- CTO – Chief Technology Officer
- CISO – Chief Info Security Officer
- Chief Privacy Officer
- Director of IT
- IT Manager
- Project Manager
- Program Manager
- Network Manager/Engineer
- Game Designer
- Risk Manager
- Cybersecurity engineer
- Info Assurance Analyst
- UX Designer
- UI Designer
- System Administrator
- Help Desk Manager
- Help Desk Technician
- Technical Writer
- IT or Computer Specialist
- IT Technician
- Desktop Support Engineer
- Systems Analyst
- Business Analyst
- Consultant
- IT Auditor
- Database Manager
- Database Administrator
- Business Intelligence
- Data Scientist
- Info Viz Designer
- Usability Tester
- Web Producer
- Accessibility Engineer
- DevOps Engineer
- **Entrepreneur**

Start-ups and Entrepreneurship

- Upon graduation, most students tend to work for established companies
 - Big, small, or non-profits
- Others prefer to work for start-ups.
There are tradeoffs
- Some students are very entrepreneurial and want to start their own company.
 - One success already from Informatics, [Kabir Shahani](#)
 - Foster has an [Entrepreneurship minor](#) that may be helpful



Amperity Video

Some Big IT Challenges

- Rapid technological change – more devices, more platforms than ever
- Complex and rapidly changing legal landscape
- The “Consumerization of IT”
 - Most “regular” people can now use technology quite well without IT guidance.
 - Many are fast adopters who demand control. Their device, their software, their services - when and where they need it.
 - IT potentially seen as a bottle-neck or viewed as the people who just say “NO”, or who stay with old/out-of-date legacy tech for too long
 - Bring your own device (BYOD) trend makes it difficult for IT to control and secure information
 - Many users want to intermix their personal life and work life on a single device
- Cloud Services
 - Some services may be attractive to end-users with rich functionality, but may not be legally compliant. Users will try to go around IT or ignore IT to use what they as an individual prefer.
 - May expose the organization to considerable extra risk.
 - Adds reliance on another company or Internet connectivity. Loss of control.
- Some say that “IT Doesn’t Matter” any longer
they claim technology is not a business differentiator as it is now commoditized.
- IT may spend too much effort fighting fires vs. thinking strategically about how to improve the organization or company



What else should you know for success?

Soft-skills are super important

Ability to work well on a team



Ability to communicate well 1:1 and
present your ideas to others



Steve Jobs...

You also need skills specific to your area of interest

- Data Science, Databases, Data Analytics, Information Visualization
- Networking, Risk Management and Cybersecurity
- Code and algorithms
- Design and Information Architecture
- Research Methods to inform your designs/decisions
- Vendor, product, or platform specific knowledge such as Windows Server, Linux, Active Directory, Storage Area Networks, Cloud services (Azure and AWS), SQL Server, Cisco networking

Some tech jobs may also ask for vendor certifications, other skills can be learned “on the job”, as part of an internship, or online

Tech skills are transitory – you must become a lifelong learner!



Your personal people network means a LOT.

Are you on?



- If not, sign-up, create an initial profile, add some contacts
- If so, update your profile and add some more contacts

Seeing the world through Information colored glasses

Holistic thinking, it's not just the tech or algorithm that matters



- Think “big picture” and ask questions.
- Why are we doing this?
- What is the problem we are trying to solve?
- What information and technology do we need to solve this problem?
- Who are the stakeholders and what do they think? Have empathy.
- What are the positive and negative implications (legal, social, and organizational)?
- Is this solution cost effective?
- Is this solution sustainable?
- Who will run it, manage it, maintain it when change is needed?
- How do we design this solution so it is “easy to use”?
- Is there a non-technology solution that would be better?

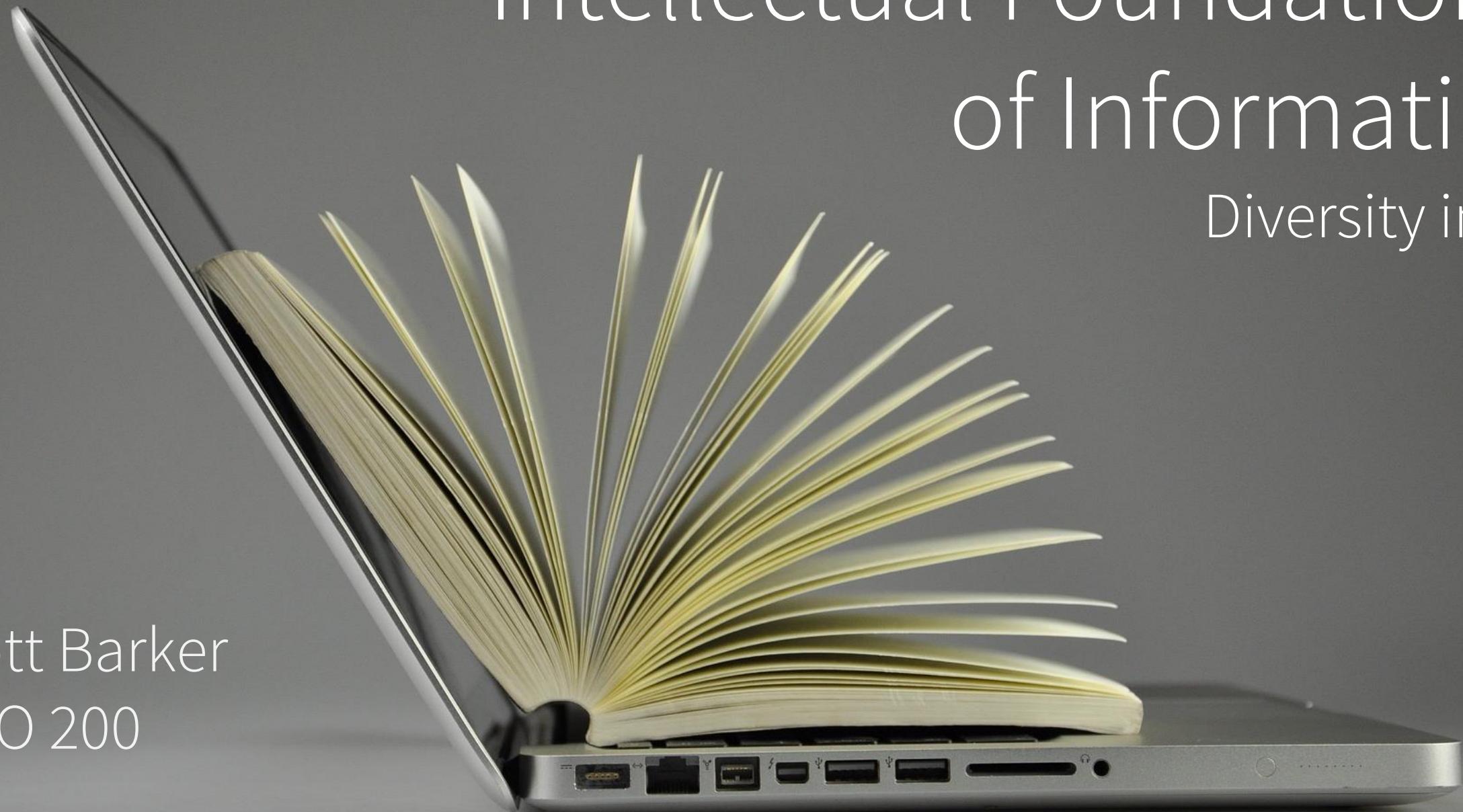
If you can continually think holistically, through information colored glasses, you will stand-out.

End Part 1

Intellectual Foundations of Informatics

Diversity in IT

Scott Barker
INFO 200



Lack of diversity in tech is an issue

Gender and racial diversity are significant problems today

There are many other types of diversity as well, for example

Sexual orientation

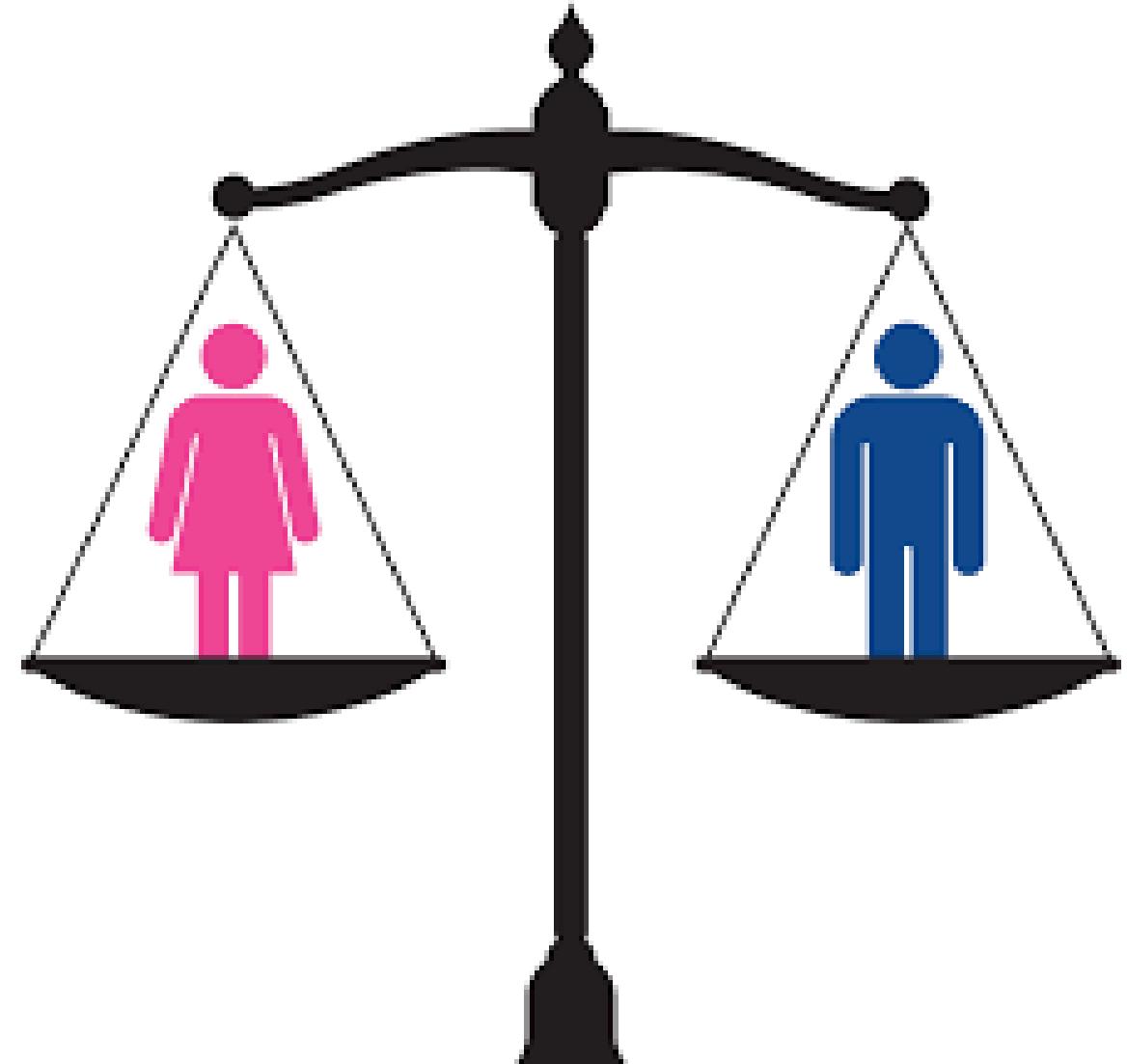
Sexual identity

Age

Weight

Veteran Status

Citizenship





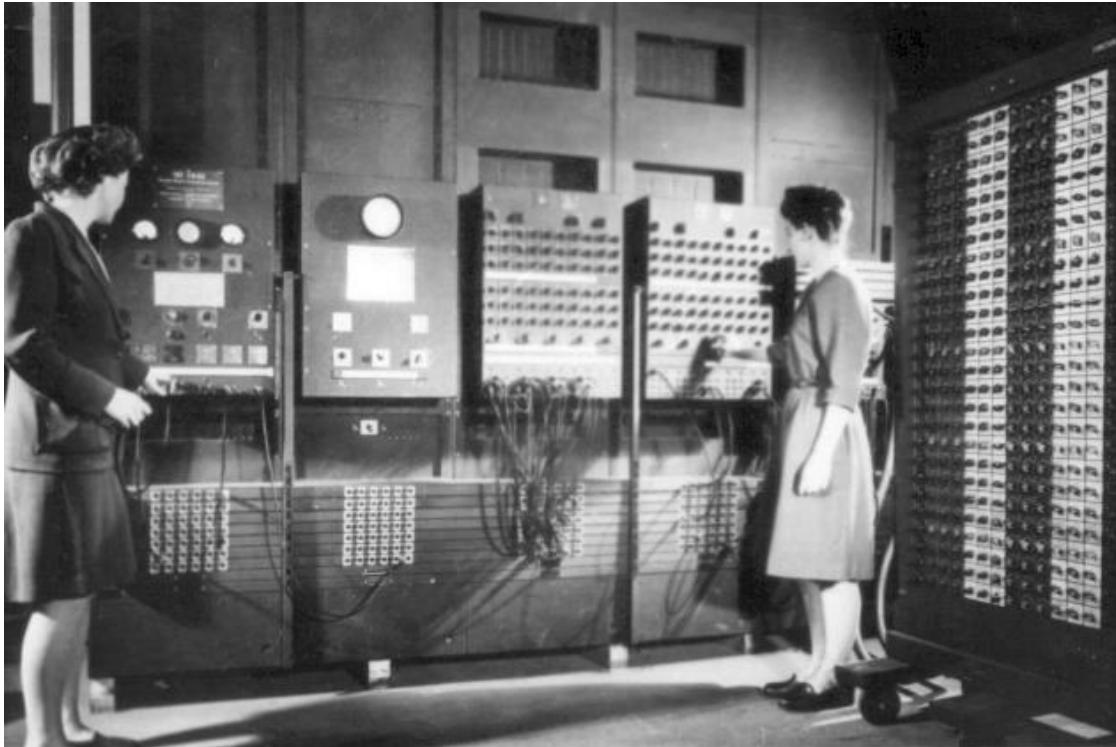
Let's look at some companies

<https://informationisbeautiful.net/visualizations/diversity-in-tech/>

Google Video

Gender Diversity

In early days
of computing
women
played a large
role





Grace Hopper (1906-1992)

Ph.D. in Mathematics from Yale

Invented the first compiler

Developed first high-level
programming language (COBOL)

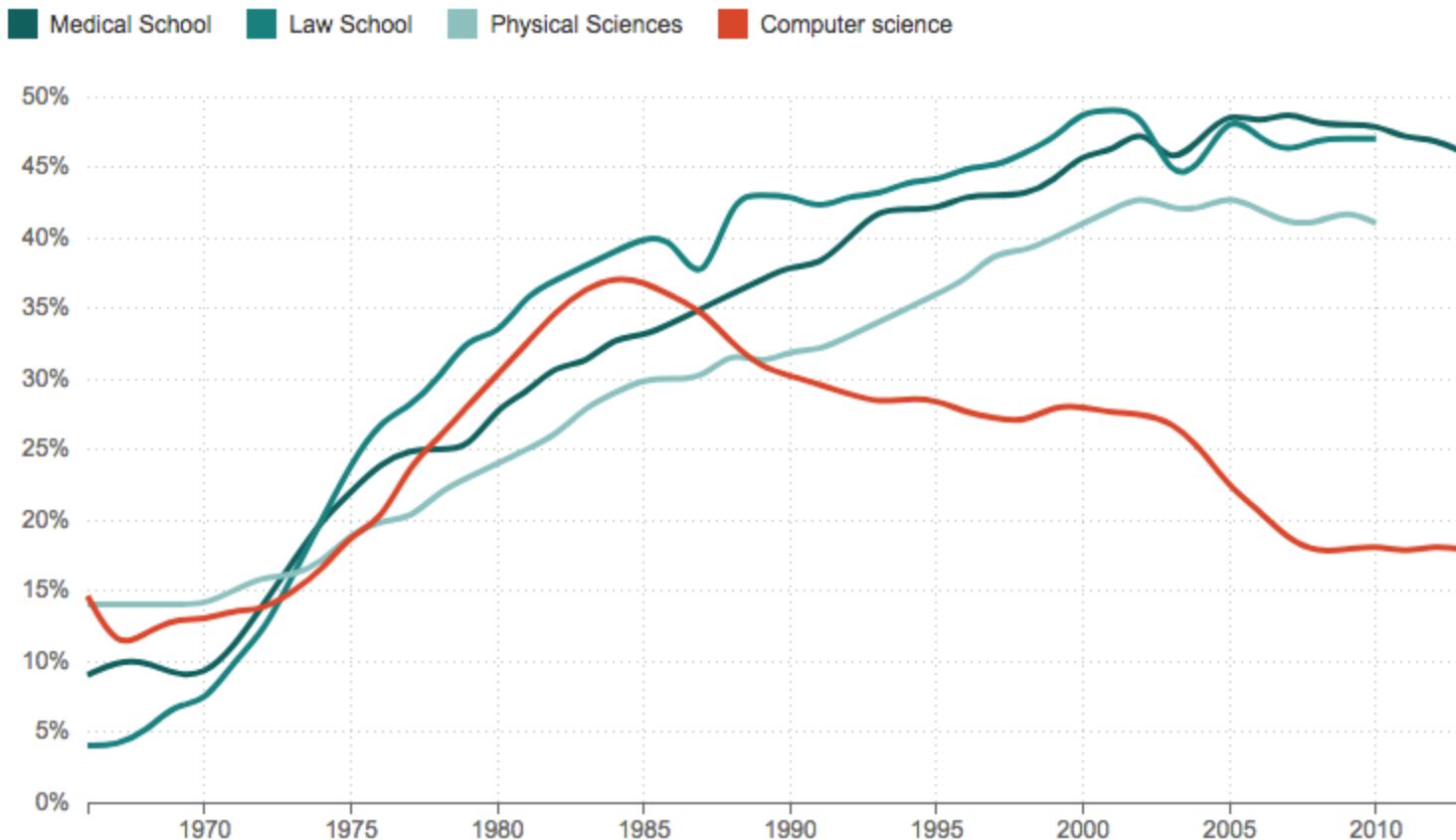
Coined the terms “bug” and “de-bug”

Annual Grace Hopper Celebration of
Women in Computing – over 20,000
people attended most recently

Grace Hopper Biography Video

Grace Hopper Convention





Source: National Science Foundation, American Bar Association, American Association of Medical Colleges

Credit: Quoctrung Bui/NPR

WINFO'S 8TH ANNUAL HACKATHON



[Video](#)

SATURDAY, JANUARY 18TH | 9AM - 9PM | HUB NORTH BALLROOM



WINFO Overview Video



Implicit Bias Video



Interested in learning more?

INFO 102 – Gender and
Information Technology
(I&S and DIV)

INFO 402 - Gender,
Race, and Information
Technology
(DIV)

WINFO – Women in
Informatics, student
group

Bottom line...

- Yes there are issues around diversity in tech today, there is LOTS of room for improvement
- But good news...
 - The iSchool and most current students care, you can do it
 - Many companies are actively working on to improve as well
- You can't do something if you do try!

End

The Information Perspective

Part I

INFO 200



W

antelope



Information Perspective 1

agenda

- ❖ Buckland & his typology
- ❖ things information can do
- ❖ consensus
- ❖ what can't be information/informing?

information is everywhere

duh

in **work** settings: emails, Slack/Teams, Zoom, presentations, etc

in **home/personal** settings: grocery lists, streaming music/movies/games, genealogy/family history, personal finance, texts, social media, etc

in **school** settings: readings, grades/transcripts, schedules, Canvas (and emails, Slack/Teams, Zoom, presentations, etc)

in **play/recreational** settings: sports analytics, standings, records, etc

why?

and...it's everywhere, but **could it be everything?**

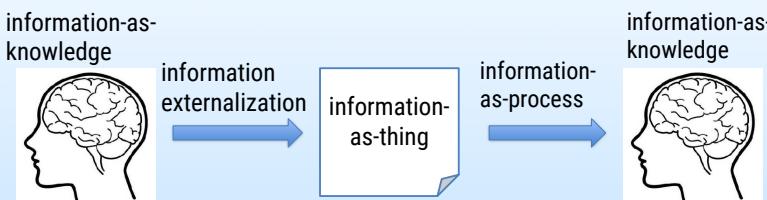
why is information everywhere?

because it has **value**

because it does **work we need and create it to do**

because **we can't help it**

and more....



Buckland's typology

Information-as-thing

(noun) data in the form of numbers, characters, records, documents, photos, audio, video, or physical objects; these are what we store and manipulate with information technology

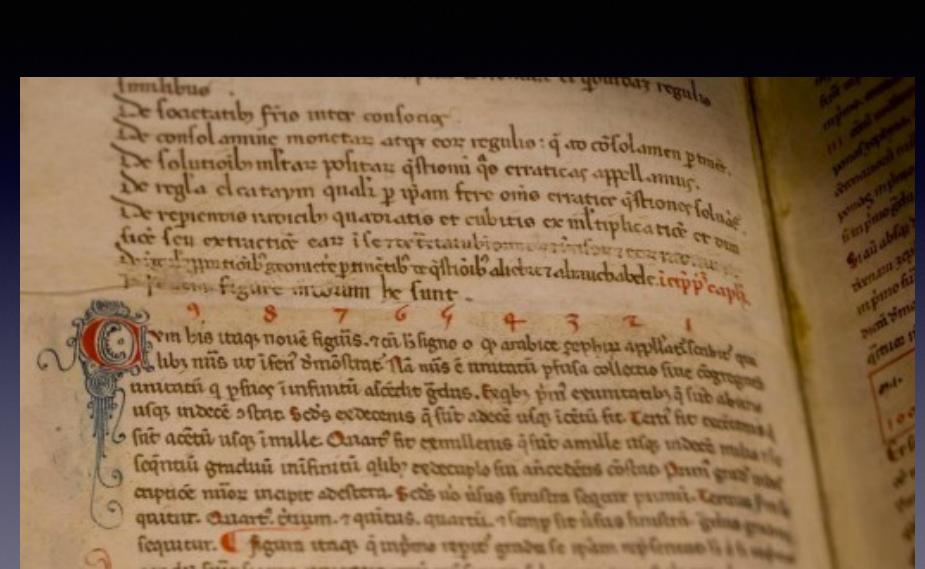
Information-as-process

(verb) the act of being informed by encountering data that has been turned into something meaningful to the person

Information-as-knowledge

(noun) the result of information-as-process; the intangible web of concepts and ideas in your own mind, which you can often externalize again into information-as-thing

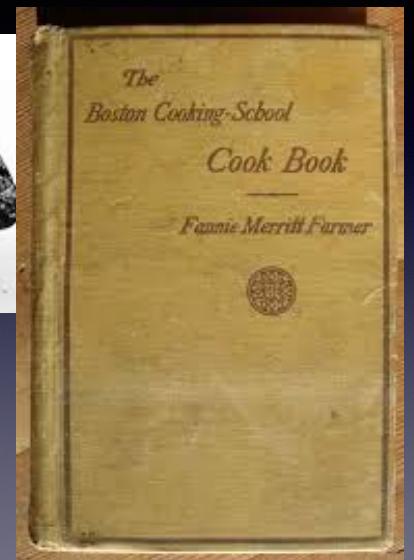
Liber Abaci 1202



Quotations of Chairman Mao
1964



Boston Cooking-School Cook Book
1896



Inter Gravissimas
1582



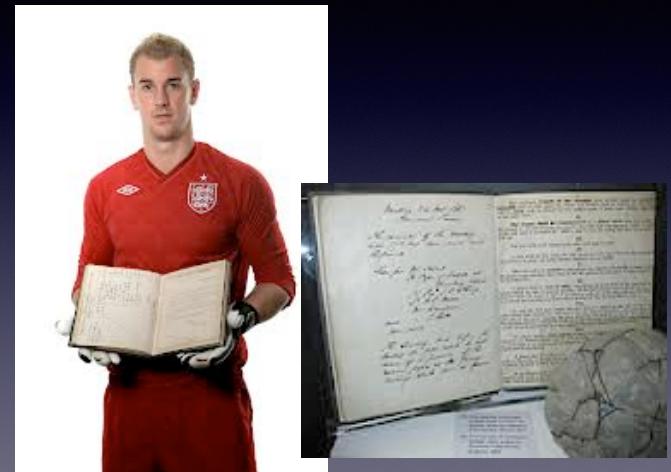
AIDS Memorial Quilt
1987



Vietnam Veterans Memorial
1982



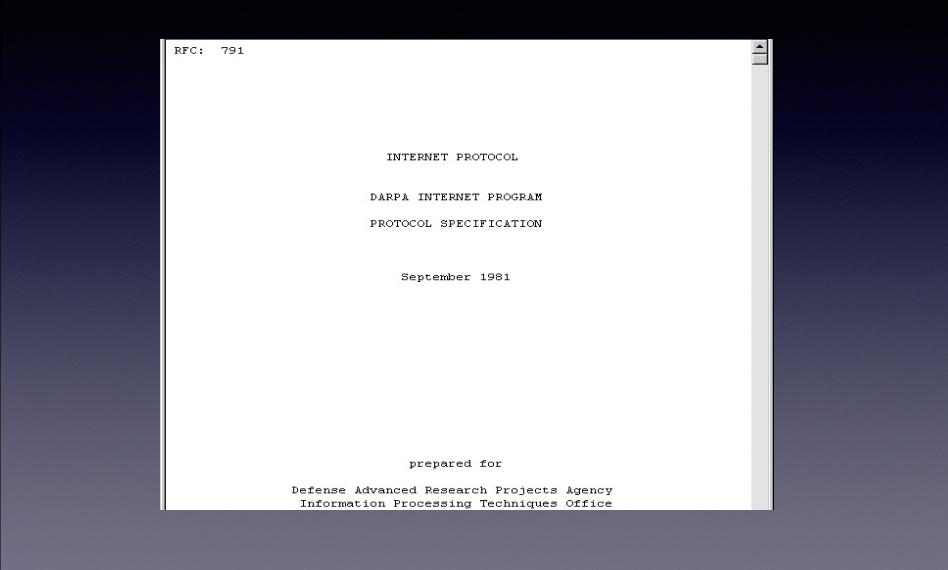
Rules of Association Football (“Soccer”)
1863



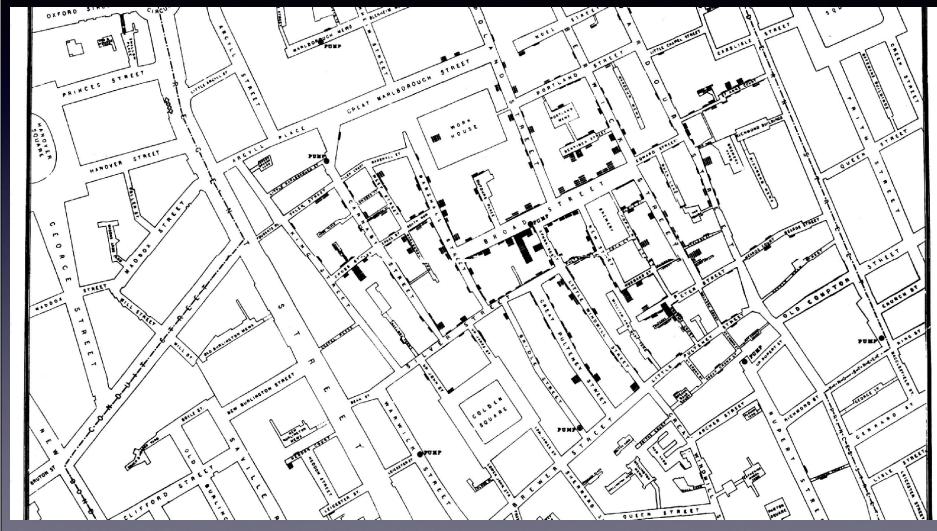
Treaty of Waitangi/Tiriti o Waitangi
1840



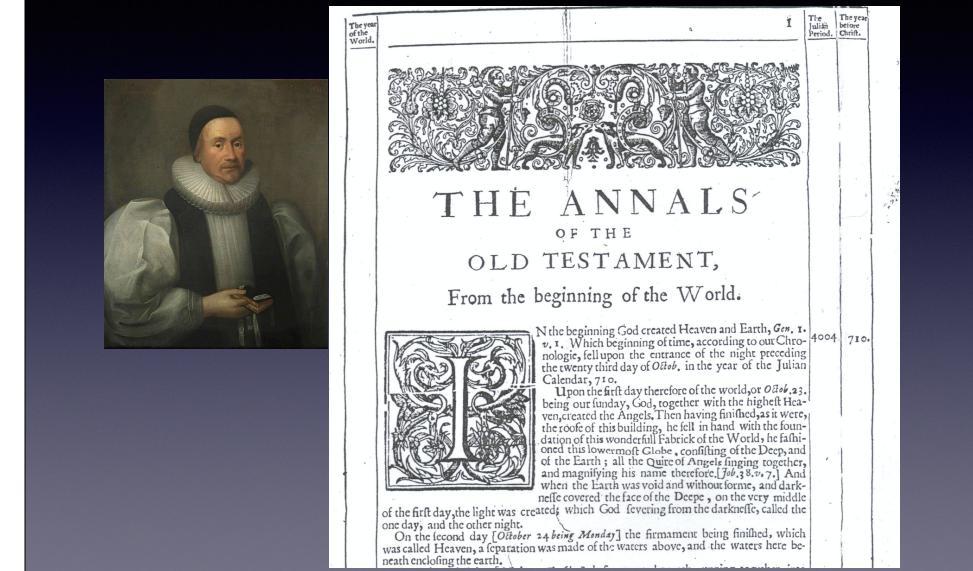
Internet Protocol (RFC 791)
1981



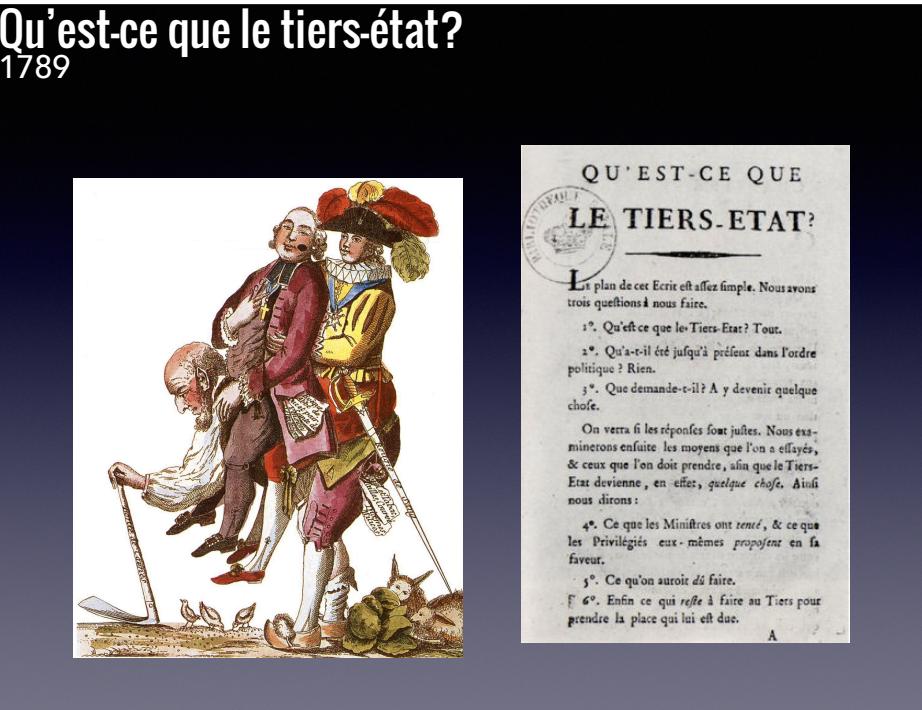
John Snow's Cholera Map
1854



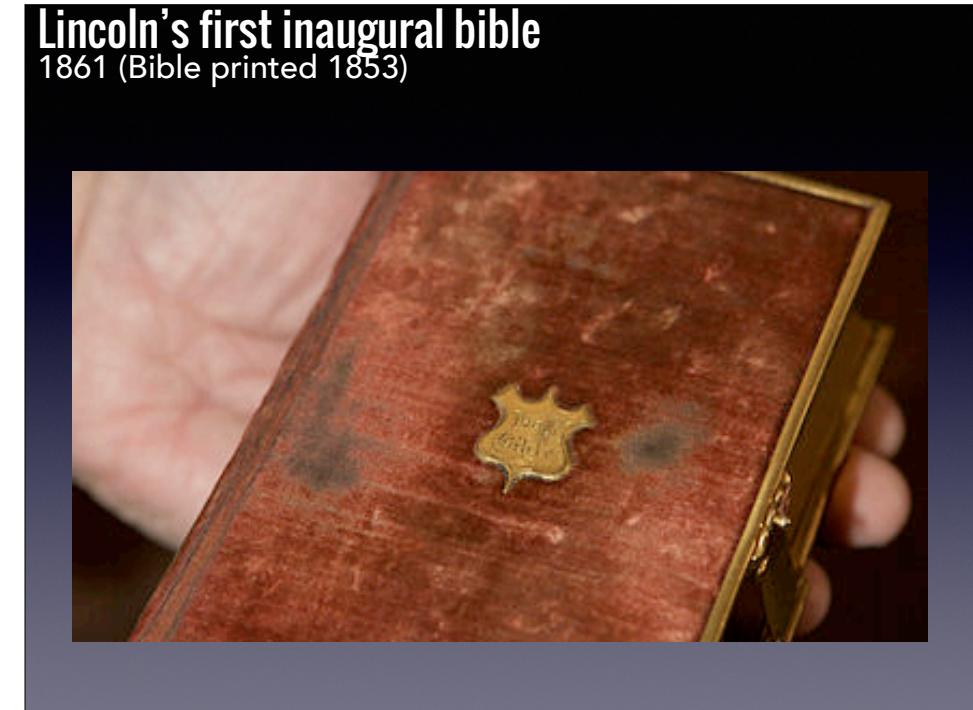
The Annals of the World
1650



Qu'est-ce que le tiers-état?
1789



Lincoln's first inaugural bible
1861 (Bible printed 1853)



“Donation of Constantine”
prob 8c (750?), known by 778



McCarthy’s “list”
1950

antelope



and so...?

make the case the antelope **is not** information
make the case the antelope **is** information
situational

consensus

things can be informative at a specific time, then they're information
some things, kinds of things, are informative a lot, often,
commonplace, so the likelihood that they're usually informative
at any given time, present or future, is pretty high (examples?)
for those, we have a general (societal, cultural) **consensus** that they
are "information"
...which is why the antelope seems peculiar

other things that can be informing

events

cf. *representations* of events (recordings...which are *things*)

smells

screams of terror

what can't be information?

Buckland 356: "**we are unable to say confidently of anything that it could not be information.**"

... "if everything is information, then being information is nothing special." (I disagree)

The Information Perspective

Part II

INFO 200

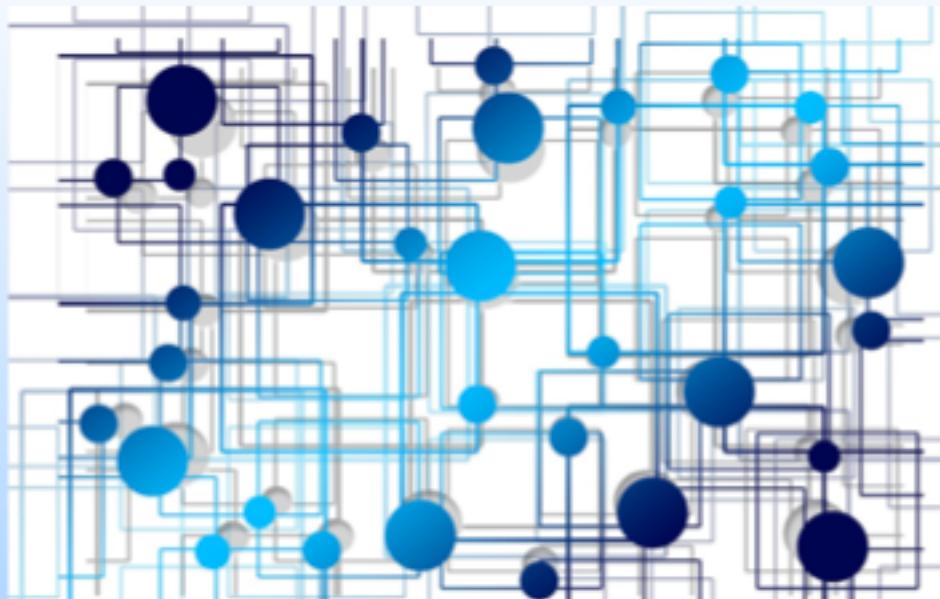


Information Perspective 2

agenda

- systems and information systems
- a couple more examples of objects, roles, and systems
- the life cycle of information - and what's happening
- where the “information perspective” comes from
- ...and an important new (old) concept

what's an "information system"?



how would you systematize?

information as **knowledge**

information as **process**

hence, the focus on information as **thing**

Rosetta Stone
196 BCE



Rosetta Stone
196 BCE



giant fist



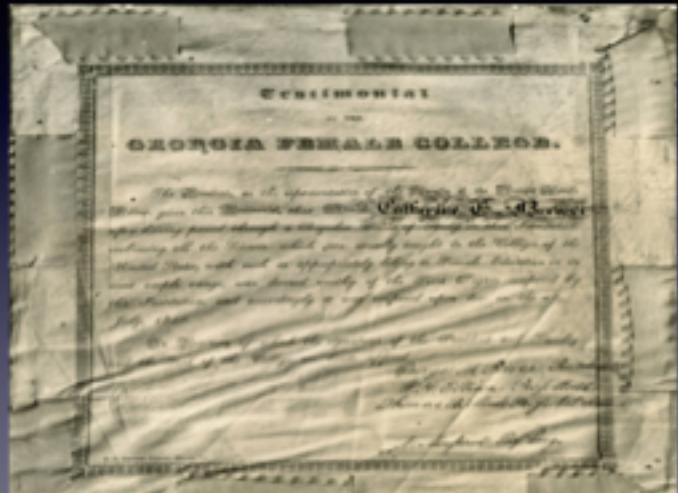
Arm of Amenhotep III (statue fragment)
1550-1069 BCE



Rosetta Stone
196 BCE

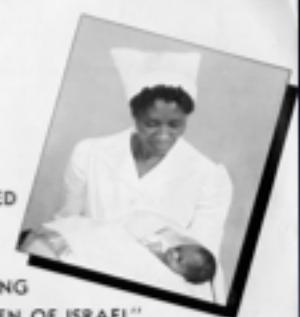


Catherine Brewer's Diploma 1840



Barack Obama Birth Certificate

"A Birth Certificate for Baby"



"AND
MOSES
NUMBERED
AS THE
LORD
COMMANDED
ALL THE
FIRST
BORN AMONG
THE CHILDREN OF ISRAEL."

[IN THE BIBLE WE FIND A RECORD OF A CENSUS IN THE TIME OF THE PROPHETS. THIS BOOK TELLS YOU WHY IT IS IMPORTANT TODAY TO HAVE A RECORD OF THE BIRTH OF ALL BABIES. YOU CAN HELP BETTER THE HEALTH AND WELFARE OF OUR PEOPLE BY FOLLOWING THE INSTRUCTIONS GIVEN HERE. IT WILL BE A SERVICE TO YOUR COUNTRY.

THE FRIENDLY COOPERATION OF THE GEORGIA DEPARTMENT OF PUBLIC HEALTH AND THE HEALTH DEPARTMENT OF THE CITY OF ATLANTA IN SECURING THE SUBJECTS FOR THE VARIOUS PHOTOGRAPHS IS GREATLY APPRECIATED.

Oscar P. Scoring
Federal Security Administrator

"life cycle of information"

creation
publication/dissemination/production
evaluation & collection
storage
organization
retrieval/search
evaluation & use
...which often leads to creation



*at each stage, decisions are made, neutral, good and otherwise;
intentional and unintentional*

and it expands

2020 This Is What Happens In An Internet Minute



and it gets faster

Velocity - Time required to send 250 words over 3000 miles

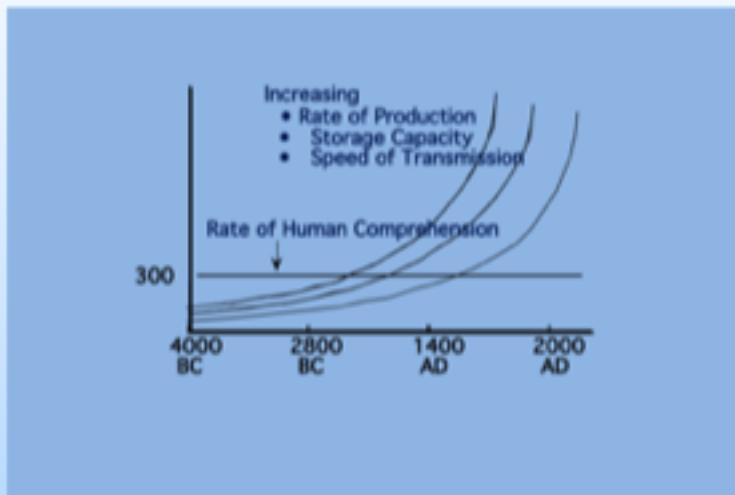
490 BC		about 120 days running 25 miles/day
1844 AD		a little over 4 minutes
1999 AD		.33 seconds
2019 AD		.002 seconds

and we don't

Rate of Human Consumption

4000 BC		~ 300 words per minute
2800 BC		~ 300 words per minute
1450 AD		~ 300 words per minute
2019 AD		~ 300 words per minute

oops



the “information perspective”

paying attention to information (etc.) for its own sake - all those stages in the life cycle, how it works, for whom, why, why not, in what circumstances and situations ...
and if you pay attention long enough, you realize something that underlies just about everything here...

power

The Information Perspective

Part II

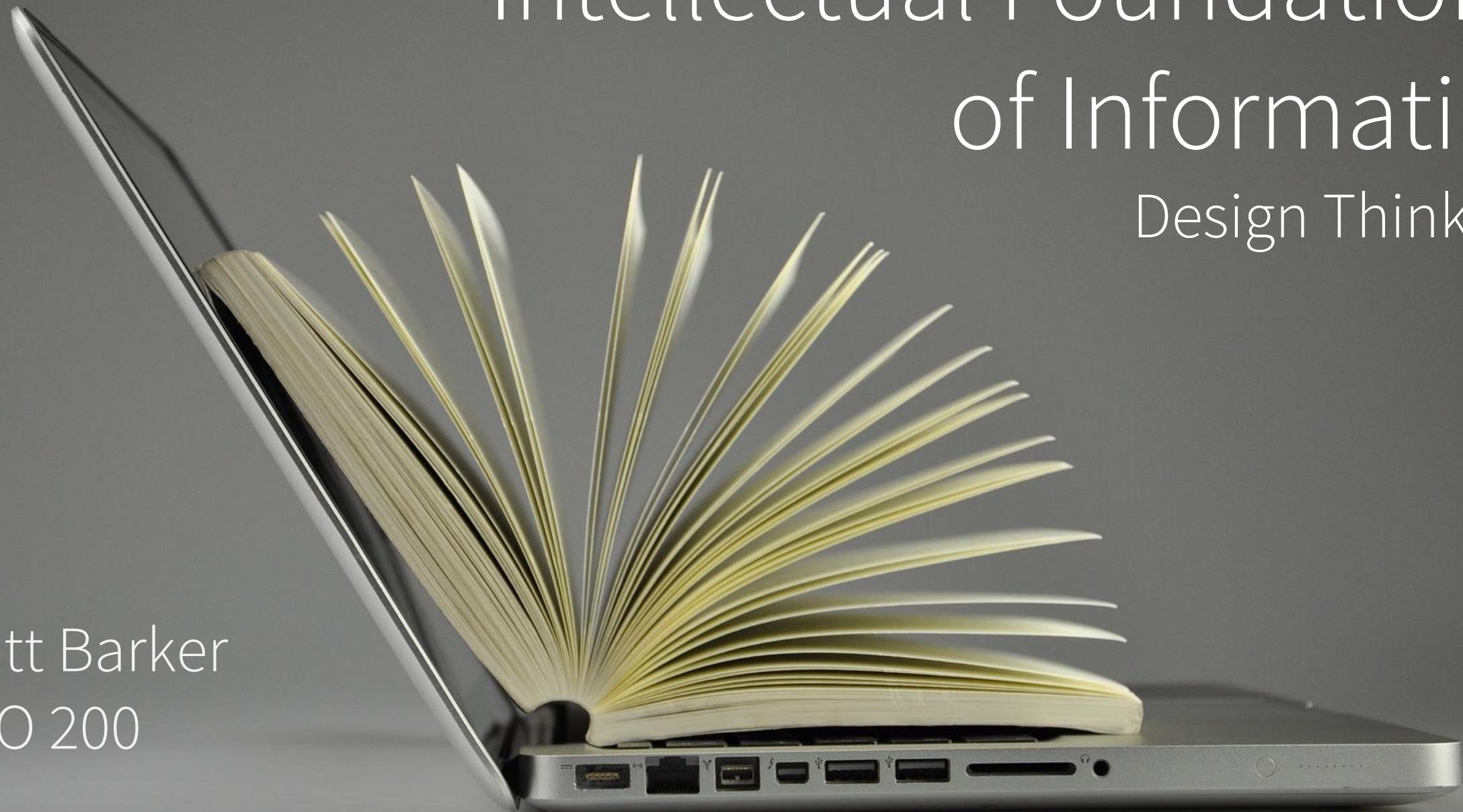
INFO 200

Joseph Janes
Associate Professor, Information School

Intellectual Foundations of Informatics

Design Thinking

Scott Barker
INFO 200

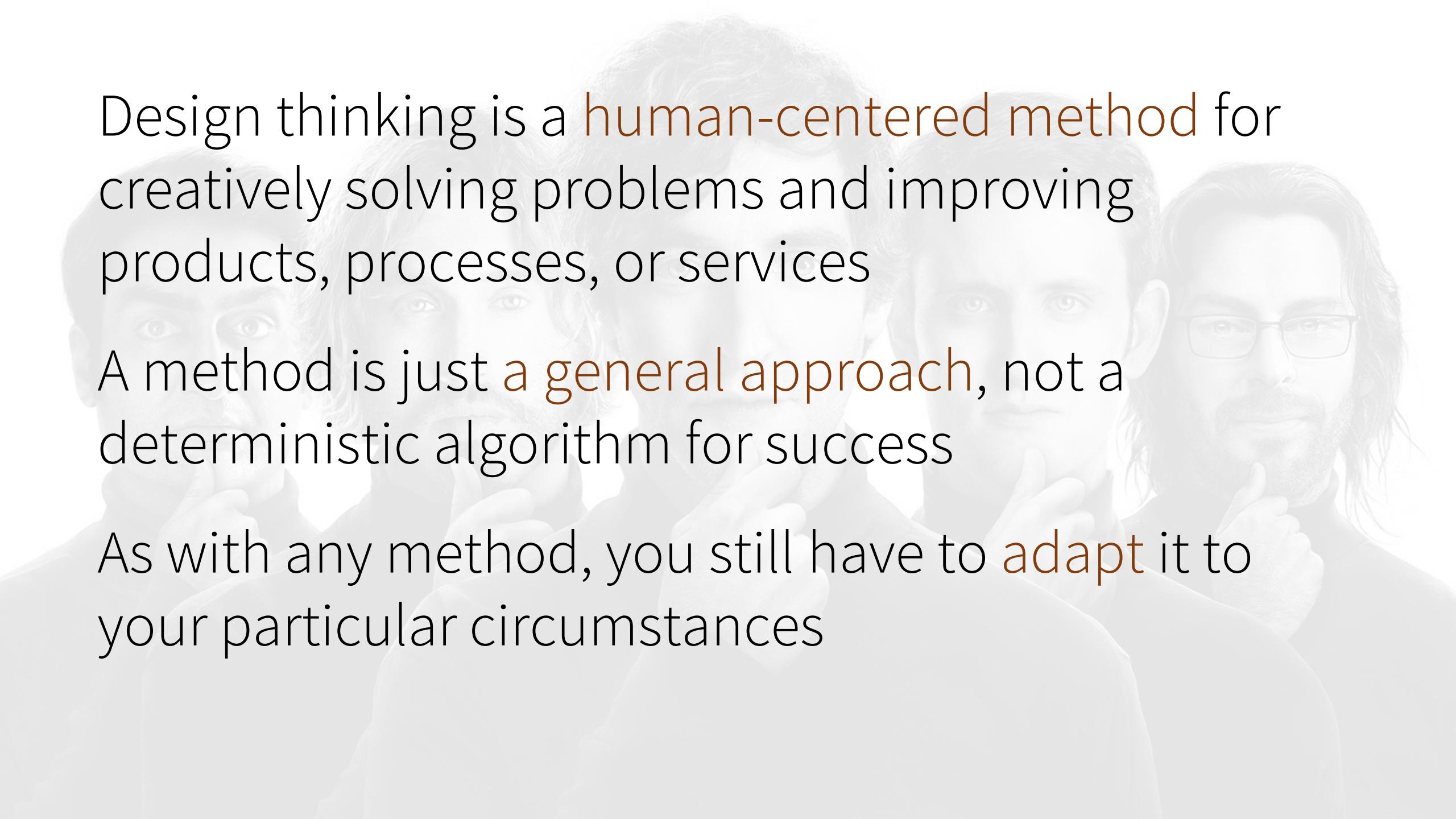


Design Thinking



How did IDEO go about
redesigning the shopping cart?

What was their “recipe for
innovation?”



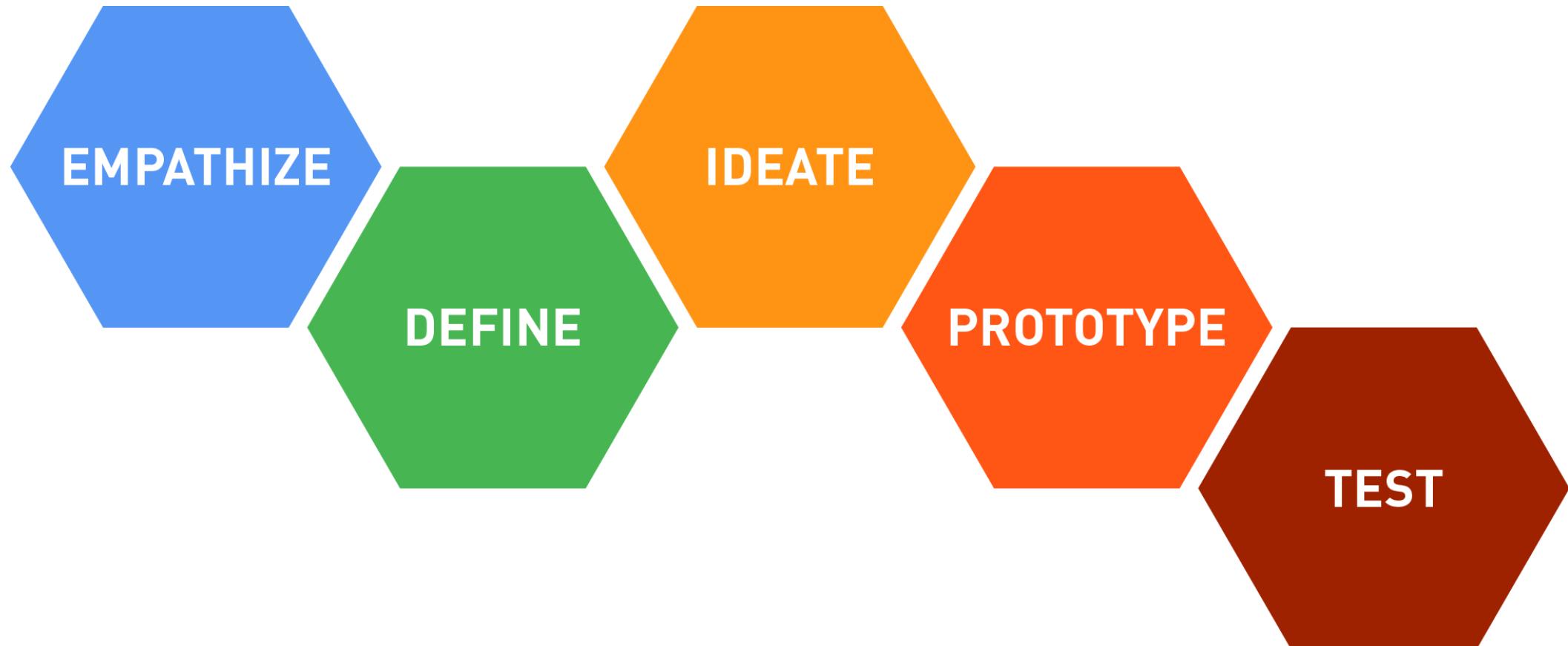
Design thinking is a human-centered method for creatively solving problems and improving products, processes, or services

A method is just a general approach, not a deterministic algorithm for success

As with any method, you still have to adapt it to your particular circumstances

The Design Thinking Process

Stanford d.school



Empathize

Empathy is the foundation of a human-centered design process.

To empathize, you:

- Observe. View users and their behavior in the context of their lives.
- Engage. Interact with and interview users
- Immerse. Experience what your user experiences.

Why?

- The problems you are trying to solve are rarely your own—they are those of other users/people/humans
- In order to design for your users, you must build empathy for who they are and what is important to them - put yourself in their shoes, see their perspective.

Define

- Unpack and synthesize your empathy findings into compelling needs and insights
- Scope a specific and meaningful challenge/problem.

It is a mode of “focus” rather than “flaring.”

Goal:

- Come up with an actionable problem statement: your point of view.

Your point of view should be a guiding problem statement that focuses on specific users, and insights and needs that you uncovered during the empathize mode.

Ideate

Goal:

- To explore a wide solution space – both a large quantity of ideas and a diversity among those ideas. Brainstorming.

Mentally it represents a process of “going wide” in terms of concepts and outcomes—it is a mode of “flaring” rather than “focus.”

The fundamental principle of ideation is to be cognizant of when you are generating ideas and when you are evaluating ideas – typically keeping these two tasks separate.

During ideation you are generating ideas, **not evaluating and criticizing them!**

Prototype

Goal:

Get ideas and explorations out of your head and into the physical world.

A prototype can be anything that takes a physical form

Post-it notes, drawings, an object, a storyboard, a simulated “app” created by a prototyping tool (such as Figma, Adobe XD, Invision, Sketch)

In early explorations prototypes should be rough and rapid to allow yourself to learn quickly and investigate a lot of different possibilities.

Test

Goal:

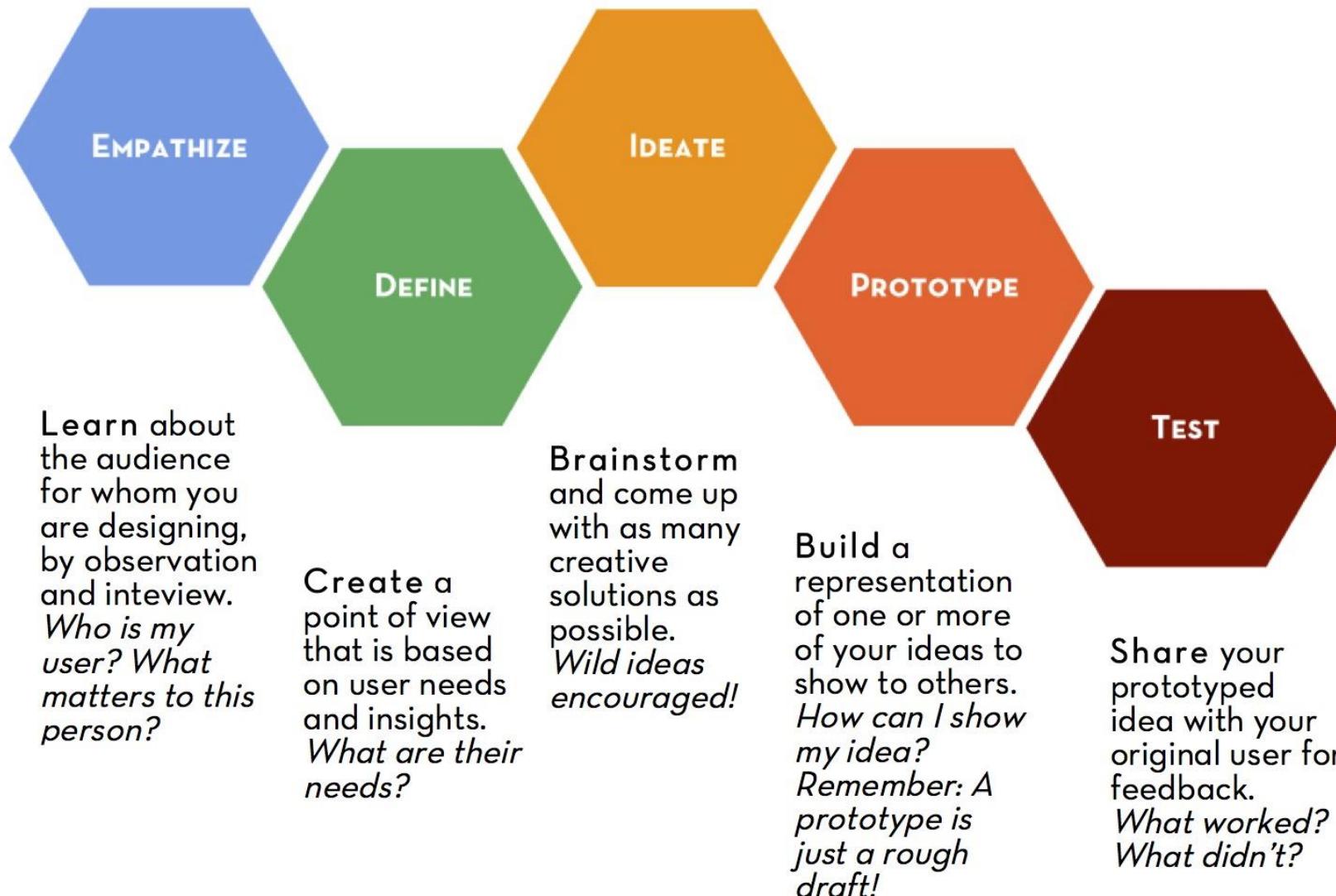
- Get feedback on your solutions so you can refine them to make them better

Testing informs the next iterations of prototypes. Sometimes this means going back to the drawing board. To learn more about your user.

Testing is another opportunity to build empathy through observation and engagement—it often yields unexpected insights. To test and refine your POV.

Sometimes testing reveals that not only did you not get the solution right, but also that you have failed to frame the problem correctly.

We are all DESIGNERS!



End Lecture

Note: No “Part B”

Instead spend that time working with a partner on handout/activity

Intellectual Foundations of Informatics User Experience

Scott Barker
INFO 200

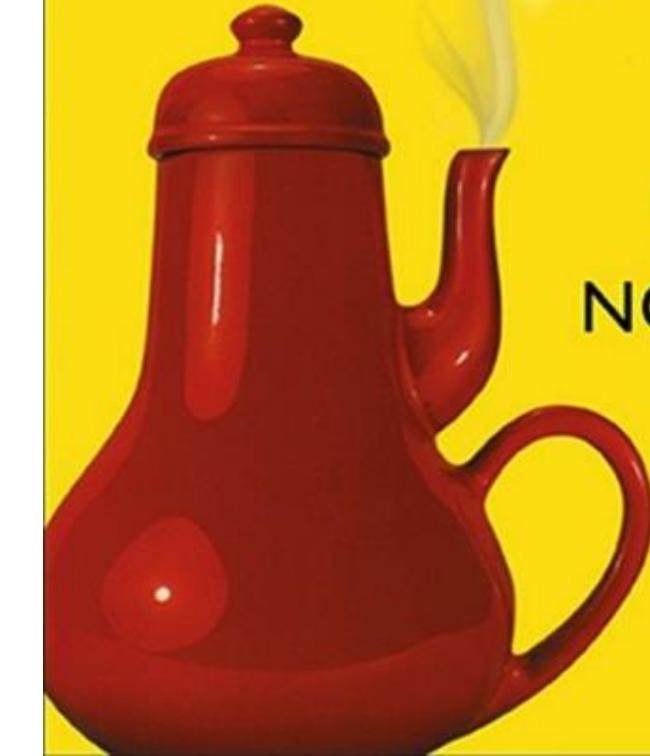


User Experience (UX) Design

“The practice of designing products, processes, services, events, and environments with a focus placed on the quality and enjoyment of the total experience...

No product is an island. A product is more than the product. It is a cohesive, integrated set of experiences”

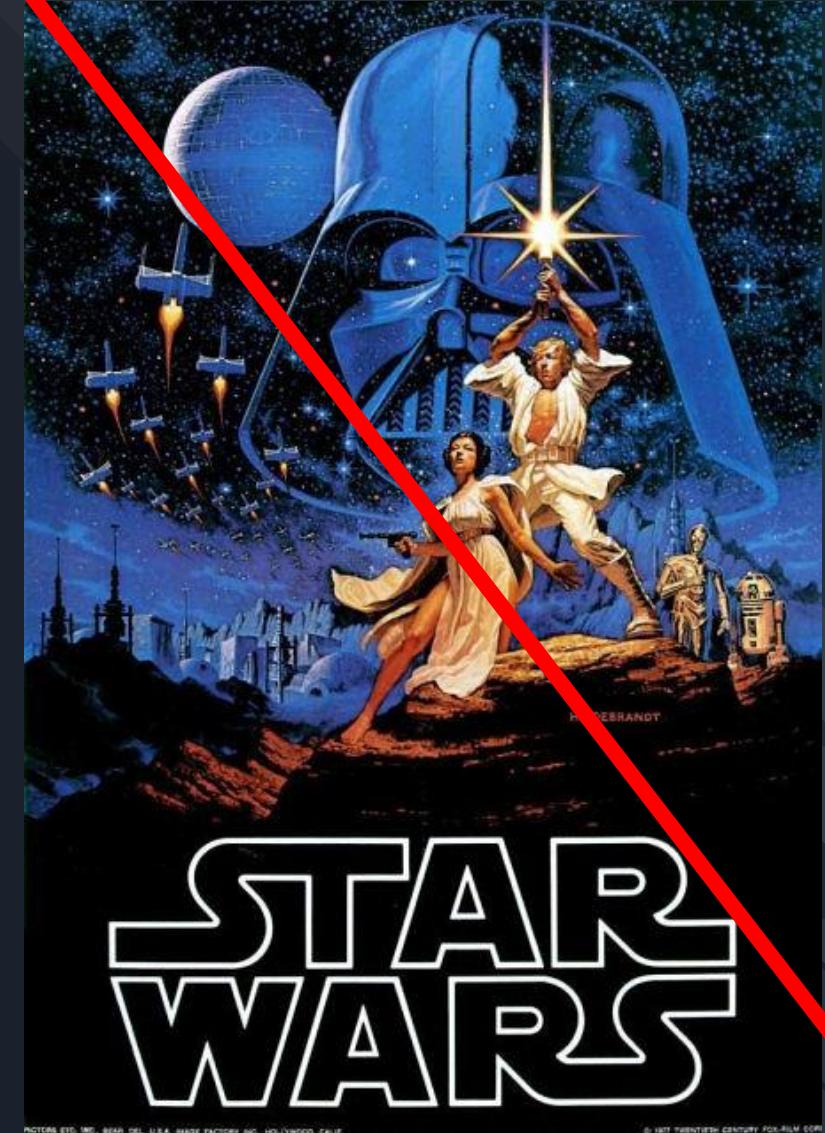
*The DESIGN
of EVERYDAY
THINGS*



DON
NORMAN

It is not a movie poster
you are creating.

It is an experience.



Example: CARS

What is a good user experience?



Ford Focus: It's a City Car

- Needs to be small,
easy to park
- Economic
- Should carry 2-4
people



2015 Ford Focus SE ©EVOX Images



BMW 5 Series: It's a luxury car

- Needs to be comfortable
- Lots of features
- Fuel Economy not very important
- Should carry 4 people





Porche 911:

It's a sports car

Needs to be *FAST FAST FAST*

Highly responsive

Lots of features

Fuel Economy not very important

Brand-name likely matters a lot





What if you have a family and need to take your kids to soccer practice?

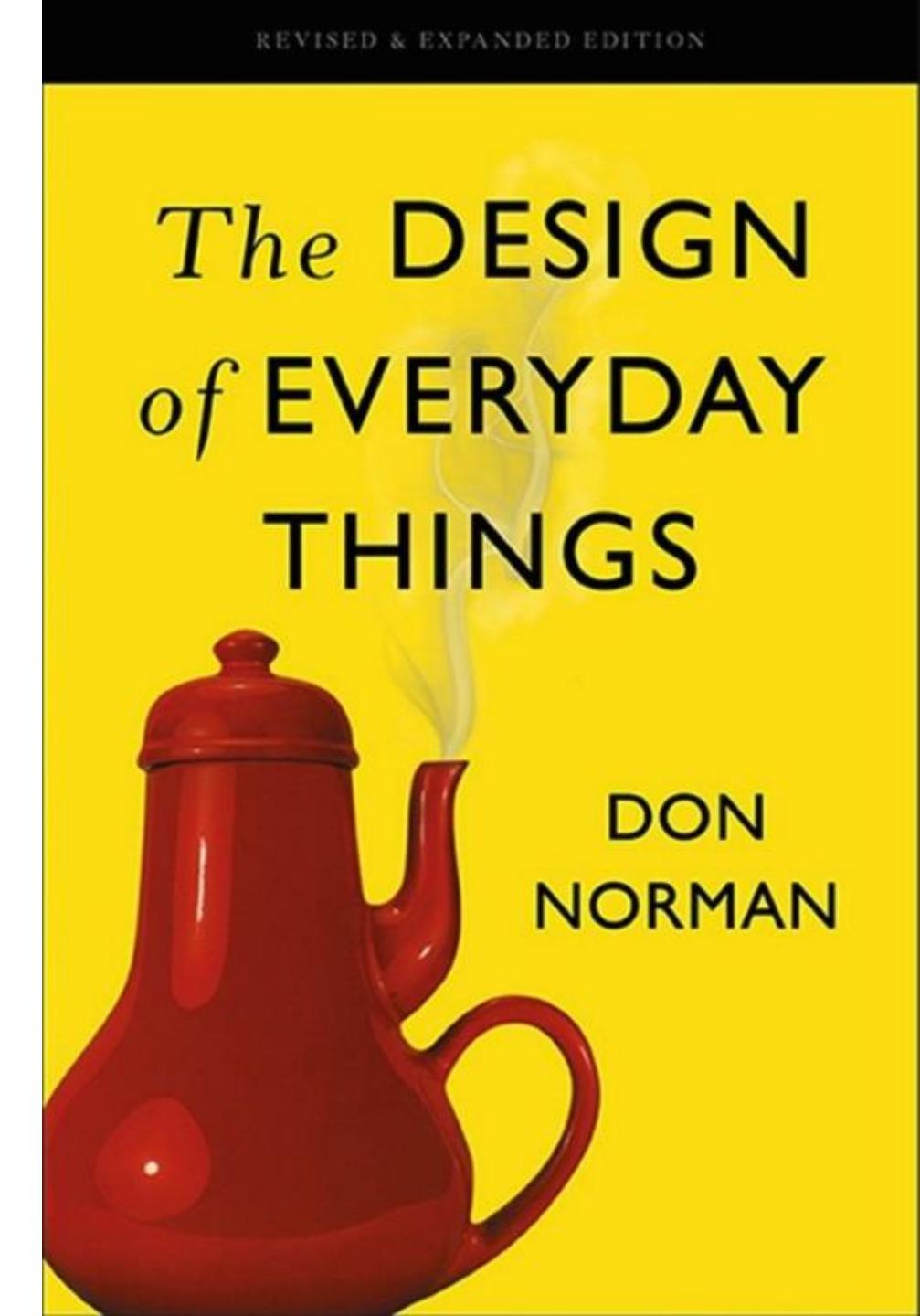
- Different Users
- Different Requirements
- Different desired User Experiences
- Aside from the car itself is the entire car buying experience, they are not necessarily related



User Experience (UX) Design

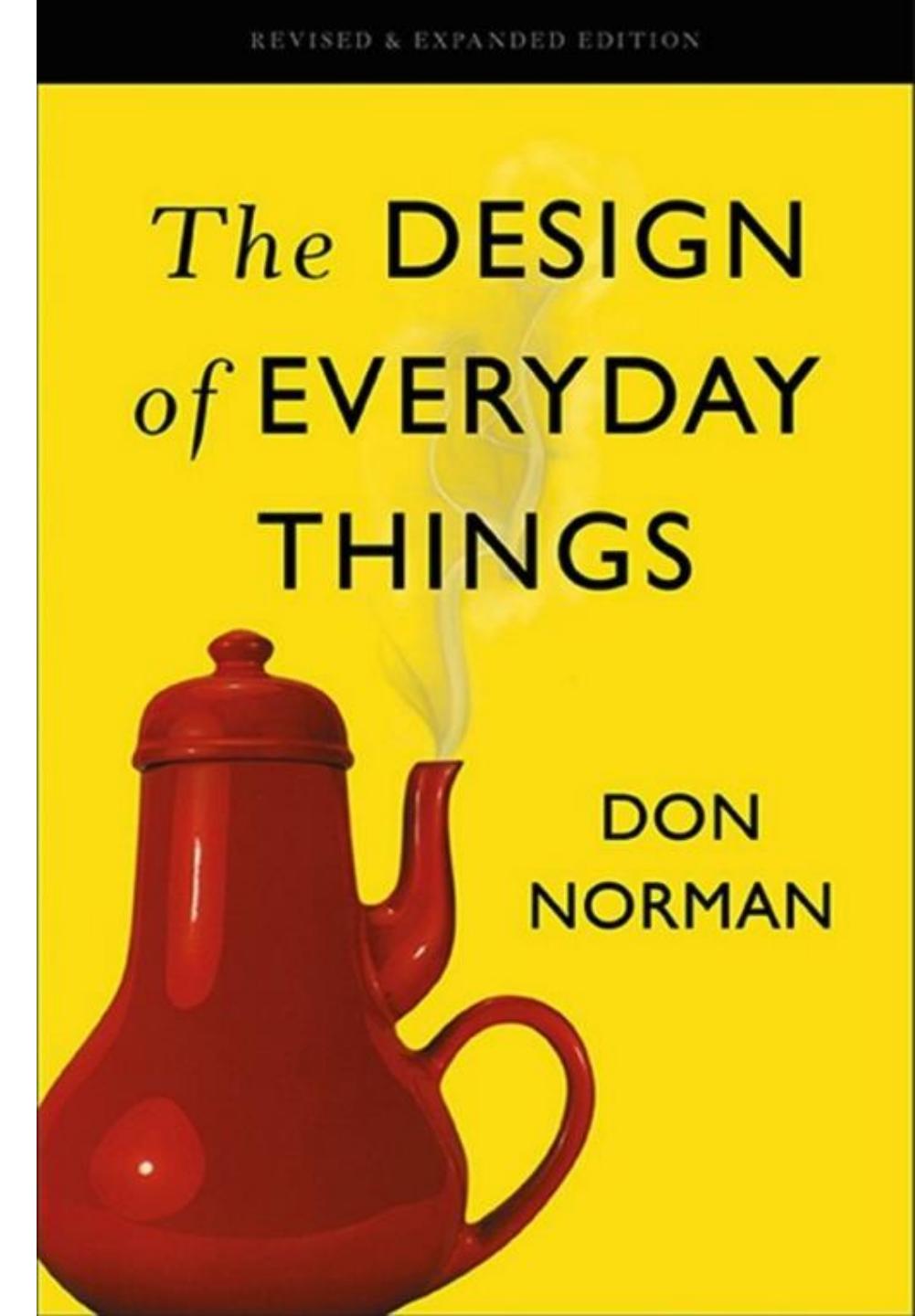
Consider a product, an app, a place to go (like a restaurant), or an event where you've had a **FABULOUS** user experience or a **TERRIBLE** user experience

What made it so?



User Experience (UX) Design

- Is there universal agreement between all people that a particular thing has a “good” or “bad” user experience?
- Is user experience only determined by the “design” of that thing or were there other factors at play?



How did Disney use the MagicBand to create a “magical” user experience?





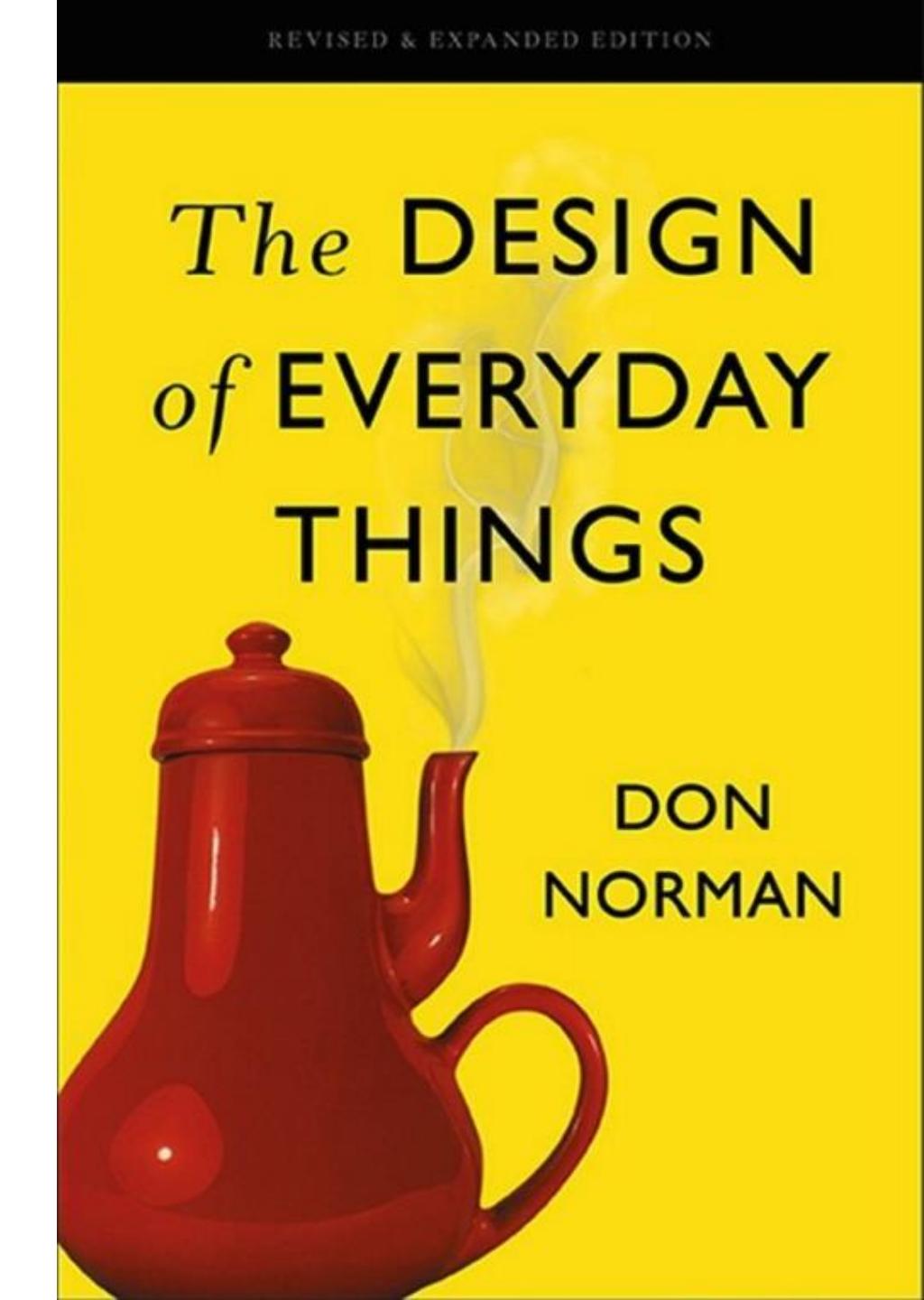


Interaction Design

How people interact with artifacts, either through direct physical manipulation, or indirect software-based interfaces

Goal is to make things ‘intuitive’

Different than “visual design” which has more of an art perspective.



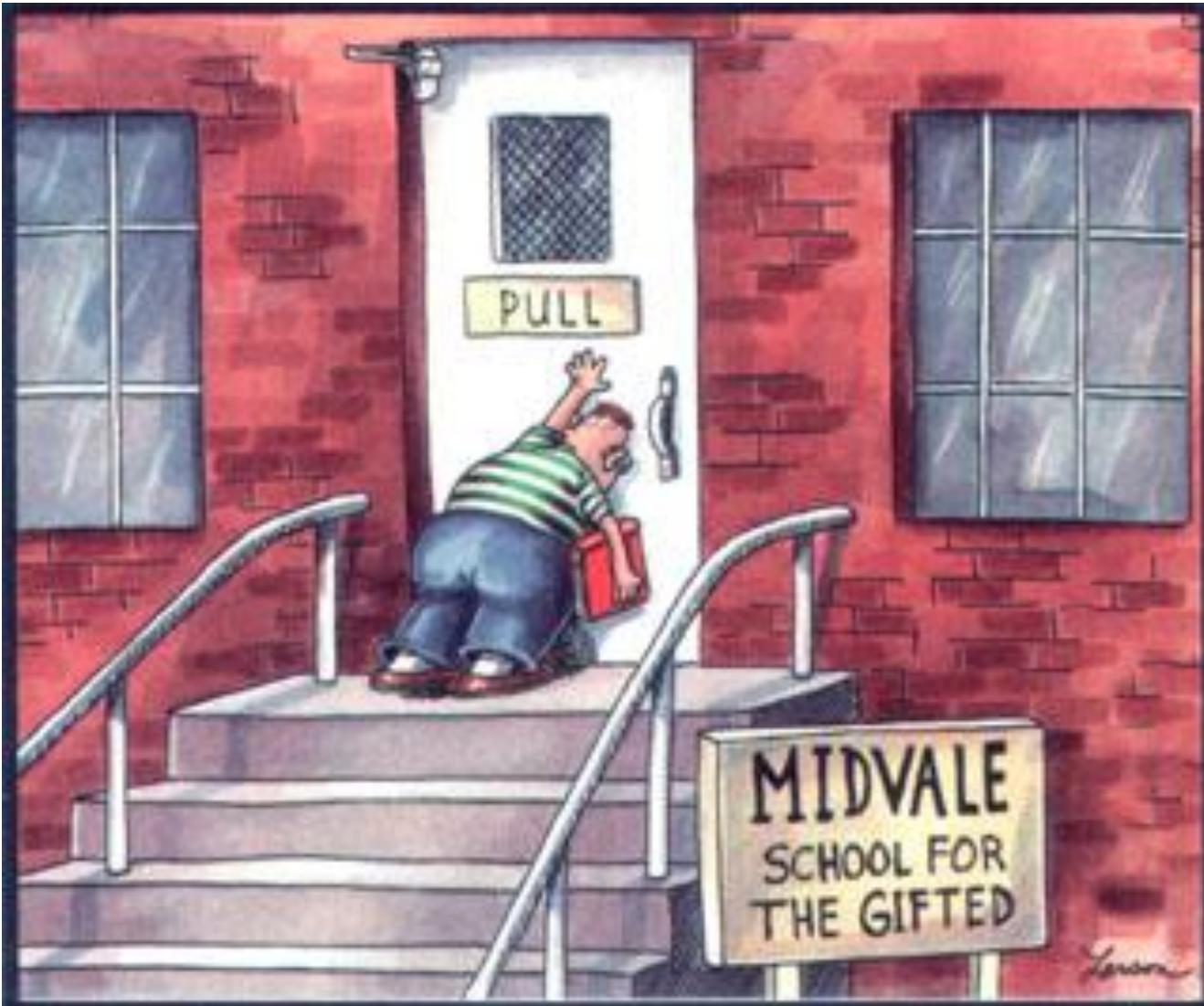
Design

is not just what it looks like
and feels like.

It is how it works

-Steve Jobs

Affordances and Signifiers



What is an Affordance?

“...the relationship between a physical object and a person (or for that matter any interacting agent, whether animal or human, or even machines and robots)...that determines just how the object could possibly be used.

The presence of an affordance is **jointly determined** by the qualities of the object and the abilities of the agent that is interacting.

A chair affords (is used for) support and therefore affords sitting. Most chairs can be carried by a single person so they afford lifting, but for some (those that are weak and can't lift the chair) it does not afford lifting.”

Discoverability

To be effective, affordances have to be discoverable

When you look at something you should be able to “discover” what operations you can do

You shouldn’t need an instruction manual or sign to figure it out

With many systems and computer apps there may be poor discoverability

For some, even simple things like answering your phone are not discoverable

Signifiers

Affordances determine what actions are possible, while signifiers communicate where the action should take place

We need both

Signifiers communicate the purpose, structure, and operation of the device to the people who use it

May be deliberate and intentional (e.g. a PUSH sign) or unintentional (e.g. presence of a worn path on the grass showing a short-cut on a walk way

Signifiers



What happens if the signifier doesn't match the action?

PUSH



You can HAVE IT YOUR WAY® and pull if
you want, but this hinge is pretty stubborn.



Pull

BURGER KING

Norman Doors

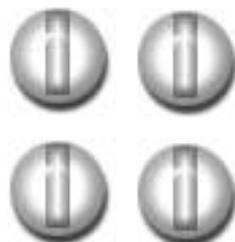


Mapping

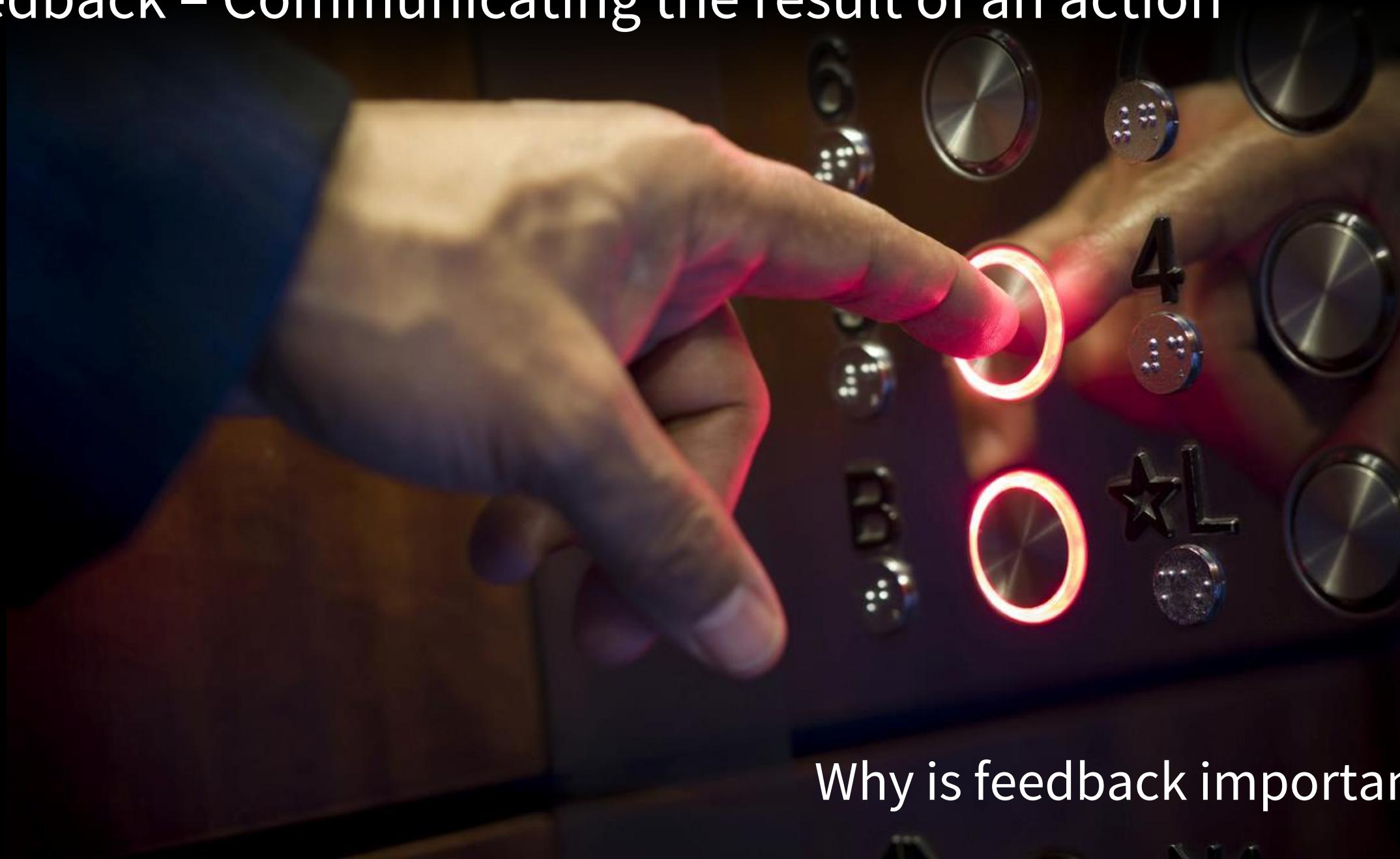
The relationship between the elements of two sets of things



Mapping – which of these is better?



Feedback - Communicating the result of an action



Why is feedback important?

Why do people press traditional crosswalk buttons multiple times expecting the light to change faster?

In fact, do these buttons do anything at all?



Constraints

Design elements that make it difficult or impossible to use a device incorrectly or unsafely



USB Connectors – from constraints to no constraints. Why?



Paying attention to single parts of a design may improve that one element, but doesn't necessarily insure a better overall “user experience”

Apple's latest MacBook Pro has switched to USB C connectors only.

Is this a better
“user experience”?
If so – for whom?



Ethernet dongle
\$30



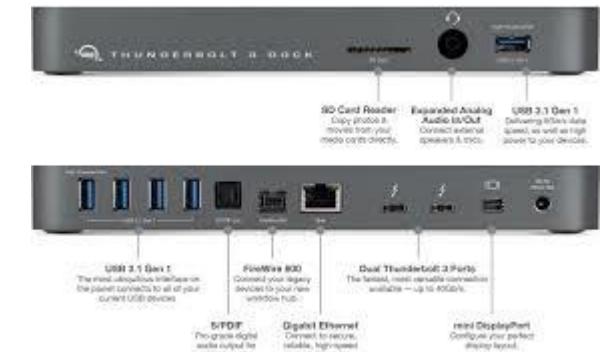
Apple Multiport Adapter
\$69



USB C Hub
\$70



OWC Thunderbolt 3 Dock
\$299



Conventions



Long established patterns that become learned signifiers or expected mappings

Which is hot and which is cold?
What are some other conventions we use?

End Lecture