

Public Attitudes, Perceptions, and Engagement in the Field of Genetic Modification



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GES Center: Resident Fellow Projects

Jade Barry-James (Public Administration)

- Faith-based communities of color and attitudes to GMOs

Jane Hoppin (Biology)

- GM health impacts on agricultural producers

David Berube (Communication)

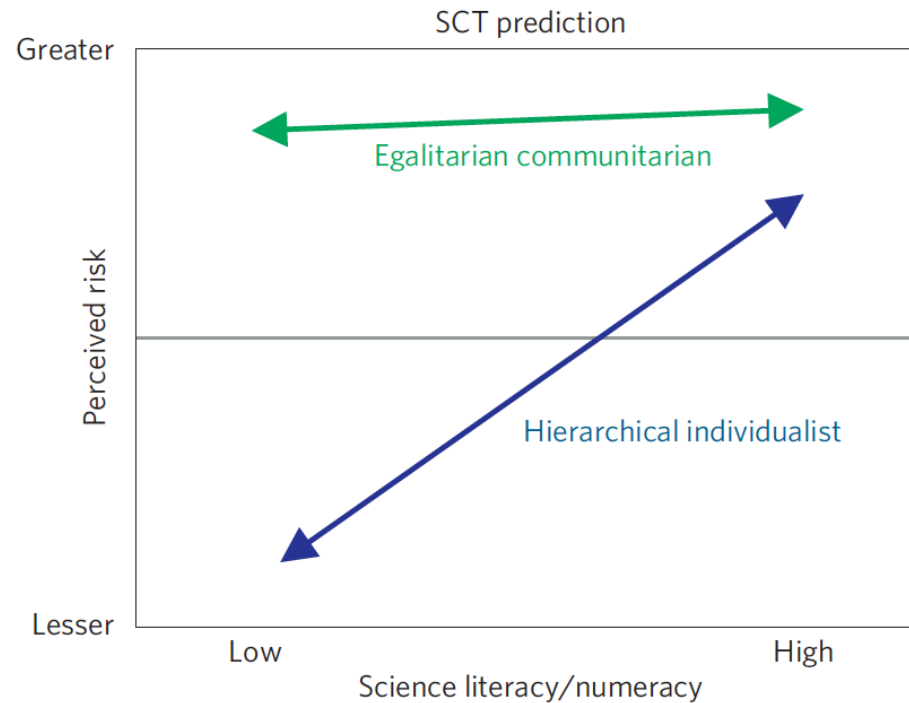
- Do-it-yourself syn-bio labs and governance

Andy Binder (Communication)

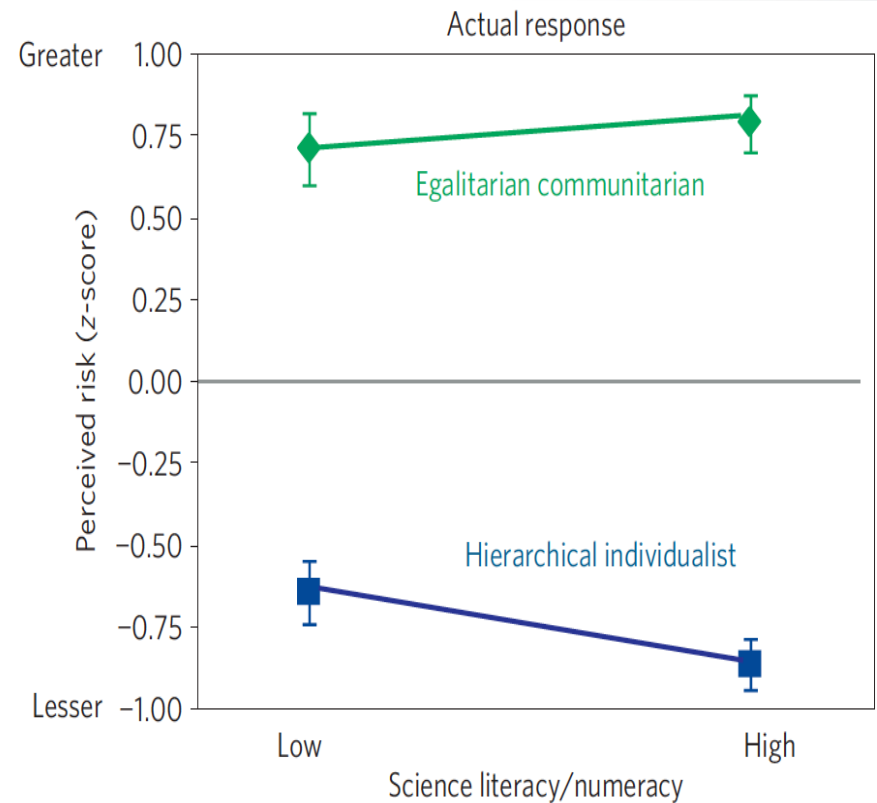
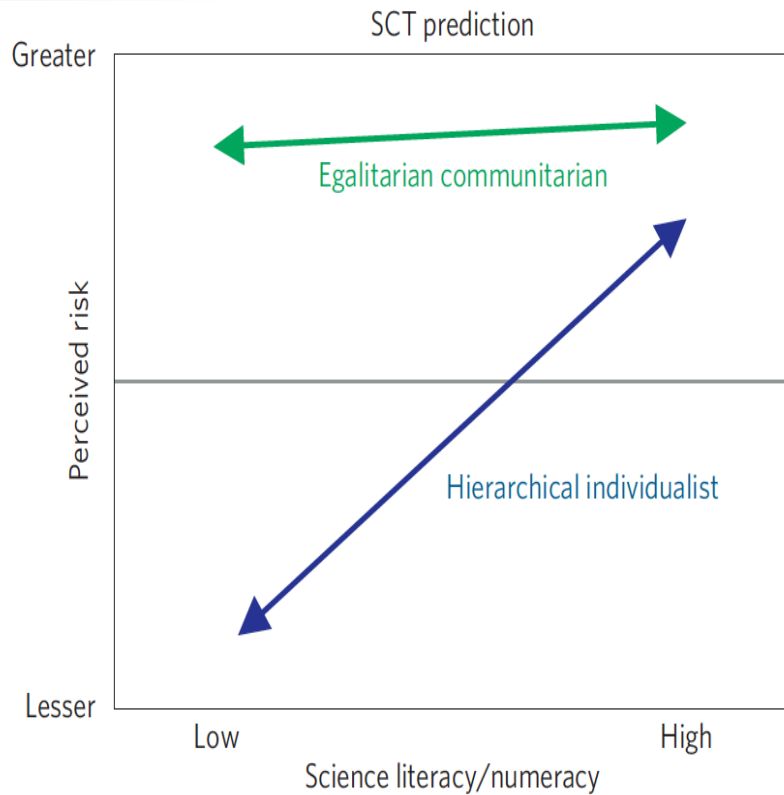
- Meta-analysis of GM food perception studies



“How much risk do you believe climate change poses to human health, safety or prosperity?” (Kahan, et al. 2012)



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Cultural Cognition Project

LETTERS

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nature
climate change

The polarizing impact of science literacy and numeracy on perceived climate change risks

Dan M. Kahan^{1*}, Ellen Peters², Maggie Wittlin³, Paul Slovic⁴, Lisa Larrimore Ouellette³, Donald Braman⁵ and Gregory Mandel⁶

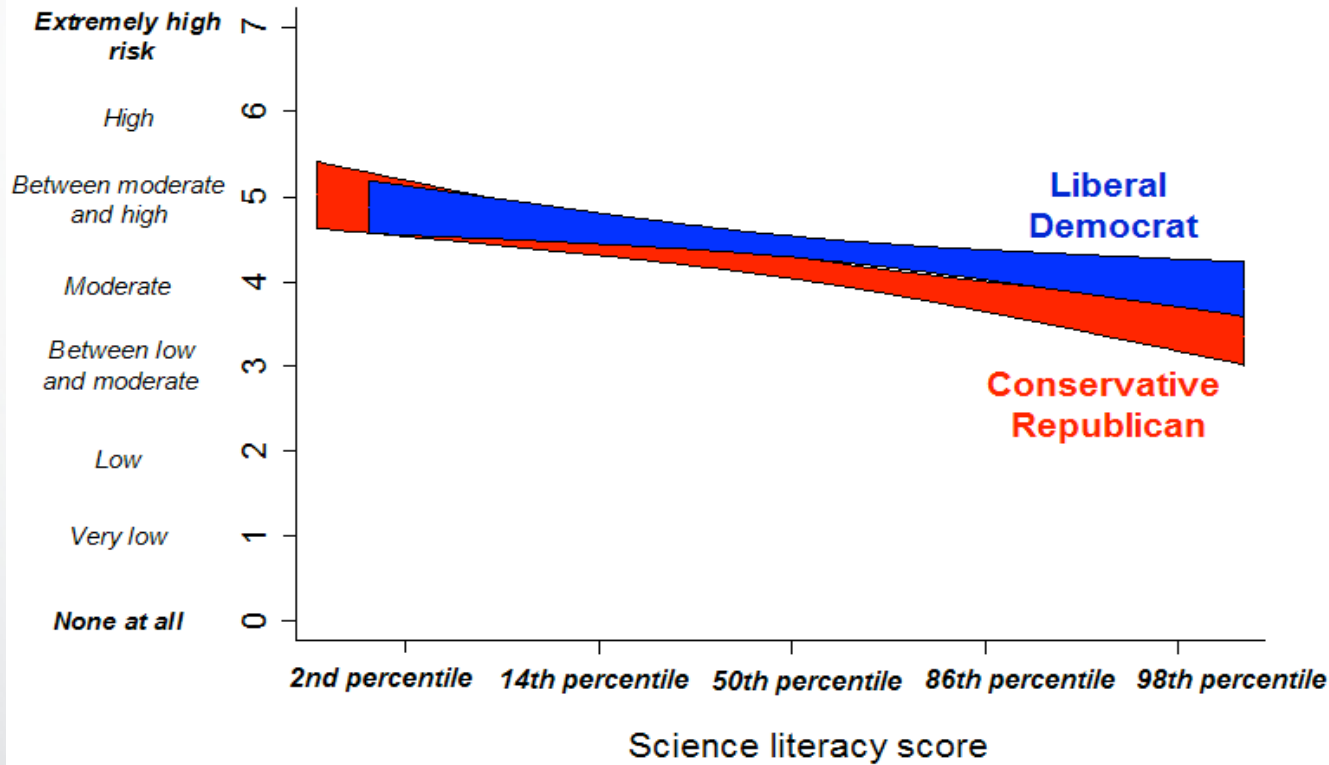
Seeming public apathy over climate change is often attributed to a deficit in comprehension. The public knows too little science, it is claimed, to understand the evidence or avoid being misled¹. Widespread limits on technical reasoning aggravate the problem by forcing citizens to use unreliable cognitive heuristics to assess risk². We conducted a study to test this

literacy—that is, concern should increase as people become more science literate.

Second, and even more important, SCT attributes low concern with climate change to limits on the ability of ordinary members of the public to engage in technical reasoning. Recent research in psychology posits two discrete forms of information

Perceived risks of GM food

“How much risk do you believe **genetically modified food** pose to human health, safety, or prosperity?”

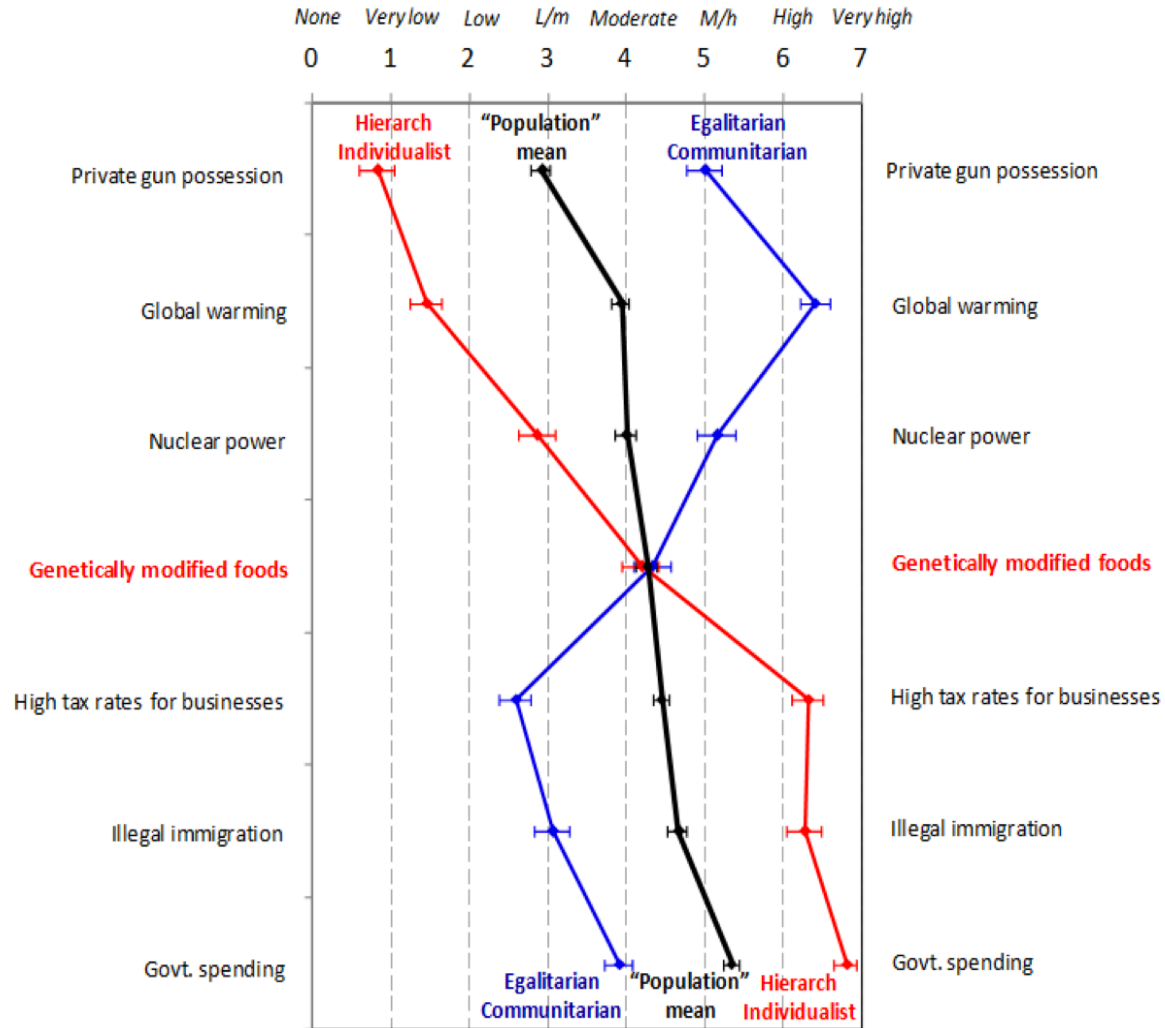


Annenberg Center for Public Policy & Cultural Cognition Project. $N = 1769$. Nationally representative sample, April/May 2014 (YouGov). Simple linear regression. X-axis is continuous “Ordinary Science Intelligence” scale formed by IRT-weighted responses to NSF & Pew science literacy, Numeracy, and Cognitive Reflection Test items ($\alpha=0.83$). Partisan identification determined by reference to mean on Conservrepub, a scale formed by aggregating liberal-conservative ideology and party self-identification. Color-shaded areas reflect 095 level of confidence for estimated population mean at corresponding level of science literacy.

<http://www.culturalcognition.net/blog/2014/09/19/the-more-you-know-the-more-you-know-you-climate-change-vs-gm-foods.html>

http://www.culturalcognition.net/blog/2013/11/15/we-arent-polarized-on-gm-foods-no-matter-what-the-result-in.html

“How much risk do you believe each of the following poses to human health, safety, or prosperity?”

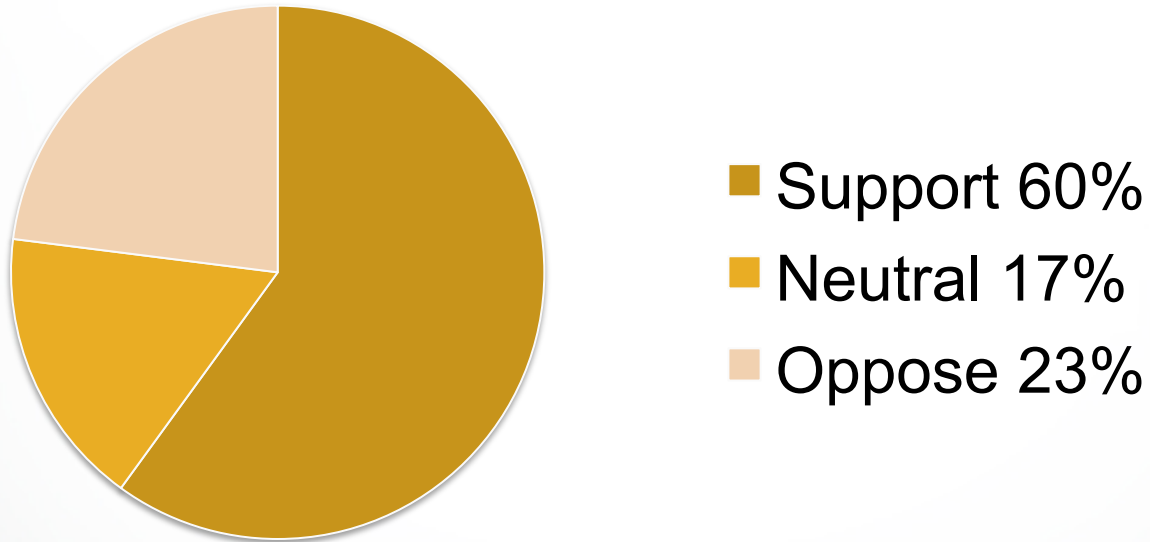


N = 764-769. Estimates derived by multivariate regression in which risk source was outcome variable and cultural worldview measures were used as predictors. Estimates for “Population mean” determined by setting predictors to sample means; estimates for “hierarchy individualists” and “egalitarian communitarians” determined by setting cultural worldview predictors to +1 SD and -1 SD, respectively. Cis reflect 0.95 level of confidence.

Public perceptions of GE mosquitoes in Key West, Florida

- Mosquitoes engineered to reduce population that carries dengue fever.
- NC State study team: M. Cobb, A. Binder, E. Pitts, E. Johnson-Young, and M. Storment
- 205 interviews (27% response rate) at places of residence in January 2013
- Open-ended questions about hazards and benefits

Public Support for GE mosquito release?



From Pitts and Cobb, unpublished.

Table 1: Perceived Benefits of Using GE mosquito control technology

Benefit	Frequency of Mention
Mosquito Control	40% (N=82)
Don't Know/No Answer	31% (N=63)
Human Health/Disease Prevention	14% (N=29)
Not one: Rejects premise	8% (N=16)
Gibberish	3% (N=6)
Ecosystem	2% (N=4)
Generic Optimism	2% (N=4)
Uncertain Benefit(s)	1% (N=1)
Economic	0% (N=0)
Total	100% (N=205)

From Pitts and Cobb, unpublished.

Table 2: Perceived Hazards of Using GE mosquito control technology

Hazard	Frequency of Mention
Don't Know/No Answer	36% (N=73)
Not one: Rejects premise	21% (N=43)
Human Health/Disease Worse	11% (N=22)
Ecosystem	9% (N=19)
Uncertain Hazard(s)	9% (N=19)
Mosquito Control	7% (N=14)
Gibberish	4% (N=8)
Generic Pessimism	3% (N=7)
Economic	0% (N=0)
Total	100% (N=205)

Inability to engage the question: 57%

Concerns: 39%+

From Pitts and Cobb, unpublished.

The Public?



Publics?



Audiences?



Delborne, J. A. (2011). Constructing Audiences in Scientific Controversy. *Social Epistemology*, 25(1), 67–95.

Public Engagement

Type of Engagement

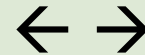
Public Communication

Public Consultation



Public Engagement

Sponsor



Public Representative

Rowe, G., & Frewer, L. J. (2005). A Typology of Public Engagement Mechanisms. *Science, Technology and Human Values*, 30(2), p. 255.

Consensus Conferences

- Developed by the Danish Board of Technology
- Interaction of lay persons and experts
- Integration of facts and values
- Goals
 - Promote learning through deliberation
 - Access *thoughtful* public opinion
 - Generate new ideas or policy alternatives
 - Impact governance decisions

High quality deliberation



Framing the task and questions



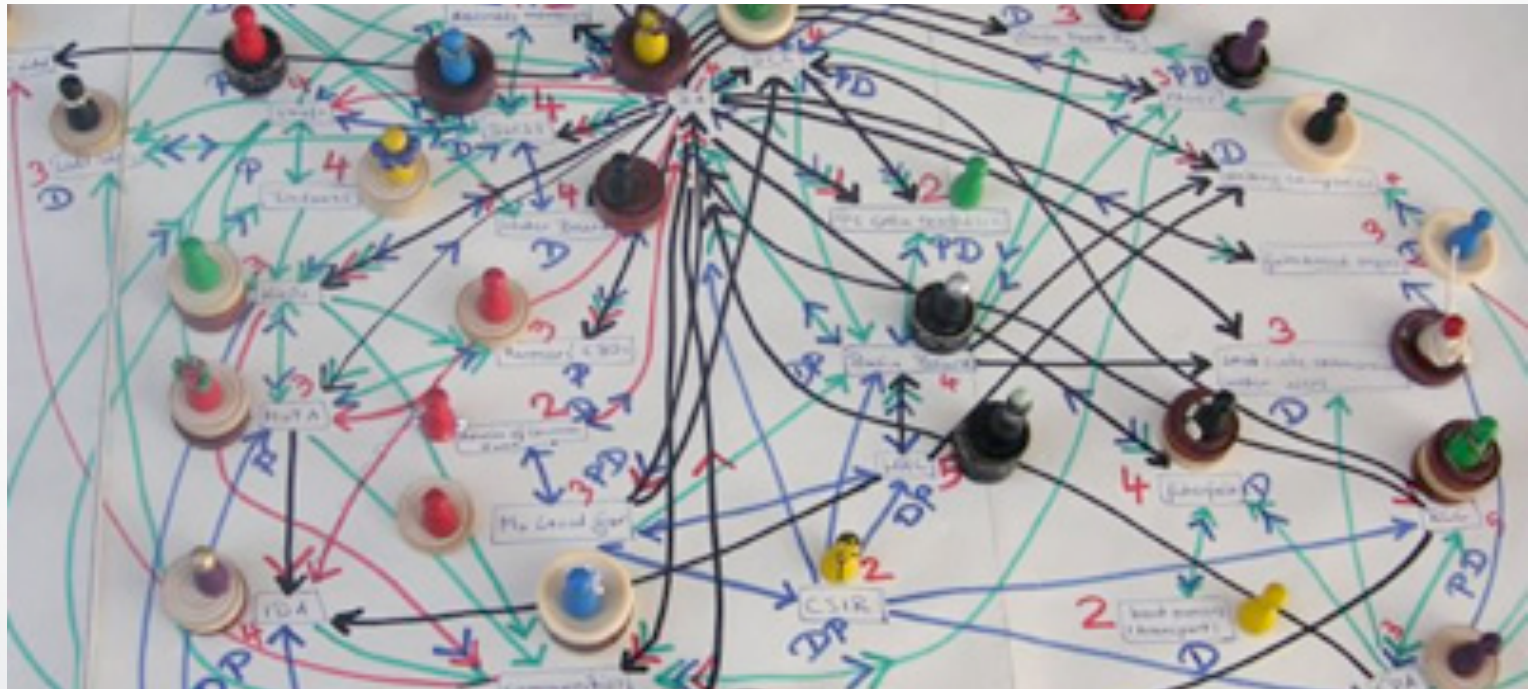
Constructing the “public”



Empowering participants

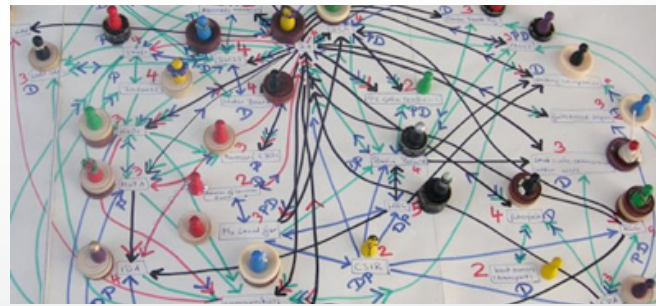


Embedding in decision networks





High quality deliberation
Empowering participants
Constructing the “public”
Embedding in decision networks
Framing the task and questions
Engagement with risk of being moved



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