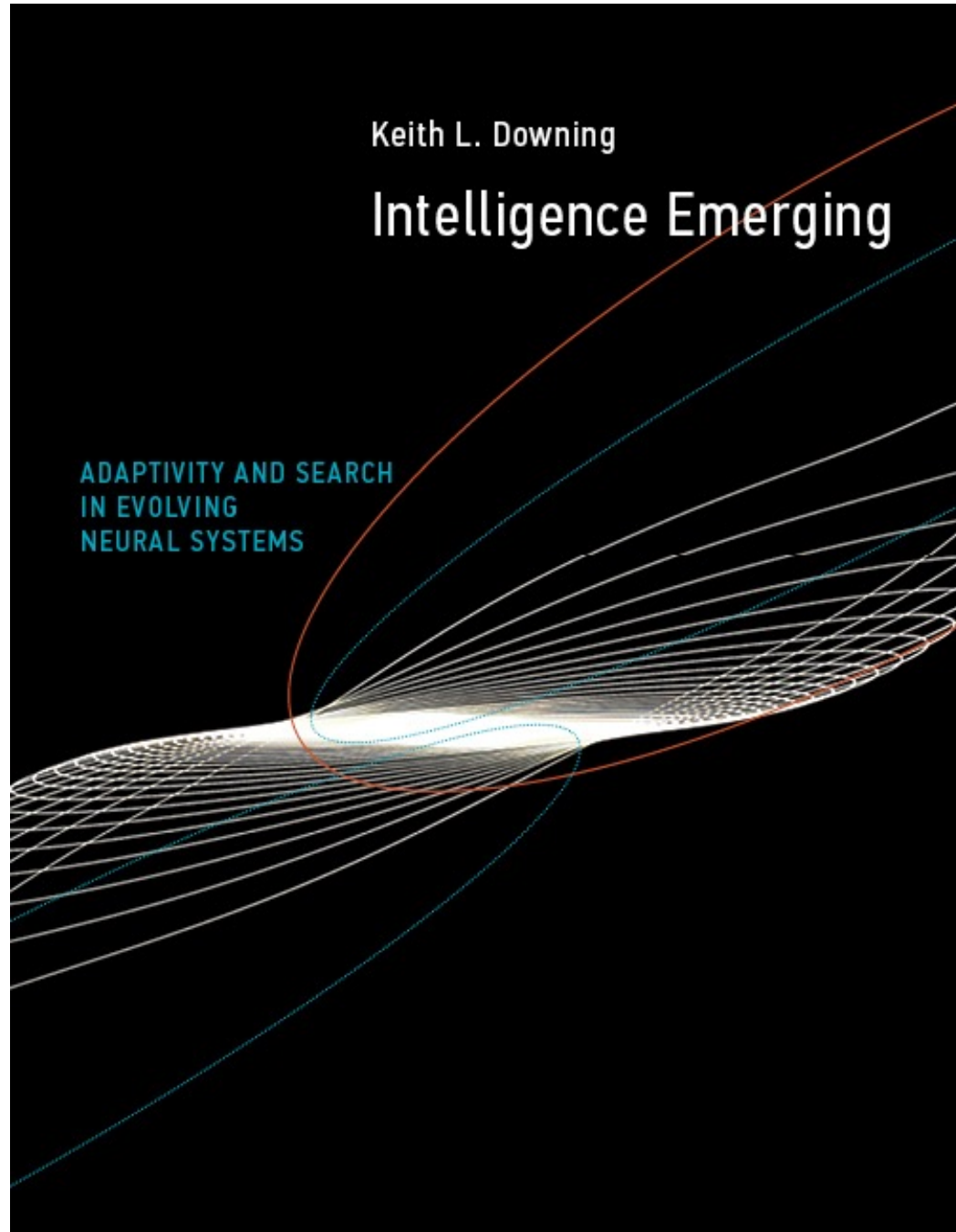


Keith L. Downing

# Intelligence Emerging

ADAPTIVITY AND SEARCH  
IN EVOLVING  
NEURAL SYSTEMS



# Stupidity (Conformity, Myopia) Emerging



Keith Downing  
Department of Computer Science  
NTNU

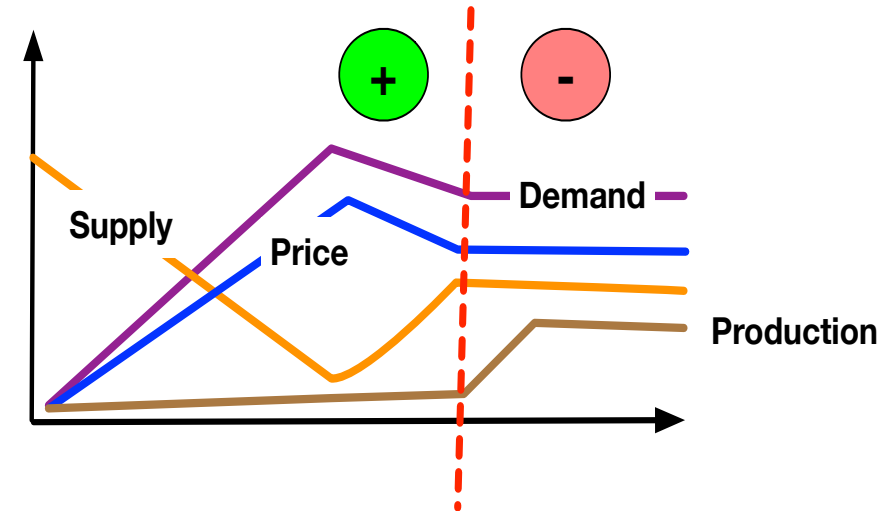
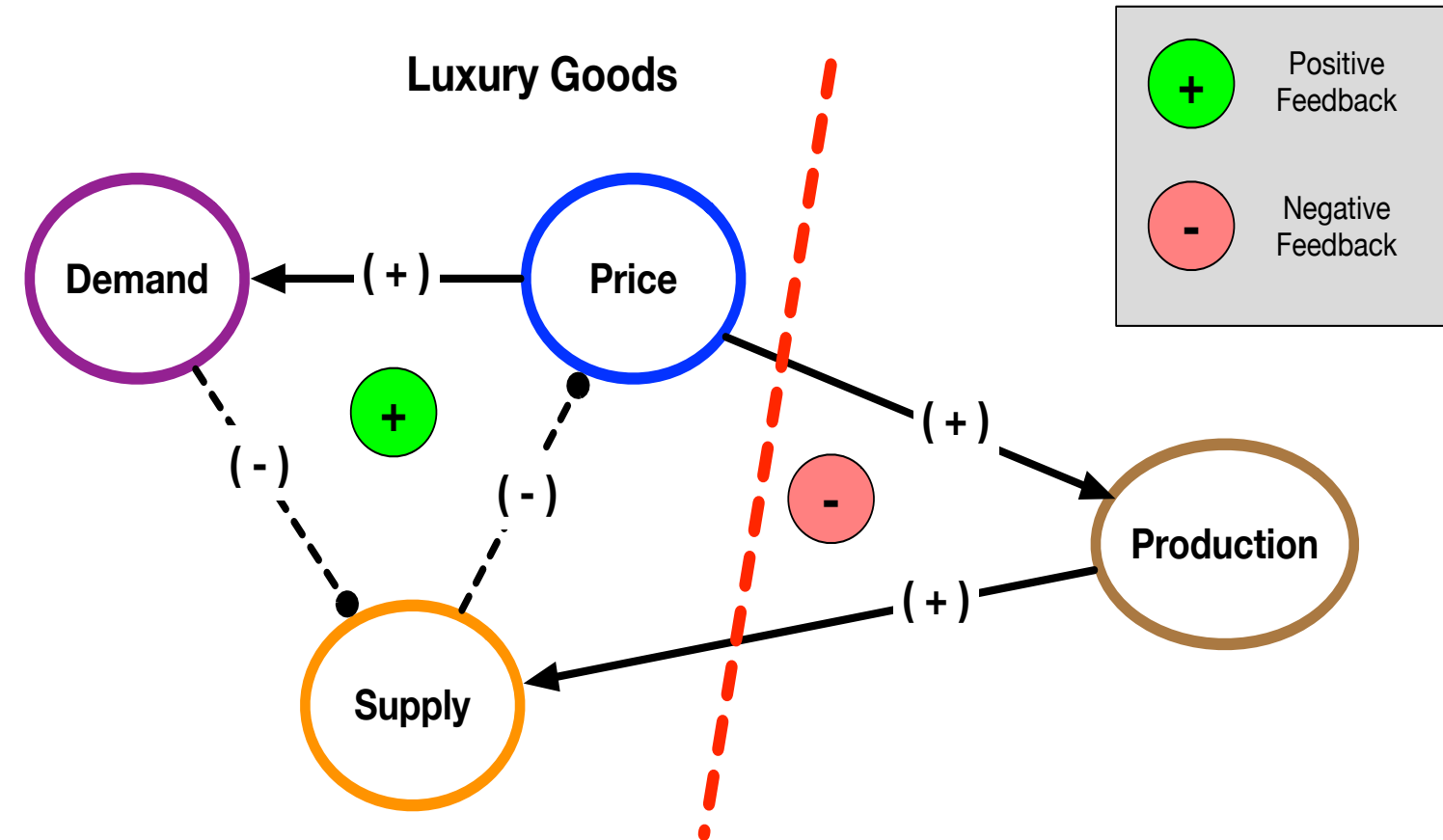


\* Picture suggested by an AI algorithm ... REALLY!!

# Emergence

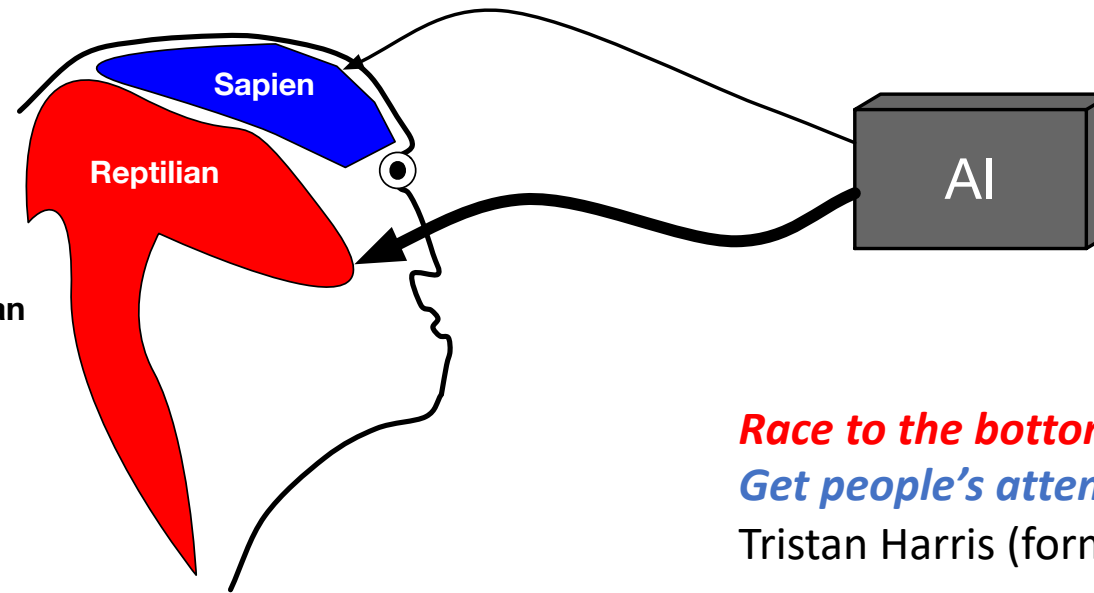
- Local interactions lead to global patterns, without global control
- Initially: positive feedbacks dominate for growth
- Later: negative feedbacks dominate for stability
- Examples:
  - Social insect behaviors and dwellings
  - Pedestrian movement patterns
  - Cultural demographics
  - Economies (the invisible hand)

# Emergence of Price

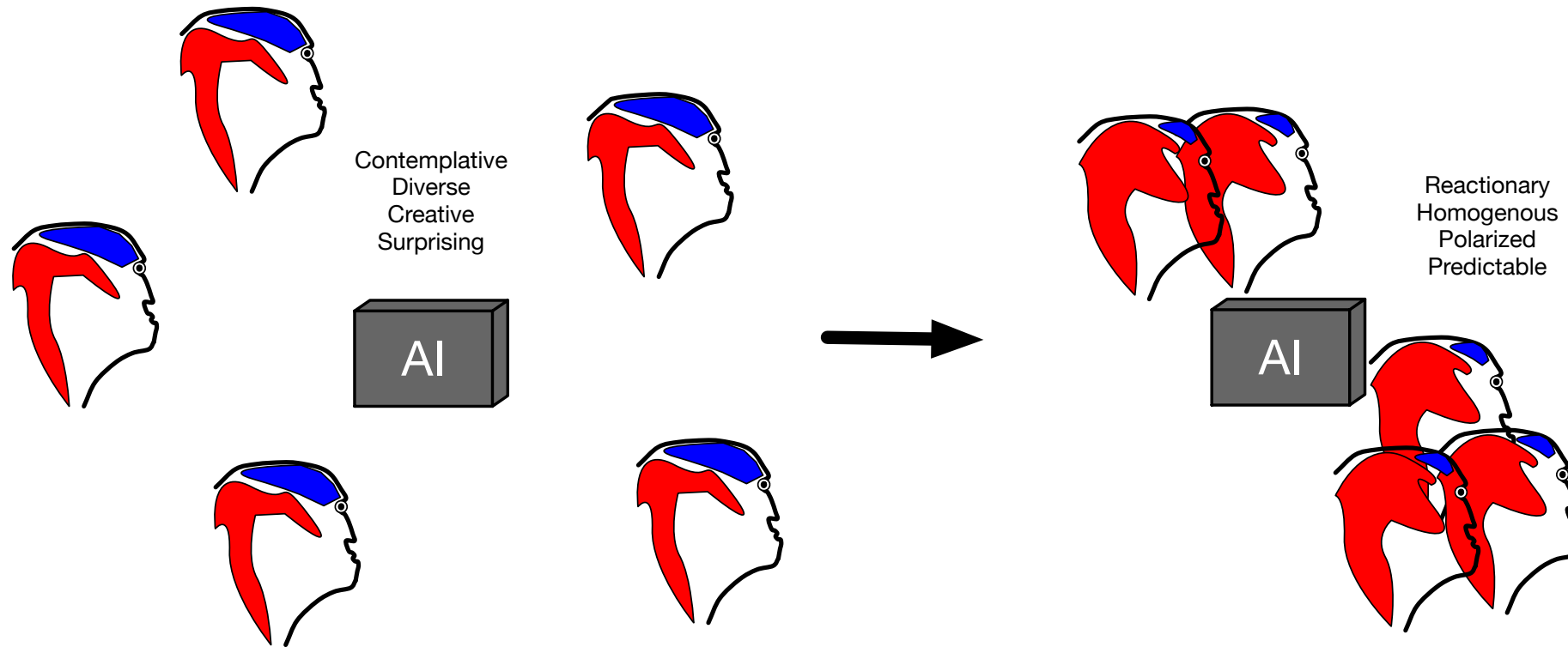


Local Interactions = Production and purchase of units

System 1: Reptilian  
System 2: Sapien

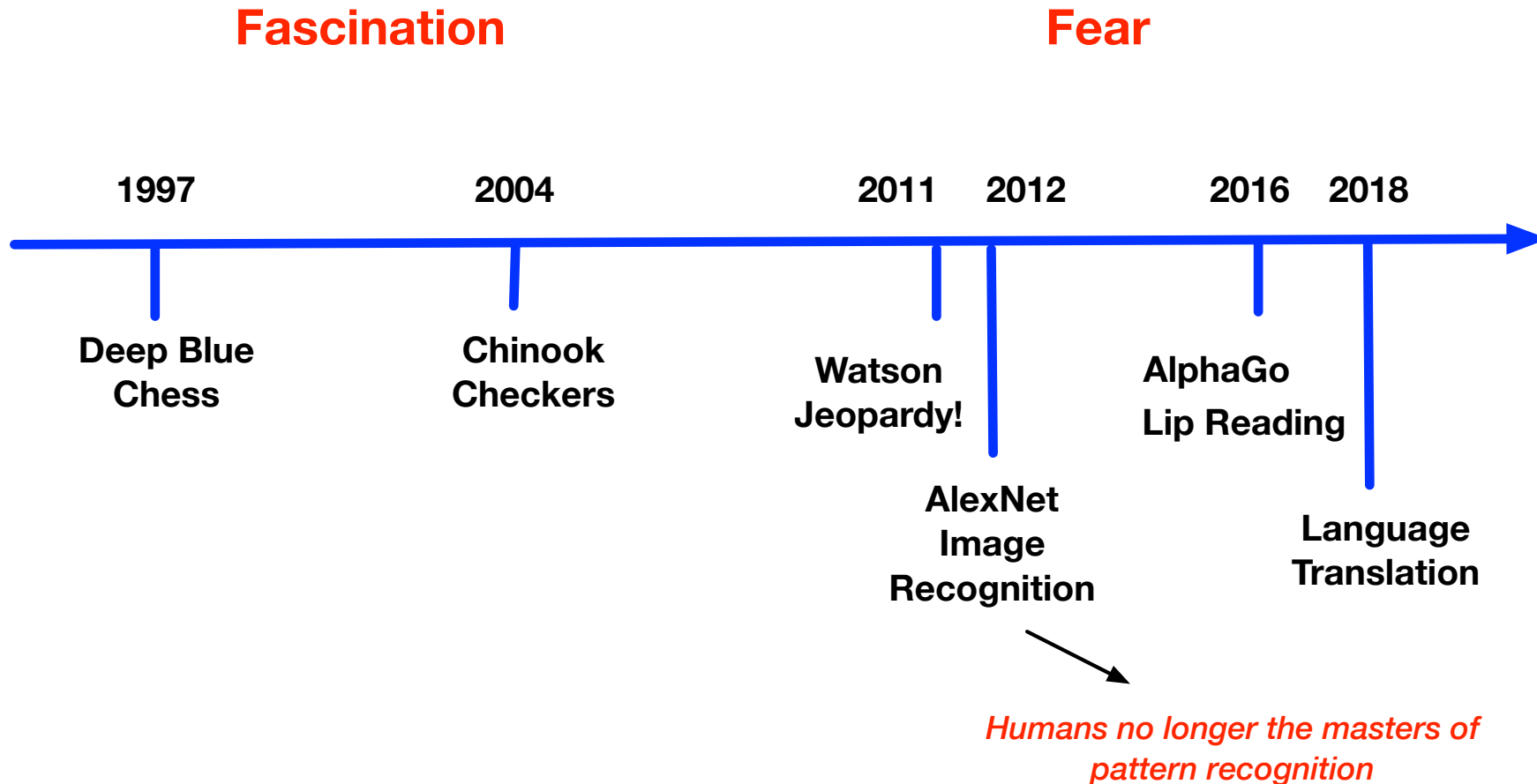


*Race to the bottom of the brainstem...*  
*Get people's attention at all cost.*  
Tristan Harris (formerly with Google)

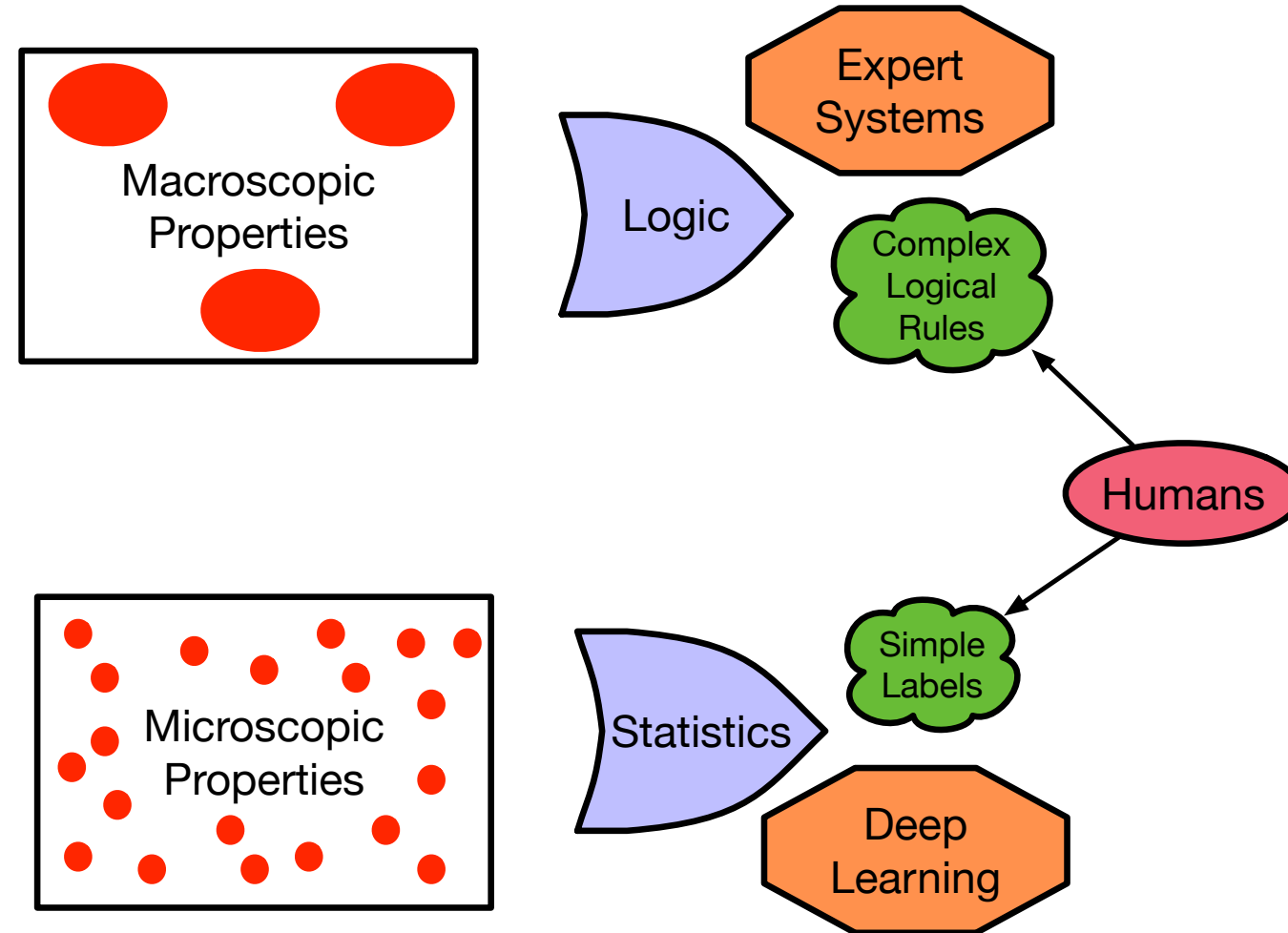


# Brief History of AI Success

AI Beats or Equals Human Experts



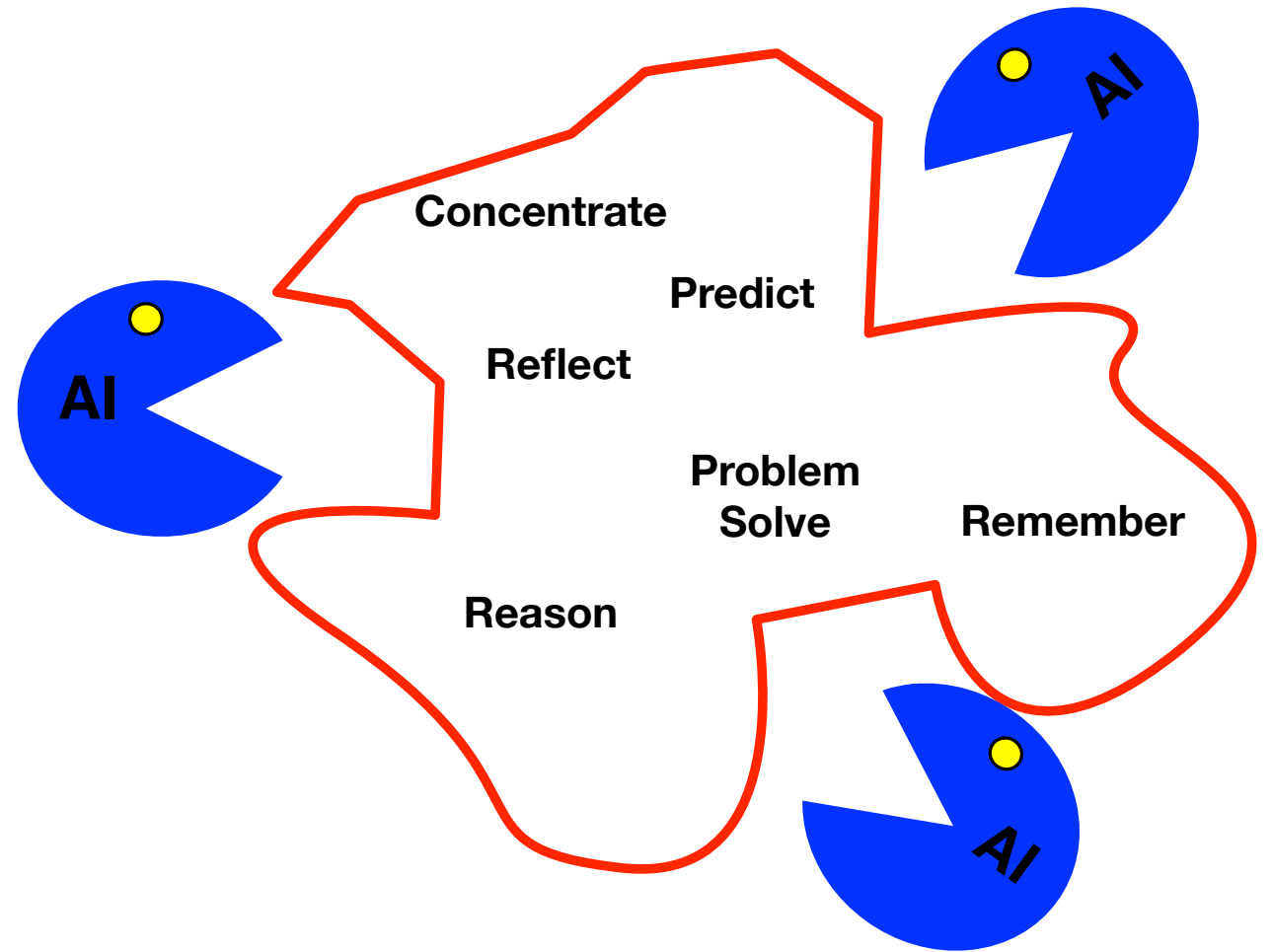
# Microscopic Pattern Recognition



- Recognition of Complex Microscopic Patterns is now possible (with AI)
- Reams of Microscopic Data are now much easier to produce

# AI's Threats to Humanity

- Robotic Takeover of the World – Later??
- Job Market Disruption – Now + later
- Financial Market Chaos - Now + later
- Automated Warfare – Now + later
- Cyber Warfare – Now + later
- **Emergent Stupidity/Conformity/Predictability** – Now + later



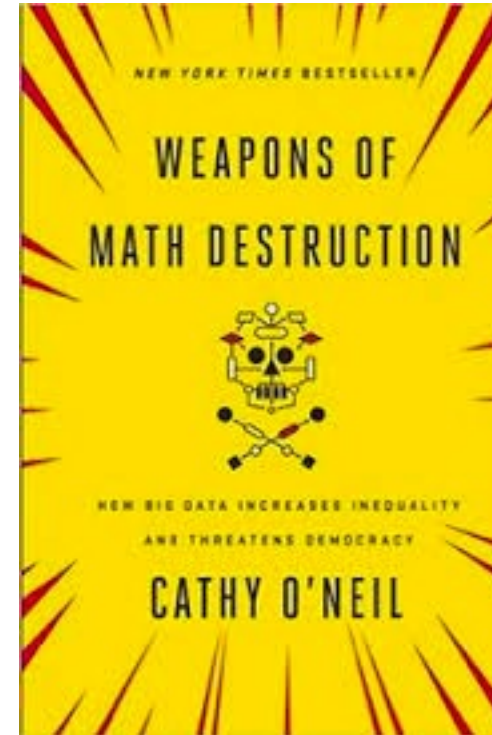
\* Layout suggested by AI



# AI is Watching, Listening, Learning & Suggesting

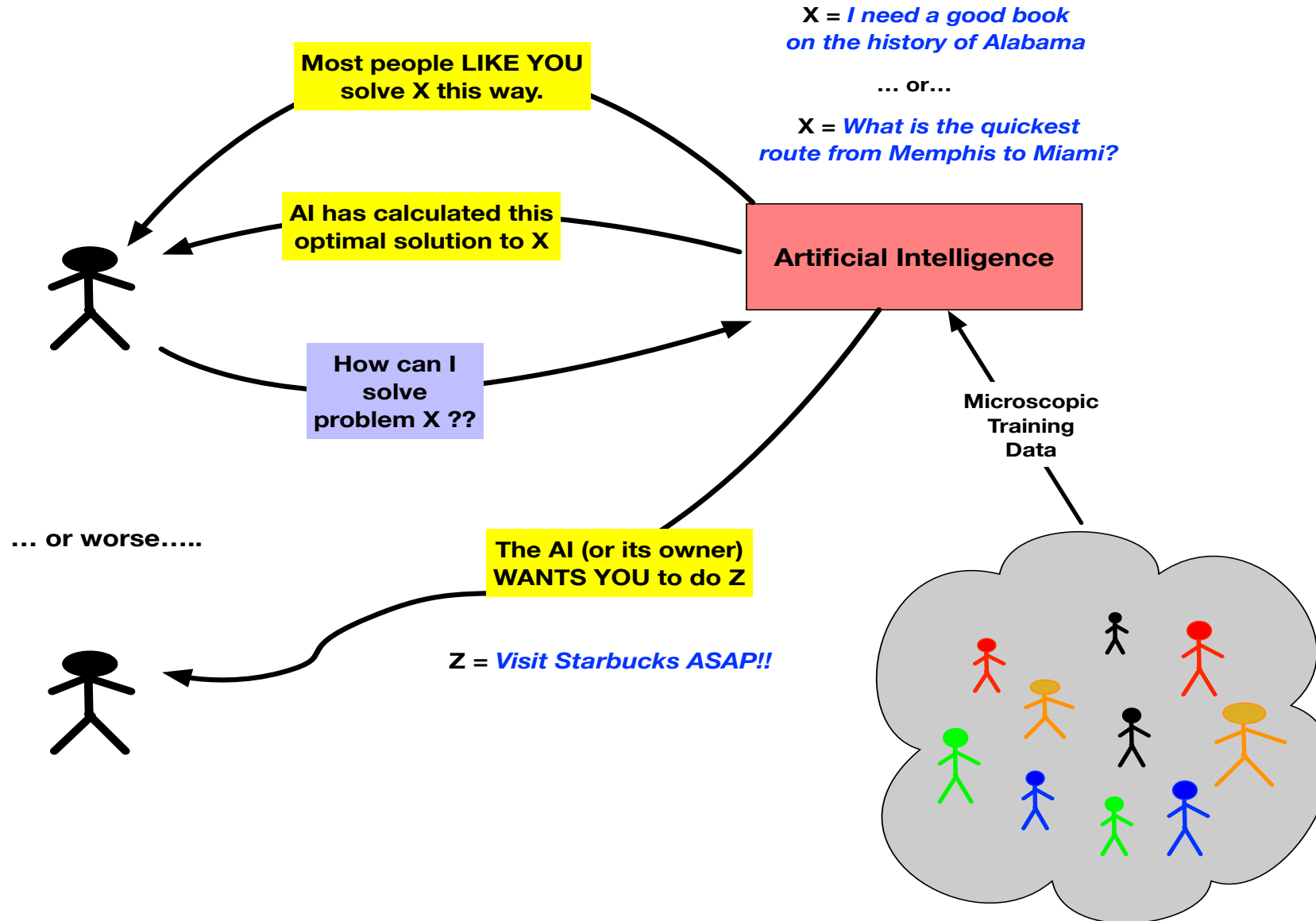
- Who is here?
- When and where will we meet again?
- What do you like?
- What do you believe?
- Should you get a bank loan?
- Can we sell you our stuff?
- Can we influence your vote?
- Should we send you to jail?

How should humans handle the information produced by big-data mining, and the suggestions given by AI systems?



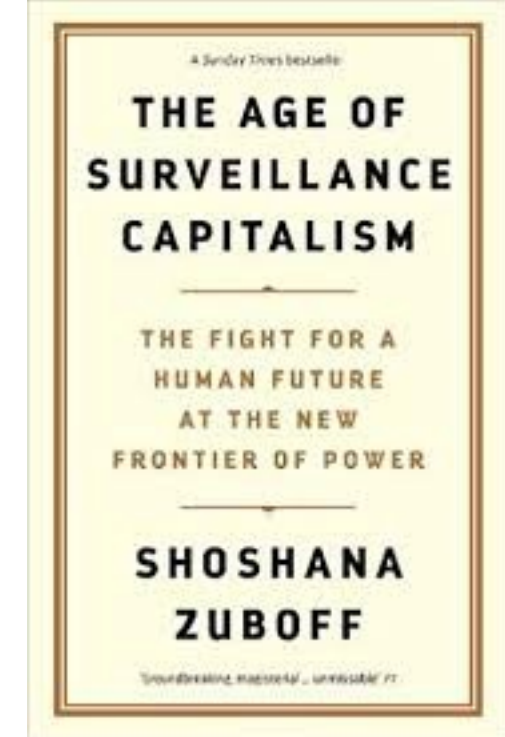
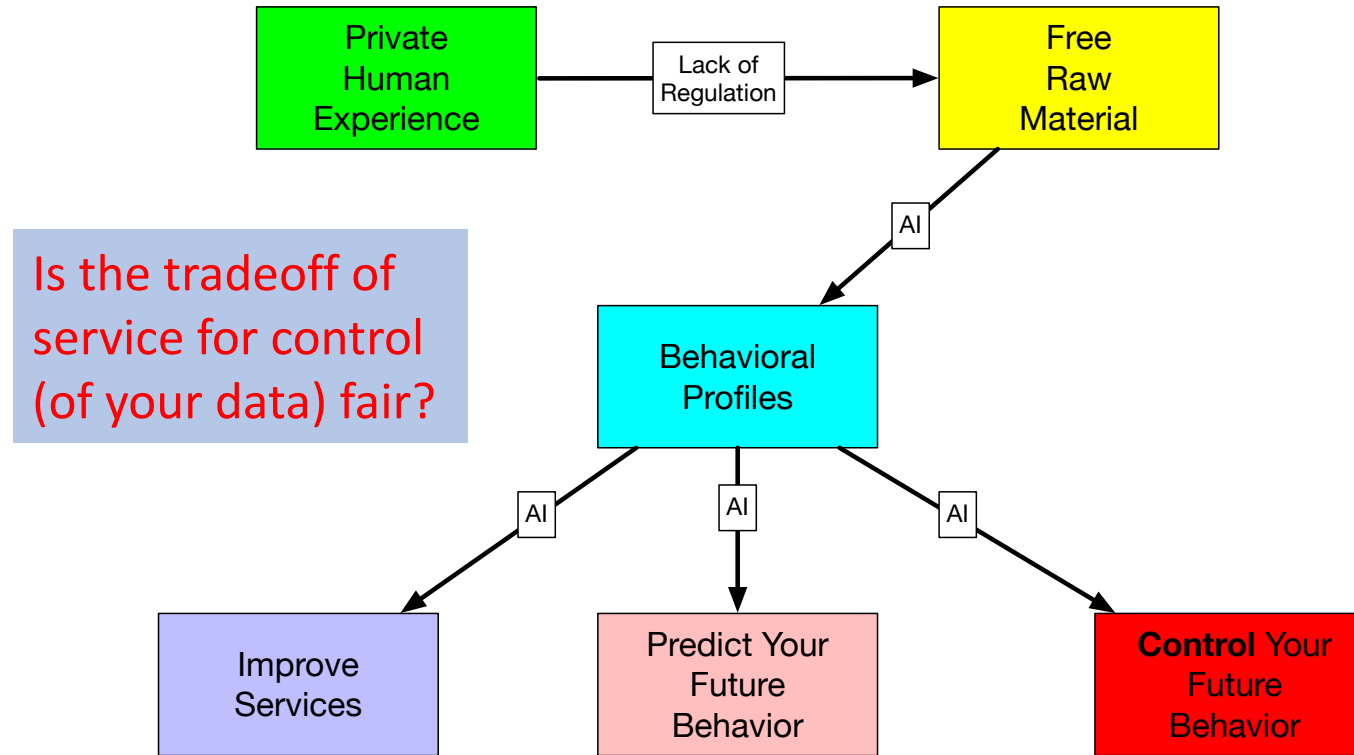
*Algorithms = Opinions  
Embedded in Code*

# AI's *Innocent(?)* Suggestions



# Surveillance Capitalism

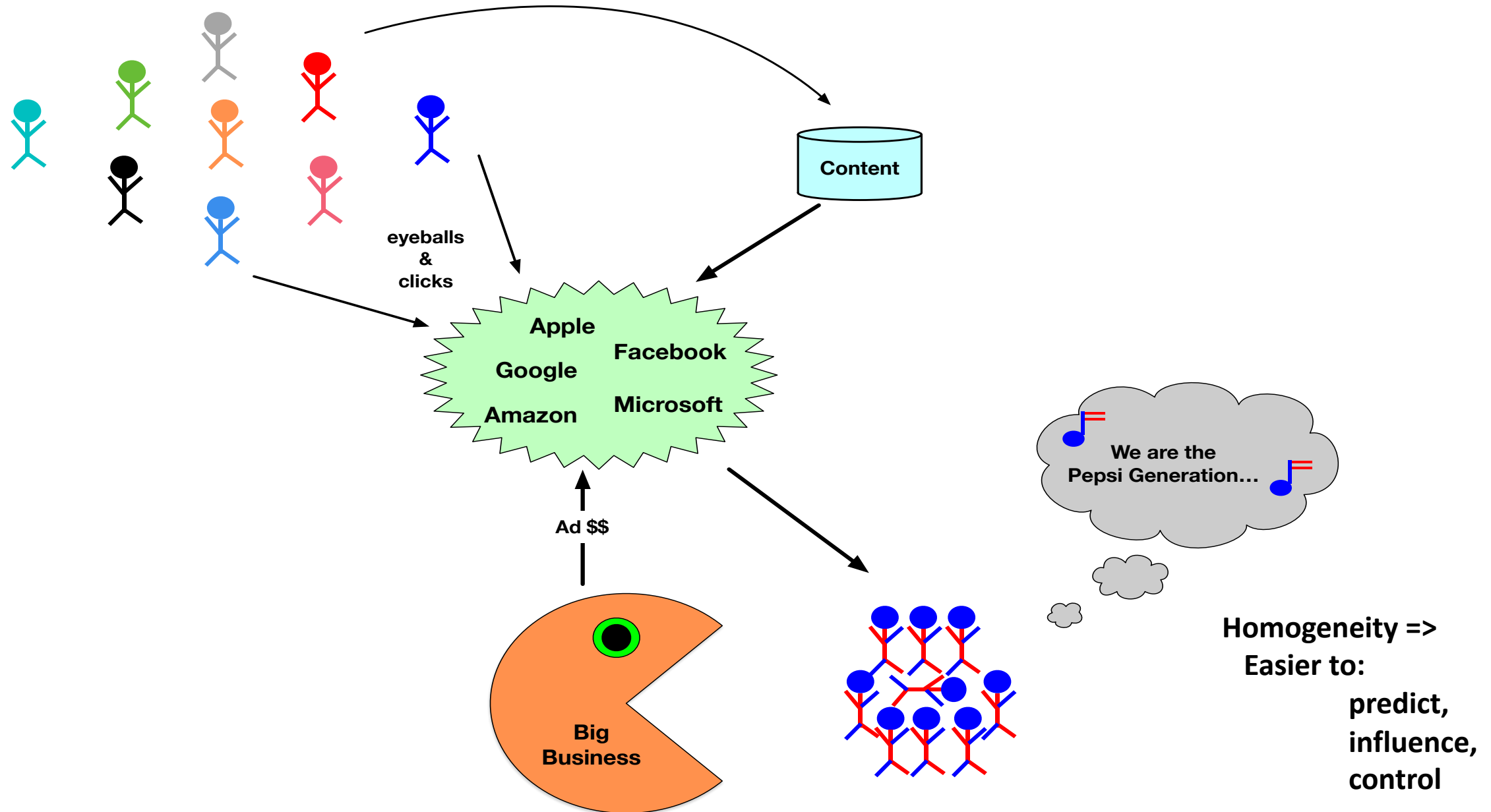
Money for nothing and your clicks for free.



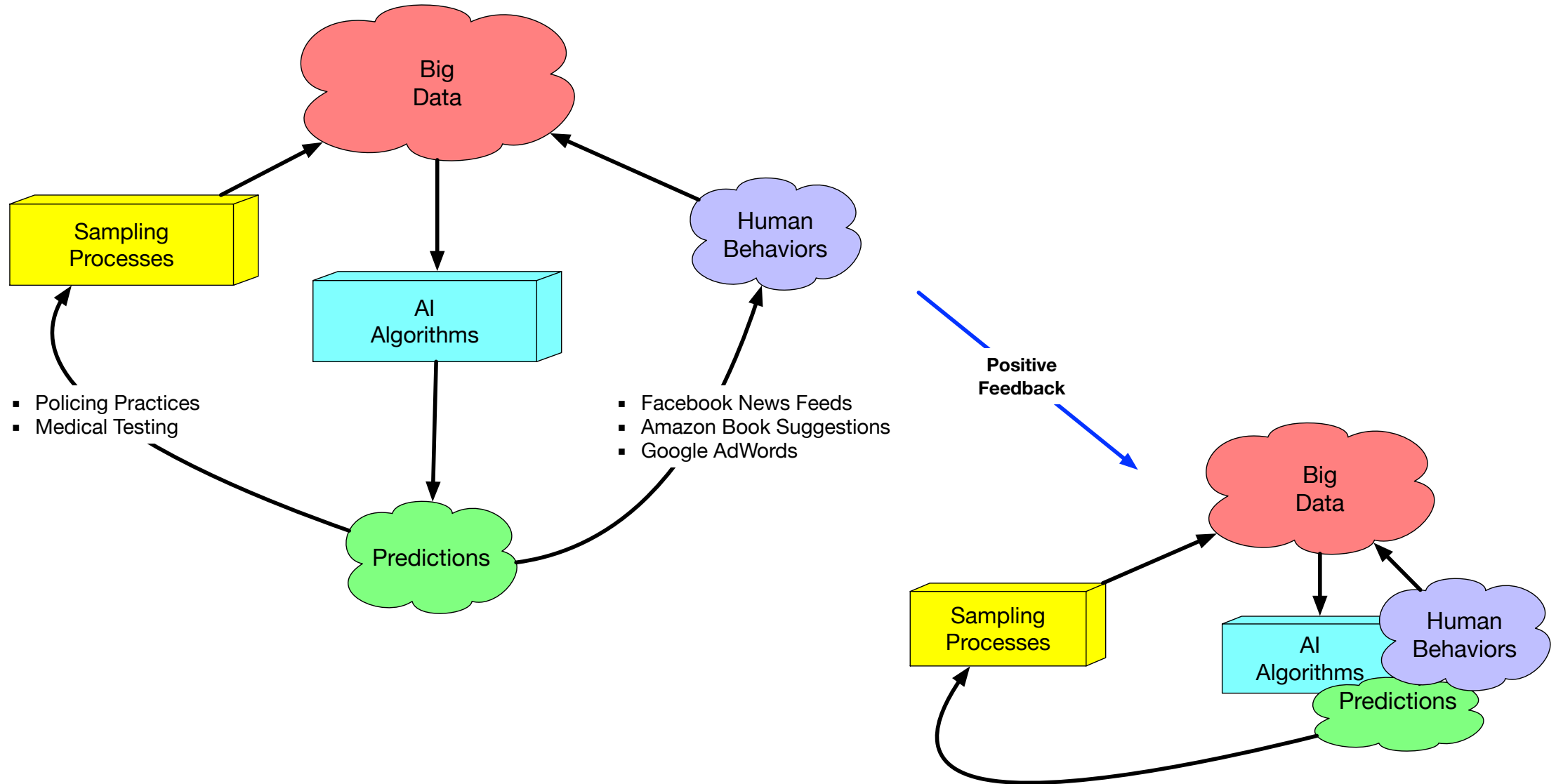
*These predictions are traded in a new futures market, where surveillance capitalists sell certainty to businesses determined to know **what we will do next**.*

*In the competition for certainty, surveillance capitalists learned the most predictive data comes not just from monitoring but also from **directing** behavior.*

# Conformity = Assurance for Advertisers



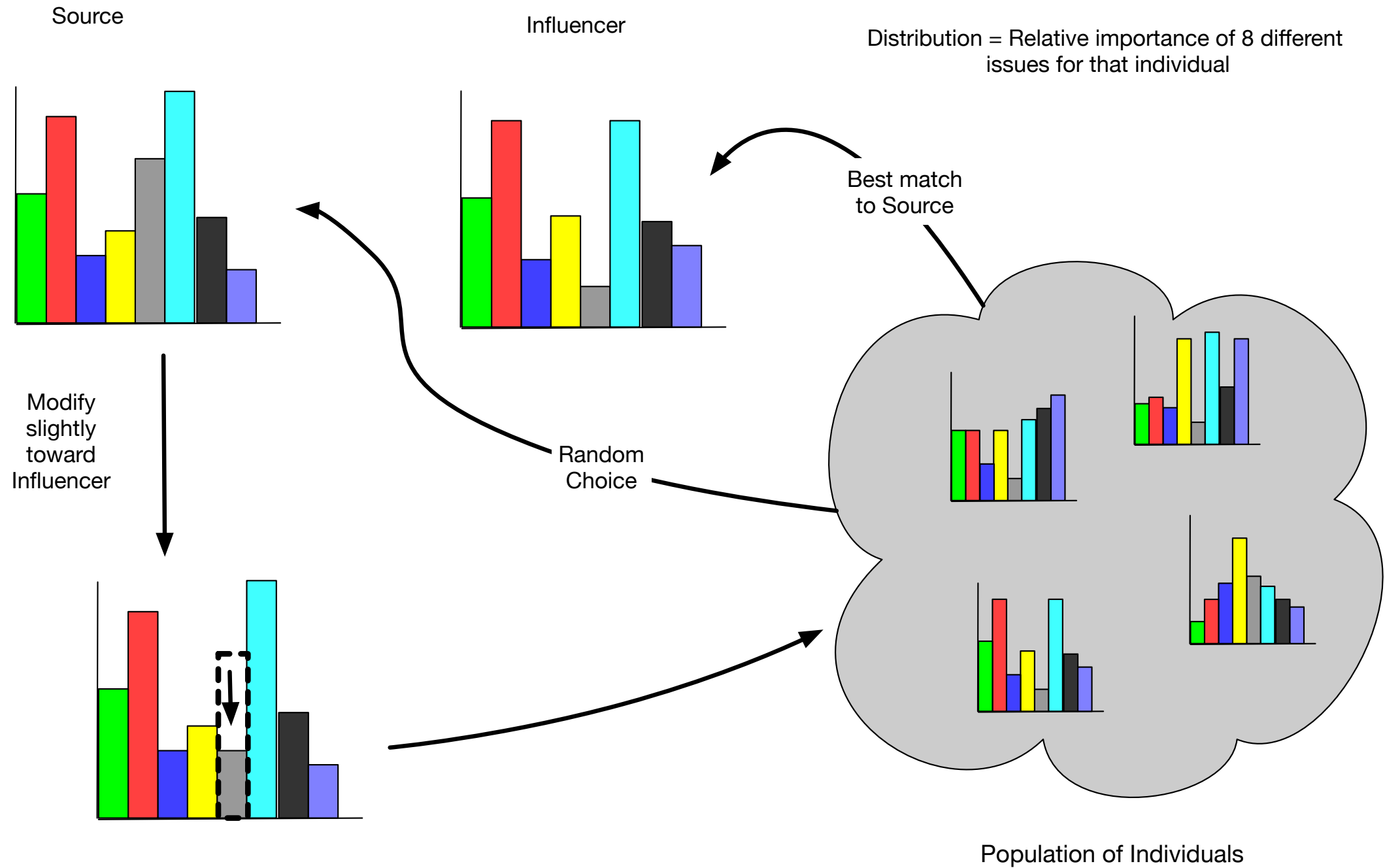
# Human-AI Convergence



# Google AdWords

(as described at [disruptiveadvertising.com](http://disruptiveadvertising.com))

- The **Google Search Network** allows you to show your ads to users who are actively searching for the keywords that you've selected...an excellent opportunity to **capture** users who are at the research and purchasing stages of the digital sales **funnel**.
- The **Google Display Network** works differently. Instead of showing ads to users who are actively searching for a product or service online, display ads or banner ads are placed on websites **you think** your **target** will be on. *(Note utility of predicting user behavior!)*





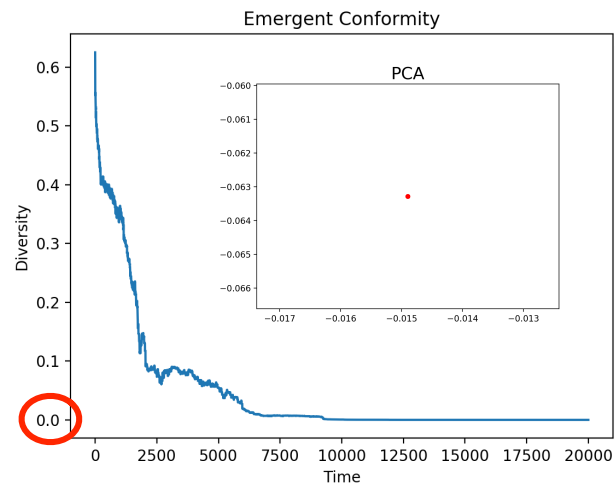
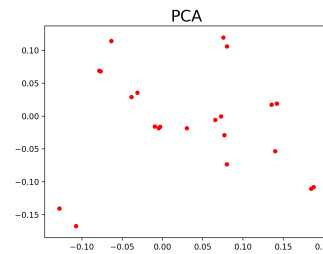
25 individuals

10 issues

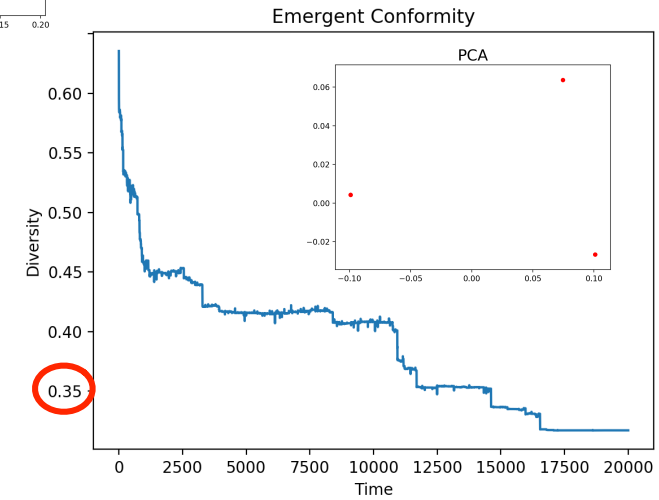
Evolve

99 % Best-Match Influencers  
1% Random Influencers

100 % Best-Match Influencers



Homogeneity



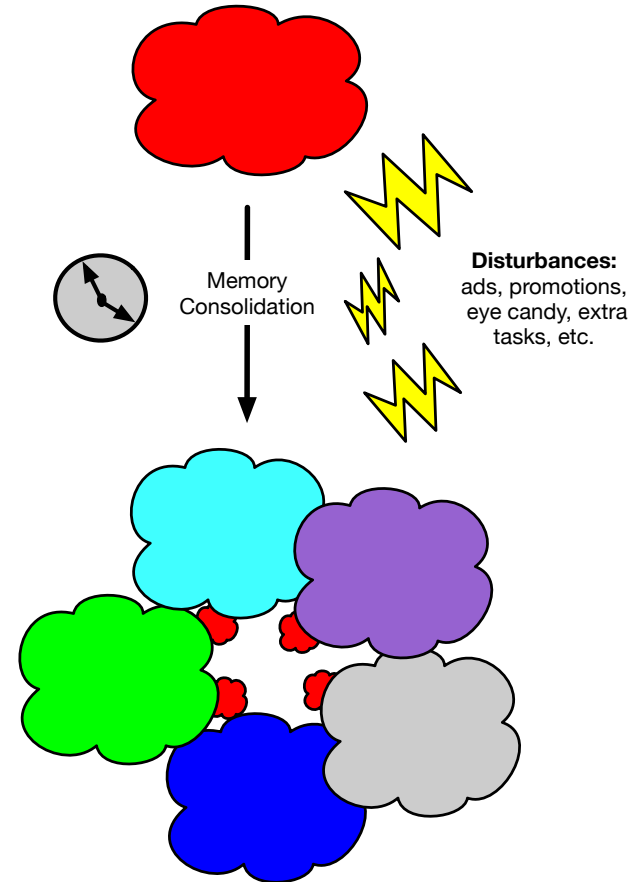
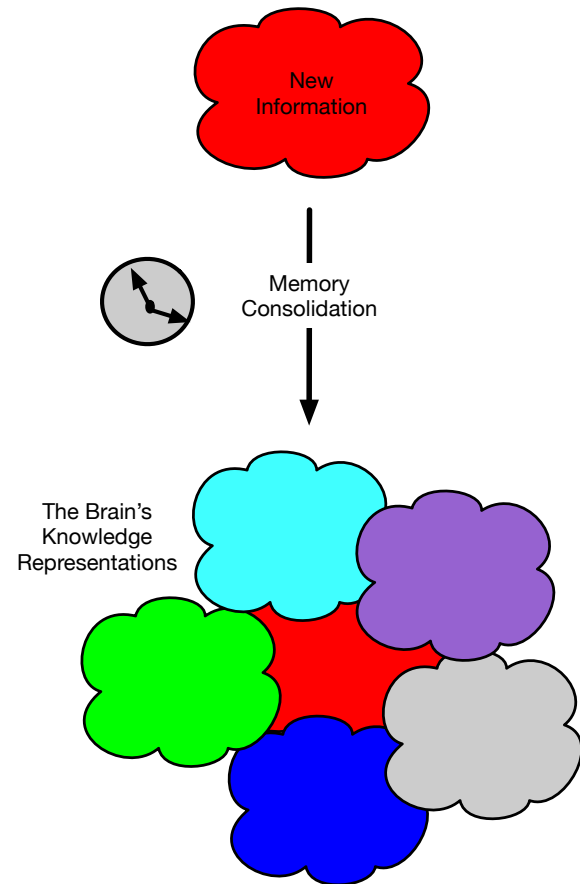
Polarization



# Drawbacks of Excessive Influence

- Constant influence by similar individuals leads to conformity, predictability and polarization.
- Small amounts of random influence move everyone to a common ground... less conflict but even more predictable!
- Bombardment of influence dramatically reduces diversity and individuality.

# Disrupted Concentration => Weak Cognition



Low Retention, Shallow Thinking, Poor Problem-Solving

# Implications

- **Quality** of information (i.e. suggestions based on population data) exerts pressure toward conformity
- **Quantity** and **frequency** of information can inhibit deep cognition.
- It thus becomes easier to just **do what the AI system suggests**, without thinking much about it. For example:
  - GPS
  - YouTube recommendations – down the rabbit hole of extremism
  - Music & book recommendations - *Meatloaf, again?*
  - Microsoft Teams suggestions for sentence extensions and completions.
  - **Powerpoint's suggestions for formatting these slides.**
- Engagement of emotions and reactive circuits of System 1 (reptilian brain), but little of System 2 (conscious reasoning)
- The only talks that people have patience for are **LIGHTNING talks** !!

# Plight of the Infovore

Constant distractions of cyberspace

“Shallows”: Reduced depth of thought and emotion

Less Creative

Reduced value in an information society

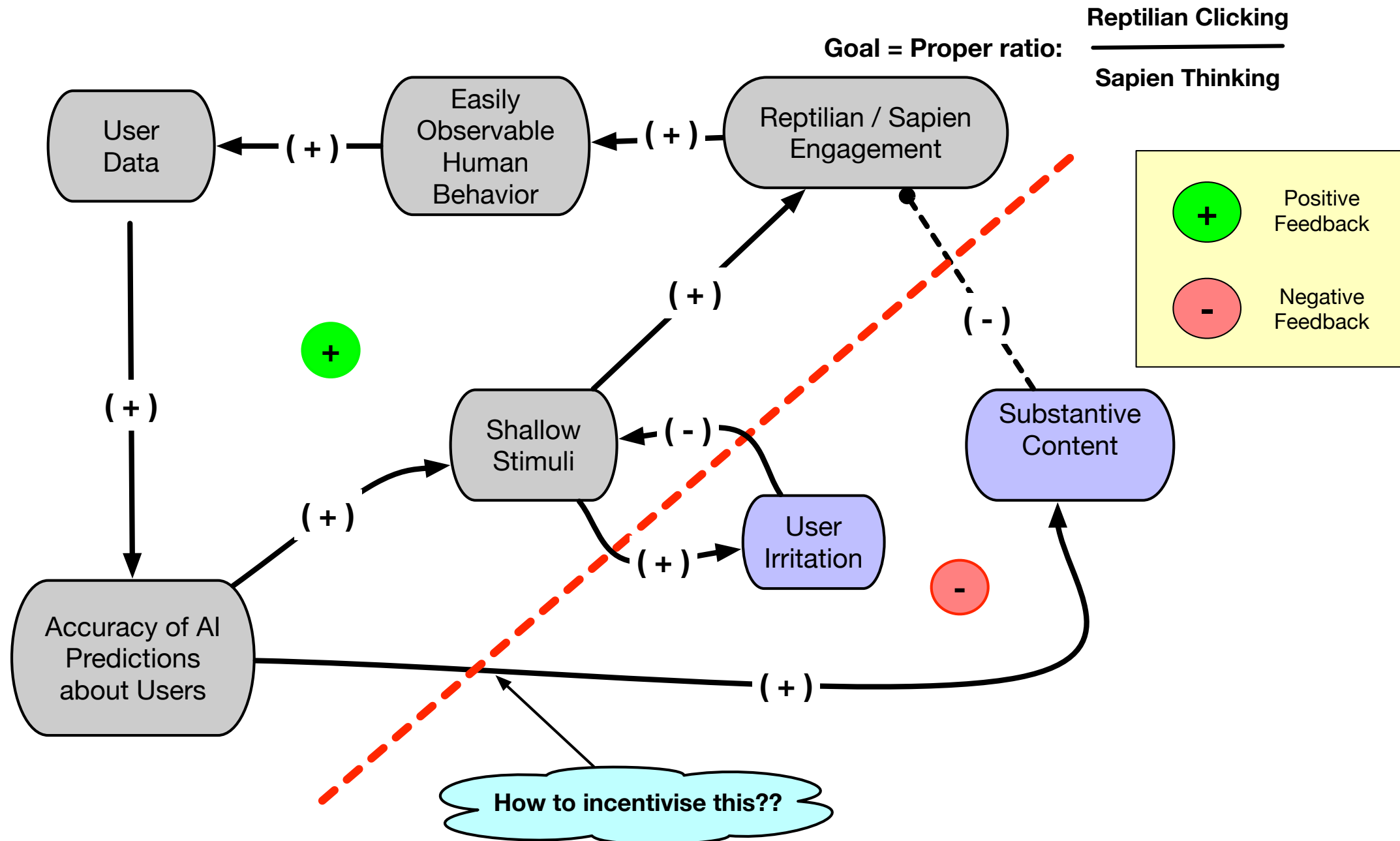
Automation Bias: Trust machines over ourselves.

Rely on computers to understand the world

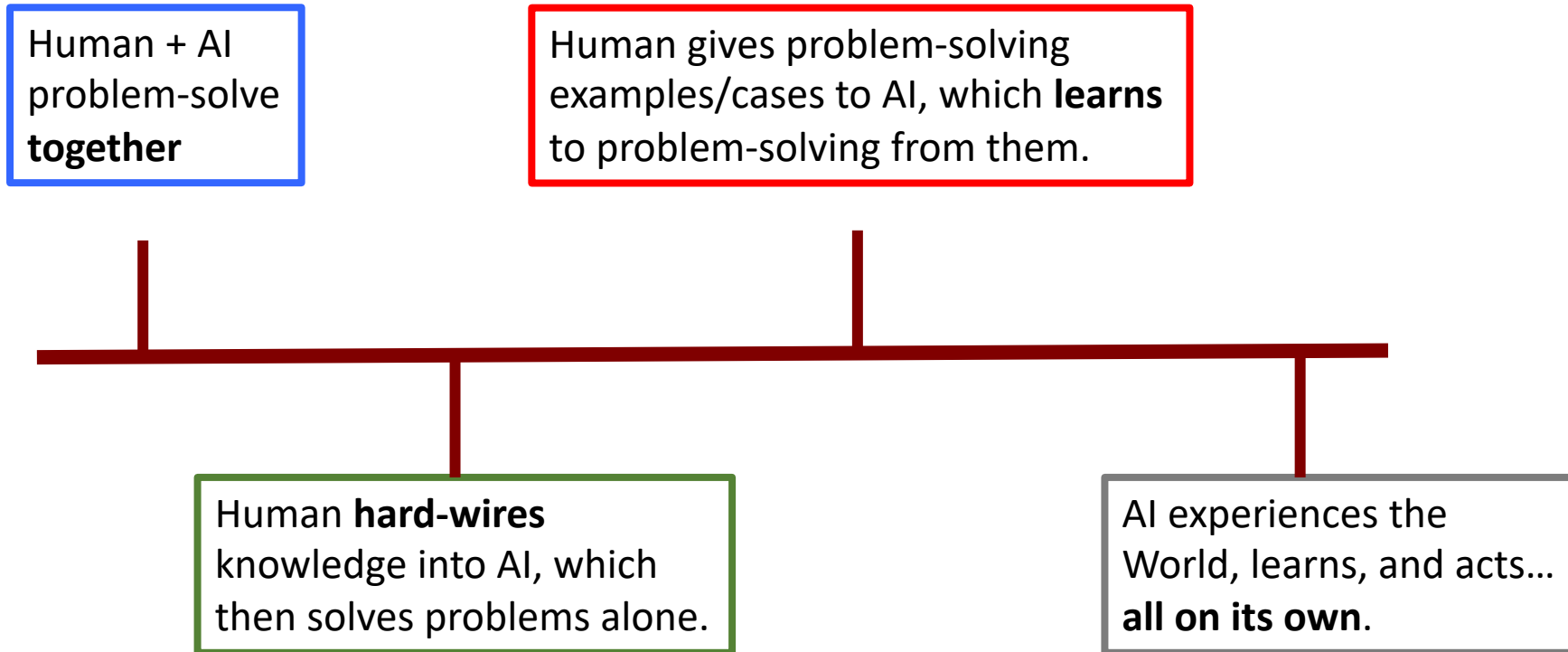
Rely on AI for **wisdom**

**Human** intelligence becomes **artificial** ... and thus more easily **predicted** and **controlled** by AI





# Human-AI Interaction Spectrum



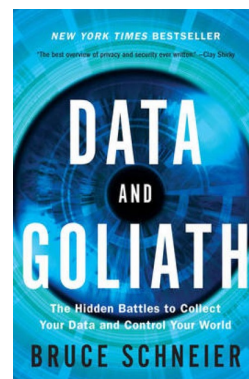
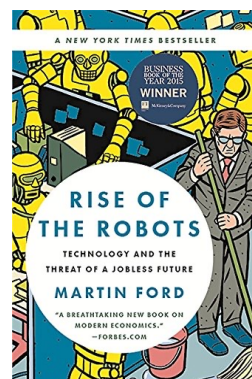
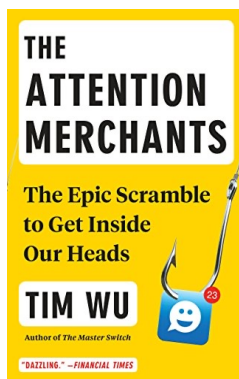
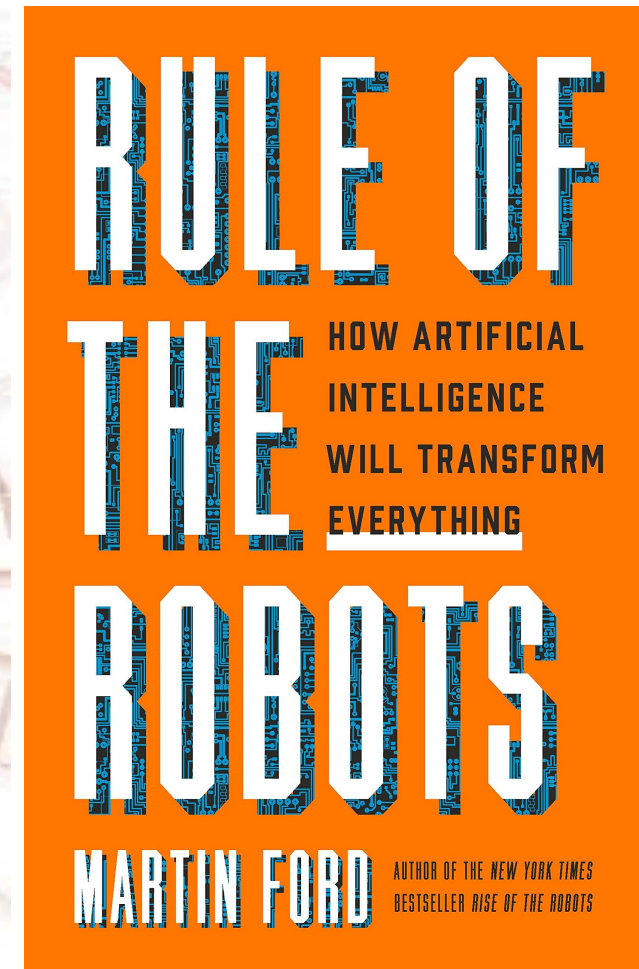
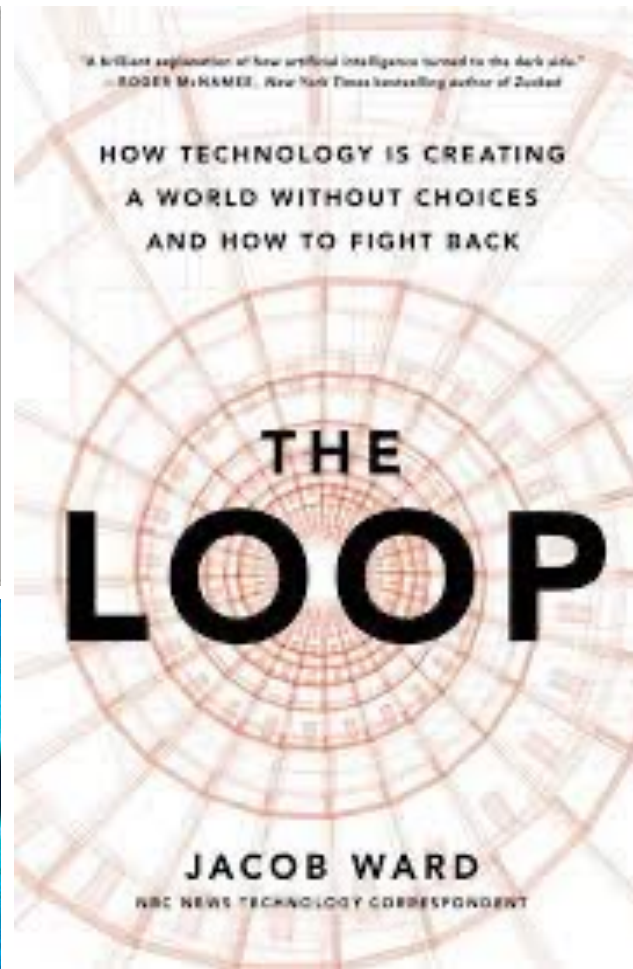
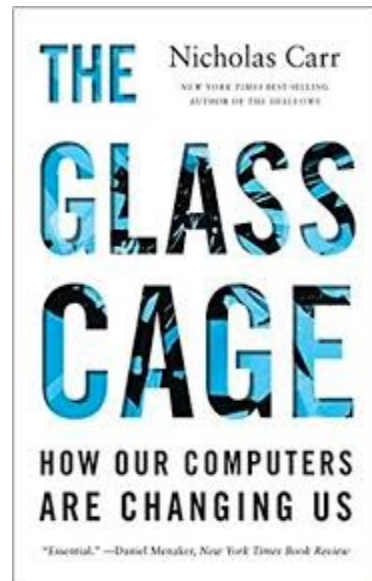
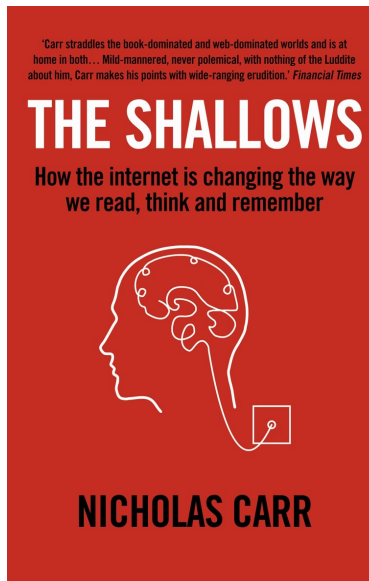
- Should AI help us learn, not just do the job itself?
- For the good of humanity, shouldn't we **move back left** ?

# Stimulating the Sapien Brain

*Reclaim our tools as instruments of ourselves, as instruments of experience rather than just means of production* (Nicholas Carr, The Glass Cage, 2014)

- Move from technology-centered to human-centered automation.
- Reduce Online Ads
  - Subscription-based web services (fees, not ads, pay the bills), e.g. Netflix\*
  - Ad Blockers
- AI that promotes diversity: **explore our creative possibilities (system 2)** instead of **exploiting our impulses (system 1)**....technically trivial.
- **Metaverse** –vs- **Real Life Matters** (Do we really want to immerse ourselves in a virtual world in which we are more easily influenced by AI?)
- Read real books!

\*Binge watching = sustained deep concentration!



\*Layout suggested by AI



## Final Words from *The Loop* (Jacob Ward, 2022)

*Our individual and social patterns are already built to give away our agency to mechanisms outside our consciousness – to our assumptions, to cues in our surroundings, to our peers ...we're on the precipice of giving our entire way of life over to an invisible, imperceptible, irresistible instinct to hand difficult choices – even and especially the vitally important ones – to automated systems...Now we have to learn, in this moment, how to resist the pull of convenience and profit and protect the best aspects of who we are.*