Sortedness + Recommendation

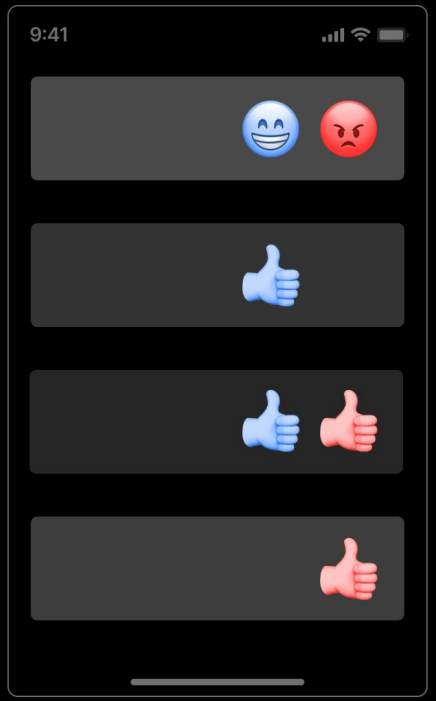
(intuition! arguments! a conjecture!)

Luke Thorburn

February 2024

Motivation

ENGAGEMENT
based ranking
for [redacted]



BRIDGING
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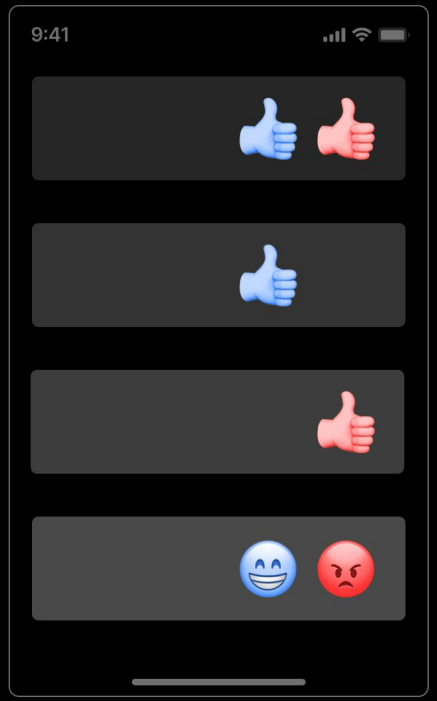

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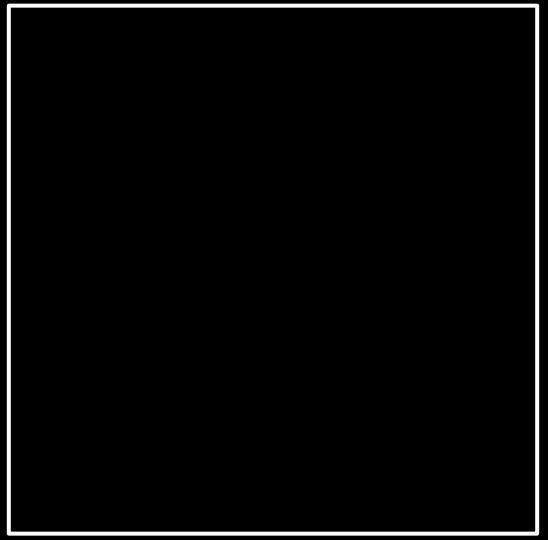
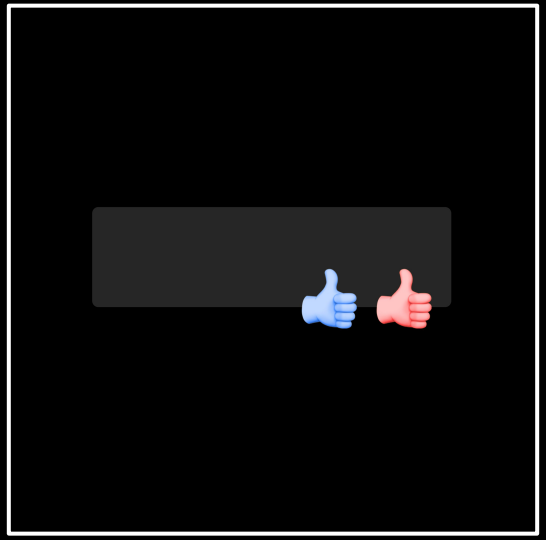


FORMALISM

Motivation



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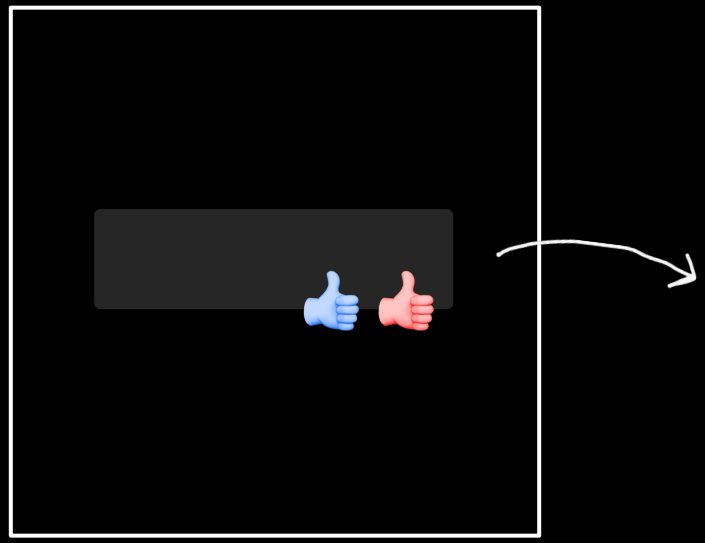
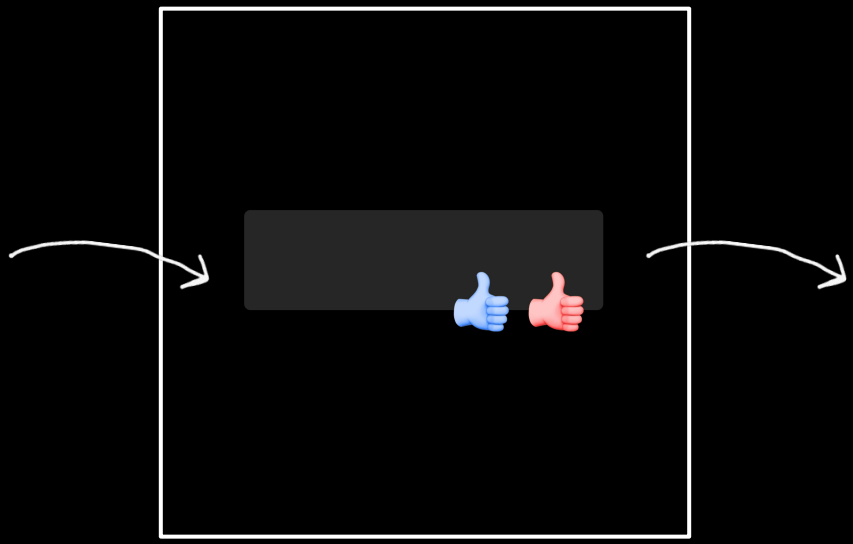


FORMALISM

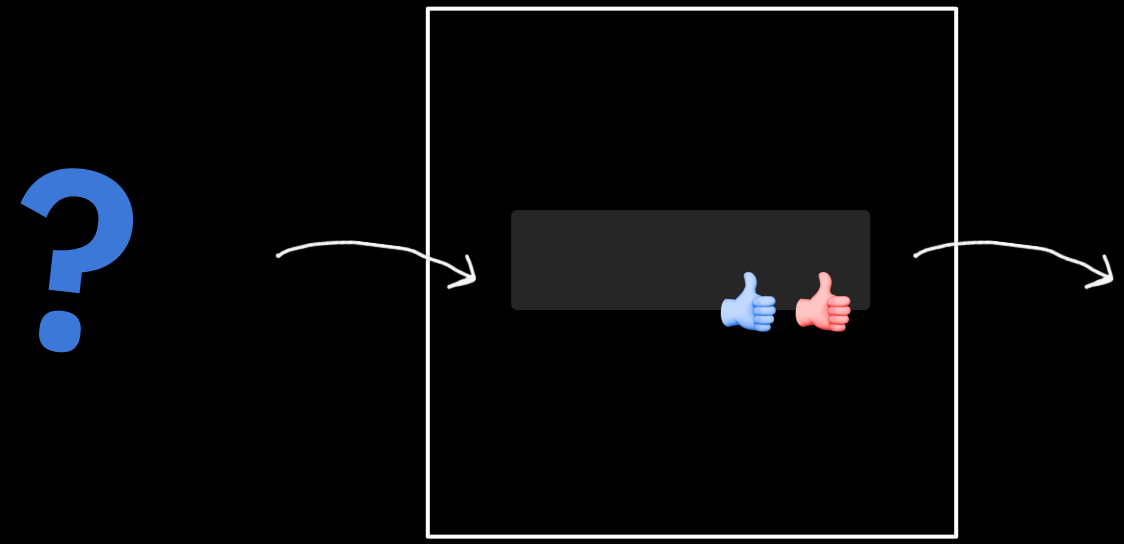
OUTCOMES

Motivation



THEORY FORMALISM OUTCOMES

Motivation



I. Sortedness

II. Why unsort?

III. How to unsort?

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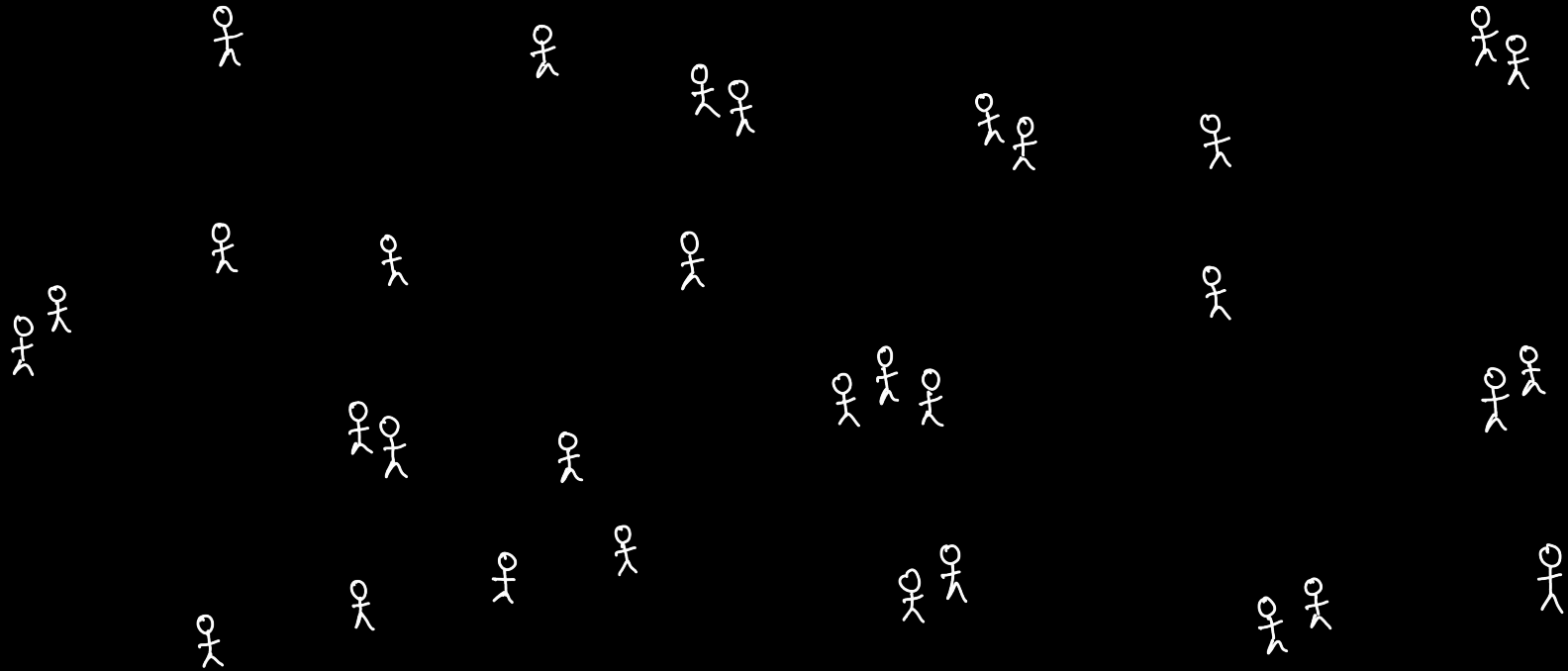
Societies are hypergraphs (intersecting groups).



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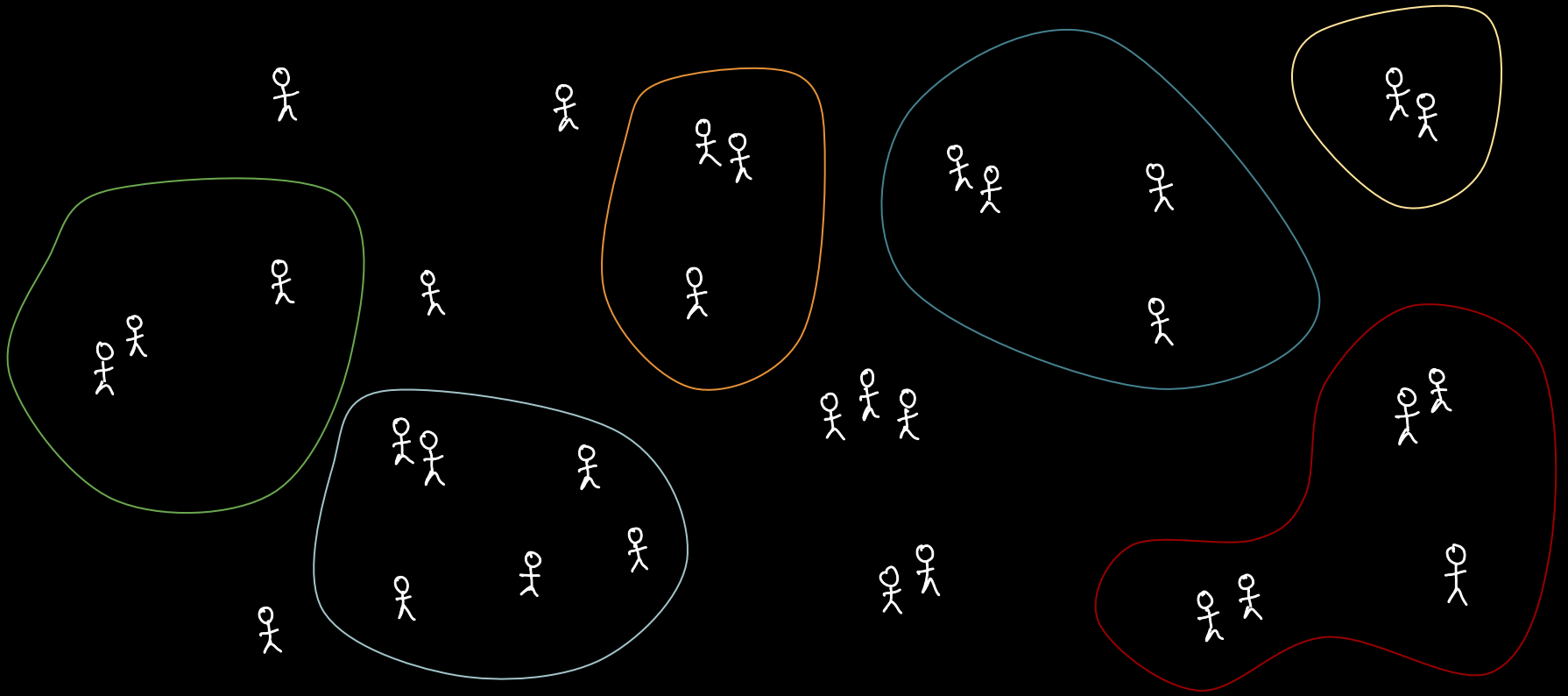

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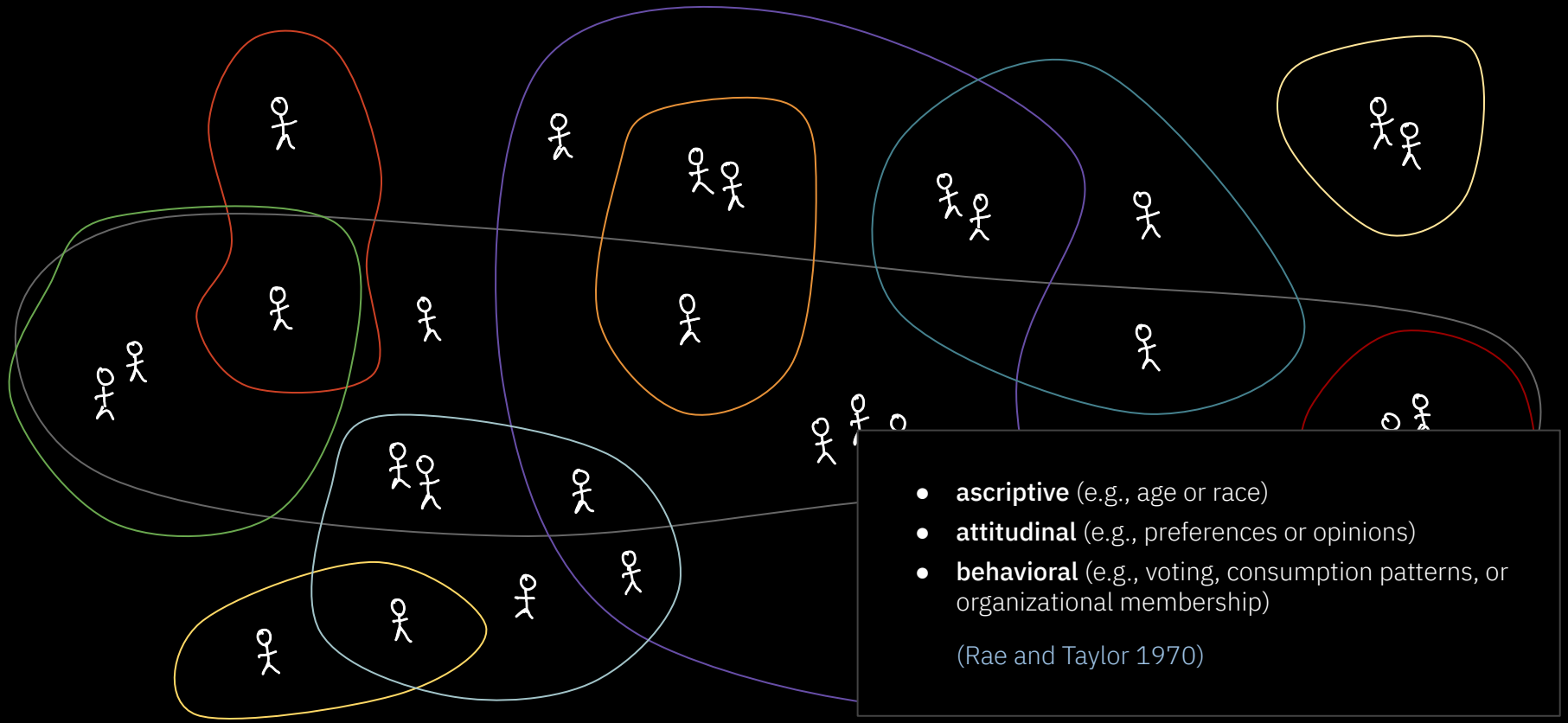

- **ascriptive** (e.g., age or race)
- **attitudinal** (e.g., preferences or opinions)
- **behavioral** (e.g., voting, consumption patterns, or organizational membership)

(Rae and Taylor 1970)

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How to quantify the overall amount of crosscutting?

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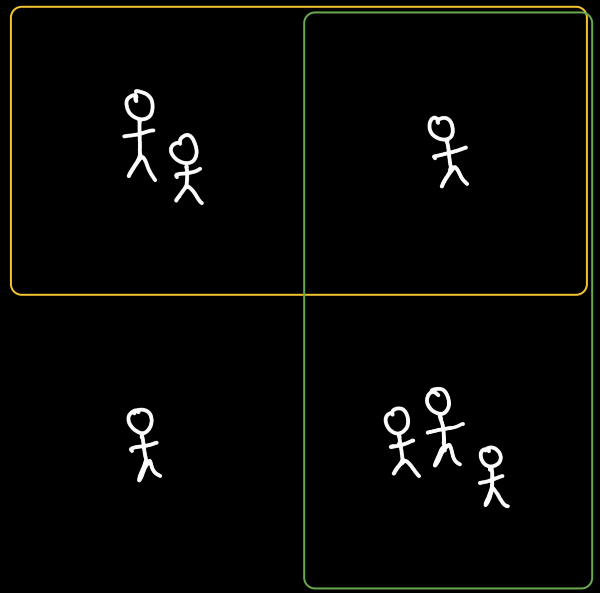
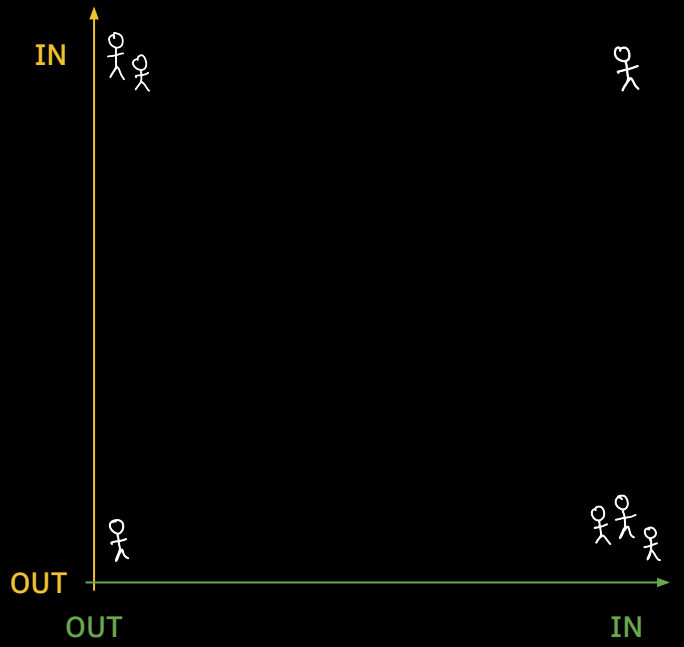
There is a correspondence between hypergraphs and distributions.





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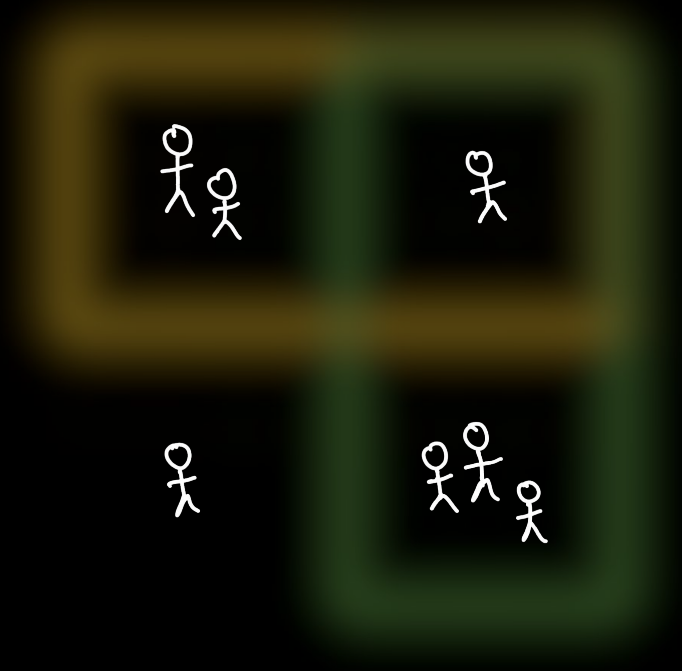

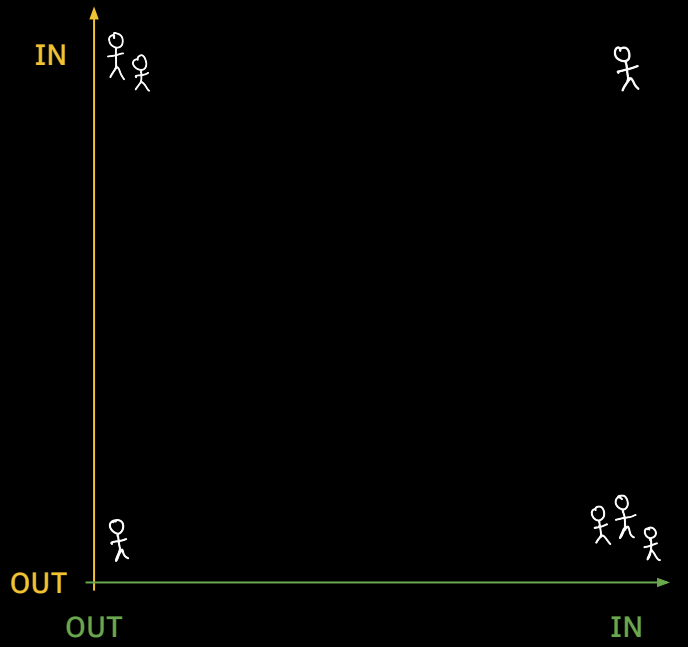

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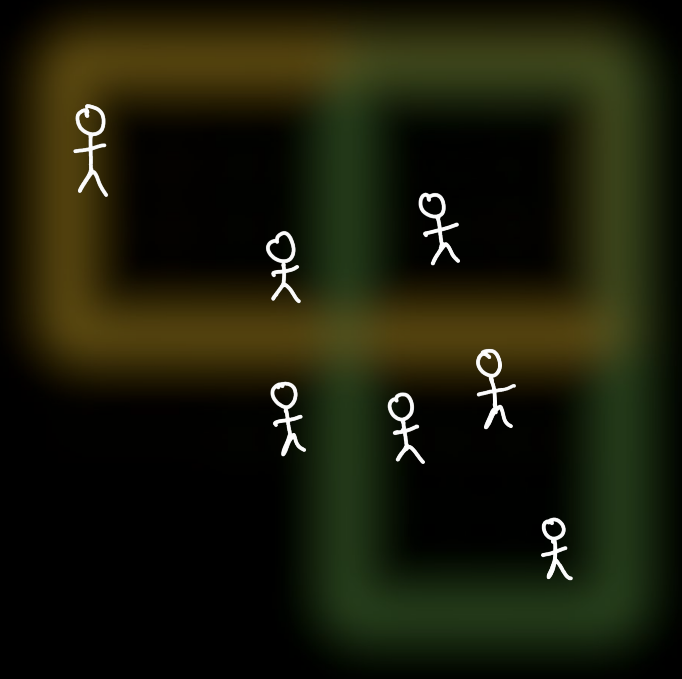

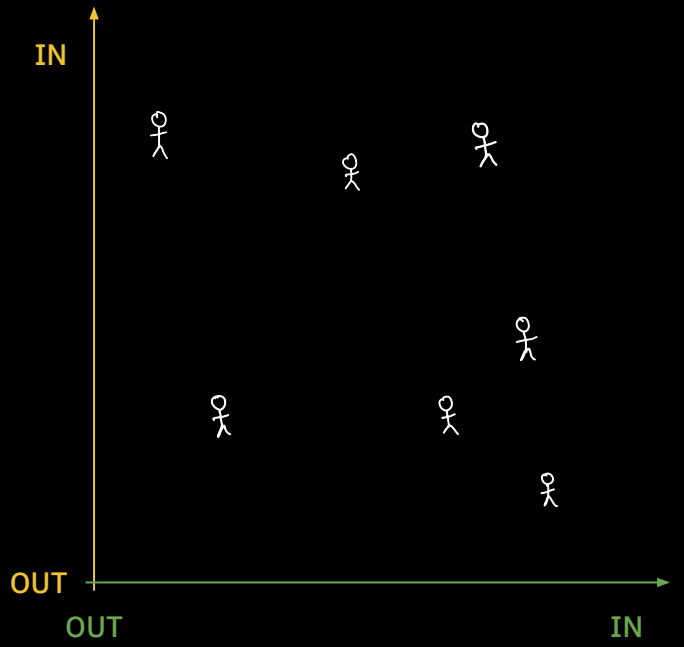

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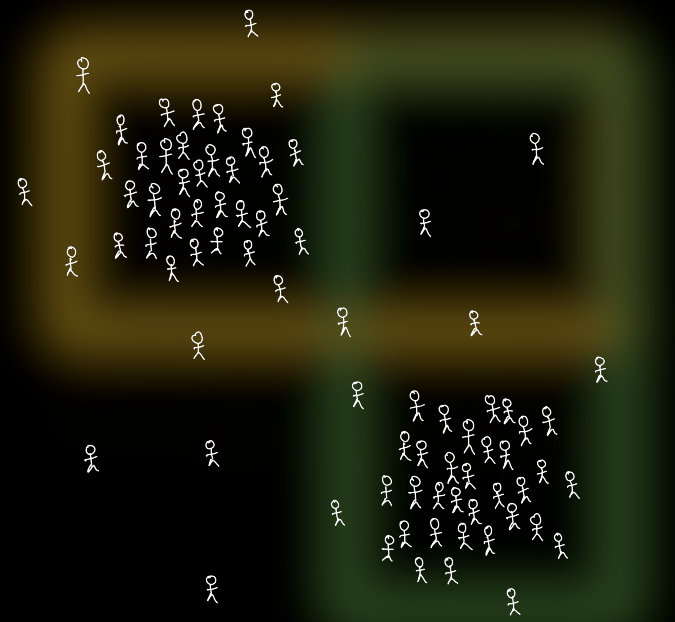

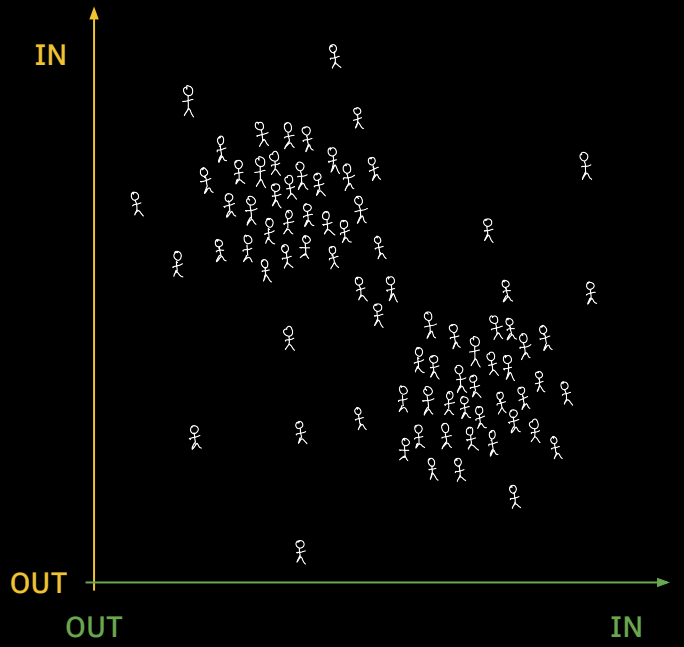

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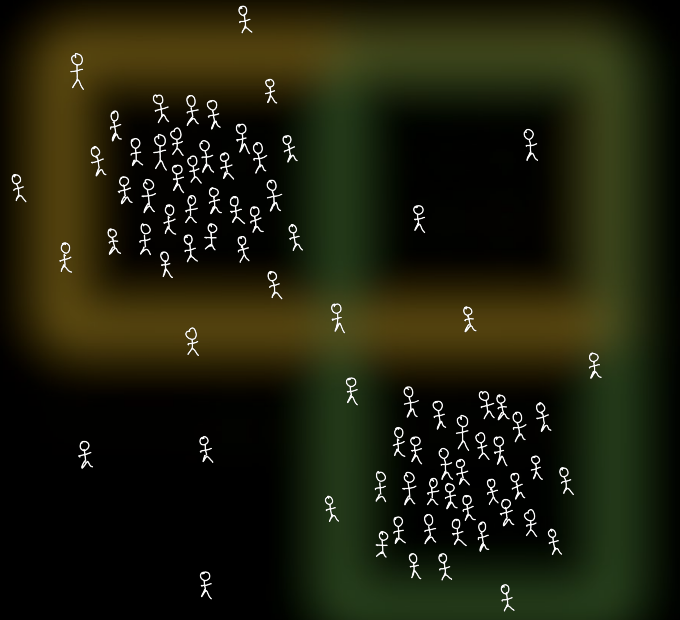

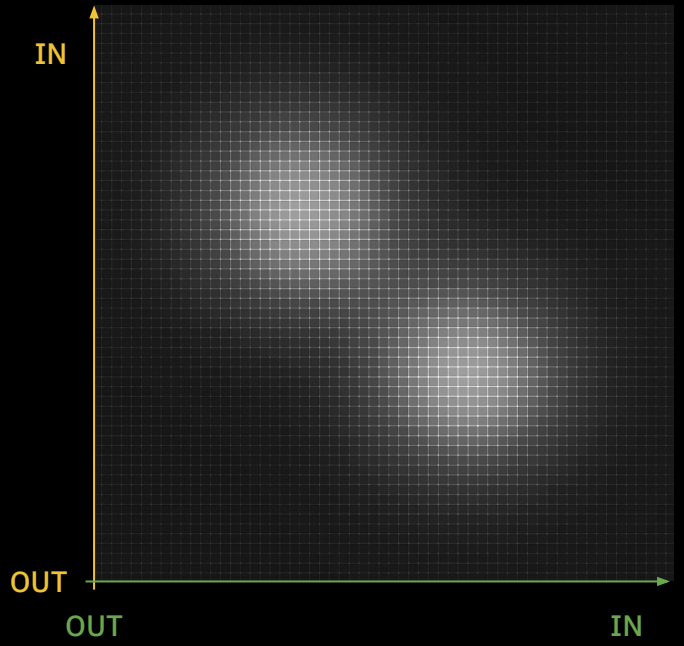

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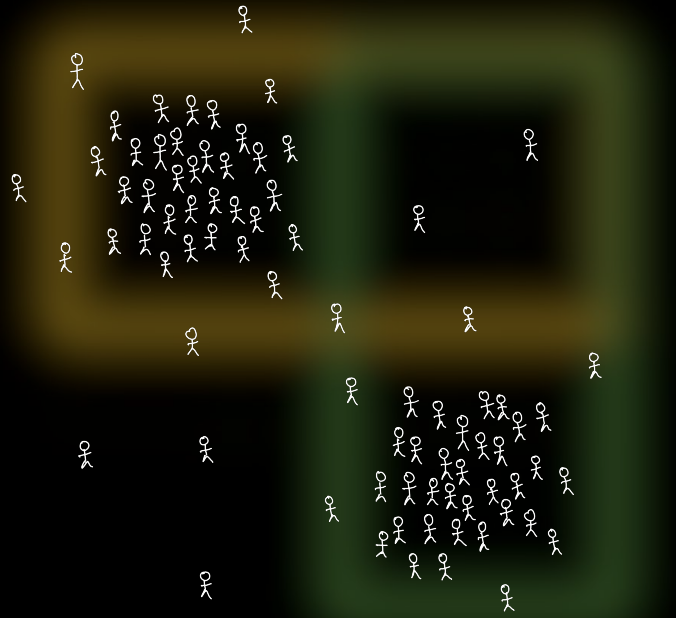
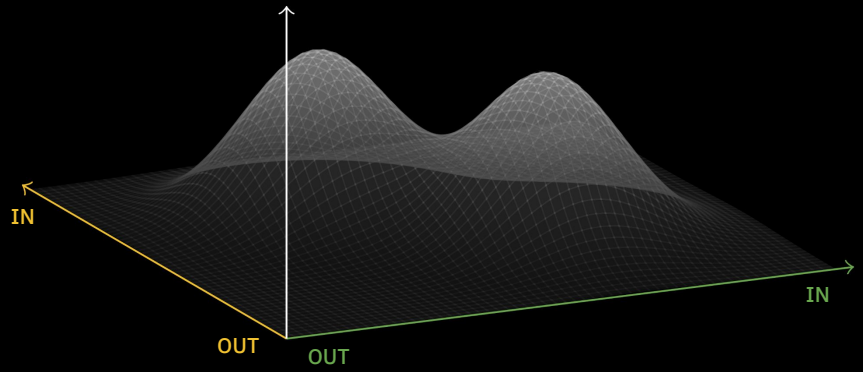
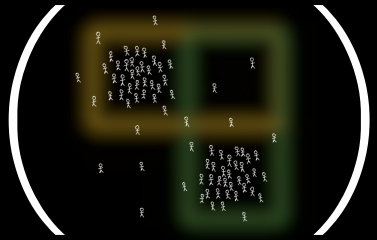
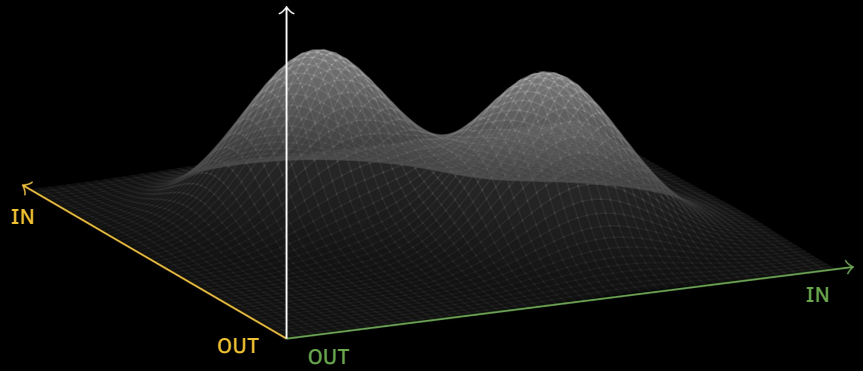




Crosscutting ∝ Dependence

Crosscuttingness





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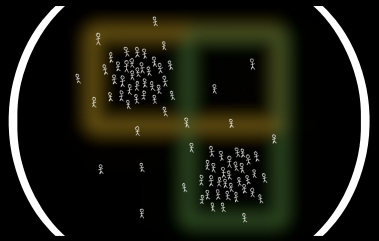
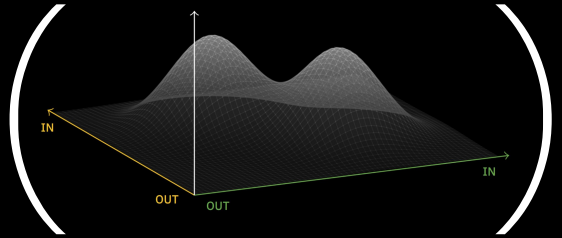
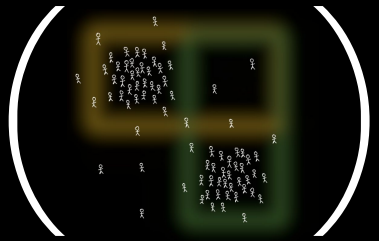
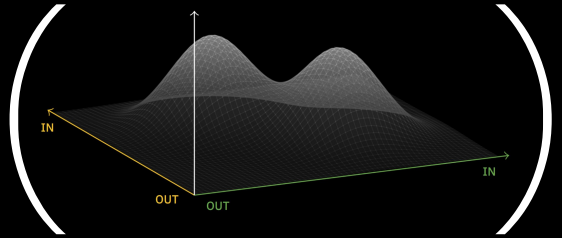
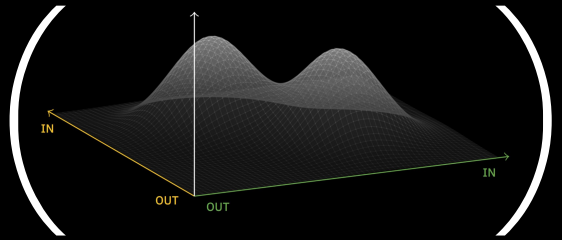
Crosscuttingness  ∝ Dependence 

Crosscutting ∝ Dependence = Sorting

Crosscuttingness  ∝ Dependence 

= Sorting 

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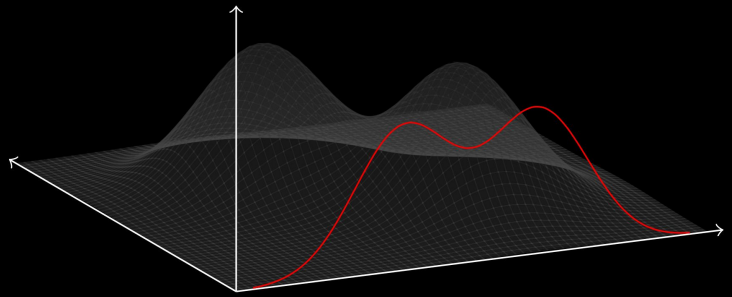
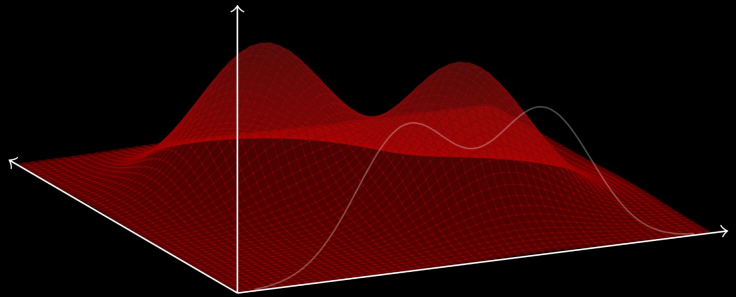


polarization



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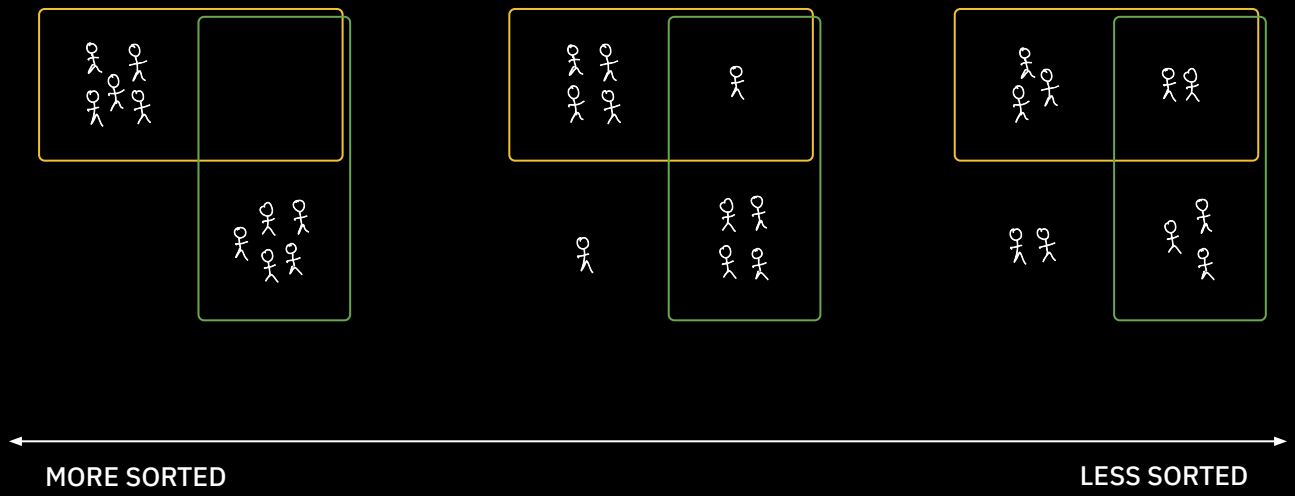

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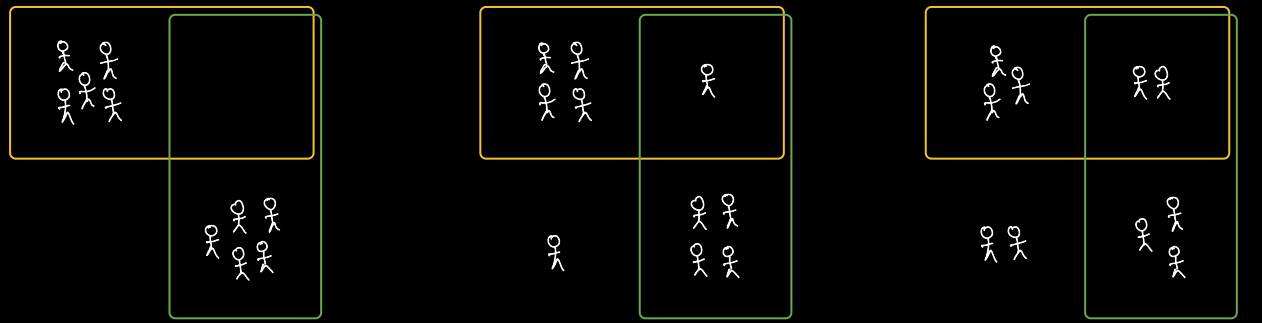

MORE SORTED — LESS SORTED

PERFECT DEPENDENCE — ~INDEPENDENCE

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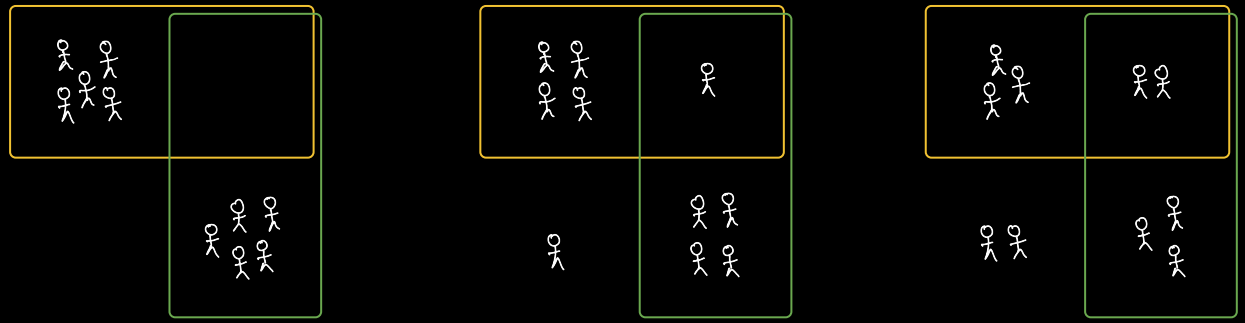

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NO CROSSCUTTING — EVERYBODY CROSSCUTTING

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Sorting is real.

Sorting is bad.

Unsorting is good.

Sorting is real.

Direct measurement:
(e.g., Abrams et al. 2015, Kaplan et al. 2022)

- ↑ correlations between issue positions
- “no evidence of polarization; the middle has not shrunk”
- ↑ geographic sorting

Explains empirical trends:
(Levendusky 2009; Abrams & Fiorina 2015; Fiorina 2017)

- ↑ difference in approval ratings
- ↓ split ticket voting
- campaigning to convince → campaigning to mobilize
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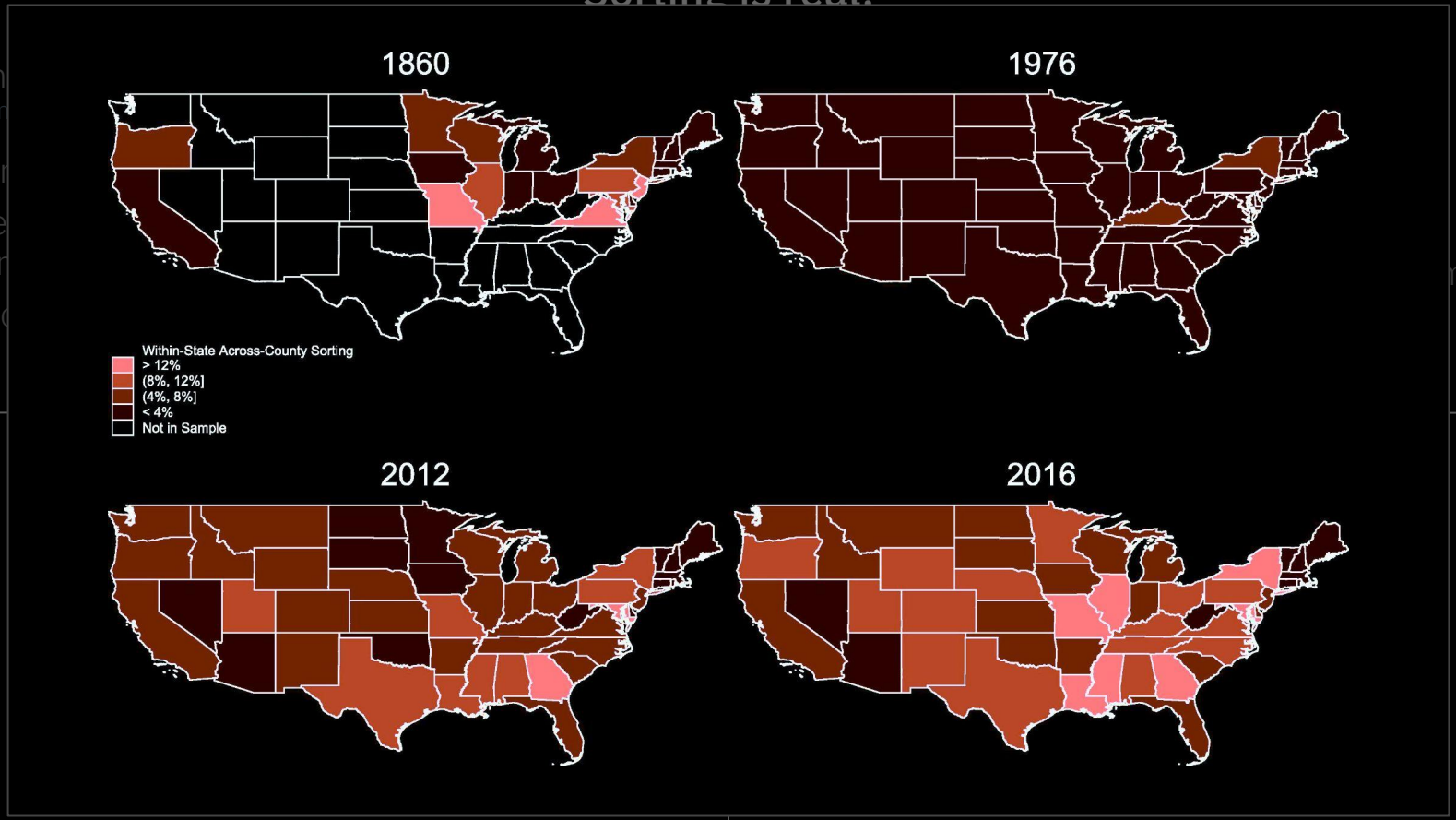

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- ↑ pigeonholing / stereotyping
- ↓ representation of nuanced, crosscutting positions (Fiorina 2016)
- ↑ risk of civil war
  (Selway 2011; Gubler and Selway 2012; Siroky and Hechter 2016)

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Unsorting is good.

- ↑ "surprising validators" (Glaeser and Sunstein 2014)
- ↑ extent to which any majority will have something in common with a minority
- ↑ weak/long ties → ↑ economic outcomes
  (Jahani et al., 2023)

Sortedness by other names:

safeguards against factionalism
James Madison, *The Federalist No. 10* (1787)

“intersection of social circles”
Georg Simmel, *Soziologie* (1908)

“overlapping memberships”
Robert Dahl, *A Preface to Democratic Theory* (1956)

“overlapping consensus”
John Rawls, *Political Liberalism* (1993)

“diverse diversities”
Amartya Sen, *Identity and Violence* (2006)

“connected society” / “polypolitanism”
Danielle Allen, *Justice by Means of Democracy* (2023)

Why not unsort?

- Probably **too neutral a goal**
- Probably **absurd if taken to the extreme**
- Maybe **the necessary interventions would be unethical**
- Makes **engaging in politics more complicated**

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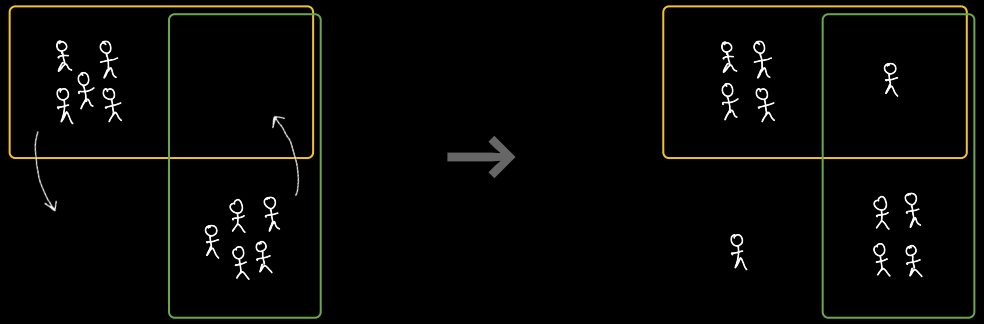
Mechanism 1

Conversion



EXAMPLES

common ground

symmachy / common enemies

surprising validation

consilience

weak / long ties

“complicate the narratives”

Most bridging algorithms use “diverse approval”.

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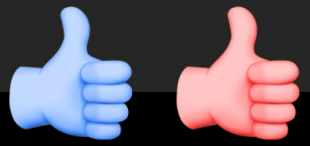
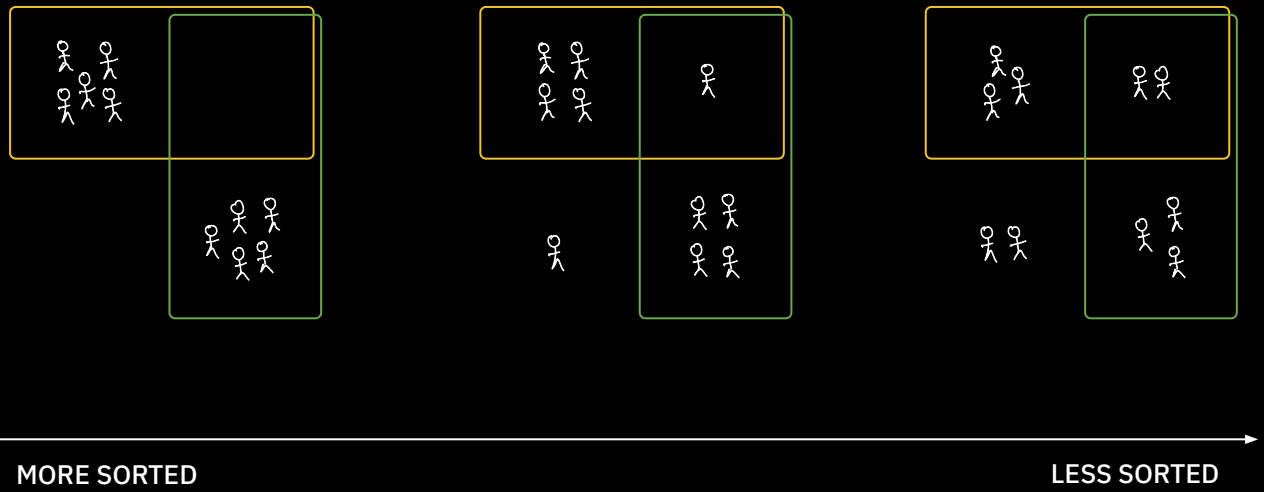


EXAMPLES

Diverse approval selects for unlikely combinations of attributes.



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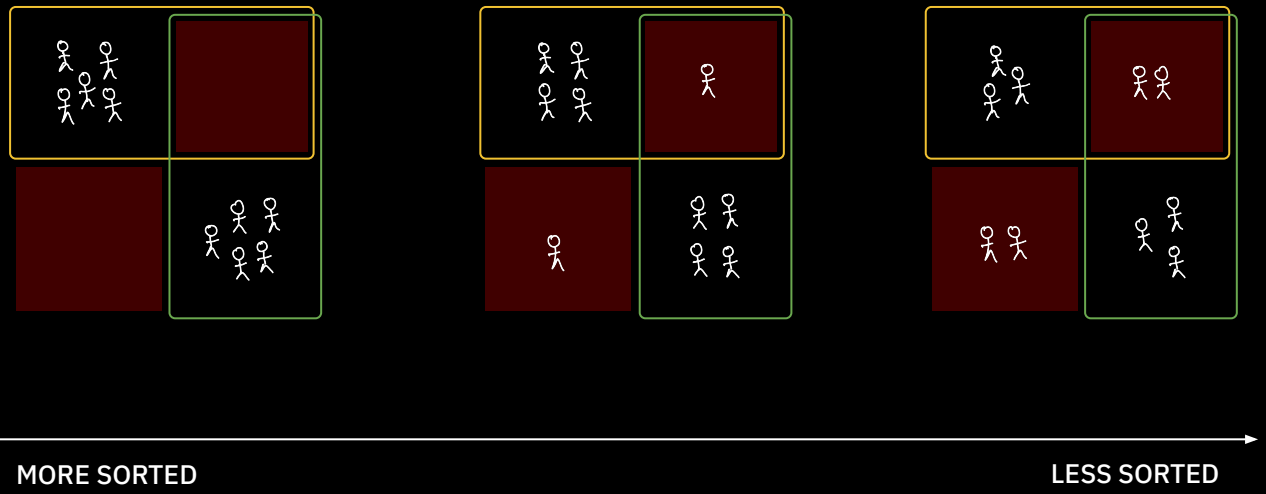

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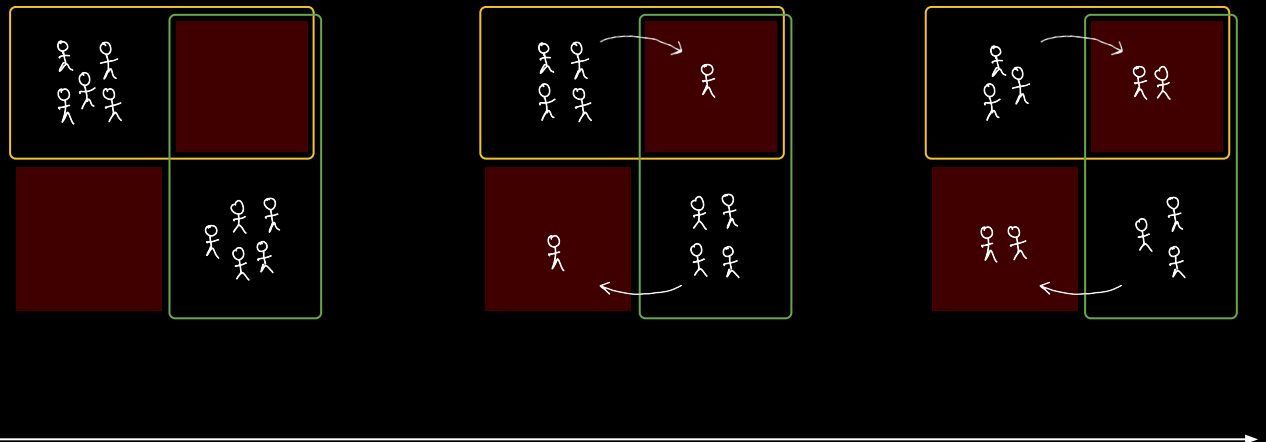


MORE SORTED

LESS SORTED

Diverse approval selects for unlikely combinations of attributes.

Cognitive “biases”

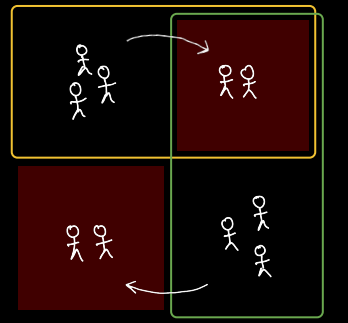
- mere-exposure effect
- illusory truth effect
- experience effects
- anchoring
- pressures to conform

Learning

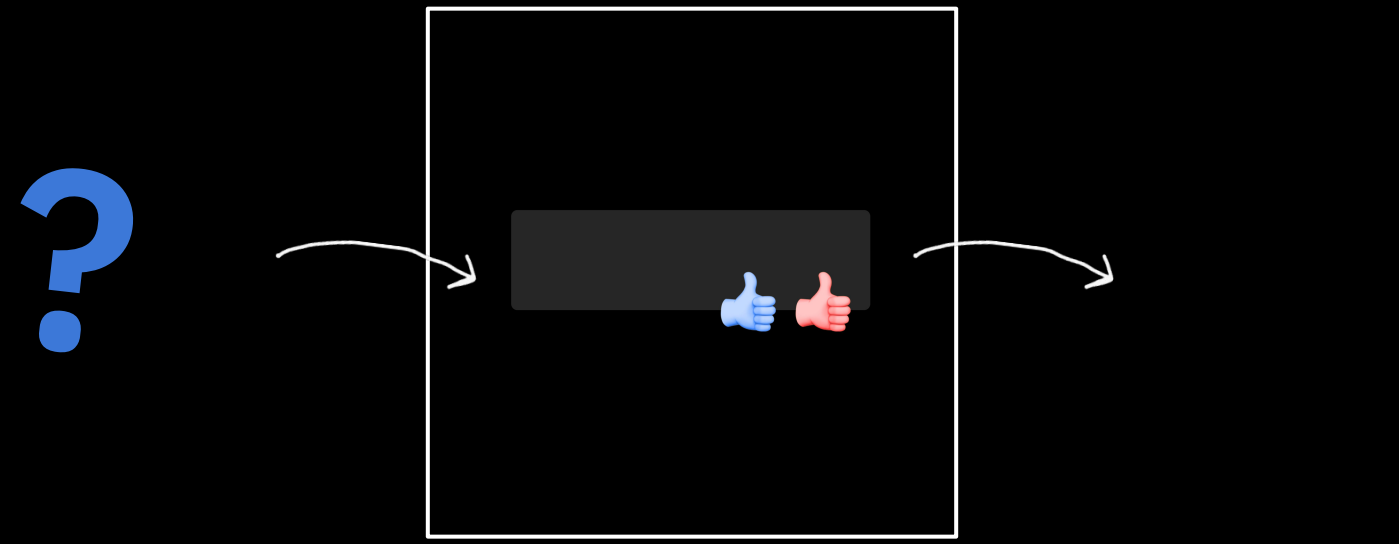
- learning new facts
- discovering new interests

Algorithmic incentives (Brady et al., 2023)

- observational learning
- reinforcement learning
- intentional strategic adaptation



LESS SORTED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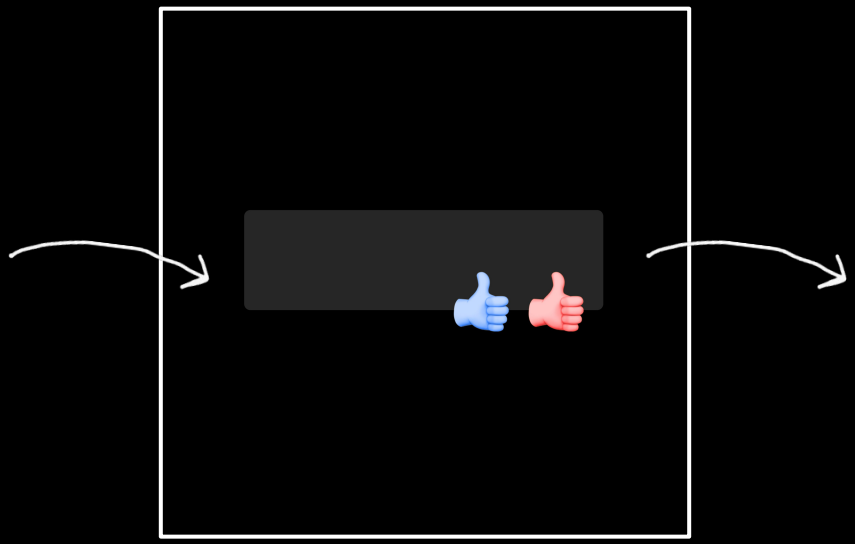
THEORY
FORMALISM
OUTCOMES

Diverse approval contributes to unsorting.



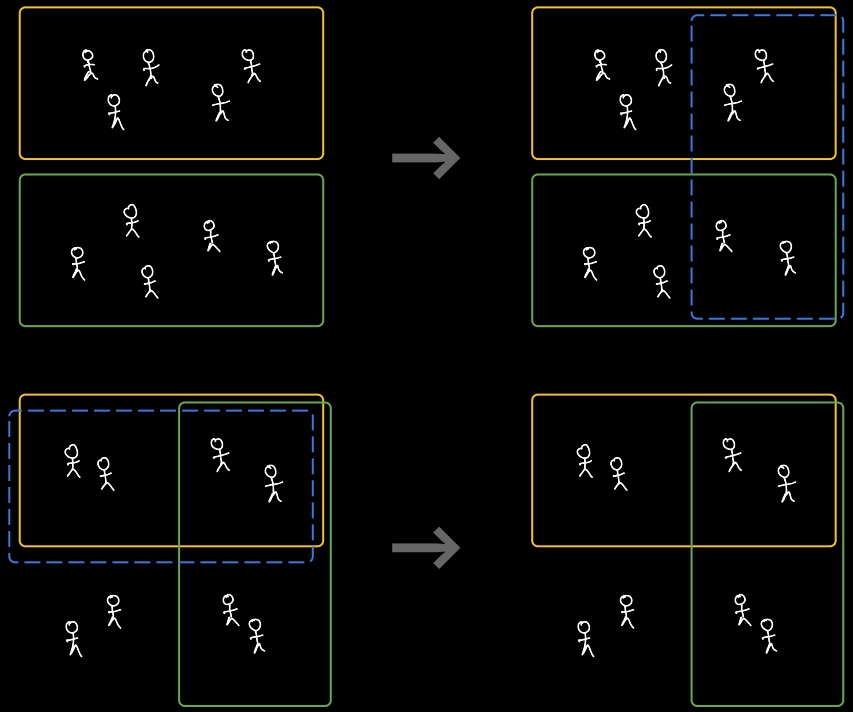
THEORY

FORMALISM

OUTCOMES

Mechanism 2

Adding or removing groups/dimensions



EXAMPLES

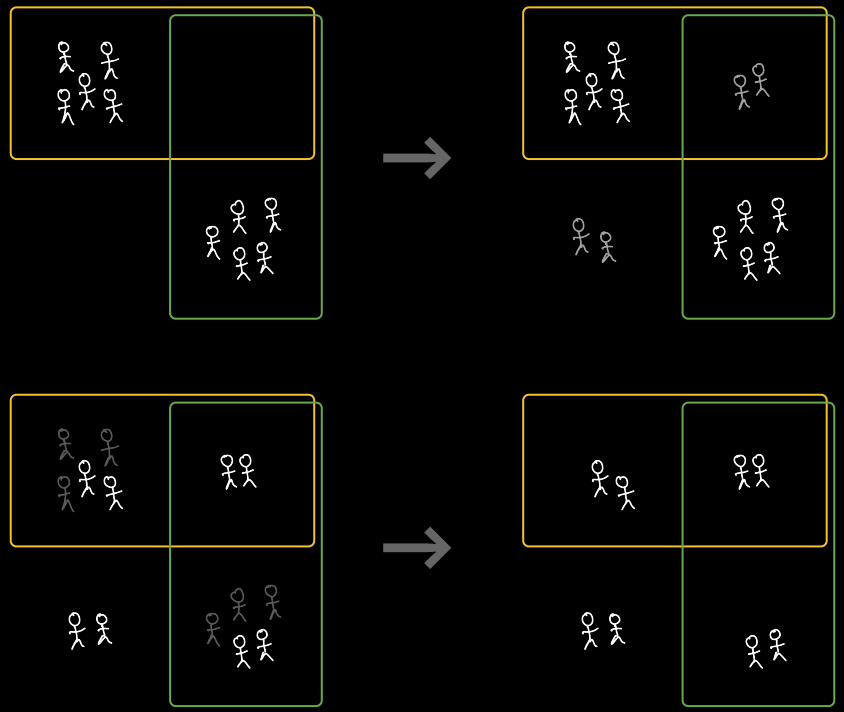
humanization

intergroup contact

depoliticization

Mechanism 3

Entry or exit of people



EXAMPLES

migration

generational change

account creation / deletion

I. Sortedness

II. Why unsort?

III. How to unsort?

IV. Can we unsort?

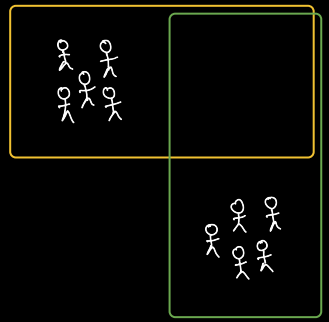
I. Sortedness

II. Why unsort?

III. How to unsort?

IV. Can we unsort?

Sortedness can be reduced globally by intervening locally.



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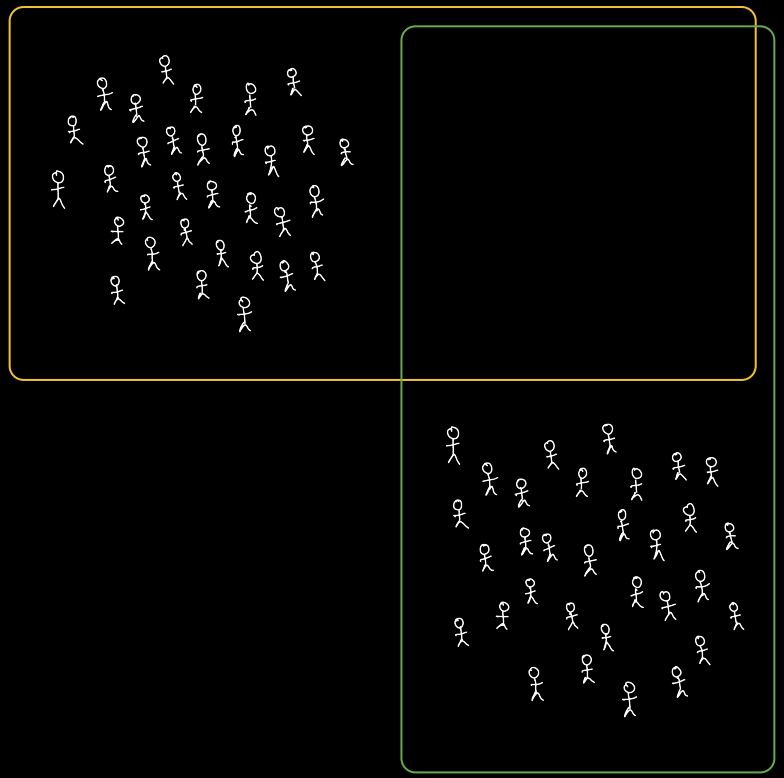

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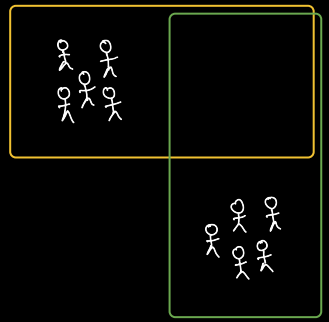

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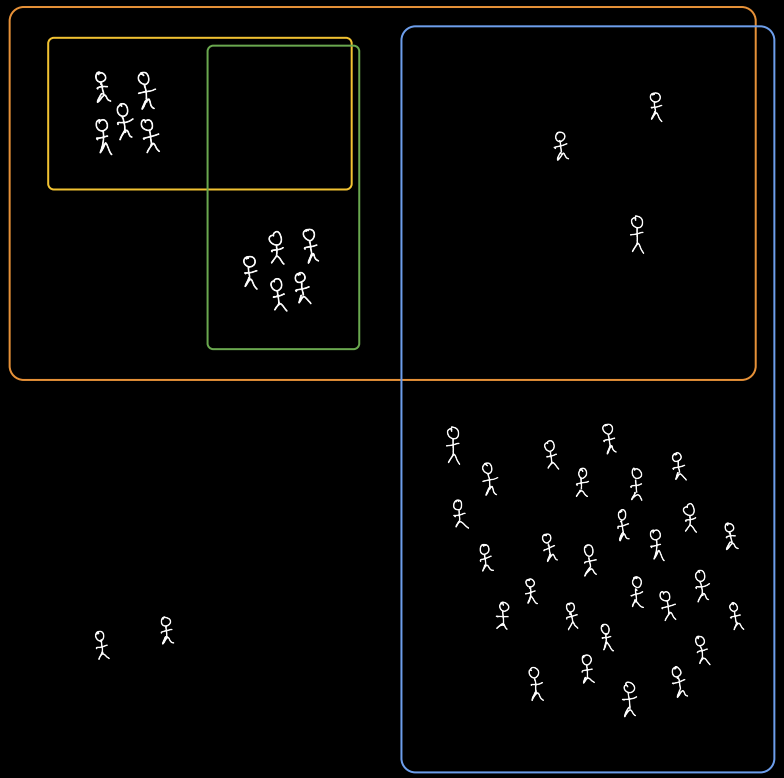

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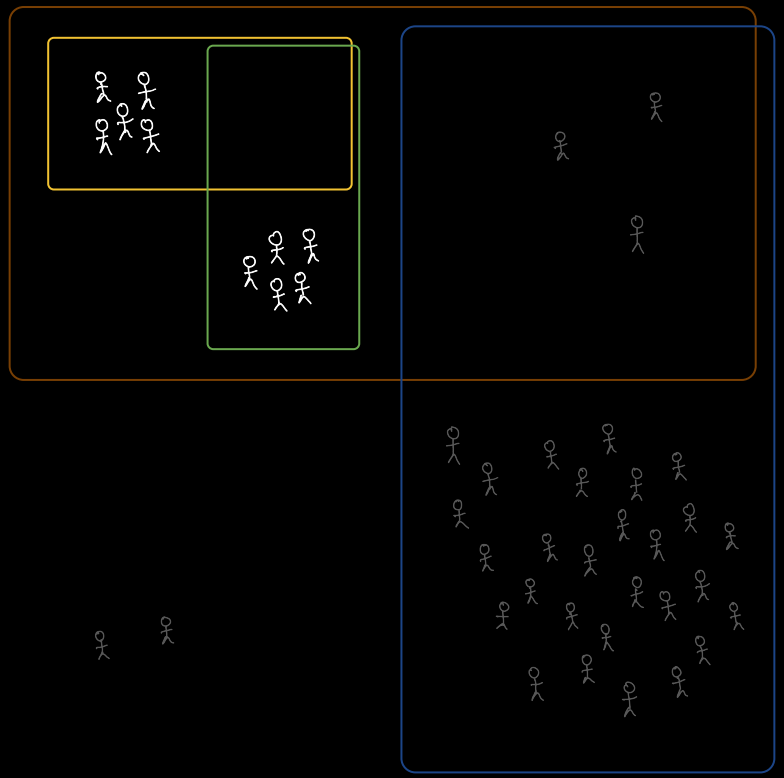

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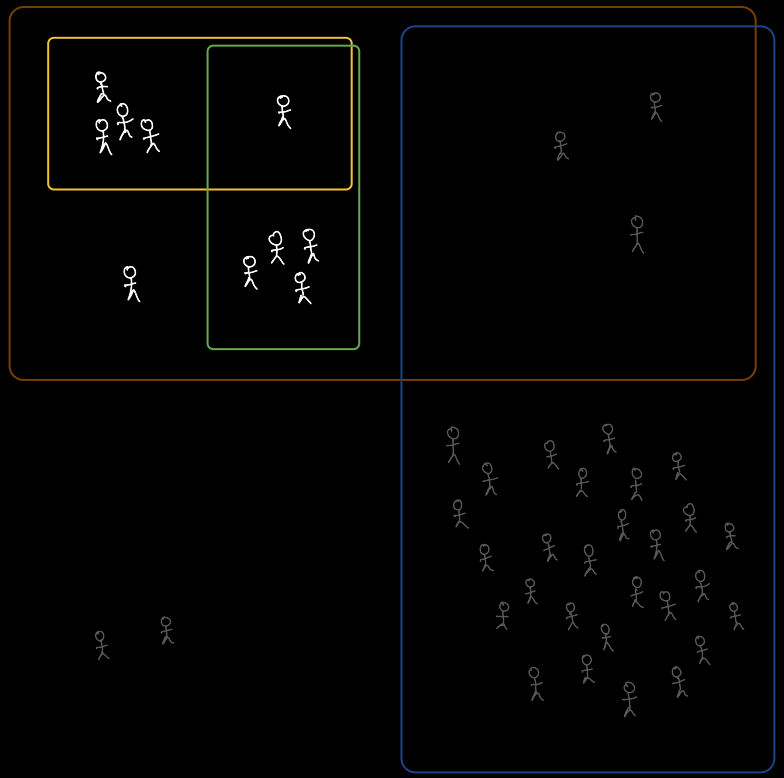

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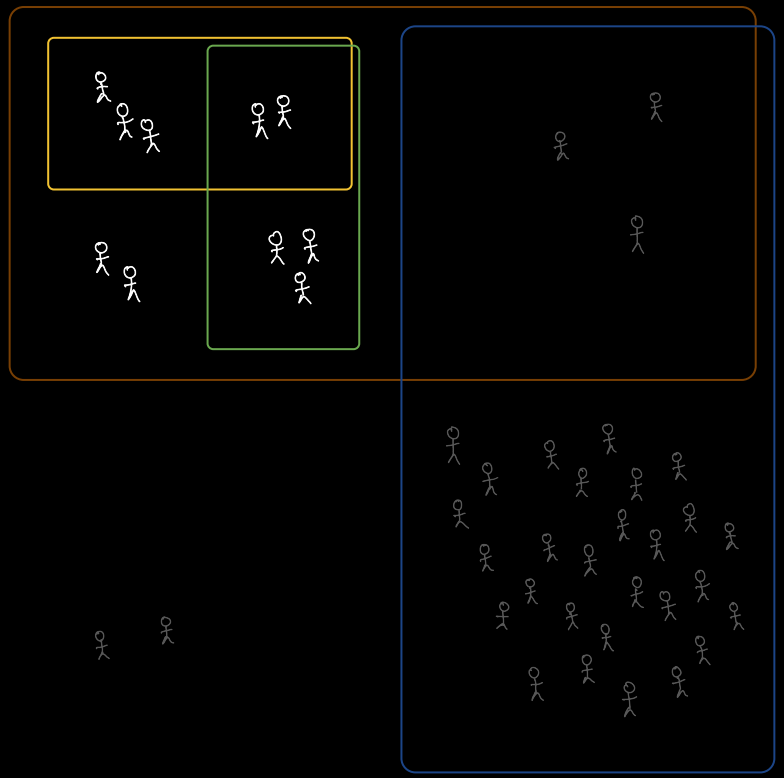
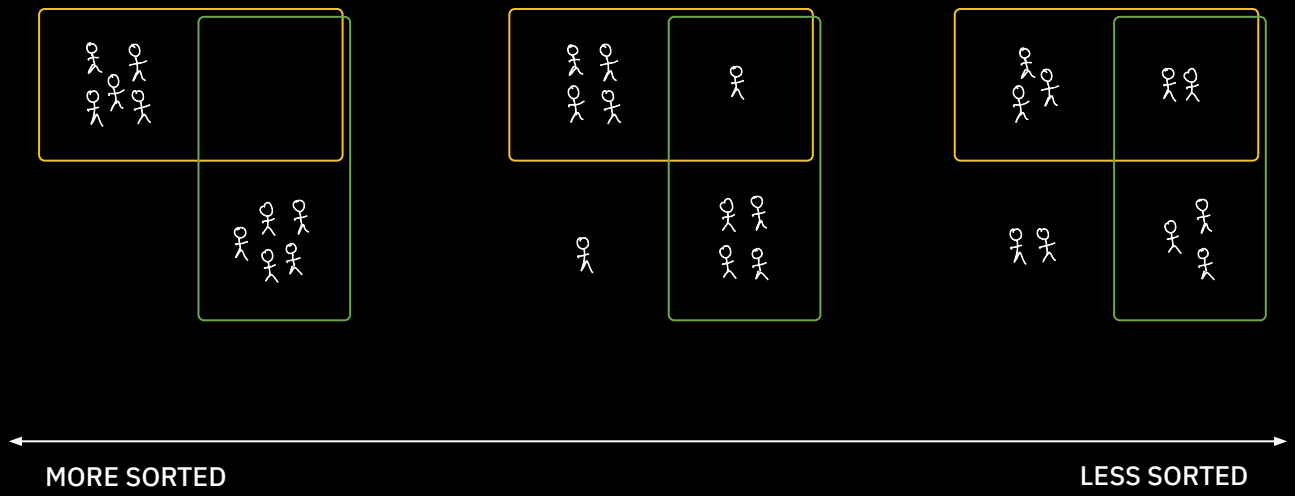
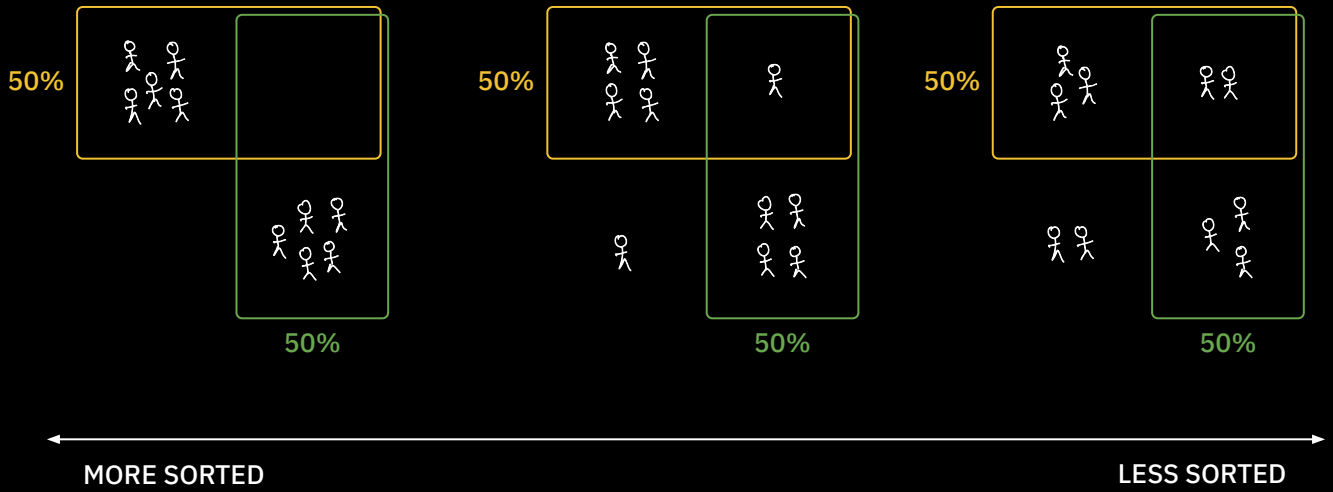


Sortedness is orthogonal to “public opinion”.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