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Understanding collective stupidity in social computing systems

MScIS Seminar Series

Jon Dron, February 2024

Athabasca University
FACULTY OF SCIENCE & TECHNOLOGY
School of Computing & Information Systems

IFNTF
International Federation of National Teaching Fellows

Collective Intelligence

What is Collective Intelligence?

a fuzzy, diversely applied term

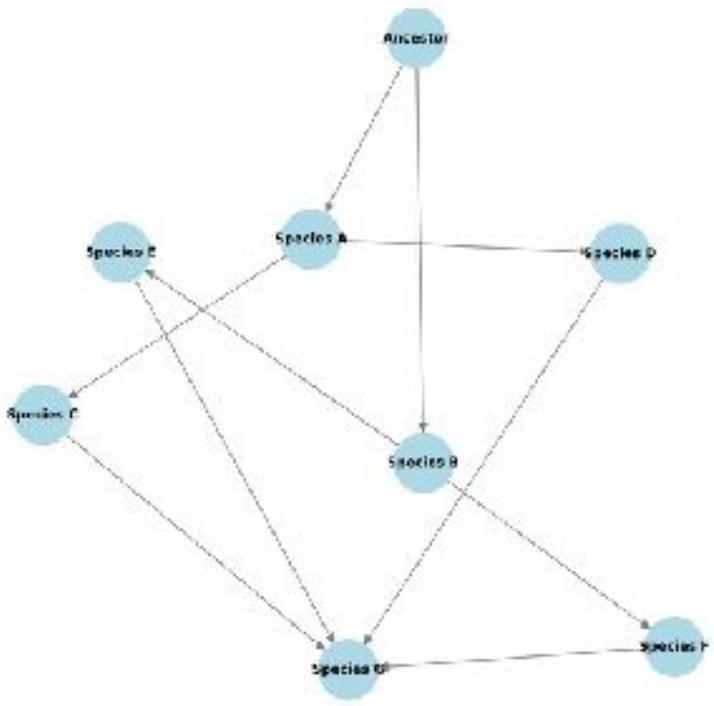
- stigmergic and emergent swarms, flocks, hives, nests, trails, etc
- group behaviours towards intentional goals
- distributed cognition
- global brain
- 4E cognition
- civic intelligence
- aggregate behaviours
- extended mind
- crowd wisdom
- connectomes
- cultural accumulation
- etc

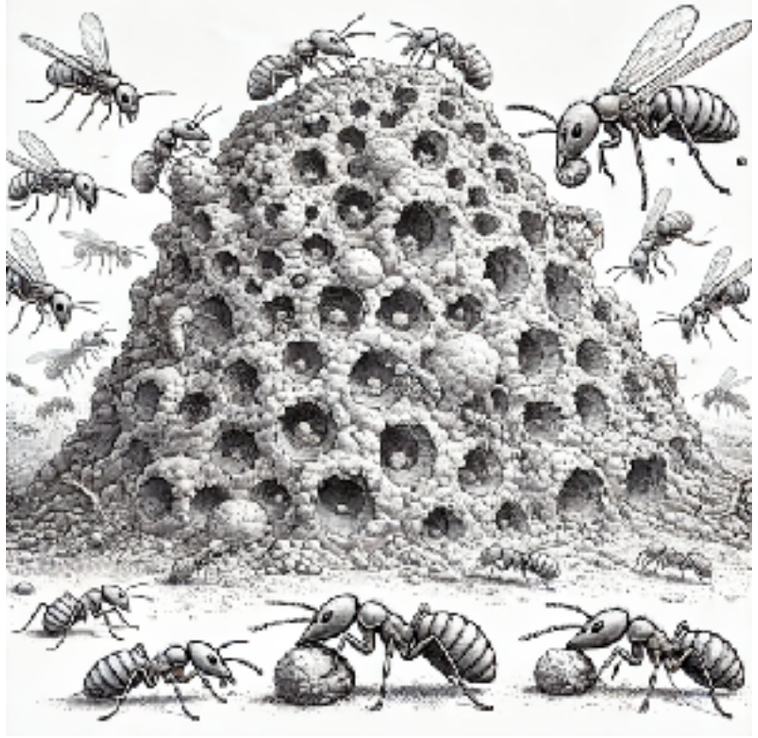
stupid mobs, wise crowds, smart organizations, etc

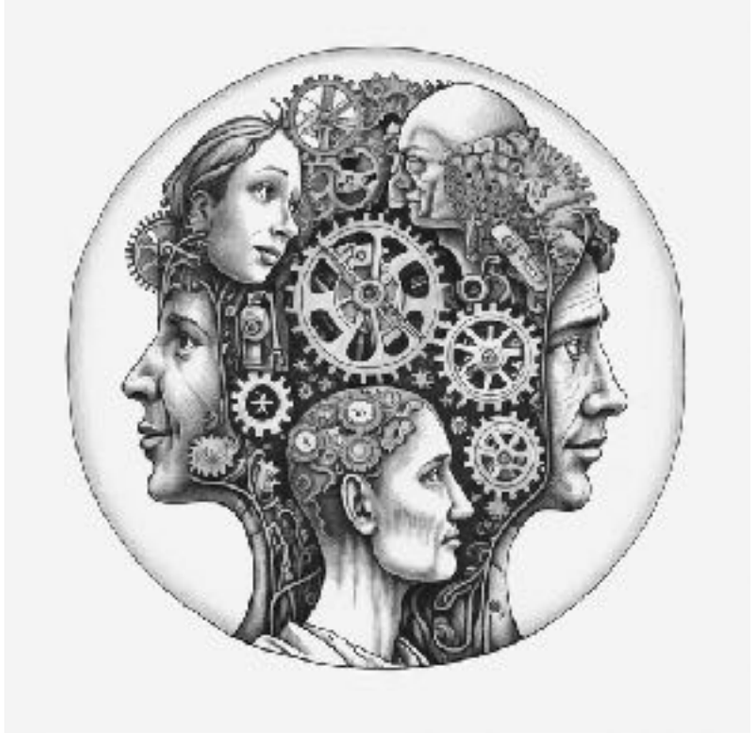
What *is* intelligence?

So let’s talk about collectives (or collective cognition/agents)

My shifting interests in collectives







wisdom of crowds

diversity

independence

decentralization

aggregation

Page, S. E. (2011). *Diversity and complexity*. Princeton University Press.

stupidity of mobs

uniformity

dependence

centralization

separation

Knight, B. G., & Schiff, N. (2007). *Momentum and Social Learning in Presidential Primaries*. *W13637*.

Social media

digital systems that only have value if they are used by at least two mutually affective participants

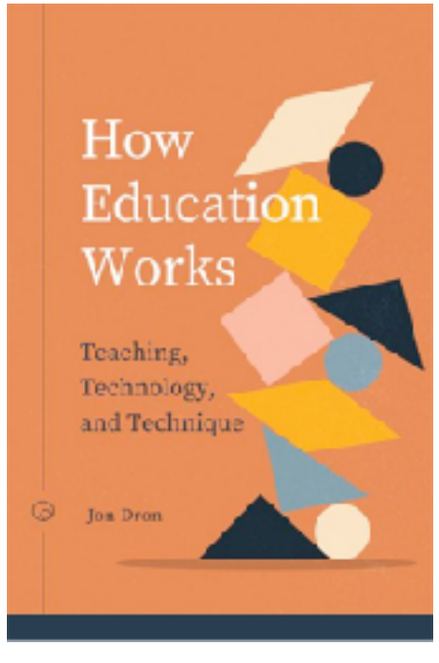
Technology

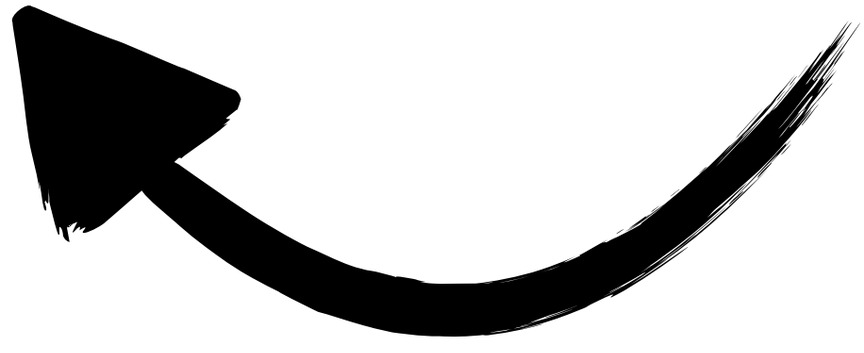
W. Brian Arthur:

The orchestration of phenomena to our use

me:

organizing stuff to do stuff



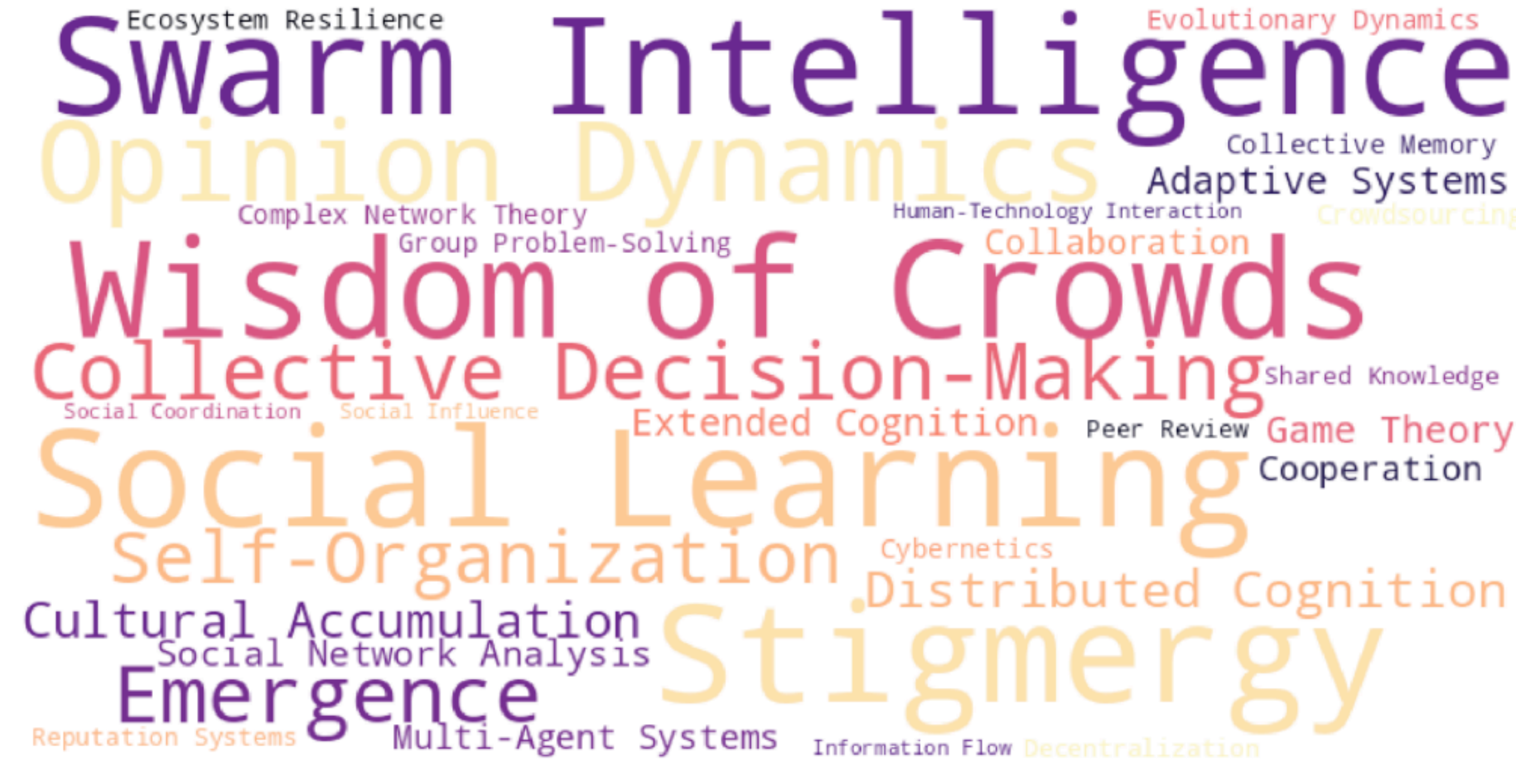


including (nearly always) other stuff organized to do stuff

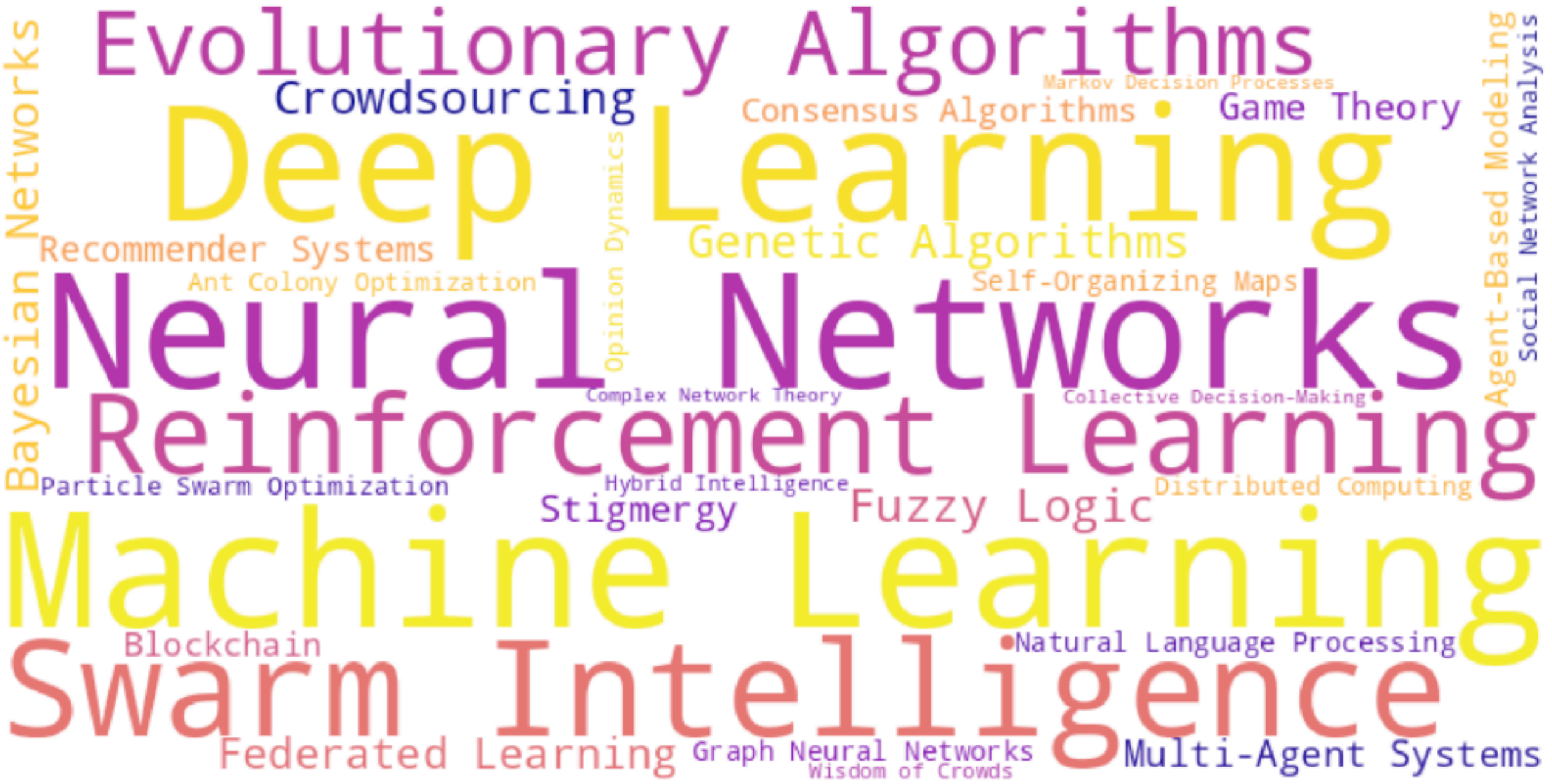
Arthur, W. B. (2009). *The Nature of Technology: What it is and how it evolves* (Kindle). Free Press.

Collectives in social media

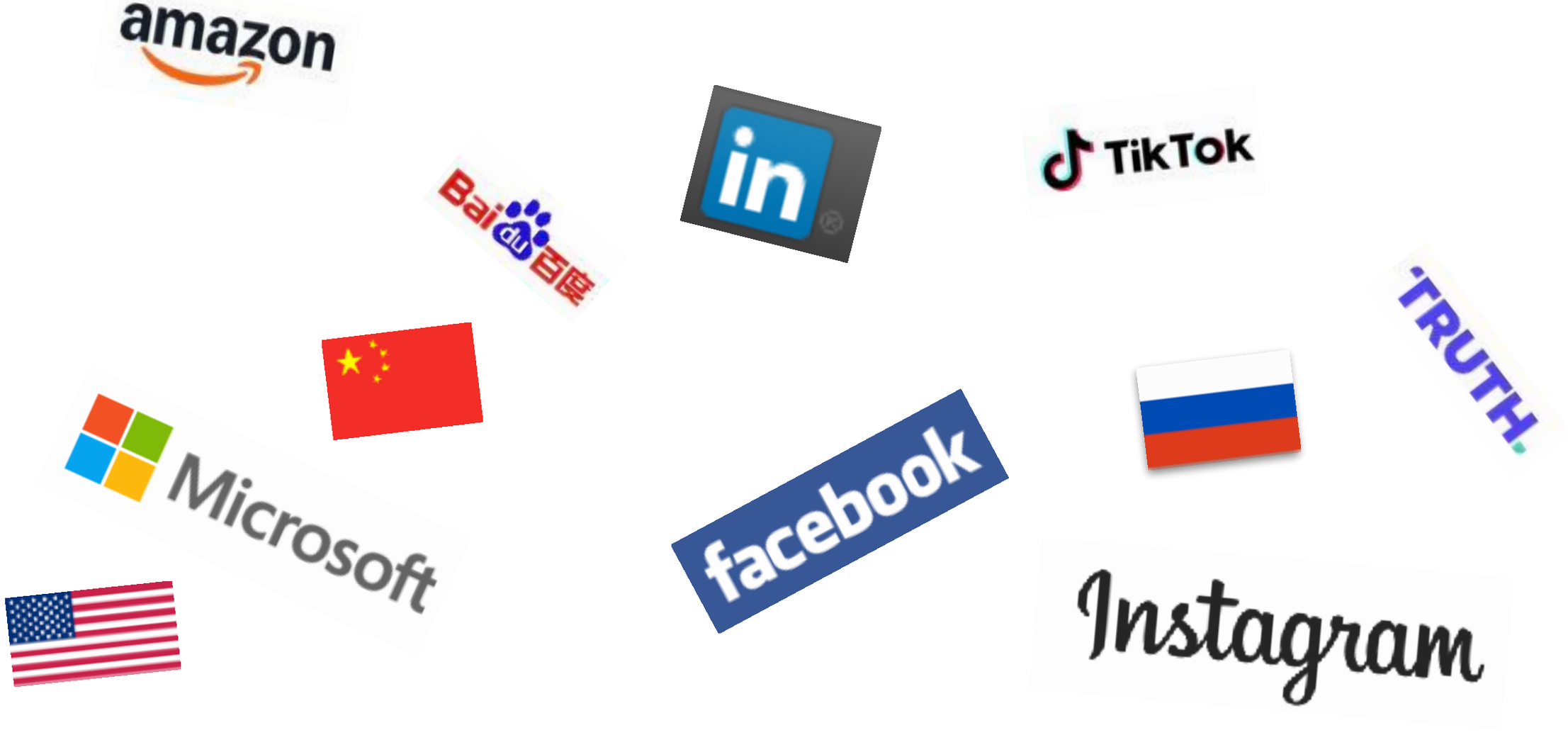
human-enacted algorithms



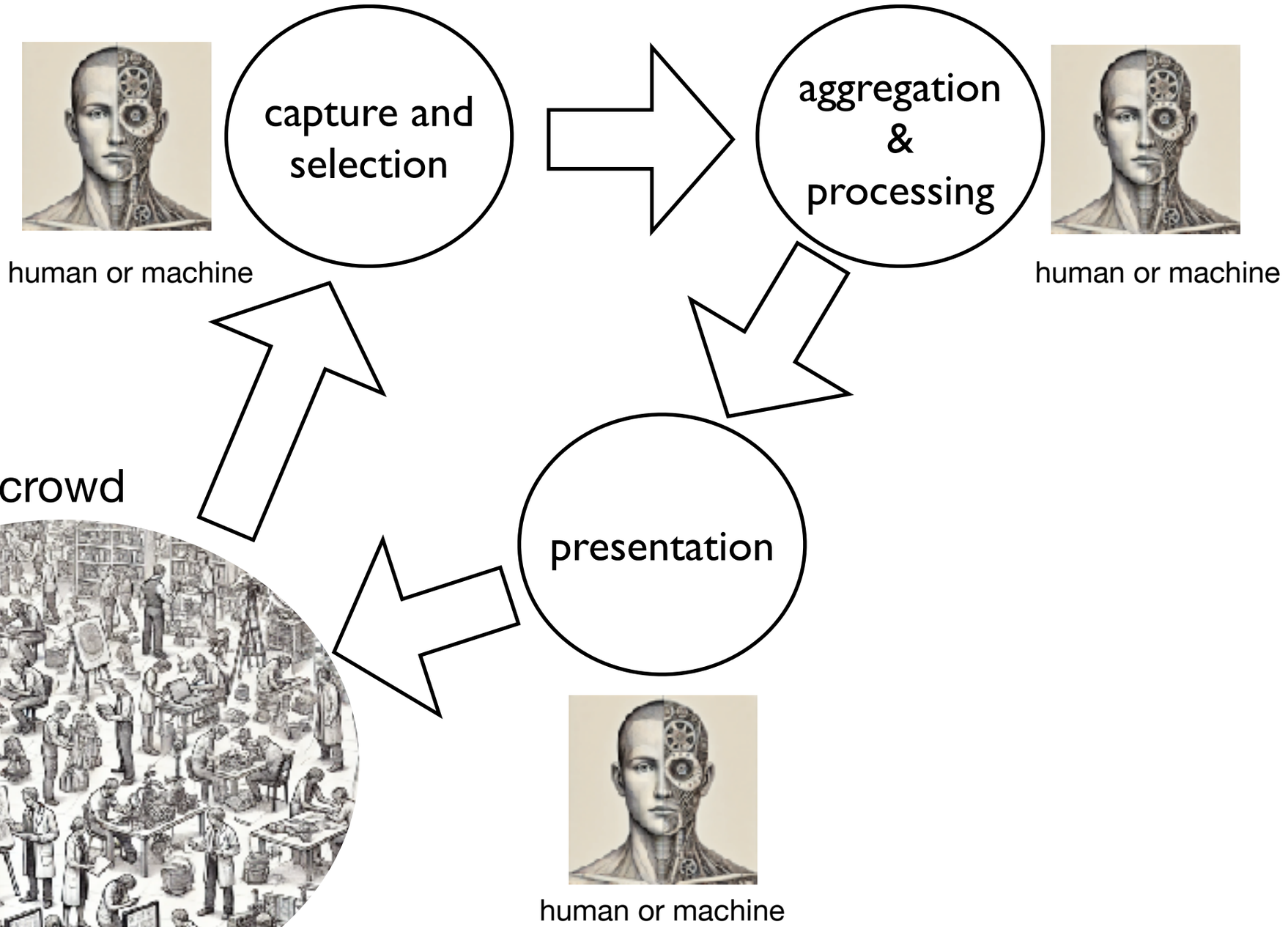
machine-enacted algorithms



Intelligent for whom?



Generic collectives

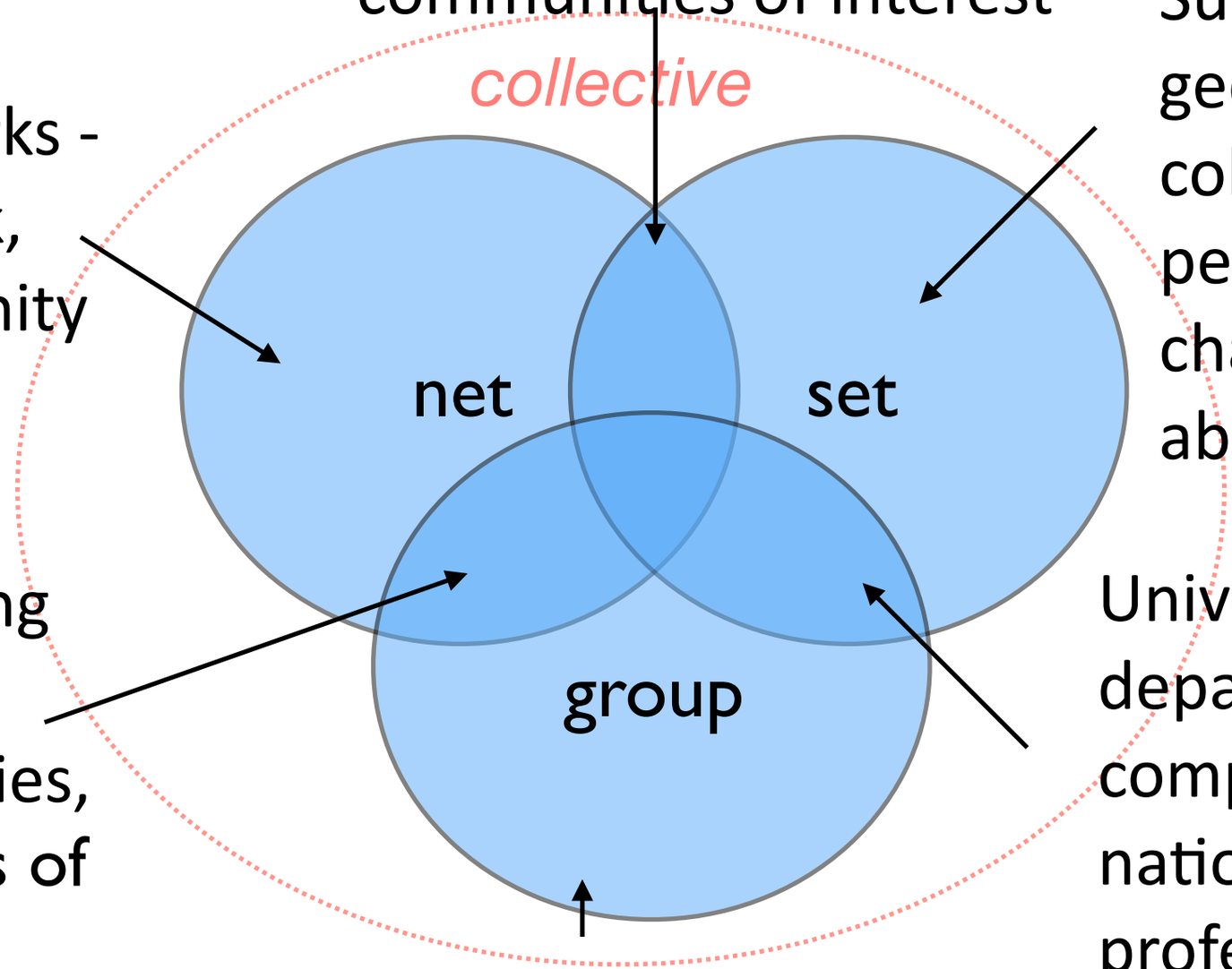


Dron, J., & Anderson, T. (2009). On the Design of Collective Applications. *2009 International Conference on Computational Science and Engineering*, *4*, 368–374. https://doi.org/10.1109/CSE.2009.469

Blendable social forms (what I used to think)

Wiki editors,
alumni networks,
communities of interest

Social networks -
friends, work,
local community



Subject areas,
geographically
collocated people,
people with shared
characteristics,
abilities, etc

Ad-hoc learning
networks,
clubs & societies,
communities of
practice

Universities,
departments,
companies,
nations,
professional bodies,
tribes

Classes,
tutorial groups,
seminars,
project teams

identity

duration

purposes

rituals

names

leaders

pace

rules

sequence

processes

Groups are technologies that utilize and form sets and nets

exclusion

norms

collaboration and contest

hierarchies

structure

power relationships

membership

joining and leaving

lack of process

inefficient paths

lack of direction/control

ownership

intentional manipulation

preferential attachment

network problems

that groups solve

connection trumps wisdom

lack of structure

context collapse

distraction

echo chambers

Matthew Effect

narcissism

reliability

bad people

stupid people

trolls

blind leading the blind

anonymity

lack of process

Set problems that groups solve

cultural conflict

lack of caring

disputes

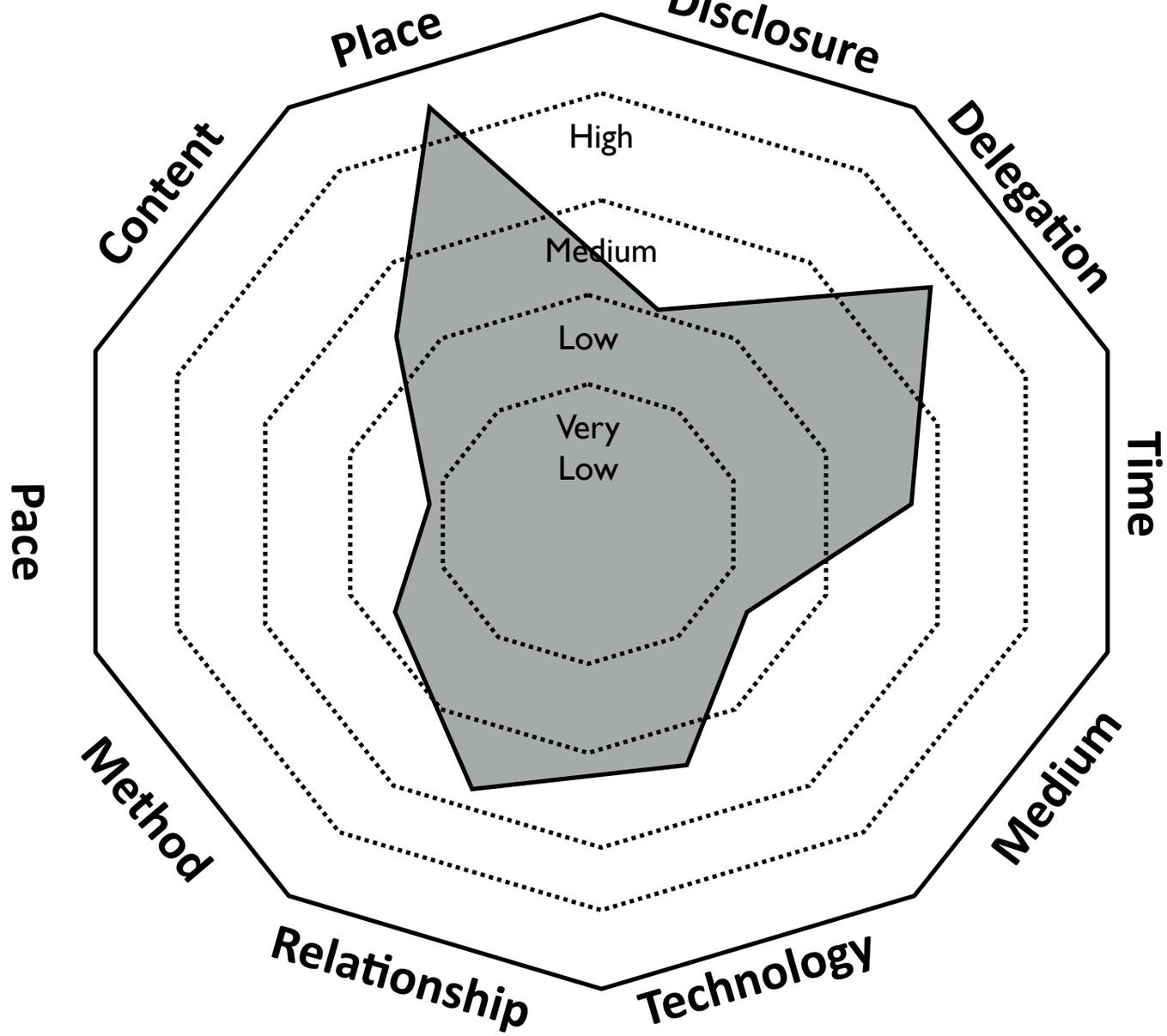
lack of structure

lack of trust

context collapse

weak social ties

But groups are a Faustian Bargain



Groupthink

Exclusion

Scalability

Restricted pace, time, tools, etc

Embedded power imbalances

Freeloading

Coordination complexity

Pathological norms (e.g. politeness, competition)

Dron, J., & Anderson, T. (2014). *Teaching crowds: Social media and distance learning*. AU Press. https://doi.org/10.15215/aupress/9781927356807.01

lack of process

reliability

Net/set/group problems that collectives (can) solve

equity

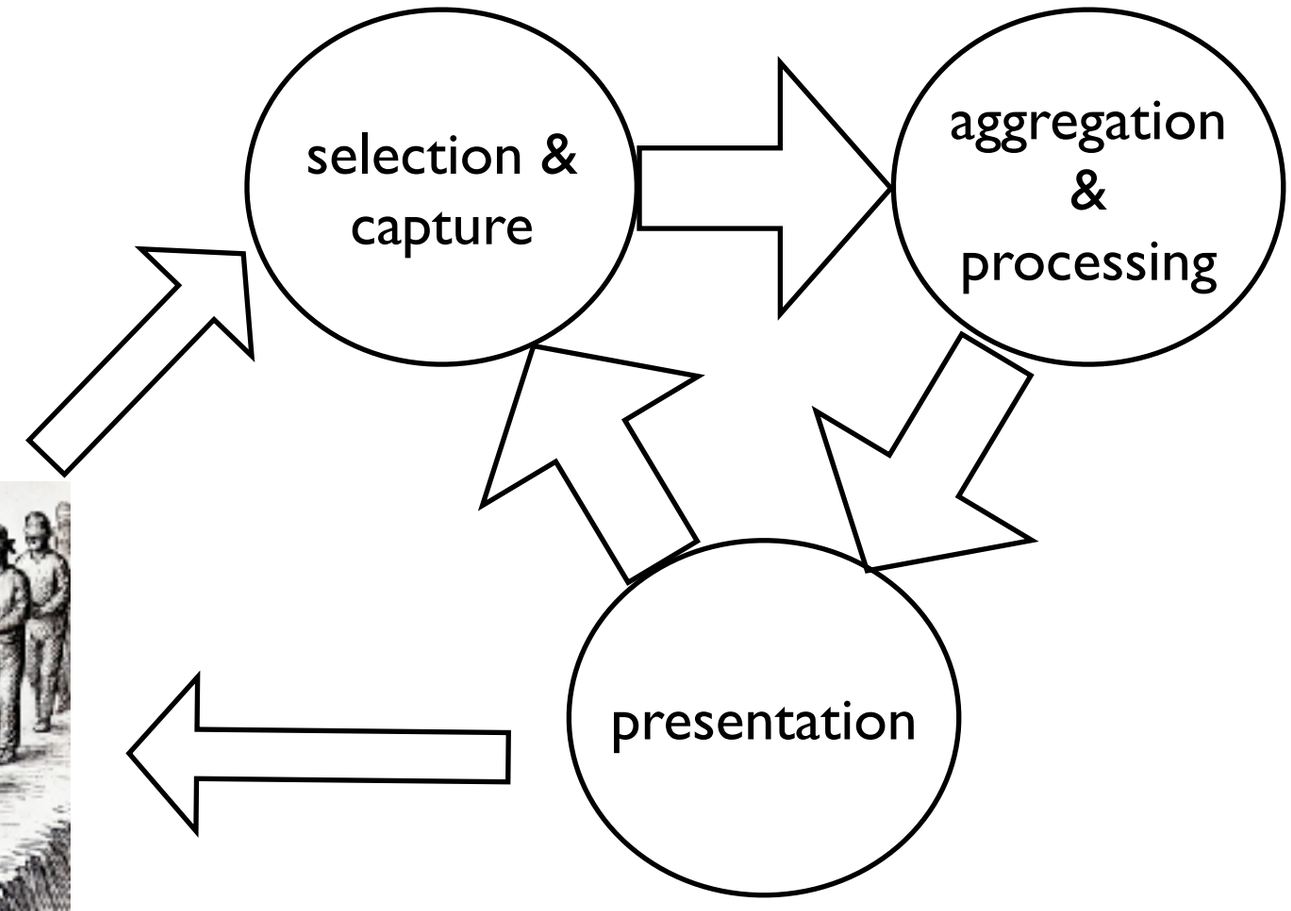
lack of structure

lack of trust

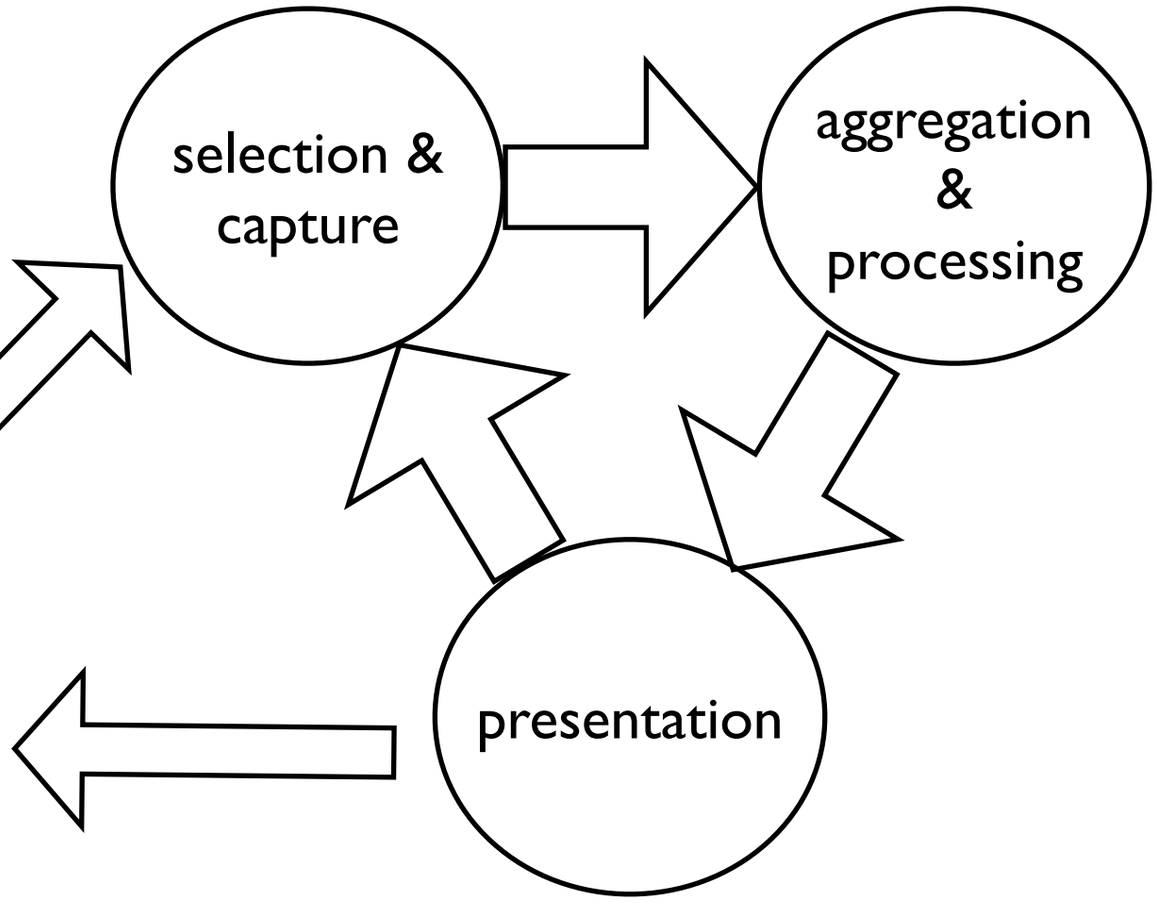
scalability

but collectives have their own problems…

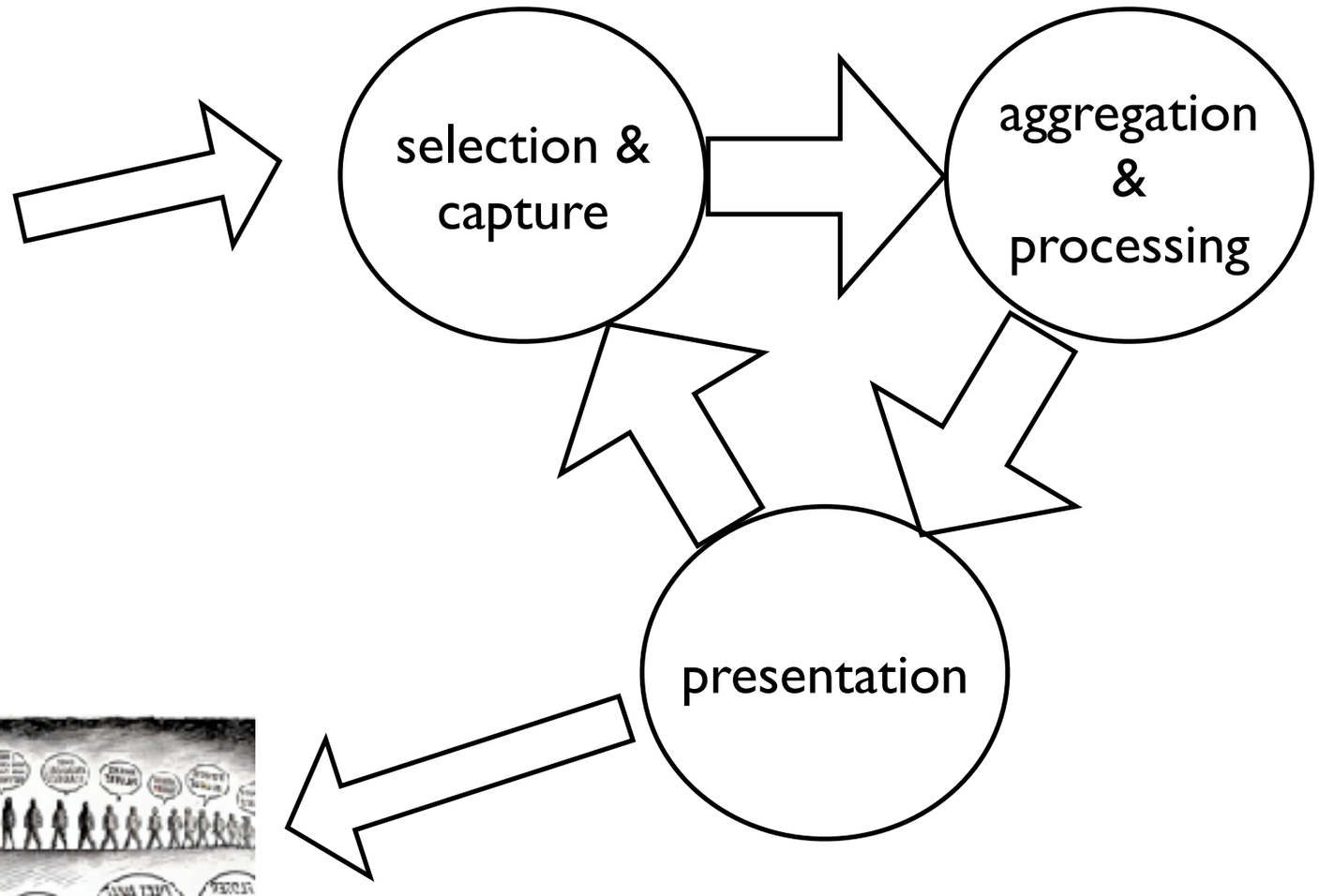
Blind leading the blind



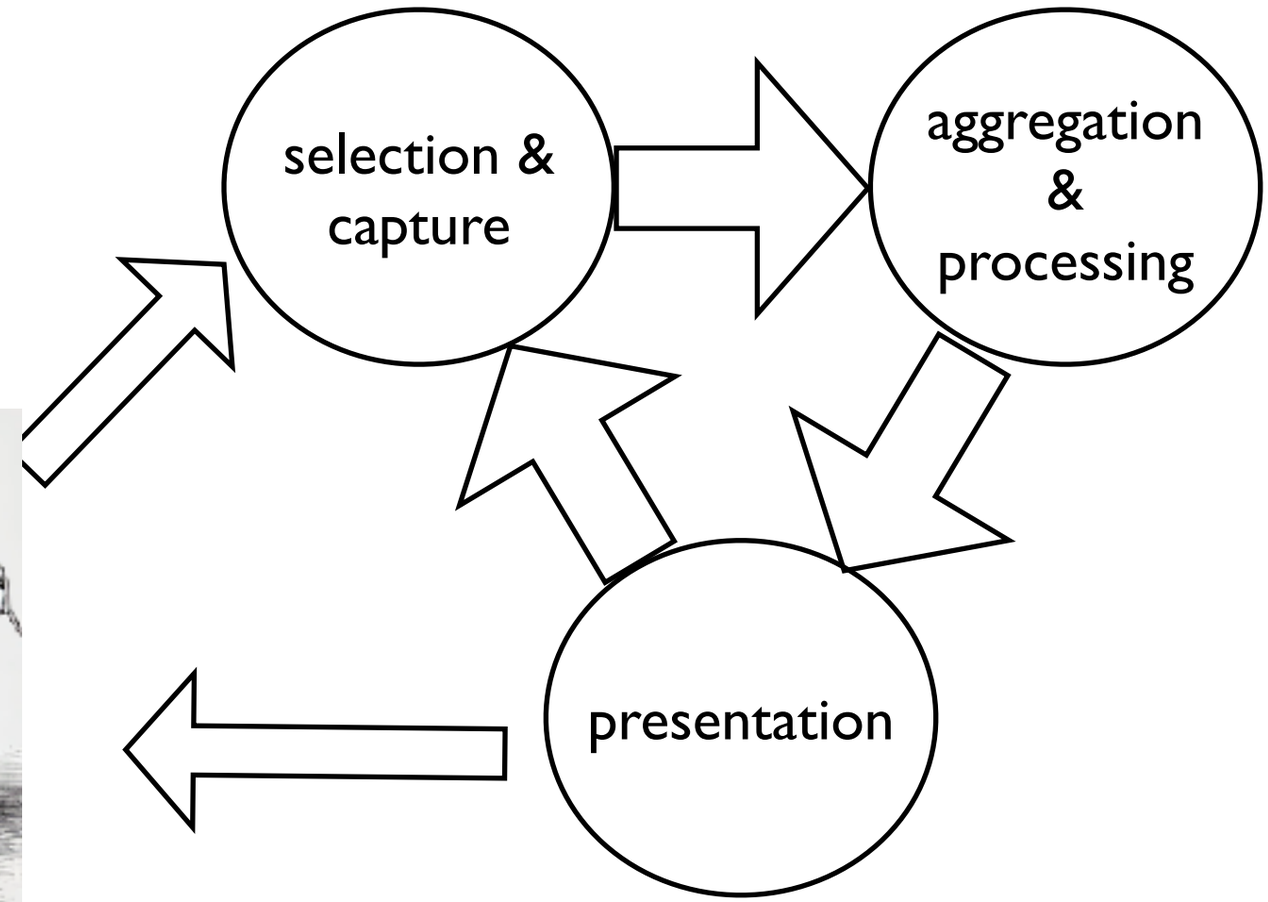
Echo chambers



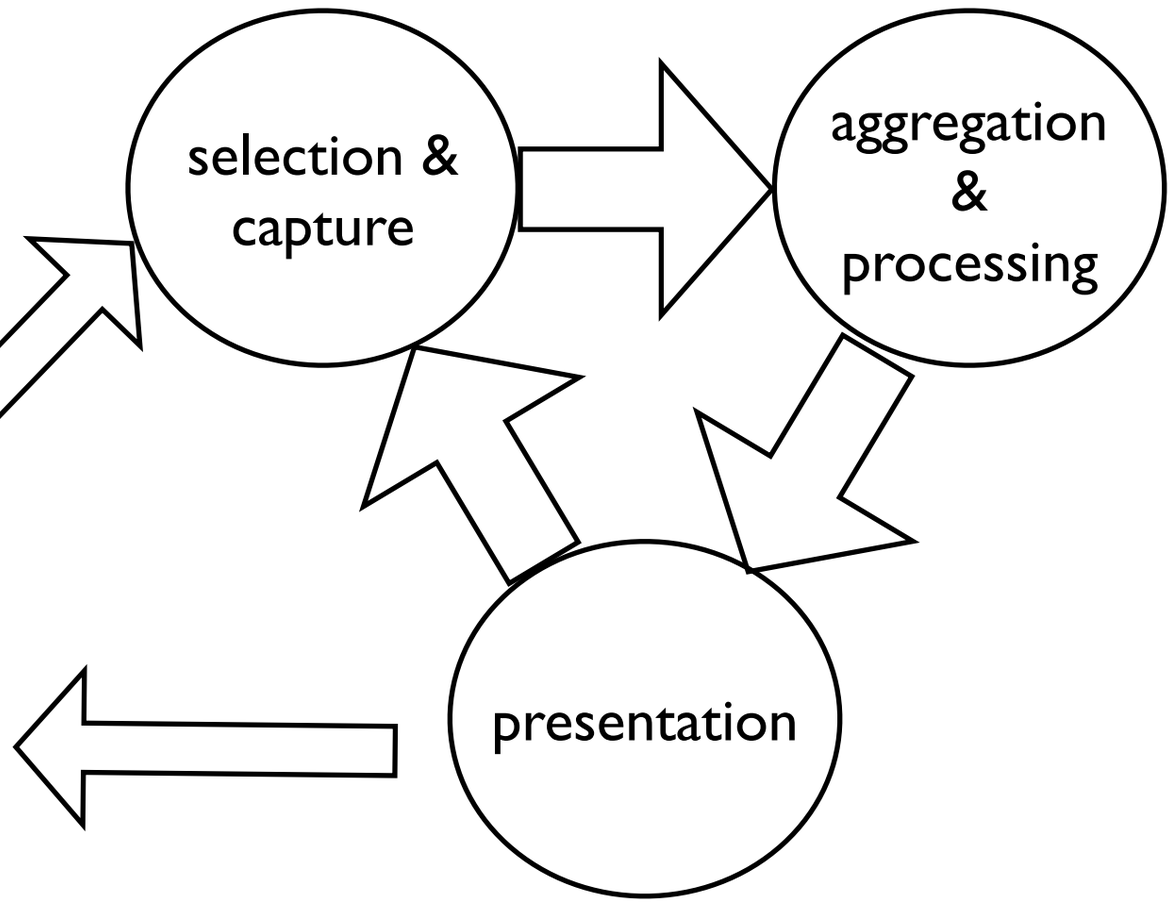
Context collapse



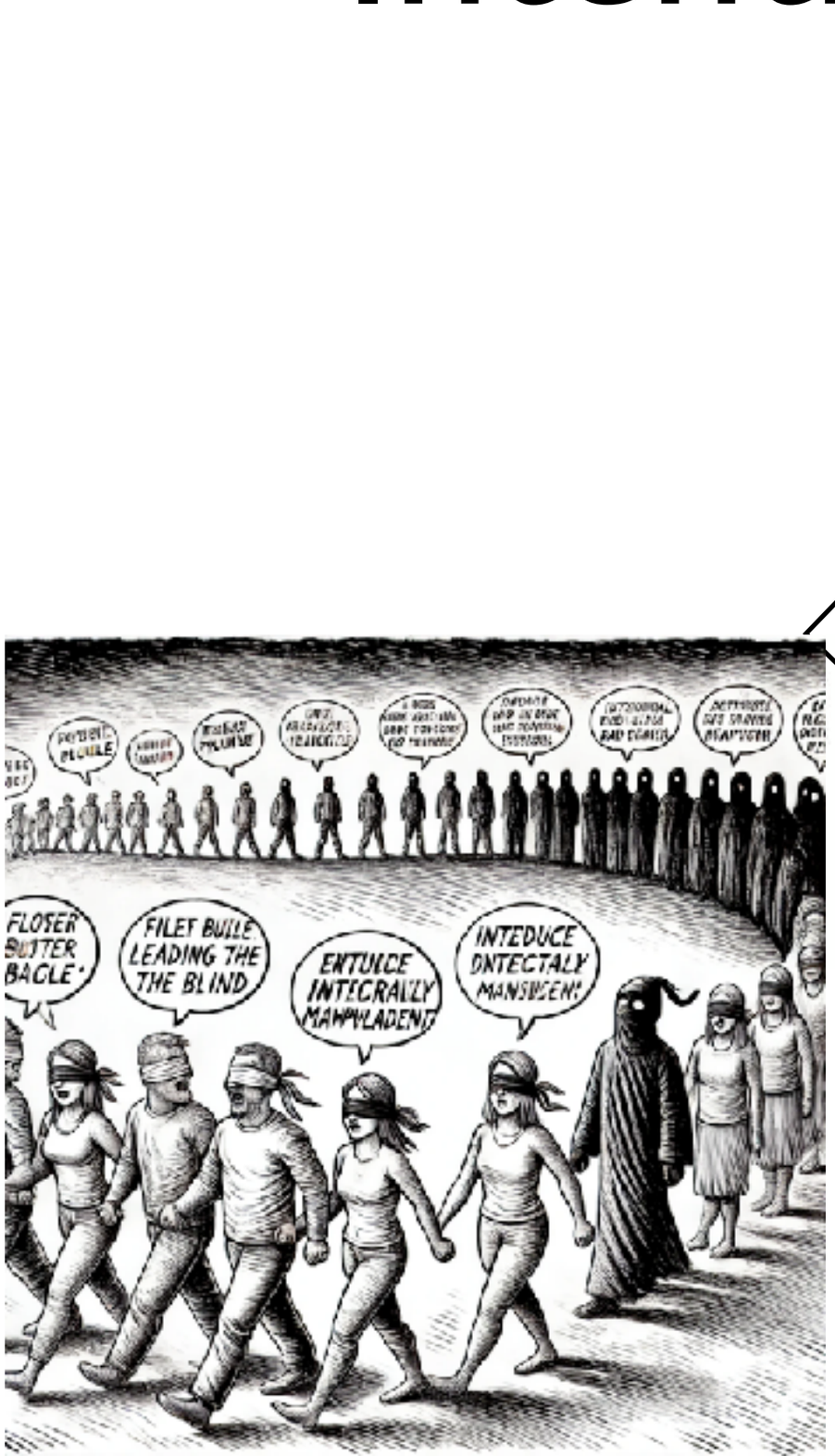
Filter bubbles

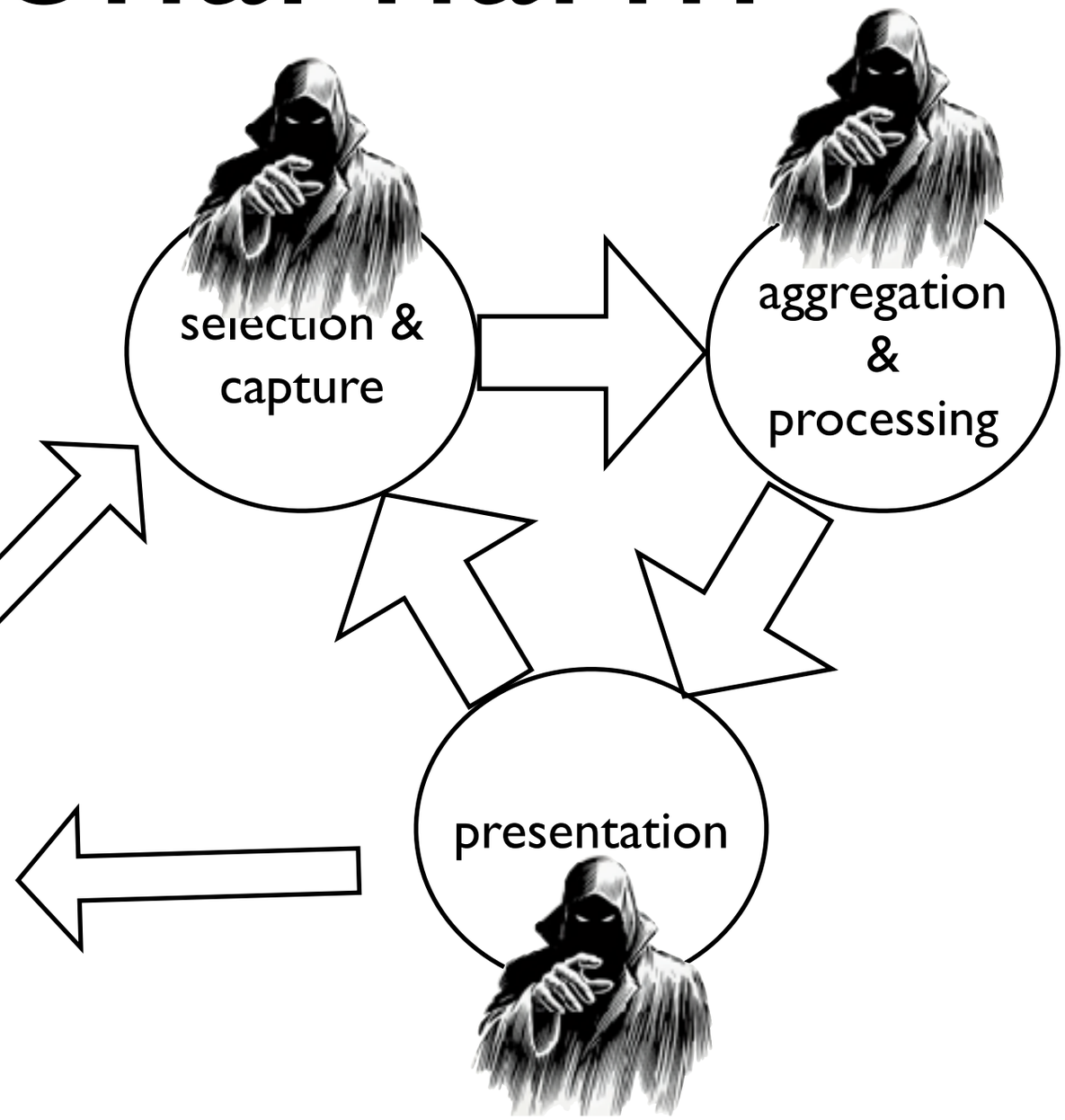


The Matthew Principle

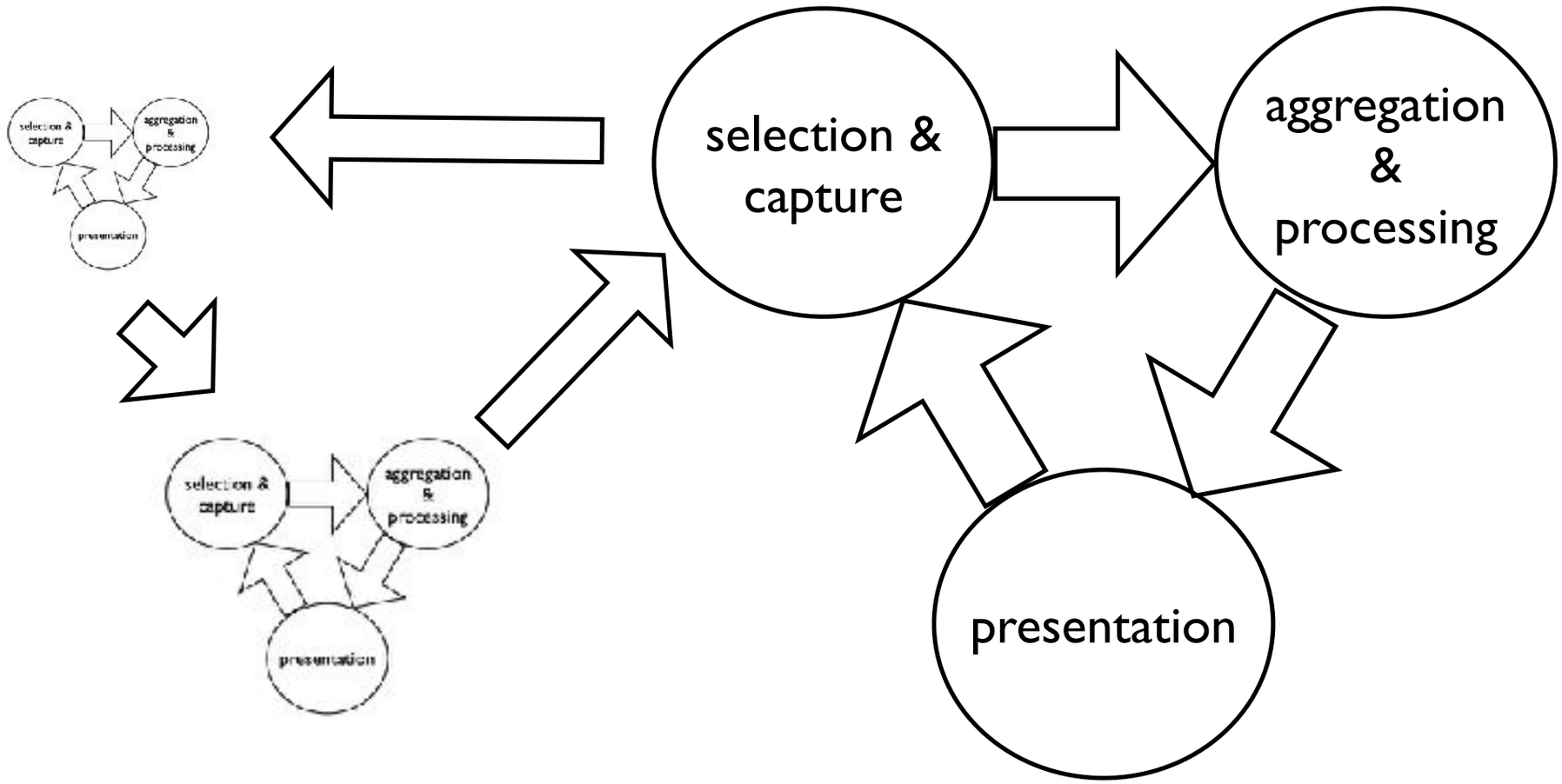


Intentional harm





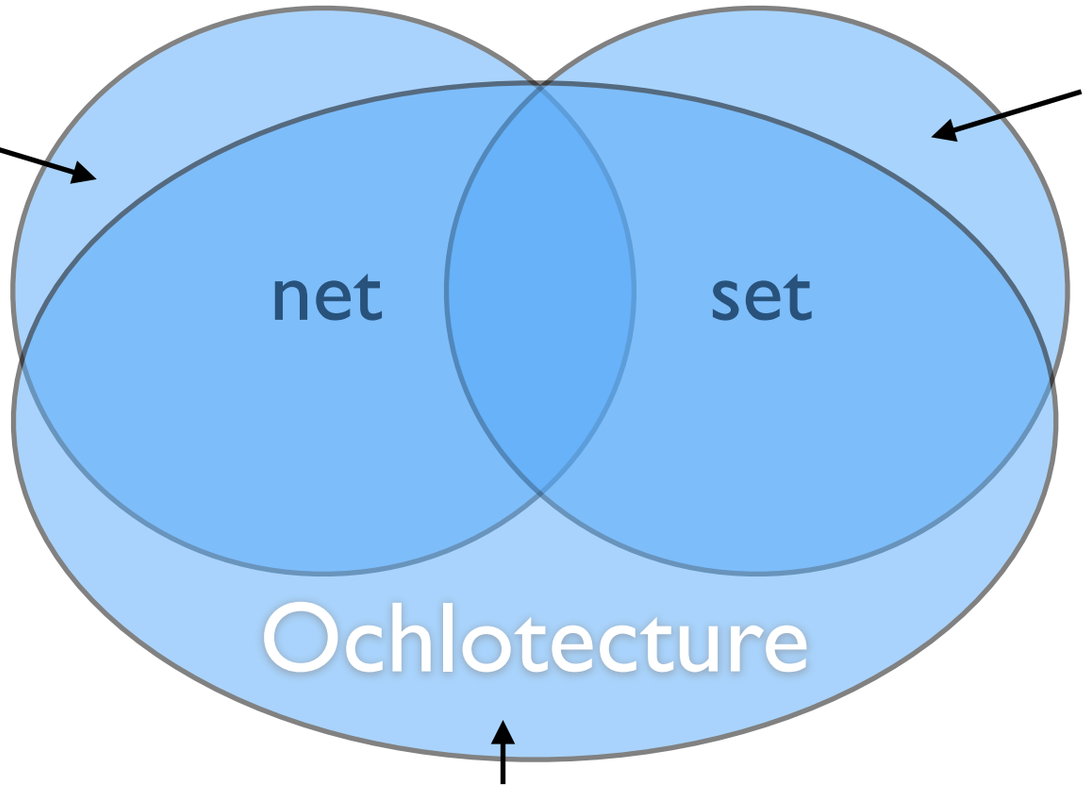
The grey goo scenario



How I see it now

people who

know one another



people who share

common attributes

Includes all group processes,
collective processes,
algorithms, structures, filters,
forms, schedules,
architecture, etc, etc.

“ochlotecture”, from the Classical Greek ὄχλος (ochlos), meaning “multitude” and τέκτων (tektōn) meaning “builder”.

Ochlotectural technological elements

Orchestrational

Structural

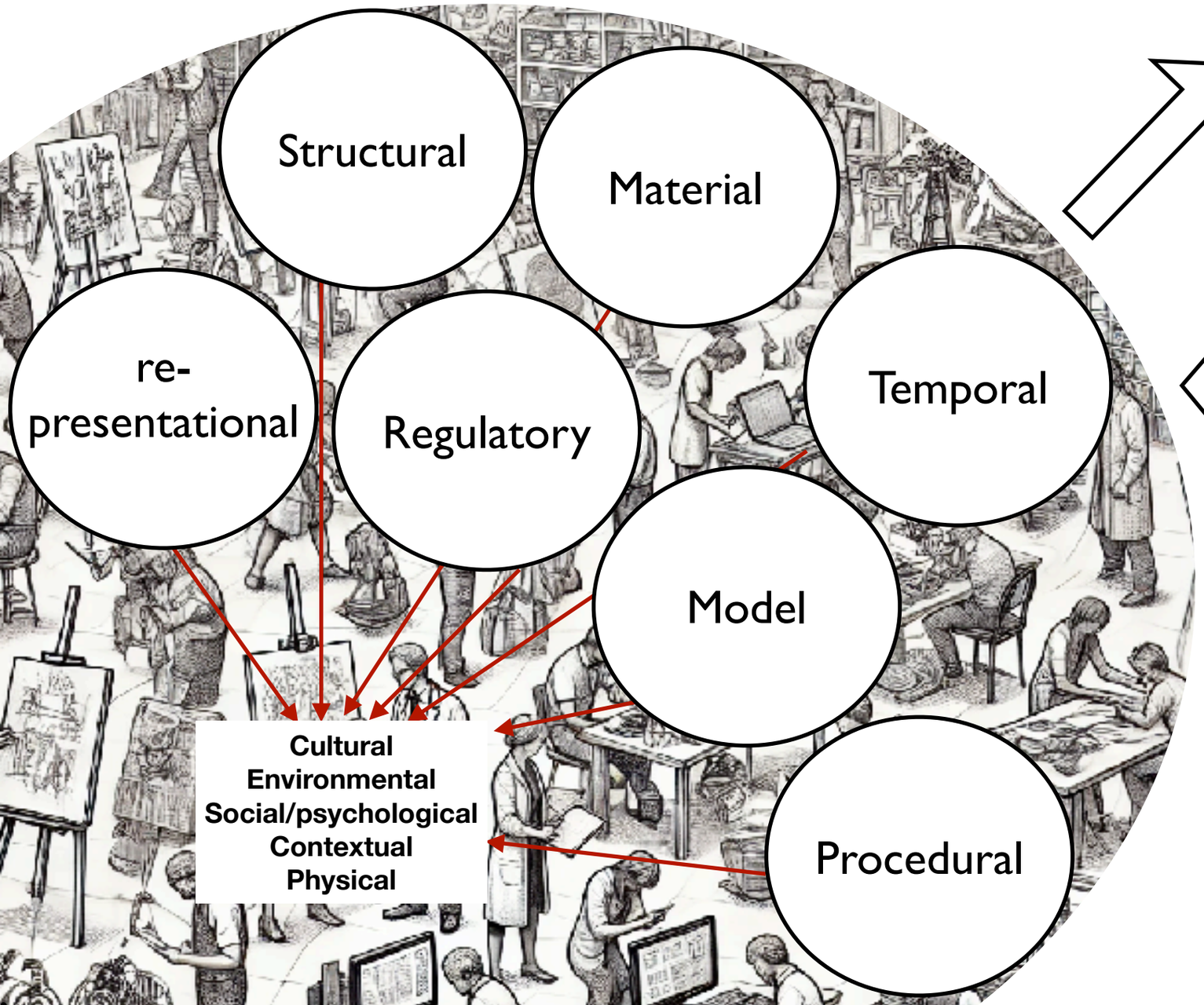
Procedural
Regulatory
Material
Temporal
Model
Representational

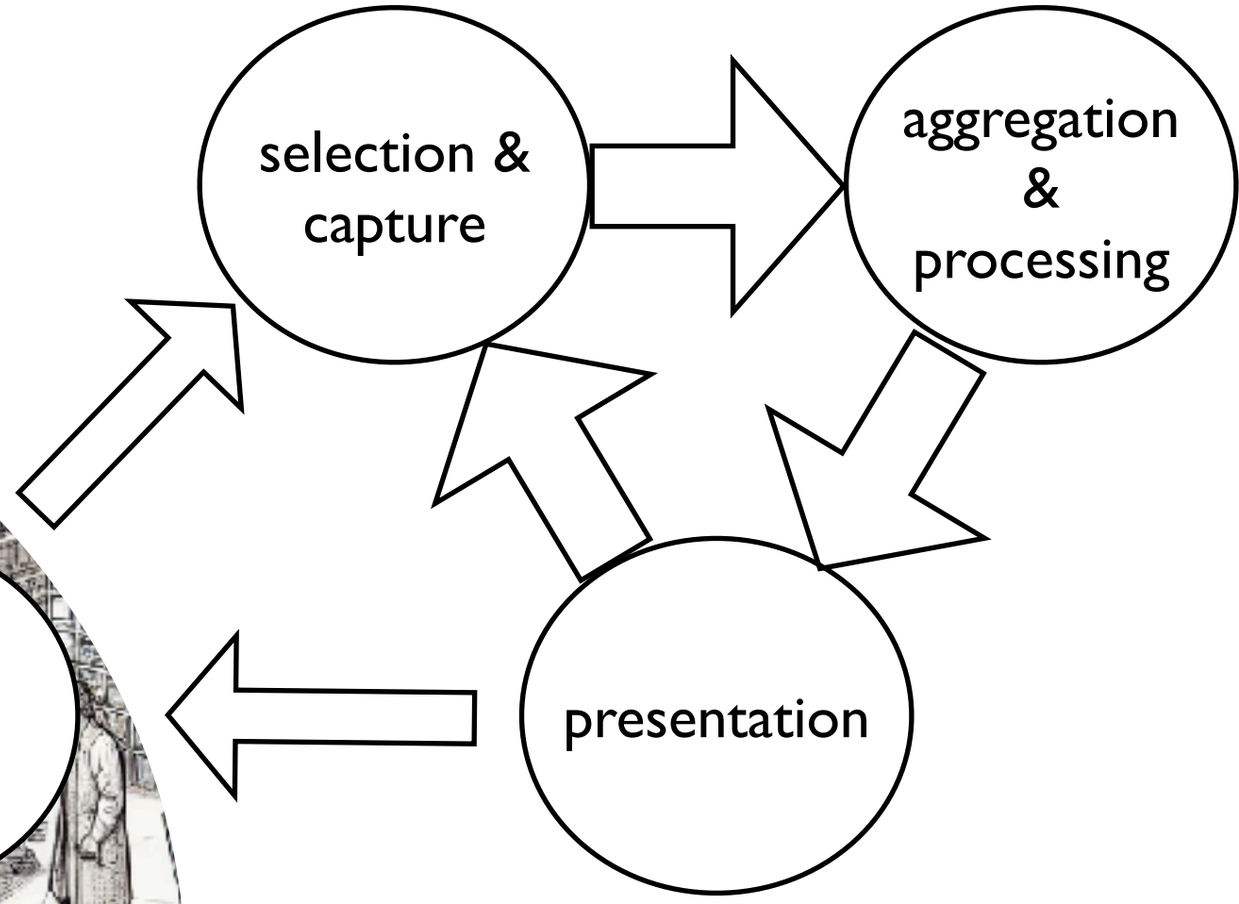
Cultural

Environmental
Social/psychological
Contextual
Physical

Phenomenal

Towards richer ochlotectures





LLMs as general-purpose collectives

capture and selection

aggregation & processing

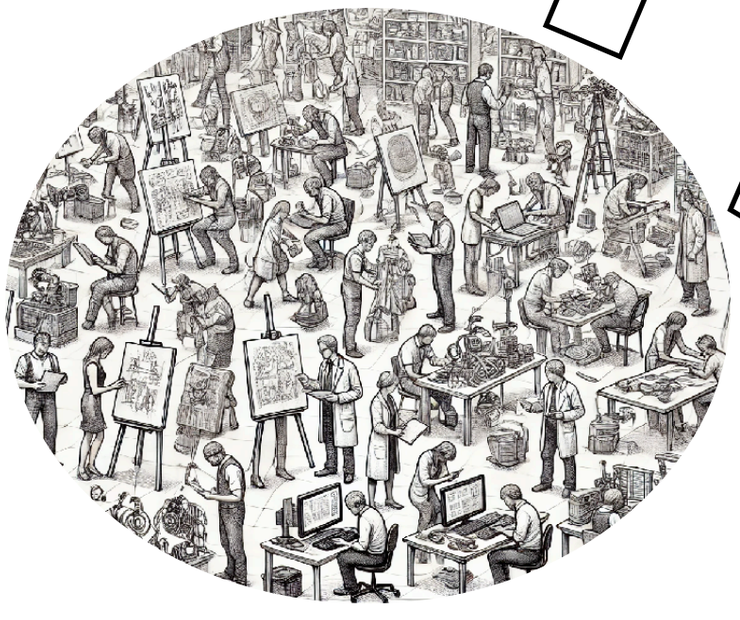
human and machine training

emergent configurations of neural networks

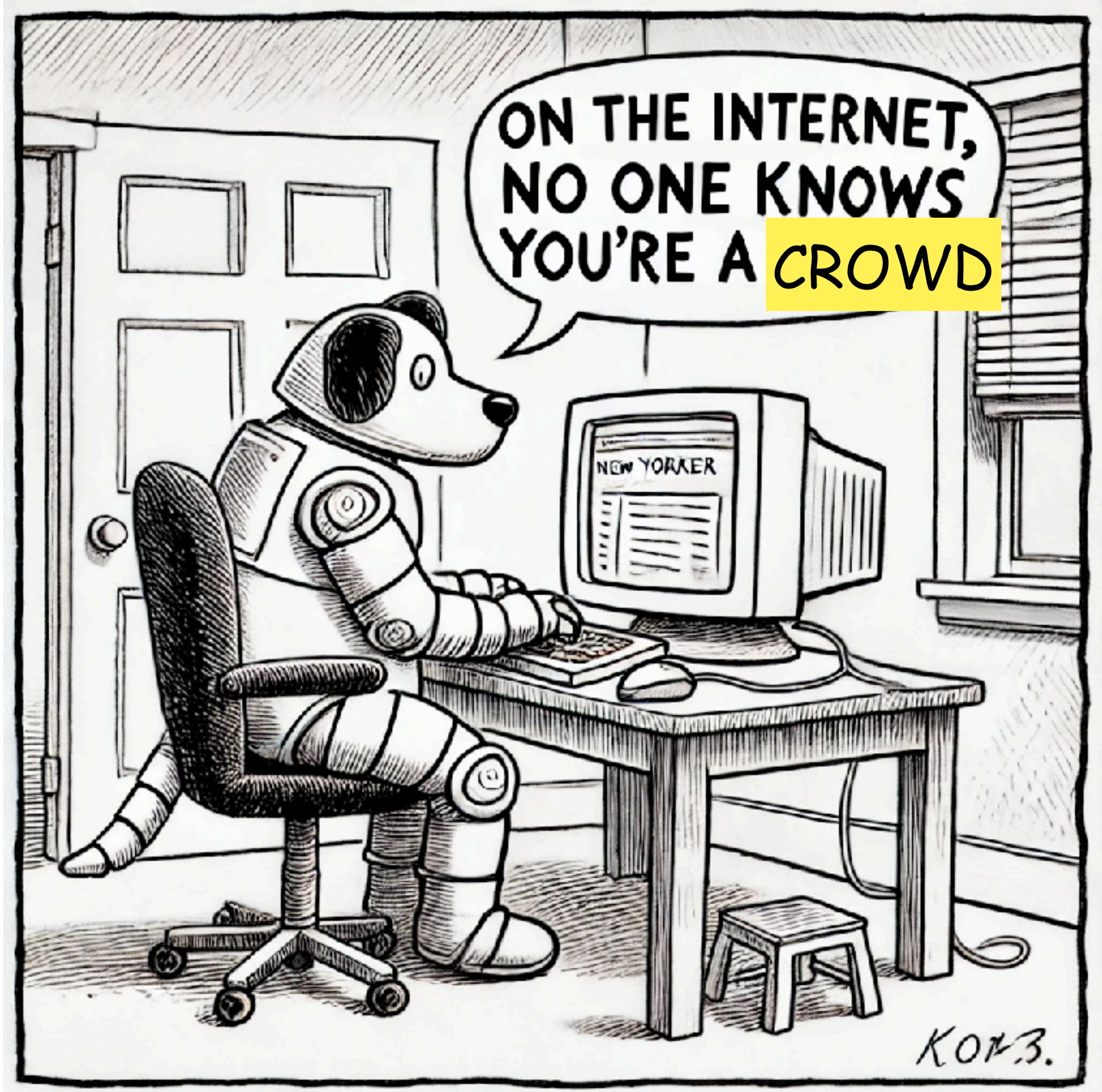
evolvable evolvability

indefinitely tunable

presentation

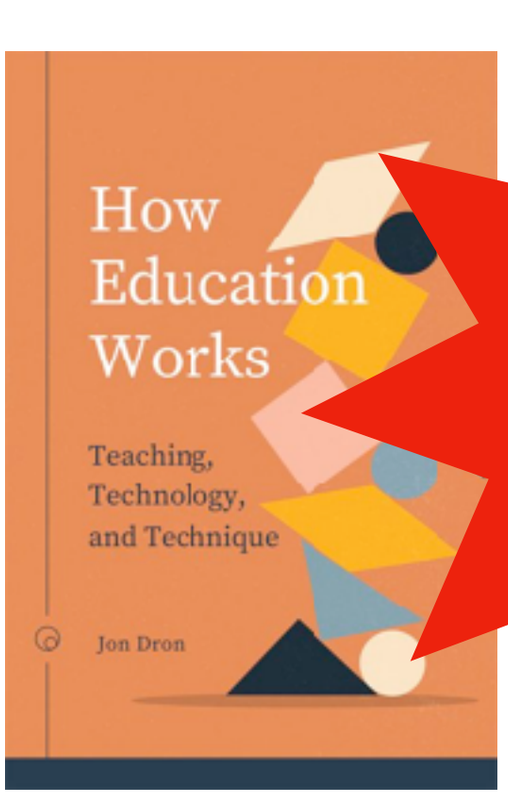


machine output from human input

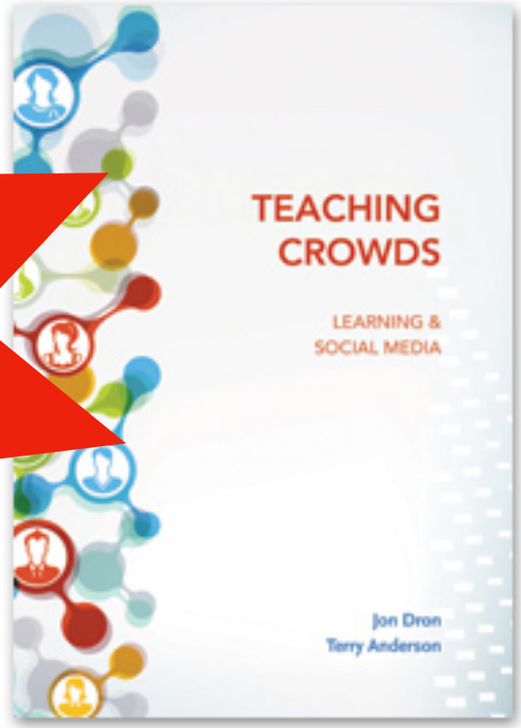

ON THE INTERNET, NO ONE KNOWS YOU'RE A CROWD
NEW YORKER
KONB.

Thank you

https://howeducationworks.ca



Free to read, cheap to buy!



new!

https://teachingcrowds.ca

Learning: A technological perspective
https://ojs.uni-oldenburg.de/journals/ojs2/ojs/index.php/jodde/article/view/43

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