

Technology, technique and teaching

Jon Dron

Pace University, October 2019

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<https://jondron.org/>
[@jondron](#)

Technology Enhanced
Knowledge Research
Institute (TEKRI)



Athabasca University

FACULTY OF SCIENCE & TECHNOLOGY
School of Computing & Information Systems

Is there a learning technology in this picture?

The image shows a screenshot of a university Learning Management System (LMS) interface. At the top, there is a navigation bar for Curtin University with links for Home, Students, OUA, Staff, Library, OLAS, and Community. Below this is a sub-navigation bar for 'Announcements'. The main content area is titled 'Announcements' and includes a 'Create Announcement' button. A dashed line indicates where new announcements appear. The first announcement is titled 'Lecture 4' and is dated Wednesday, 10 April 2013. The text of the announcement discusses a missing lecture recording and assignment details. A sidebar on the left lists various course and unit resources for 'Operations and Materials Management 301 (2013.1 OMM 301)', including Announcements, Unit Overview, Contacts, Unit Materials, Assignments, Communication, Web Links, Tools, Discussion Board, and Lectures.

Curtin University

Home Students OUA Staff Library OLAS Community

Announcements

Operations and Materials Management 301 (2013.1 OMM 301)

- Announcements
- Unit Overview
- Contacts
- Unit Materials
- Assignments
- Communication
- Web Links
- Tools
- Discussion Board
- Lectures

Announcements

New Announcements appear directly below the repositionable bar. Reorder by dragging Announcements to new bar to pin them to the top of the list and prevent new Announcements from superseding them. The order shown and cannot reorder Announcements.

Create Announcement

New announcements appear below this line

Lecture 4

Posted on: Wednesday, 10 April 2013

The missing lecture is half recorded. Not good enough, but ...
I got most groups and so far all good. If you did not send me your group yet, please do so.
Same for Assignment 2
On Friday, I will discuss the Assignment 1 and 2. I will give you A3.
I might publish the Video tomorrow, but not expecting that you will have watched it before Friday.

Assignment 3: Remark

Is there a learning technology in this picture?



Is there a learning technology in
this picture?



Is there a learning technology in this picture?



Is there a learning technology in
this picture?



What is a technology?

tech·nol·o·gy/tek'näləjē/

Noun:

1. The application of scientific knowledge for practical purposes, esp. in industry: "computer technology"; "recycling technologies".
2. Machinery and equipment developed from such scientific knowledge.

Synonyms:

technics - engineering - technique

“Anything invented after you were born” (Kay)

“Everything that doesn't work yet” (Hillis)

“Ways that people get complicated things done” (Bessant & Francis)

“A combination of artefacts and what you do with them” (Nye)

“Tools with a context” (Papert)

“Not a thing but a verb” (Kelly)

“The way things are done around here” (Franklin)

tech·nol·o·gy/tek'näləjē/

*“the orchestration of
phenomena to some use”*

W. Brian Arthur



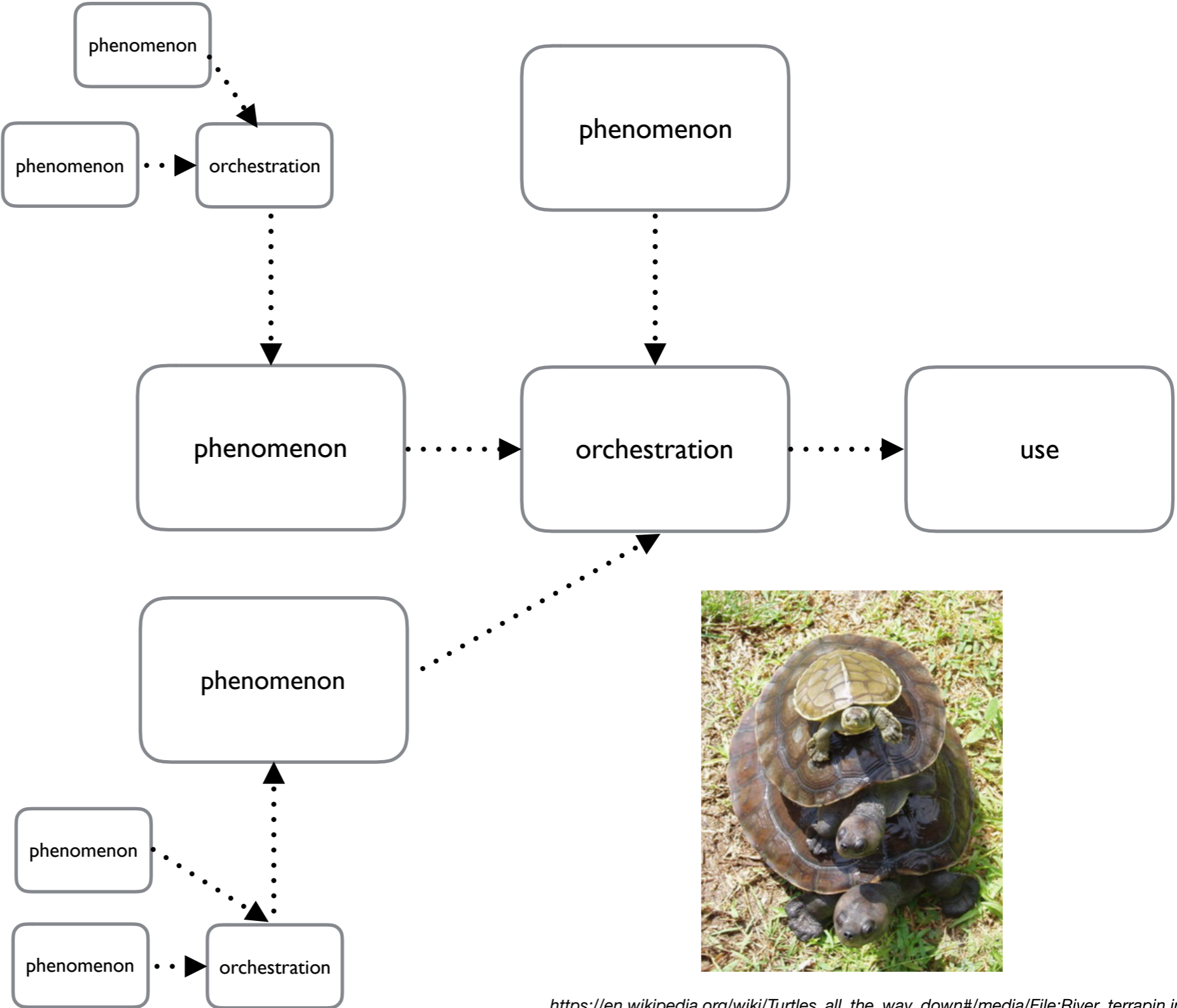
Arthur, W. B. (2009). *The Nature of Technology: what it is and how it evolves*. New York, USA: Free Press.

Technologies are assemblies

technologies are made of technologies

technologies are orchestrated assemblies

it's turtles all the way down



Arthur, W. B. (2009). *The Nature of Technology: what it is and how it evolves*. New York, USA: Free Press.

https://en.wikipedia.org/wiki/Turtles_all_the_way_down#/media/File:River_terrapiin.jpg

Hard technologies

Orchestration
of
phenomena
embedded in
the
technology



May need skill to use them *correctly*

Soft technologies



http://commons.wikimedia.org/wiki/File:François_Barraud_-_Palette_et_Pinceaux.jpg

Active
orchestration
of
phenomena
by users

Skill needed to use them *well*

pre-orchestrated



precision

replicability

accuracy

speed

ease of use

harder



continuum

hard is easy
soft is hard

continuum



orchestrated
at run-time



resilience

flexibility

diversity

creativity

control

softer

Baby Bear's bed



Steel, Flora Annie. *English Fairy Tales*. Arthur Rackham, illustrator. New York: Macmillan Company, 1918.

pedagogies are
soft technologies
(for teachers)

points of view



Image by Jules Feiffer, from The Phantom Tollbooth, by Norton Juster

learning technology



**technology that
includes
pedagogical
method(s)* in its
assembly**

* “pedagogies” for short



anyone/anything can be part of that assembly



**especially (and *always*
primarily) the learner**

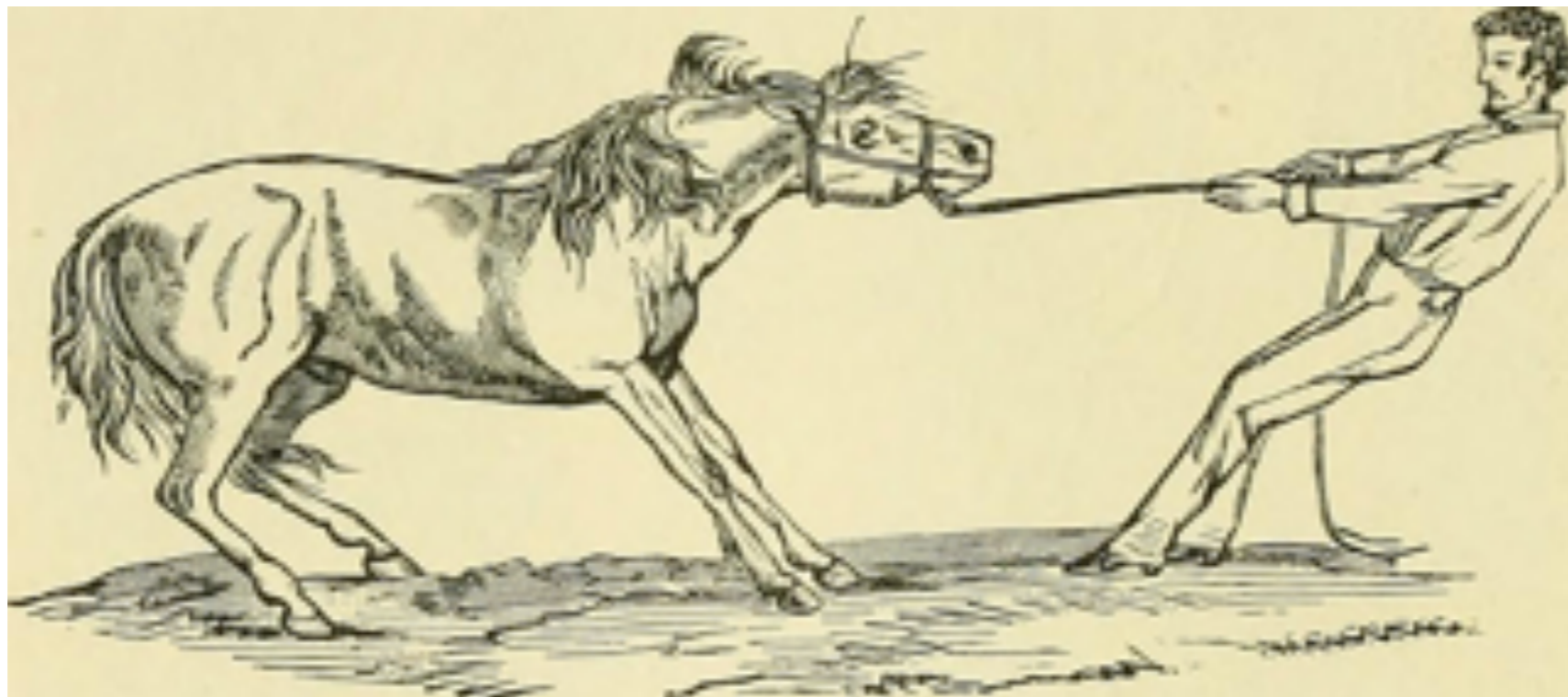
It makes no more sense to investigate the effects of computers on learning than to investigate the effects of nuts and bolts on learning.

What matters is the assembly.

but...

the mode matters

Why do we not ban
cellphones in online
classrooms?



these are *not* learning environments



Home Community Online Library

Welcome, Jon

Tools

- Calendar
- User Directory
- Student email
- Staff email
- Tasks
- Address Book
- Personal settings
- MS Office Viewers

Life Support

- Careers & Part-time Jobs
- Childcare
- Computing, Libraries & Media
- Counselling
- Disability & Dyslexia
- Health & Wellbeing
- International
- Living here
- Money
- Partner Colleges
- Religious Life
- Restaurants, Cafes & Shops
- Rights & Responsibilities
- Safety & Security
- Sport Brighton
- Student Handbook

Athabasca University

School of Computing and Information Systems

Focused on the future of learning.

You are logged in as Jon Dron (log out)

Search courses:

Home Courses Undergraduate

Navigation

- Home
- My home
- Site pages
- My profile
- My courses
- Courses
- Undergraduate
 - COMP214 (questionnaire)
 - COMP266 (questionnaire)
 - COMP361 (questionnaire)
 - Computer Science 200: Introduction to C
 - Computer Science 206: Introduction to C
 - Computer Science 210: Information Syste
 - Computer Science 214: Interactive Techn
 - Computer Science 230: Storyboard Desig
 - Computer Science 232: Graphics Design (
 - Computer Science 266: Introduction to W
 - Computer Science 268: Introduction to C
 - Computer Science 272: Data Structures a
 - Computer Science 282: Social Aspects of
 - Computer Science 283: Effective Use of M
 - Computer Science 306: C++ for Program
 - Computer Science 308: Java for Program
 - Computer Science 314: Operating System
 - Computer Science 318: Introduction to G



Recently recommended content

Wuthering Heights as Gothic
By Holly Hoffmann July 5, 2018 - 11:38am

Wuthering Heights is a novel that eas... is often complicated by the overtly Gothic elements. First and foremost, unlike most romantic novels like those written by Jane Austen, the primary...

Scholarly publishing is broken. Here's how to fix it
By Jon Dron 3 July 2018 @ 6:13pm

open source, open publishing, academic journal, journal, publishers, copyright, open access, control, research

aeon.co - An article for Aeon by Jon Tennant on the heinous state of affairs that gives unscrupulous publishers profit margins that put Apple to shame while hiding publicly funded research from the public that pays for it. It is a shamefully broken system...

Submitting Pseudocode for the Assignments
By Can Rozanes in the group COMP372 Design and Analysis of Algorithms June 25, 2018 - 5:44pm Comments (1)

Posted to group: COMP372 Design and Analysis of Algorithms

Hi Everyone, I've read the pseudocode conventions section of the course textbook but I've been wondering, can I just submit Python Code for questions that ask to describe an algorithm? I know the whole point of pseudocode is that it has to be readable...

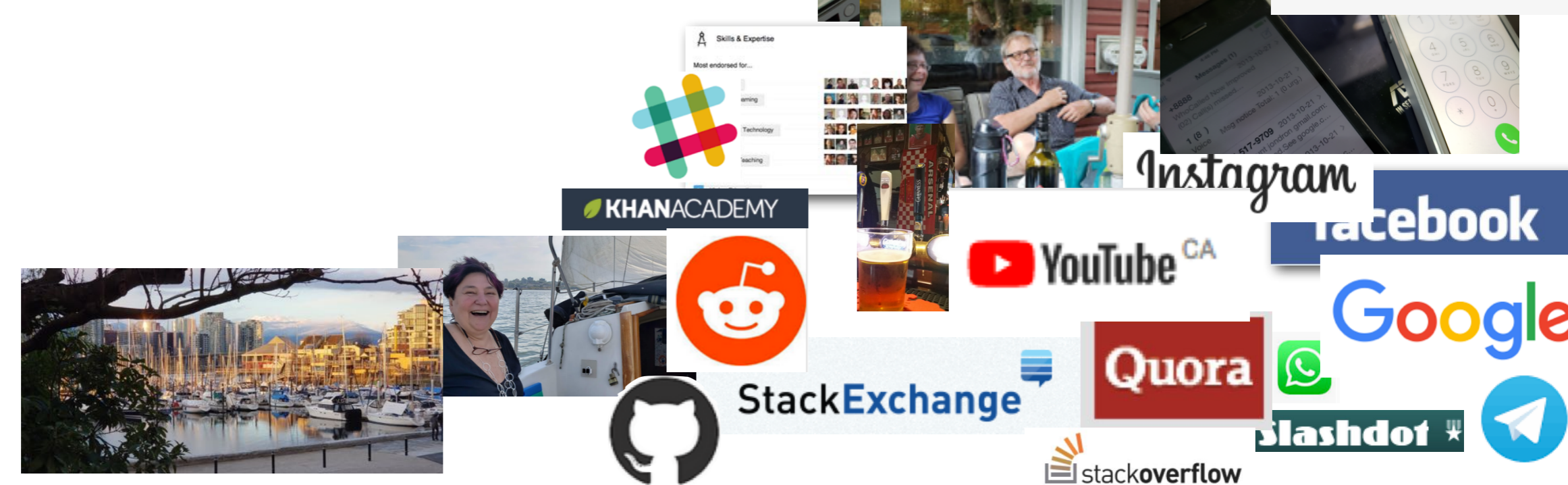
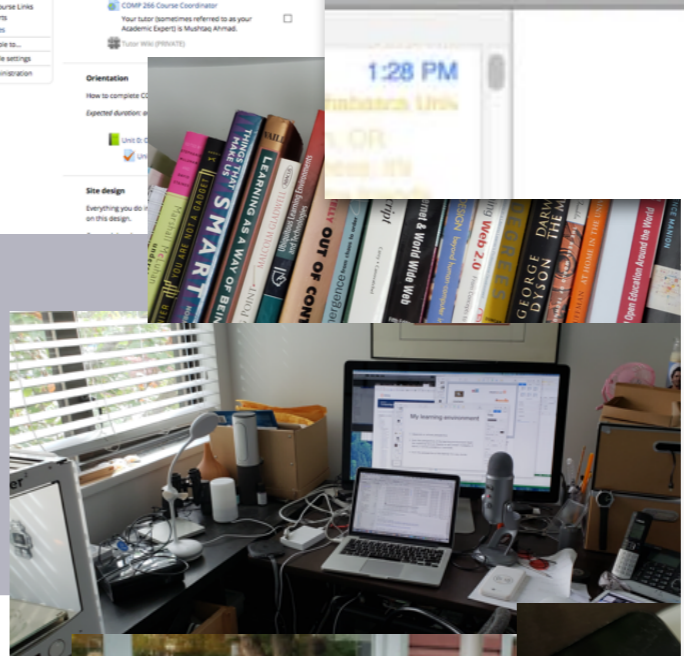
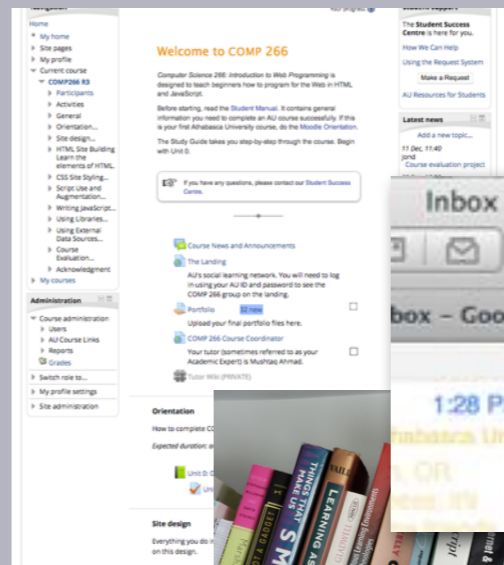
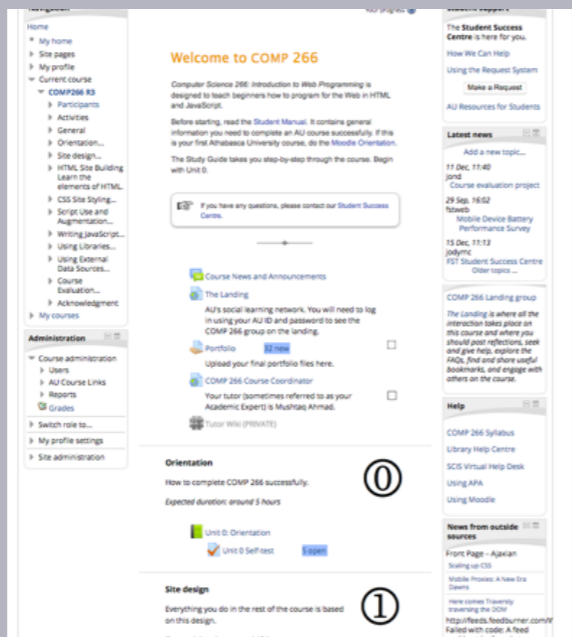
Week 8 "Off Topic Topic"
By Terry Taylor in the group Comp 607 Spring 2018 Cohort June 17, 2018 - 10:11am Comments (7)

Random posts from the last few months

EU States Must Recognize Foreign Same-Sex Marriages
By Donna Astley-Reed 5 June 2018 @ 4:13am

The teaching environment

The learning environment

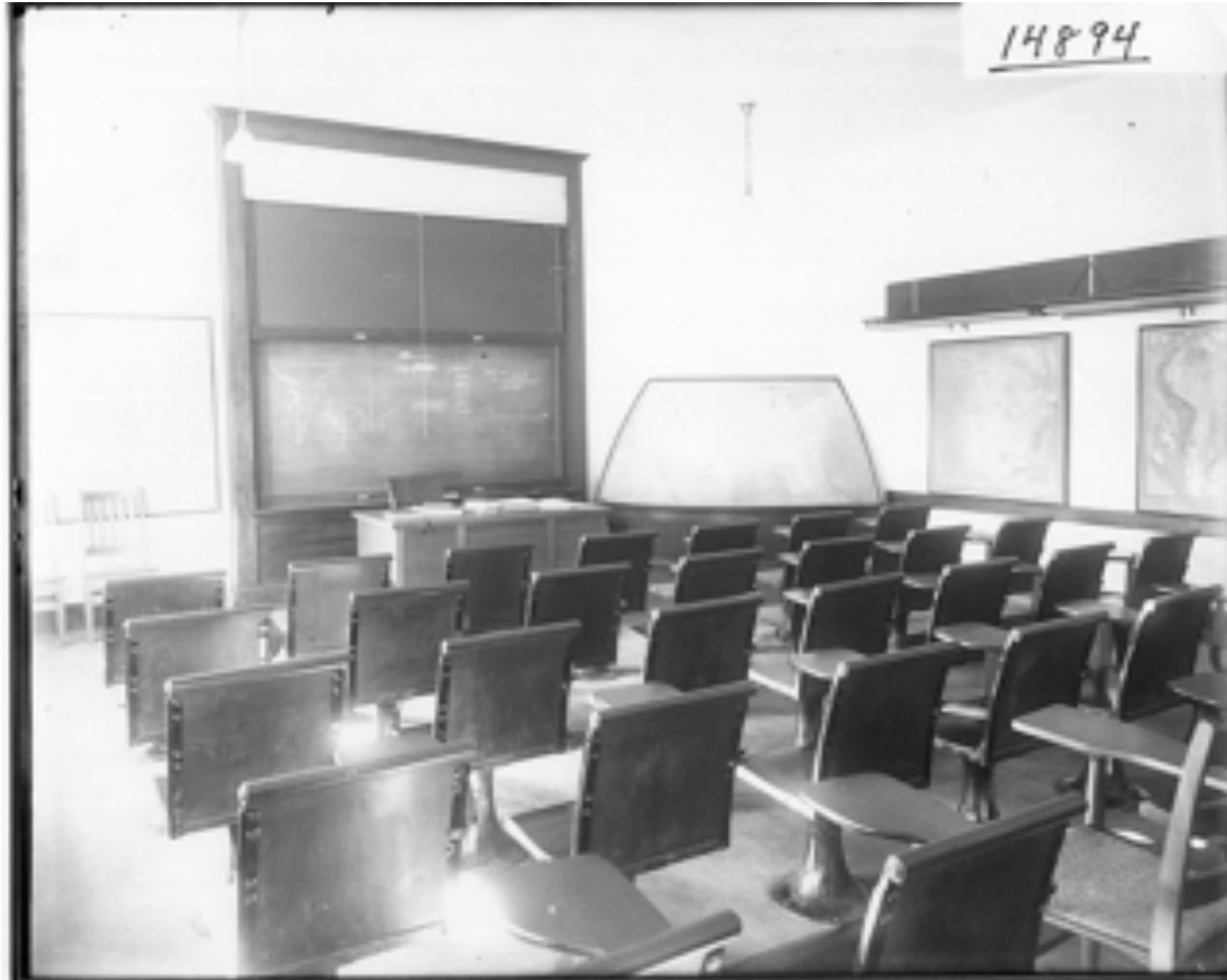


(part of) my learning environment



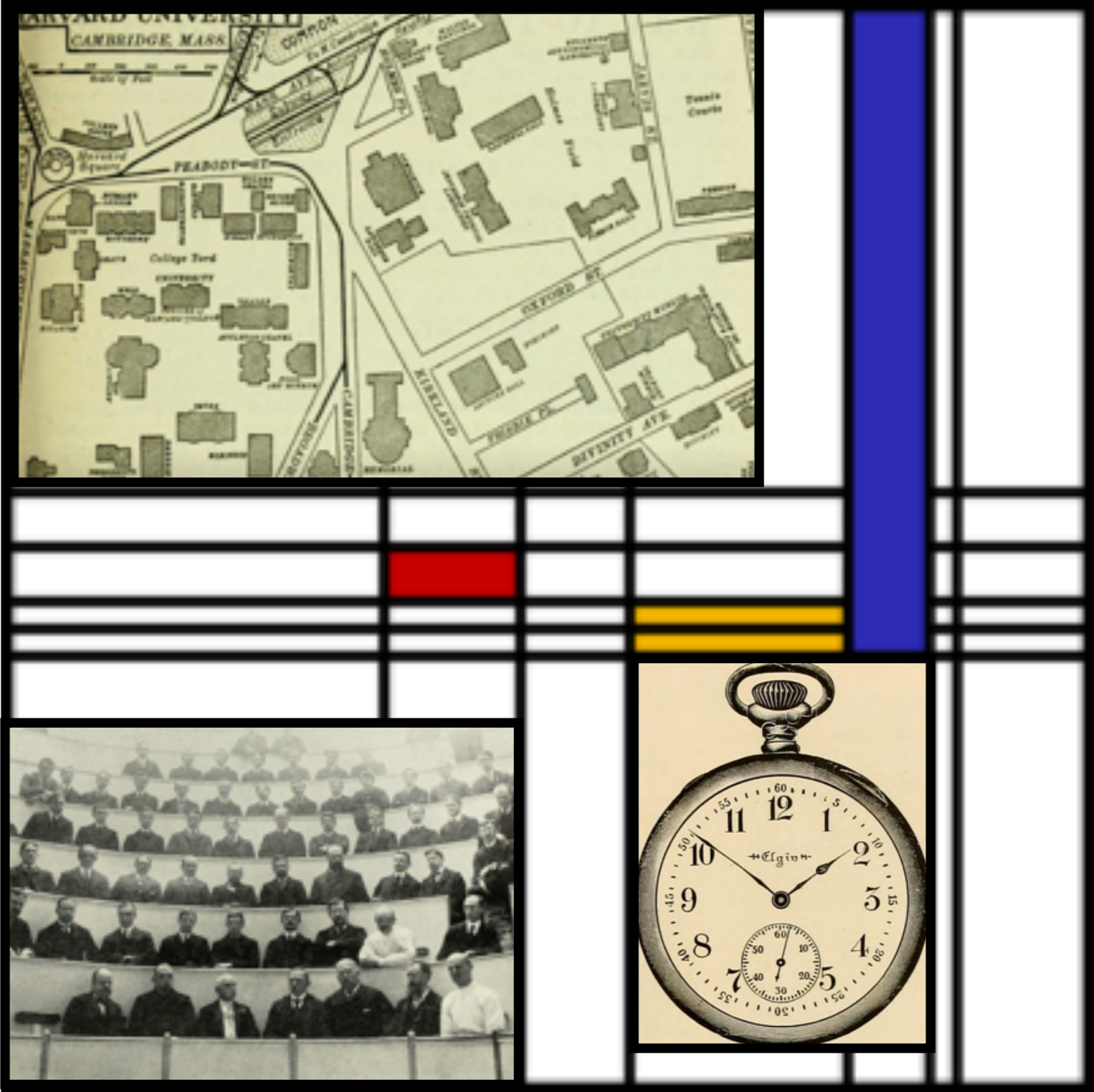
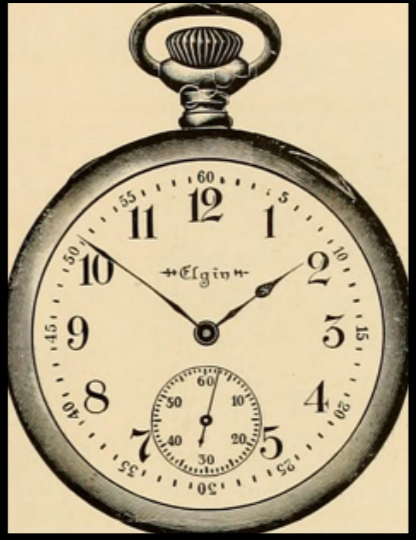
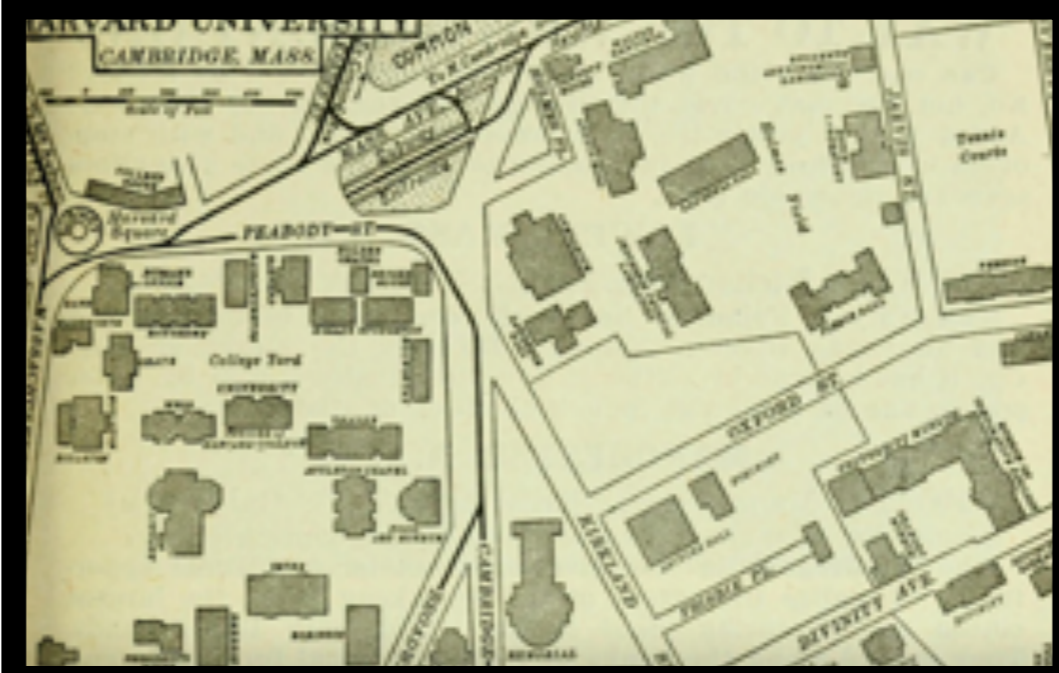
but...

**this *is* a learning
environment**



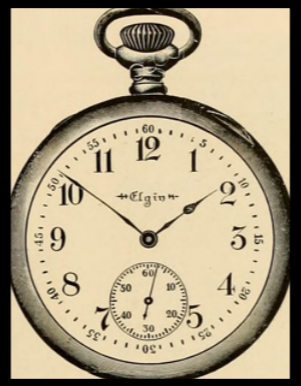
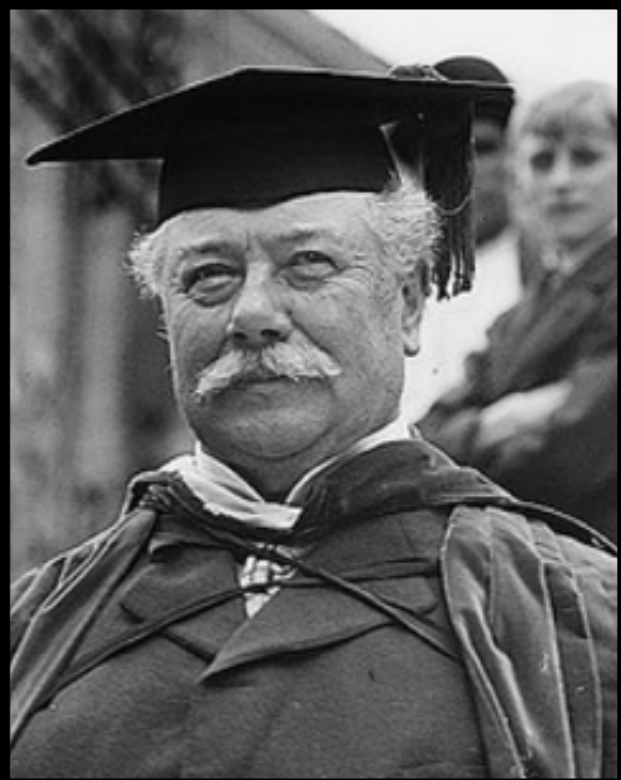
**Traditional in-person pedagogy
is a solution to...**

Physical boundaries



**Traditional in-person pedagogy
is a solution to...**

Scarce resources



classes

faculties

semesters

terms

schools

universities

tests

textbooks

accreditation

timetables

assignments

exams

seminars

What follows...

convocations

lectures

courses

programs

tutorials

learning outcomes

curricula

libraries

rules & regulations

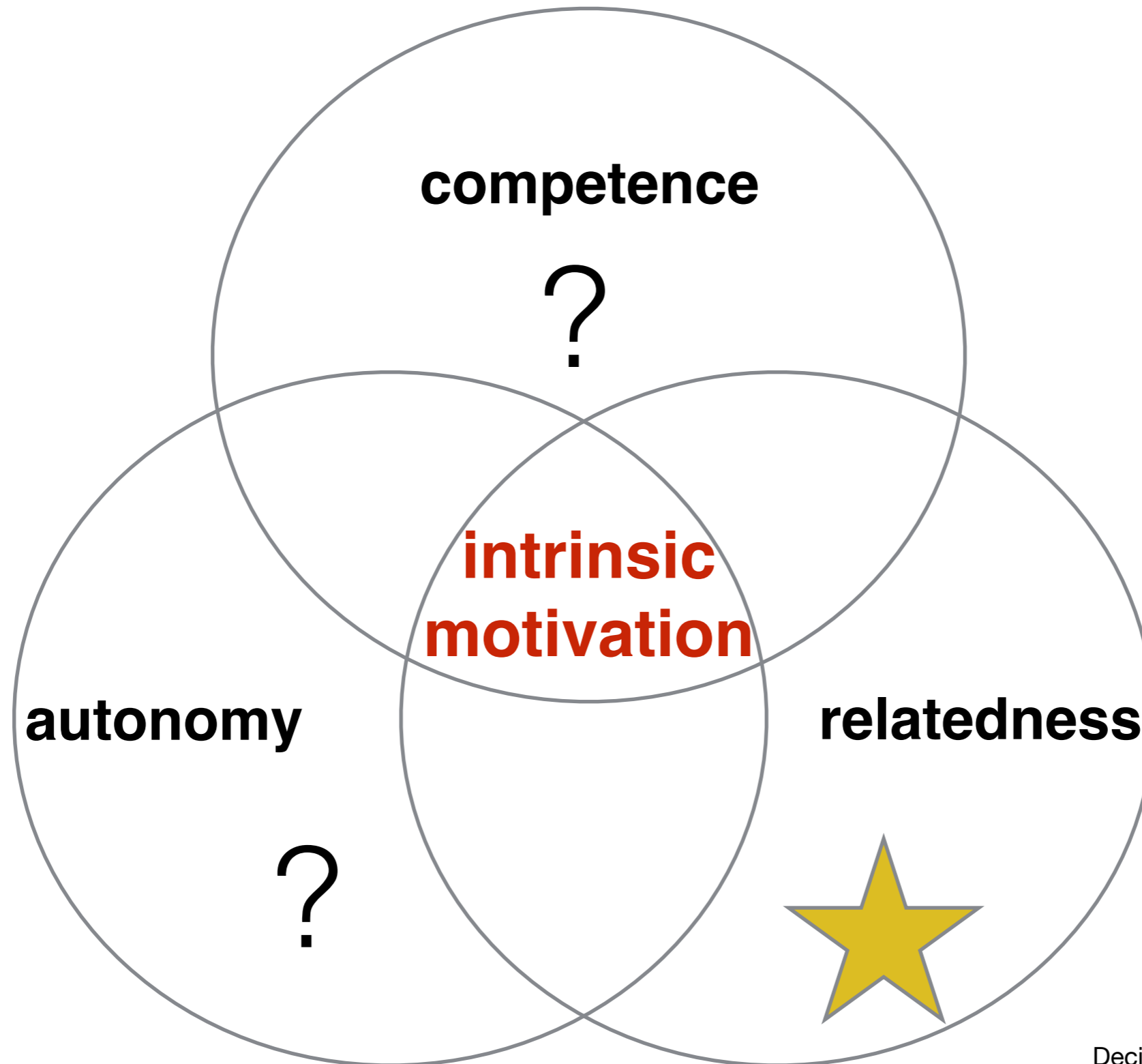
desks

and, most importantly...



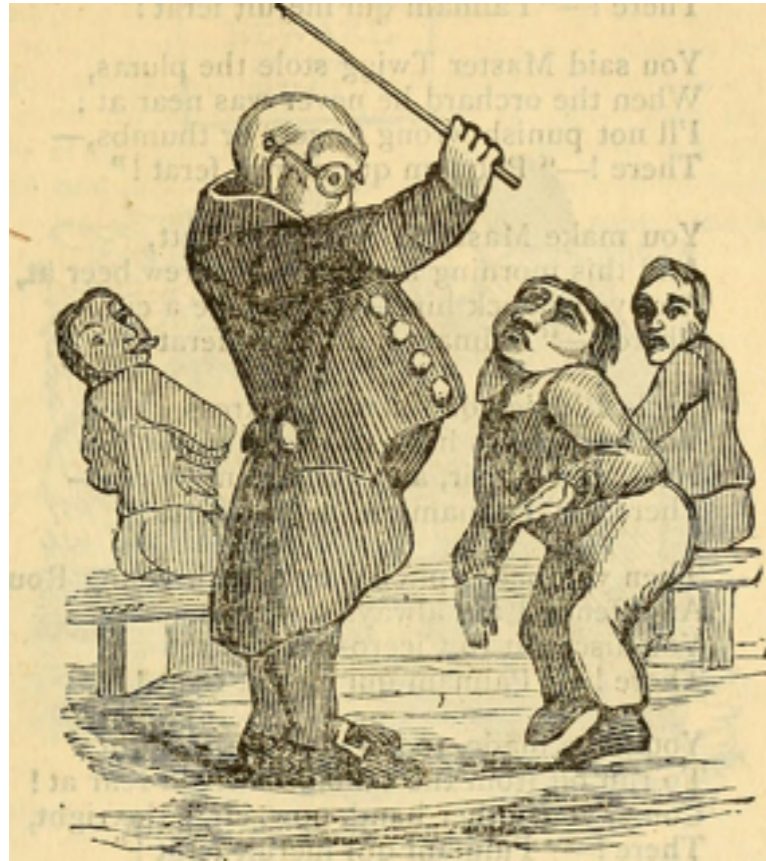
people that *do not want to be there*
a context that is *by definition*
demotivating

Classroom motivation



<http://selfdeterminationtheory.org>

Deci, E.L., & Ryan, R.M. (2000). The “What” and “Why” of goal pursuits: Human needs and the self-determination of behaviour. *Psychological Inquiry*, 11, 227-268



sticks
and
carrots



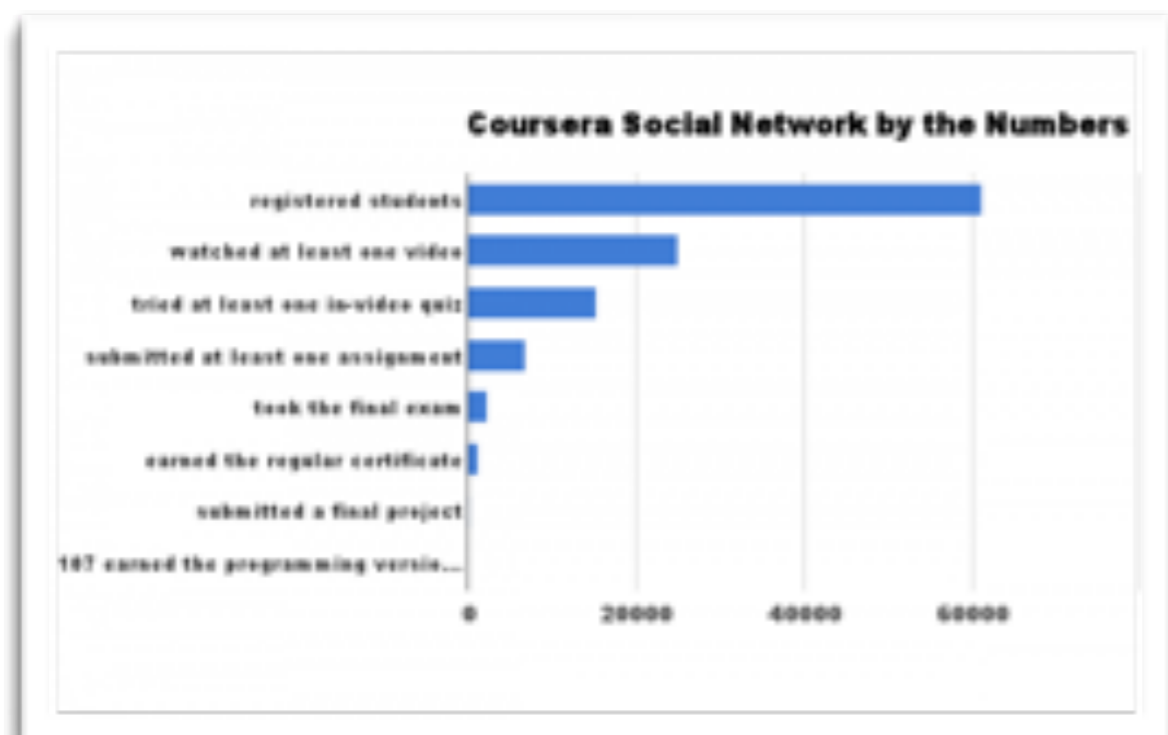
Extrinsic motivation crowds out Intrinsic motivation



**The reward, or avoidance of punishment, becomes the purpose
(and *stays* that way)**

<http://selfdeterminationtheory.org/>

What happens when you take away the power of the teacher (but keep the same pedagogies)?



<http://cogdogblog.com/2012/11/27/owning-massive/>

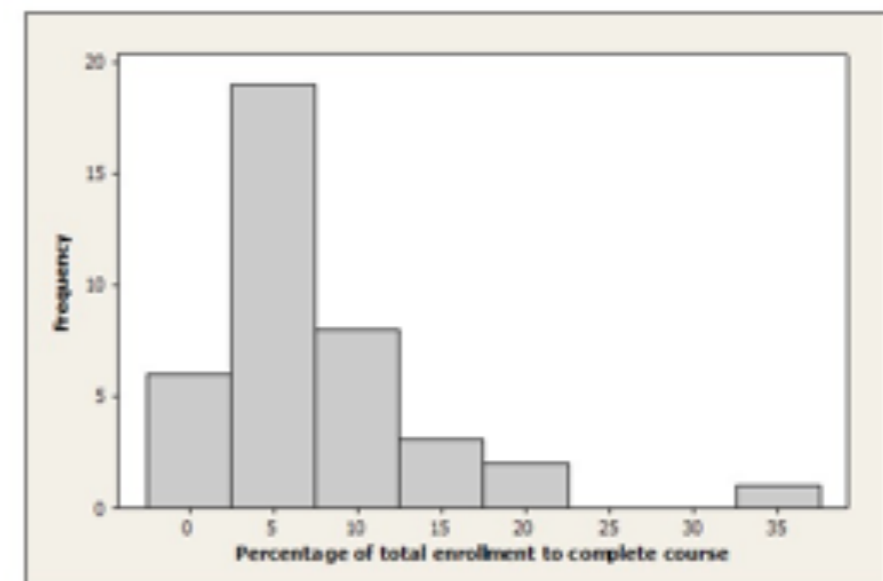
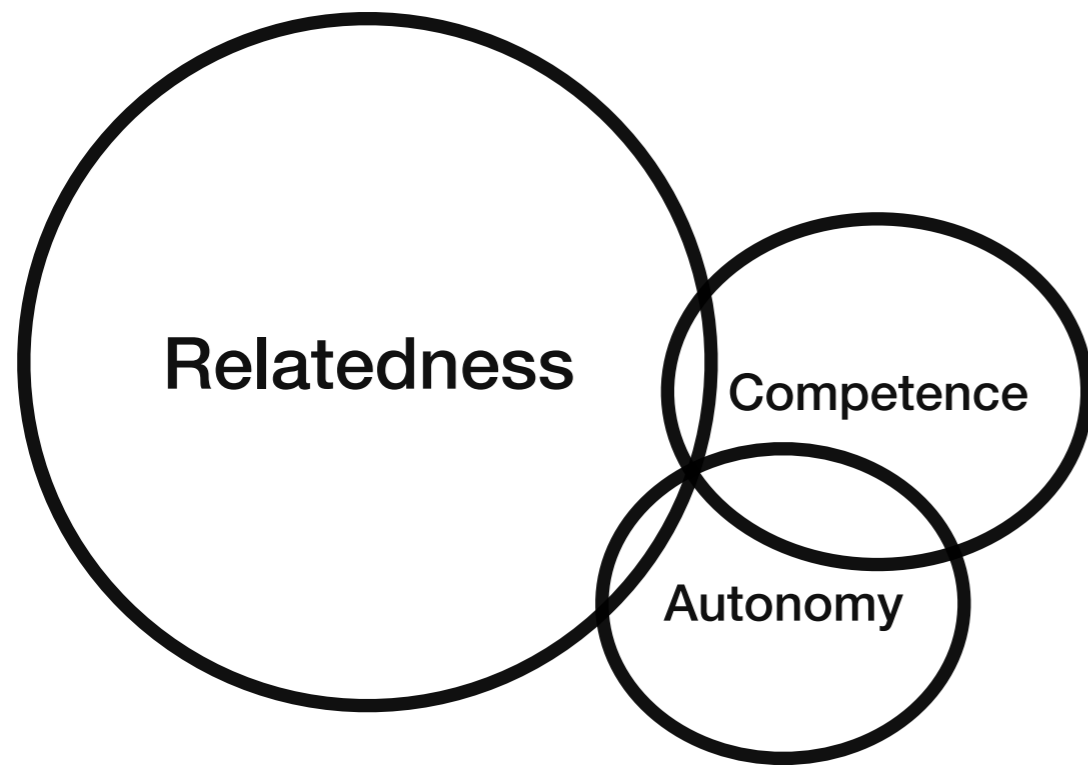
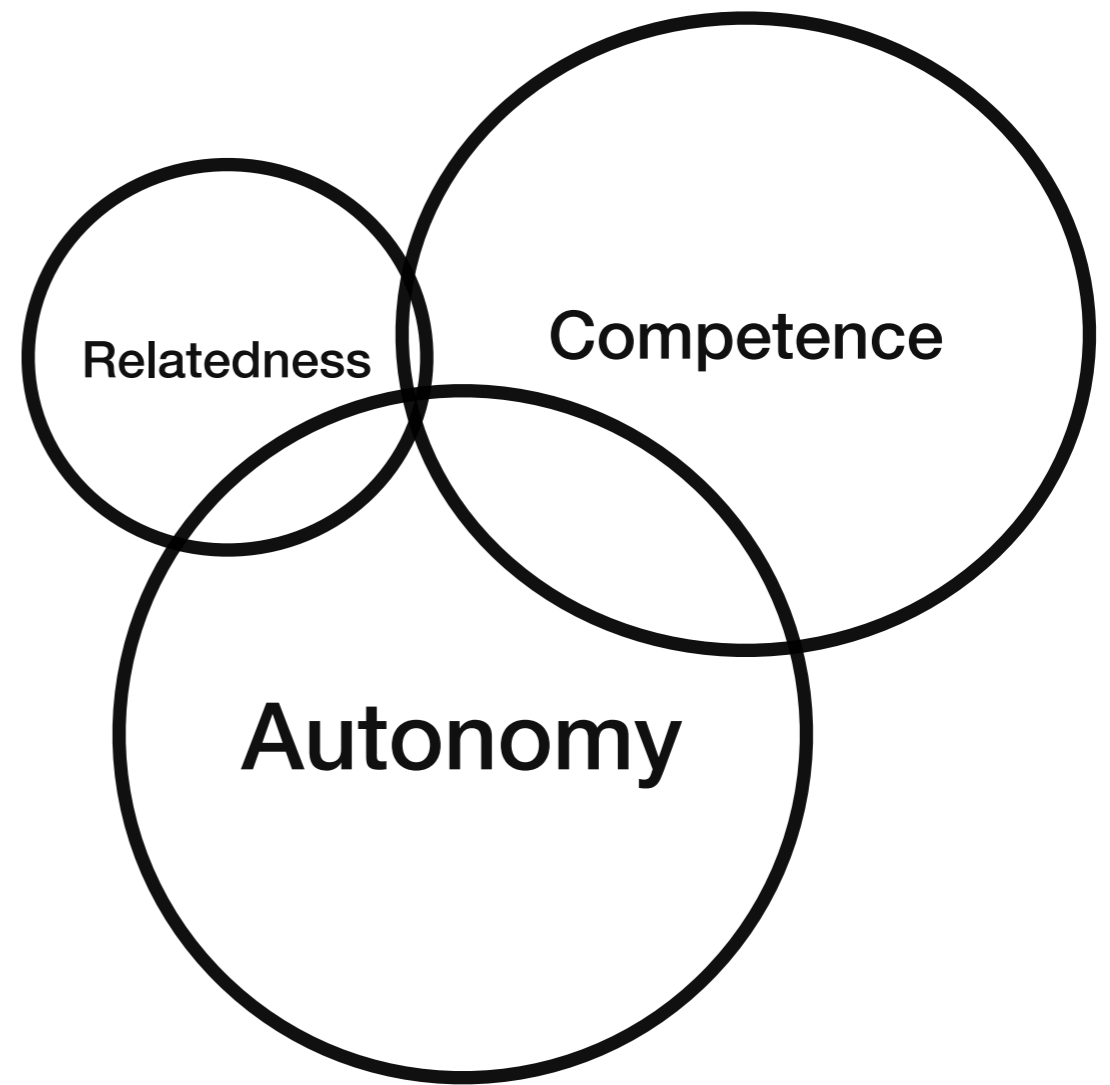


Figure 4. Histogram of completion rates for the sampled courses ($n = 39$).

“Completion rates range from 0.9% to 36.1%, with a median value of 6.5%”



in-person learning



distance learning

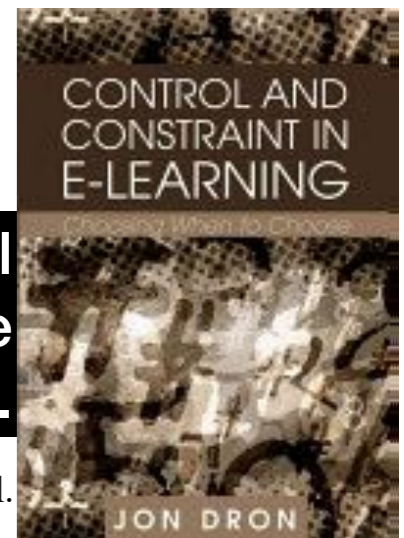
Motivation in classrooms vs motivation online

Good institutional pedagogy:

- puts learners in control*
- supports the challenged, and challenges the unchallenged
- leverages the social

Active Learning
Direct Instruction
inquiry-based learning
problem-based learning
Mastery Learning
reflective practice
project-based learning
learning portfolios
scaffolding
Anchored Learning
experiential learning
debate
case-based learning
situated learning
Communities of Inquiry
social construction
Cognitive Apprenticeship
flipped classrooms

***IMPORTANT: choice alone is not equal to control: we must be able to choose *not* to choose.**



but

***everything* works**

(especially Direct Instruction)

Hattie, J. (2013). *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. Taylor & Francis.

but

**most pedagogical methods are
solutions to problems created
by the classroom context**



**how many make sense outside
the classroom?**

**education is
technology, not science**

Tain't what you do...

**...it's the way that
you do it**

That's what gets results

What's the first thing you
do when you want to
learn something?

me too



+



25 Trends Disrupting Education Right Now

61,503 views | Oct 22, 2019, 09:47am

The End Of College Is Coming



Stephen McBride Contributor @
Markets
The editor of RiskHedge Report
The New York Times

Why This Tech Executive Says Her Plan to Disrupt Education Is Different



DISRUPTION

in Education

October 31, 2017 in The Future Of Learning 4 min read



Trending



University education is ripe for disruption

STEPHEN ELOP AND ISHWAR PURI
CONTRIBUTED TO THE GLOBE AND MAIL
PUBLISHED MAY 12, 2019



EDUCATION INNOVATION
HARVARD LEADERSHIP CONFERENCE



Education has already been disrupted (despite appearances to the contrary)

(but *not* like this



!)



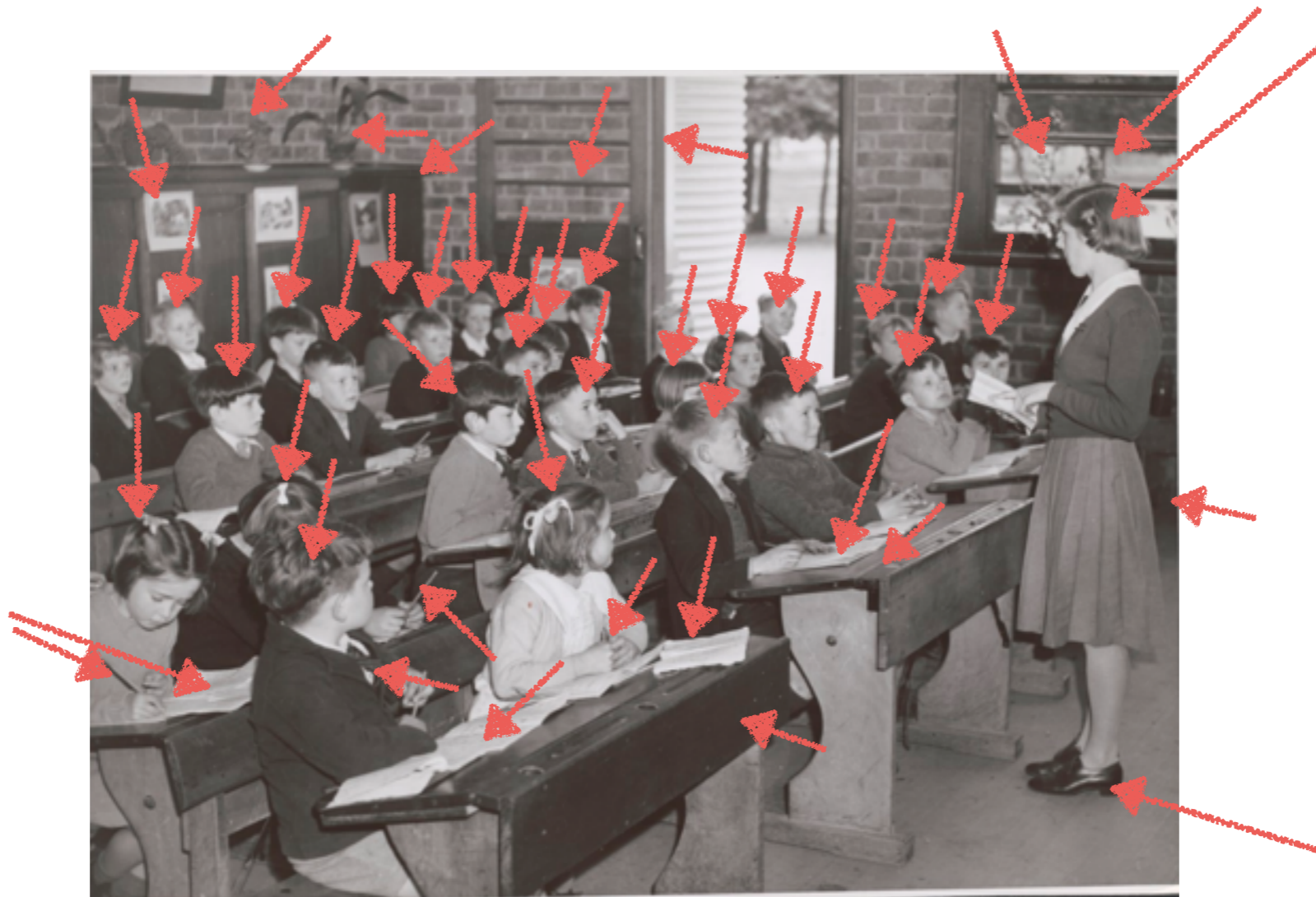
**Credentials have not (and
will not be any time soon)**

**native distance
learning**

Spot the teacher



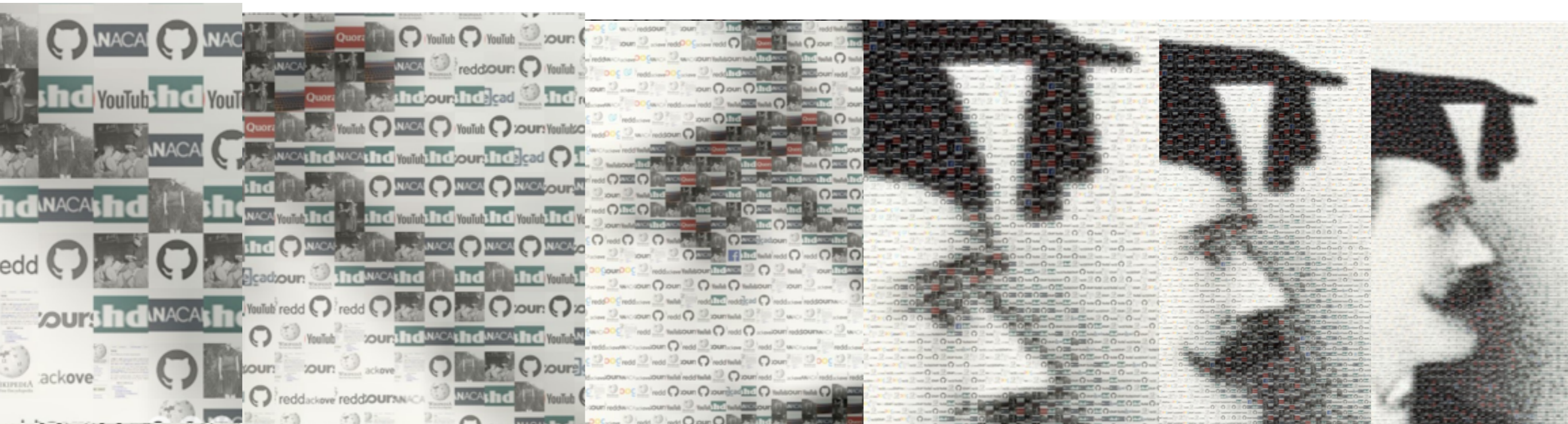
Spot the teacher



learners
schools authors buildings librarians
buttons sys admins universities
timetables editors designers rules
legislators playgrounds lecture halls
TVs books doorknobs desks artists
instructional designers directors postal workers researchers
cooks

The teaching gestalt

tweets pens
committee structures hashtags games interfaces
architects Wikipedia editors technicians LMSs
actors computers production staff
chairs indexes photographers cleaners
bloggers programmers radios governments
exam boards film teachers
clothing designers



the teaching gestalt



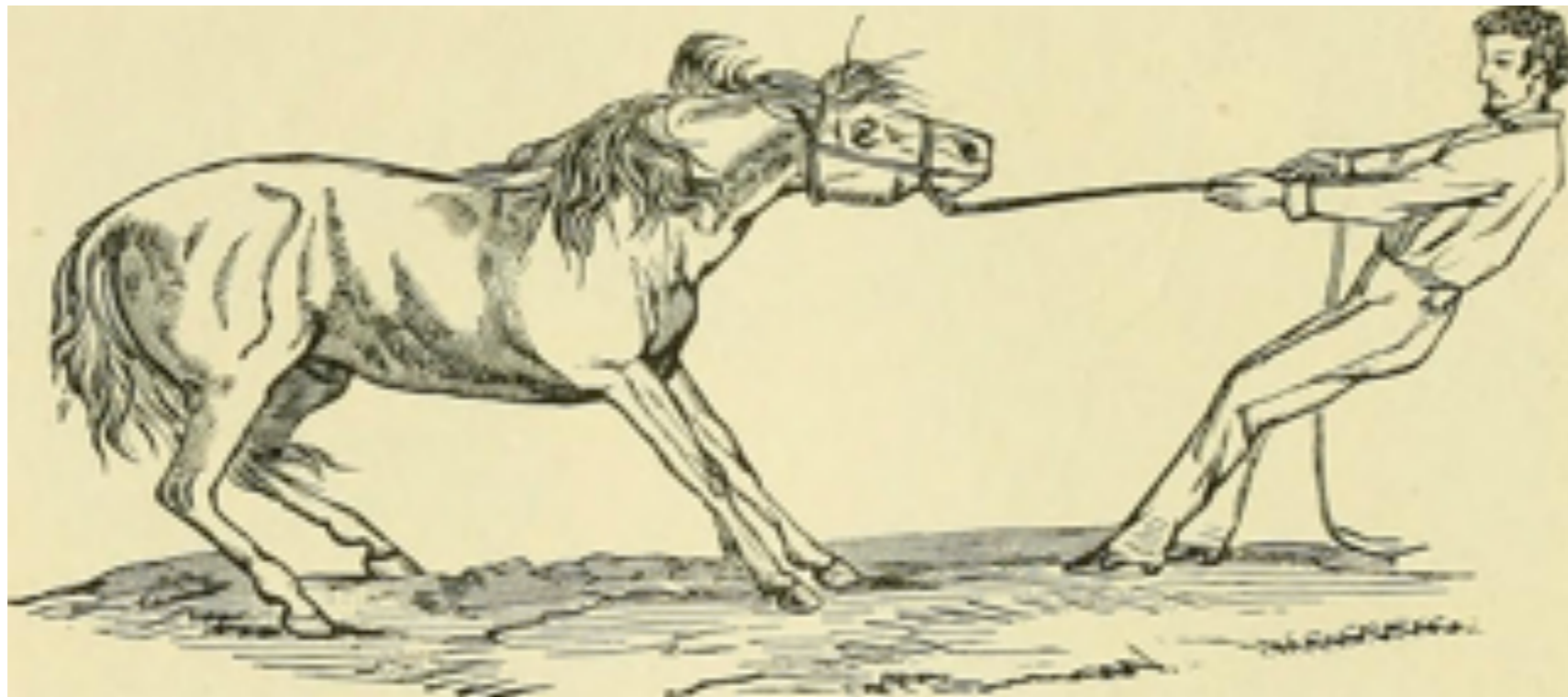
Online, we swim in a sea of teachers



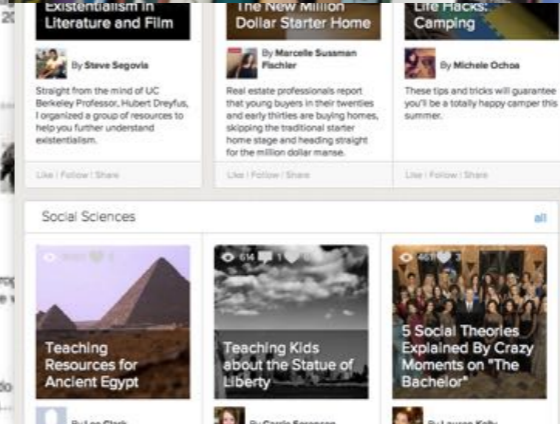
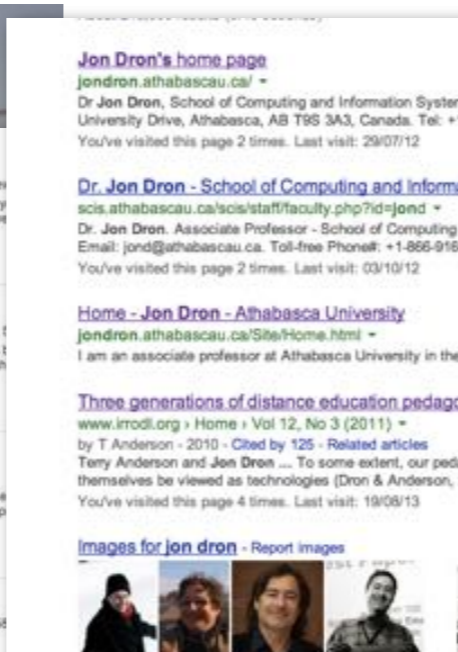
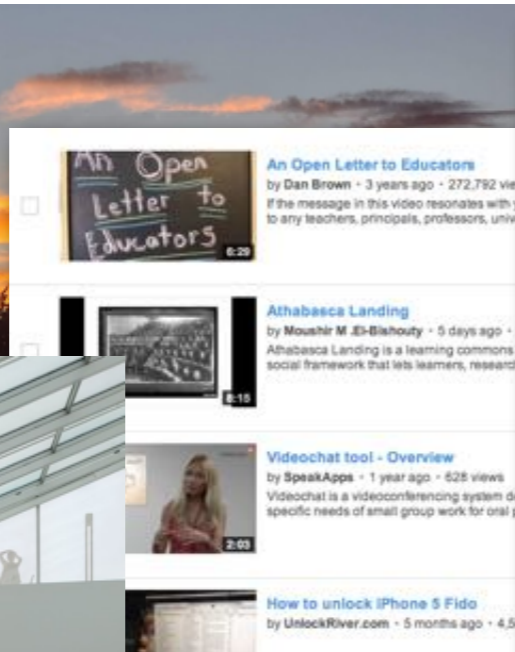
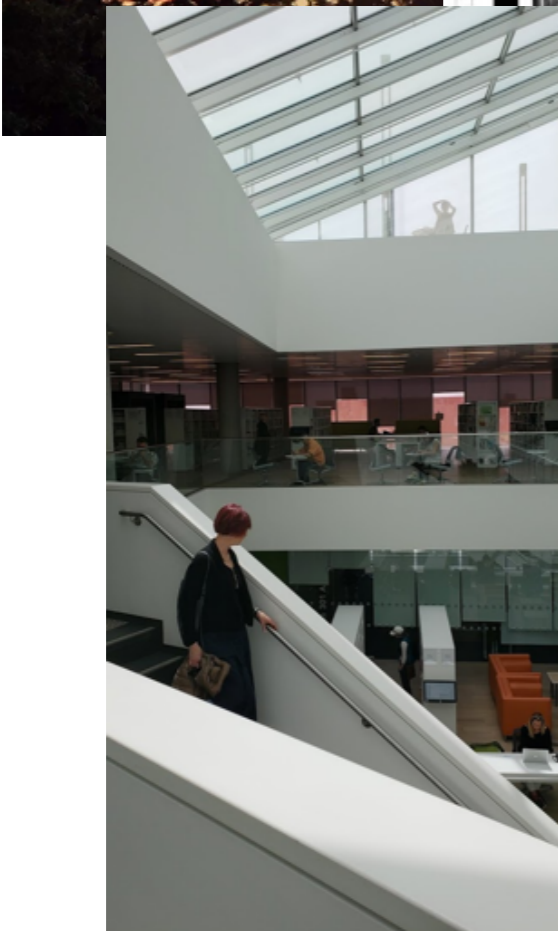
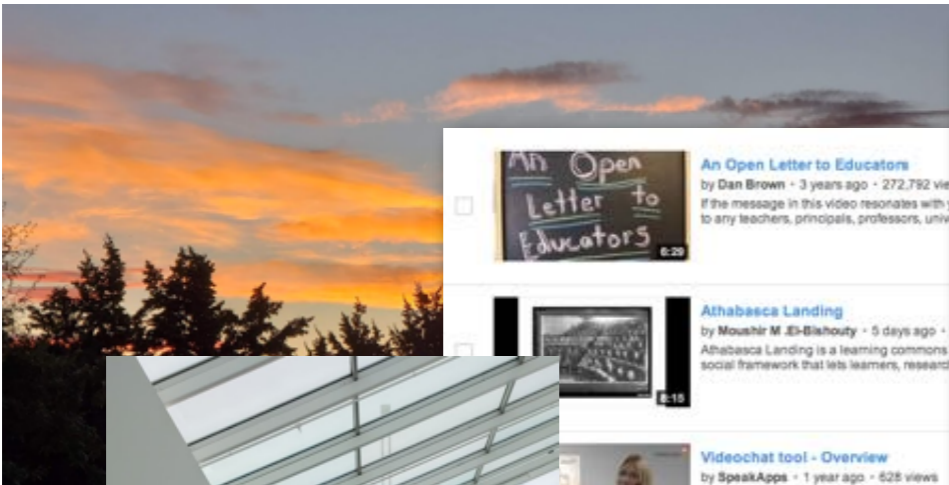
**What is
teaching like
when you
let go...**



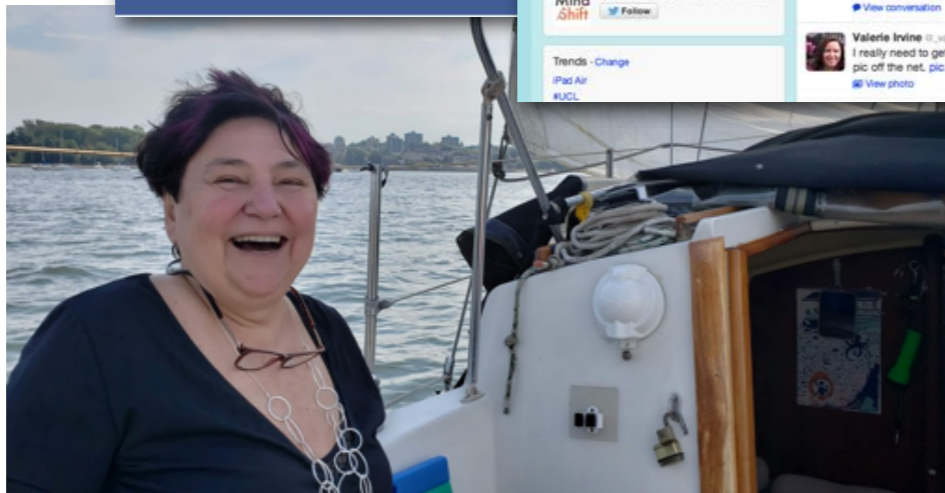
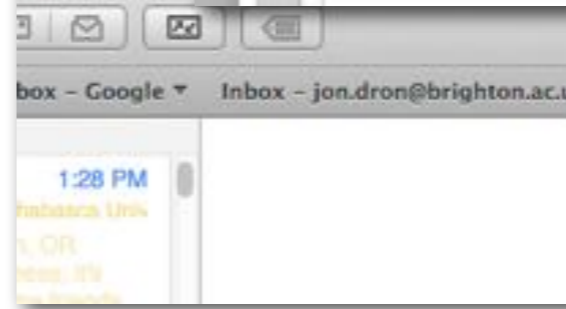
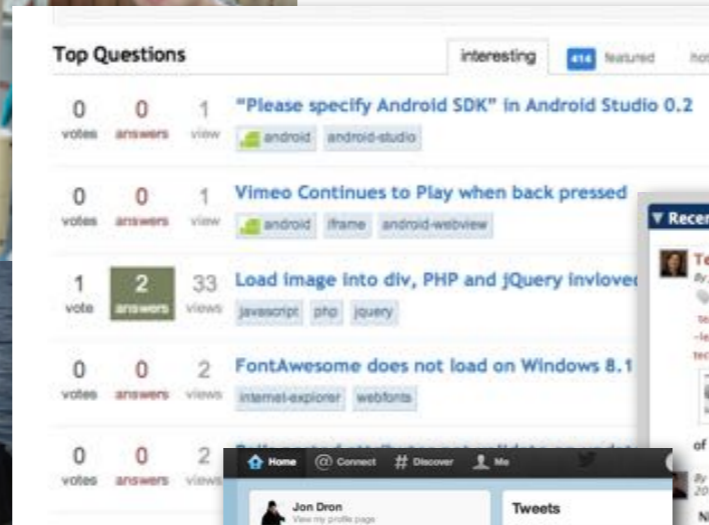
**...and when you have
no means of coercion?**



Distributed content



Distributed support



Distributed accreditation



Citations 3643
h-index 23
i10-index 56

BADGES



OpenEd Researcher



Blockcerts

Blockcerts is an open standard for creating, issuing

<http://www.blockcerts.org/>



Skills & Expertise

Most endorsed for...

- 57 E-Learning
- 47 Distance Learning
- 19 Moodle
- 18 Educational Technology
- 15 Lecturing
- 13 University Teaching
- 9 Teaching
- 8 Higher Education



Athabasca University

E-LAB PORTFOLIO



Athabasca University

Undergraduate Challenge for Credit Registration Form

Not all courses are available for challenge. Before you complete

Student Submissions



Fifty Suits of Grey

Liam Higgins Saunders. I work as a cartoonist and illustrator, producing strips, features and news cartoons for many publications...

[More submissions like this at Book Cover for Your Autobiography -](#)



One Slow Walk - On the (com)plains of an African Queue

I queued. Voluntarily. At The Department of Manpower! The dreaded DOM queues held me for just a while. Queues get a...

[More submissions like this at Observation Lab -](#)

THIEL Fellowship

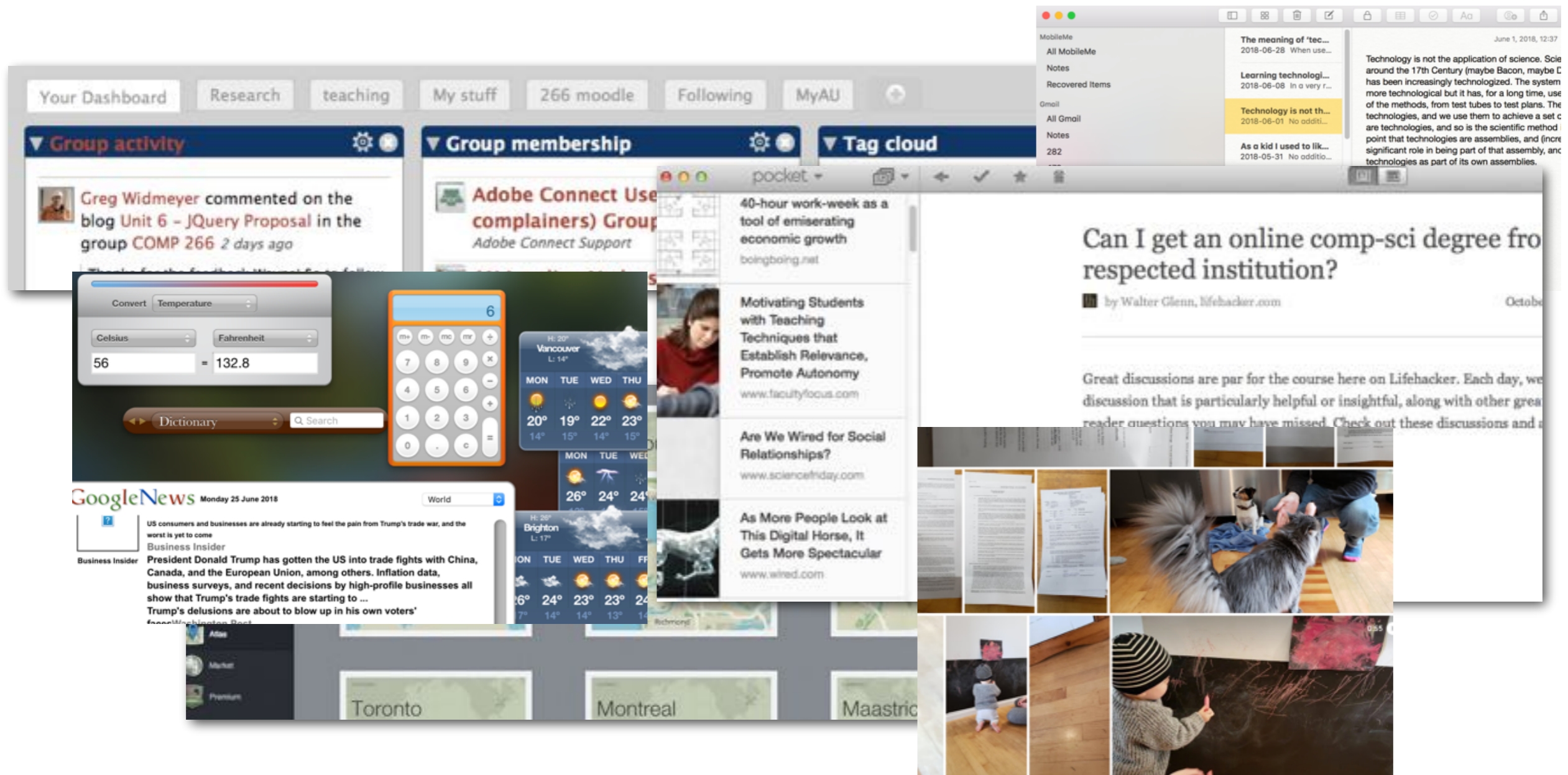
Digital Diploma debuts at MIT
Using Bitcoin's blockchain technology, the Institi



WESTERN GOVERNORS UNIVERSITY
ONLINE. ACCELERATED. AFF

Nanodegree Program

Personal sense-making



Pedagogies of the gestalt

Complexivist family examples:

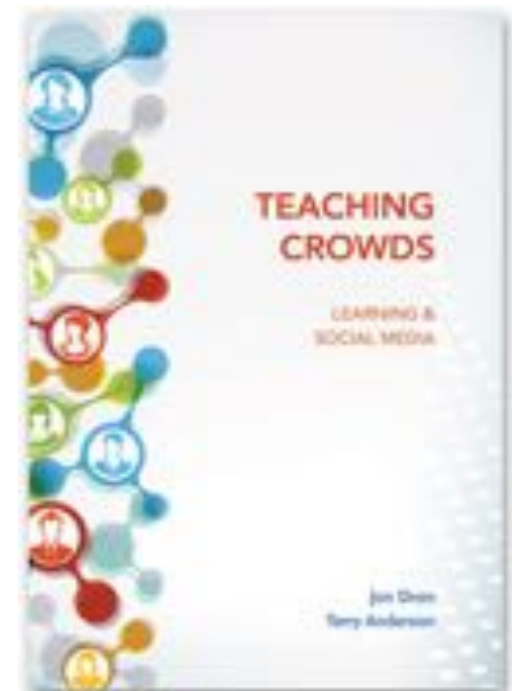
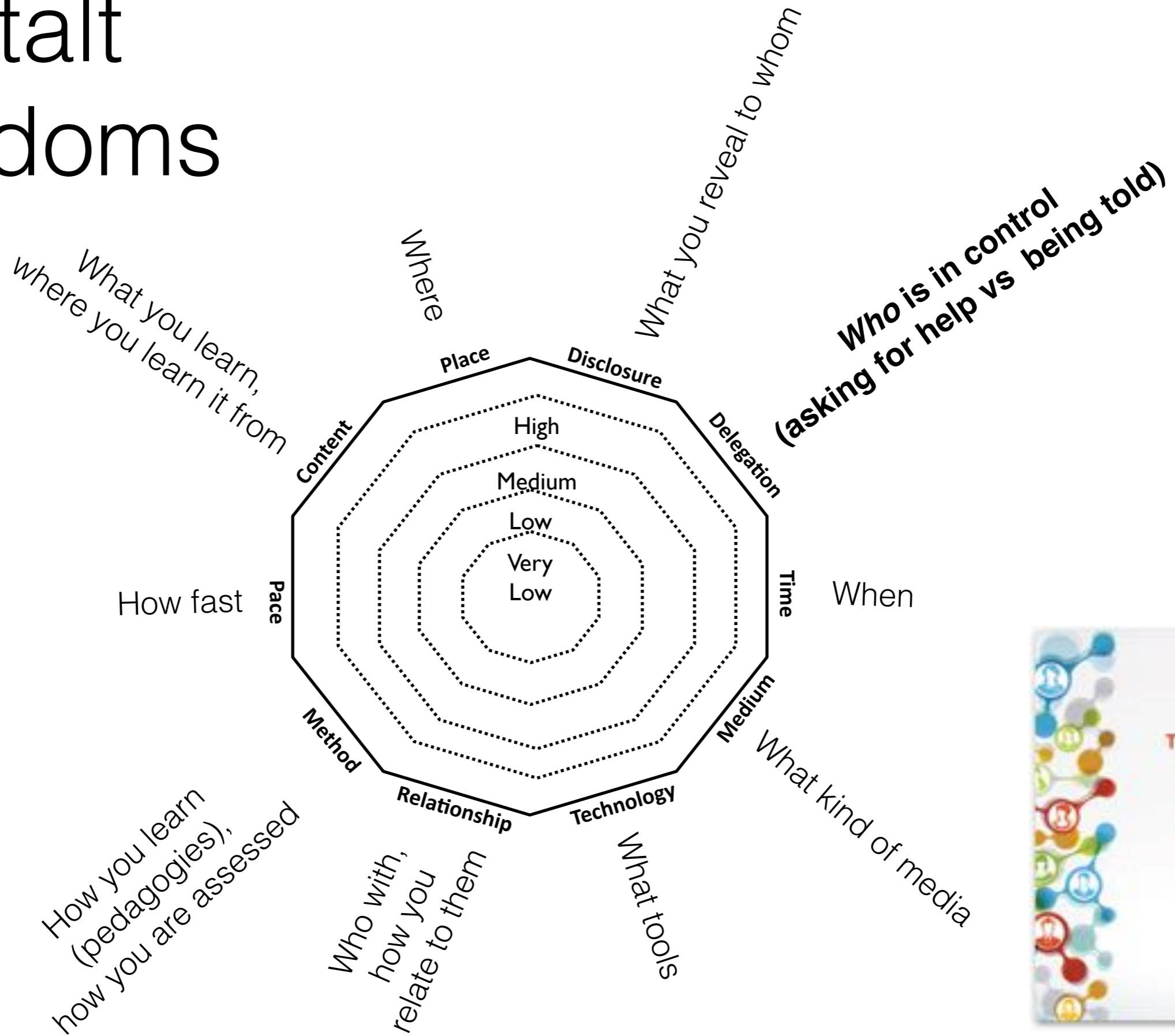
- Connectivism (Siemens, Downes)
- Distributed cognitive apprenticeship (Seely Brown)
- Rhizomatic learning (Cormier)
- Networks of practice (Wenger, Trayner & deLaat)
- Heutagogy (Hase & Stewart)
- Transactional control (Dron)



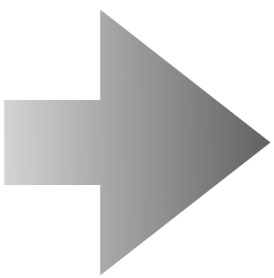
Common traits:

**distributed cognition;
sense making, wayfinding, filtering, navigation;
personal but networked/networked individualism;
complex systems, emergence;
connection not consumption;
learner control;
social construction;
reification, persistent traces;
networks of people, artifacts & machines;
cooperation more than collaboration;
creation, engagement, sharing, openness**

Gestalt freedoms



Leonardo's to-do list



TO DO :

- * [CALCULATE] THE MEASUREMENT OF MILAN AND SUBURBS *
- [FIND] A BOOK THAT TREATS OF MILAN AND ITS CHURCHES, WHICH IS TO BE HAD AT THE STATIONERS ON THE WAY TO CORDUSIO
- THE MEASUREMENT OF THE CHURCH VECCHIO (THE CHURCH IN THE DUKE'S PALACE)
- THE MEASUREMENT OF THE CASTELLO (THE DUKE'S PALACE TOWER)
- * GET THE MASTER OF ARITHMETIC (PROBABLY AN ACCOUNTANT) TO SHOW YOU HOW TO SQUARE A TRIANGLE *
- * GET MESSER FAZIO (A PROFESSOR OF MEDICINE AND LAW IN PISA) TO SHOW YOU ABOUT PROPORTION *
- * GET THE BREVA FRIAR (OF THE BENEDETTINE MONASTERY IN MILAN) TO SHOW YOU DE PONSERIBUS (= ARCHITECTURE IN MECHANICS)
- [TALK TO] GIANNINO, THE BOMBARDIER, IN THE MIDDLE OF WHICH THE TOWER OF SERRAIO IS WALLS WERE BUILT (171)
- ASK BENEDETTO PORTINARI (A MATHS PROFESSOR) BY WHAT MEANS THEY GO ON ICE IN FLANDERS??
- * DRAW MILAN *
- * ASK MAESTRO ANTONIO HOW MORTARS ARE POSITIONED ON BASTIONS BY DAY AND NIGHT *
- [EXAMINE] THE CROSSBOW OF MAESTRO GIANFRANCO *
- * FIND A MASTER OF HYDRAULICS AND GET HIM TO TELL YOU HOW TO REPAIR A LOCK, CANAL AND MILL IN THE LOMBARD MANNER *
- [ASK ABOUT] THE MEASUREMENT OF THE SUN, PROMISED ME BY MAESTRO GIOVANNI FRANCESCO
- * → TRY TO GET VITOLONE (THE MEDICAL MATHS OF A TEXT IN PISA) WHICH IS IN THE LIBRARY AT PAVIA, WHICH DEALS WITH THE MATHEMATIC.

CALCULATE

FIND

DISCOVER

GET nnn TO SHOW YOU

TALK TO

ASK

DRAW

EXAMINE

FIND A MASTER

TRY TO GET (a book)

serves

builds networks/is a network

challenges

creates

supports

assembles

inspires

discusses

models

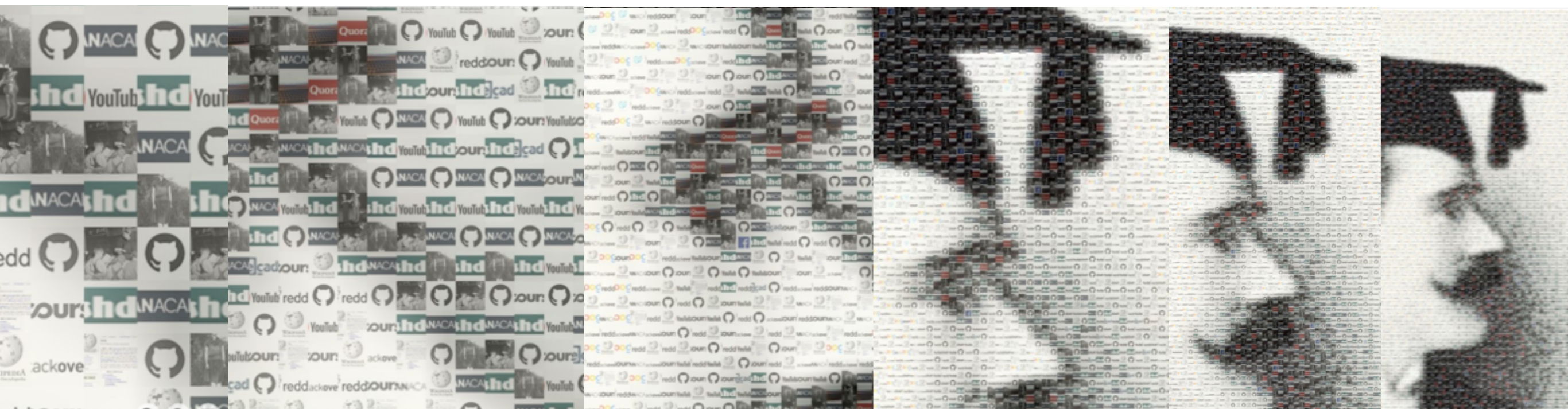
discovers

focuses

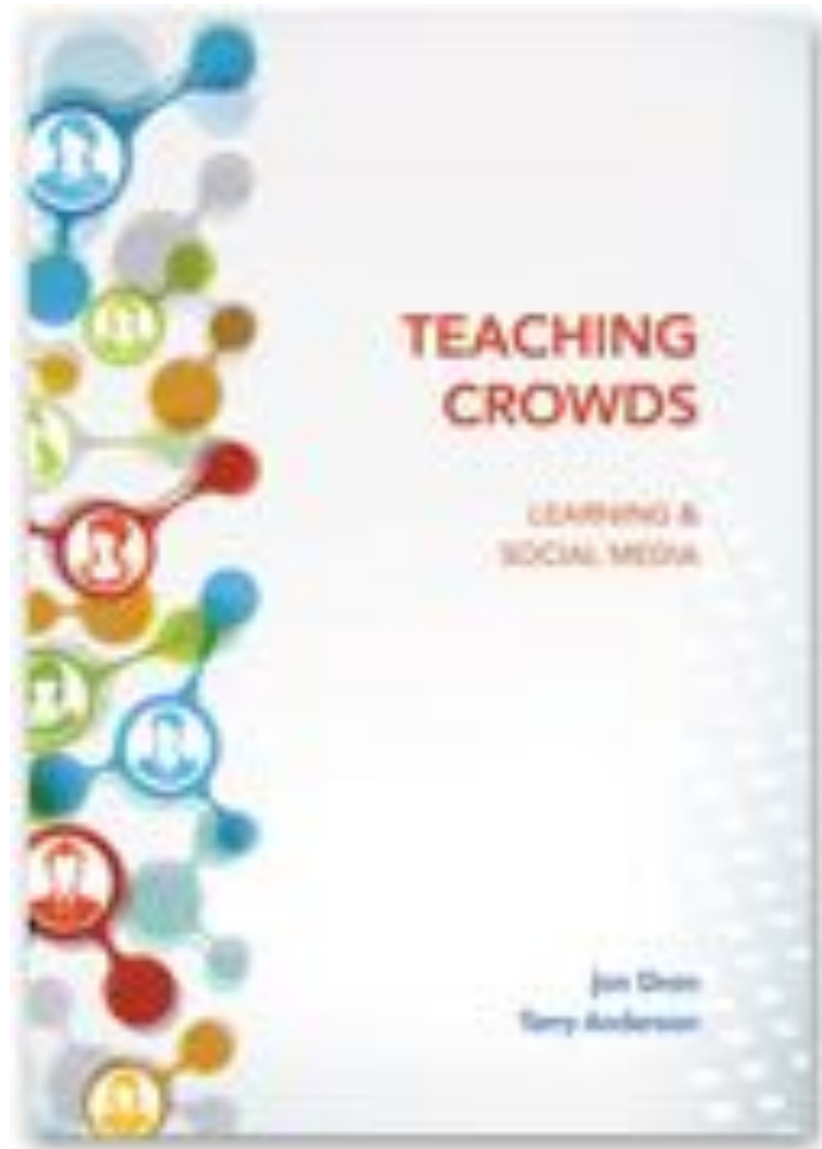
emerges

the gestalt teacher

engages connects reflects shares cares



Thank you



✉ jond@athabascau.ca

🐦 [@jondron](https://twitter.com/jondron)

🌐 <https://jondron.org/>

<https://teachingcrowds.ca/>