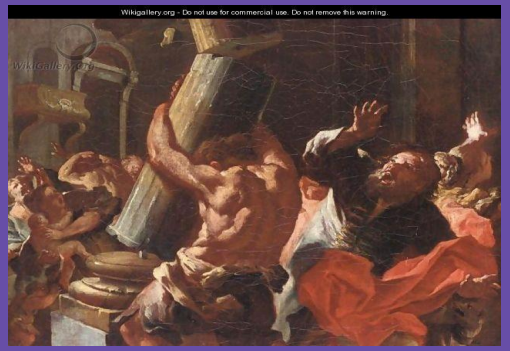
Altruistic behavior and social signaling: a study of an extreme example

DIG Seminar

https://www.shareicon.net



De Caro (XVIIth), *Sansom Destroying the House of Philistines*; from wikigallery.org

Intern: Julien Panis-Lie
Internship director: Jean-Louis Dessalles

Presentation structure

- Altruism (online): a theoretical puzzle
- Framework: costly signal theory
- Internship: altruistic suicide
- Preliminary results and two-tier model
- Perspectives

Presentation structure

Altruism (online): a theoretical puzzle

Framework: costly signal theory

Internship: altruistic suicide

Preliminary results and two-tier model

Perspectives

Research question

How can (online) altruistic behavior be explained from a theoretical standpoint?

Online **altruistic** behavior:

Images extracted from
https://www.shareicon.net

Research question

How can (online) altruistic behavior be explained from a theoretical standpoint?

Online **altruistic** behavior:

Images extracted from https://www.shareicon.net

Theoretical puzzle:

- Economic angle: tragedy of the commons (Hardin, 1968)
- Biological angle: evolution and maintenance of prosocial behaviors?

Presentation structure

Altruism (online): a theoretical puzzle

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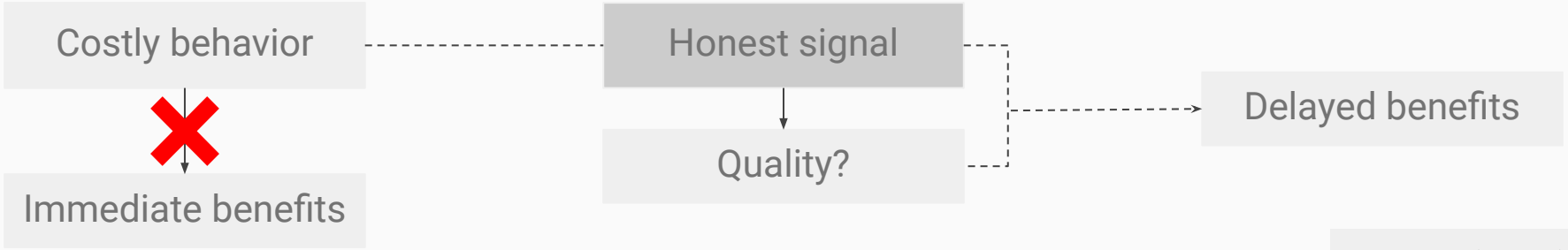
Preliminary results and two-tier model

Perspectives

Costly signal theory



- Th. biology: Zahavi (1975), Grafen (1990)
- Economics: Veblen (1899), Spence (1974)

Individual (sender)

Audience

Springbok stotting

Costly signal theory

Costly behavior

Immediate benefits

Honest signal

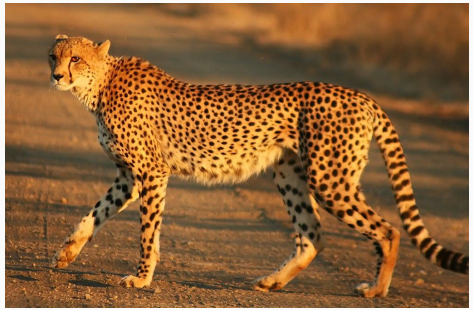
Quality?

Delayed benefits

- Th. biology: Zahavi (1975), Grafen (1990)
- Economics: Veblen (1899), Spence (1974)

Individual (sender)

Audience



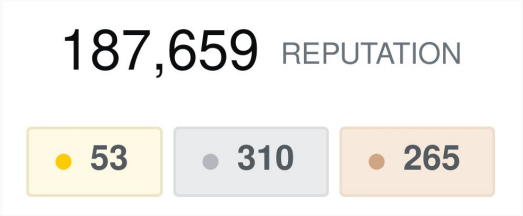
Competition

=> **Honest** signal

Images extracted from Wikipedia; icon from https://www.iconsdb.com

Helping others on Stack Overflow

Profile: first moderator by alphabetical order

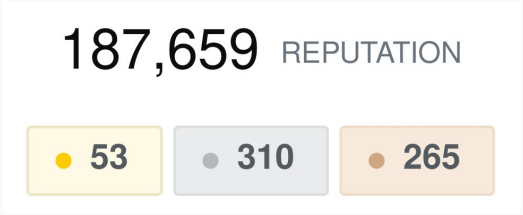


Contributions
(top 0.01%)

Elected moderator

Helping others on Stack Overflow

Profile: first moderator by alphabetical order



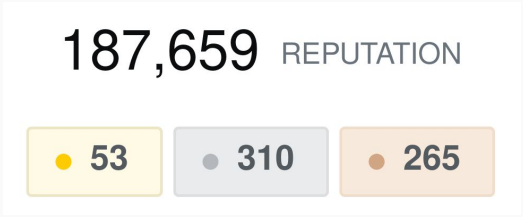
Contributions (top 0.01%)

Elected moderator

Social benefits

Helping others on Stack Overflow

Profile: first moderator by alphabetical order



Contributions (top 0.01%)

Audience: regular contributors

Expertise

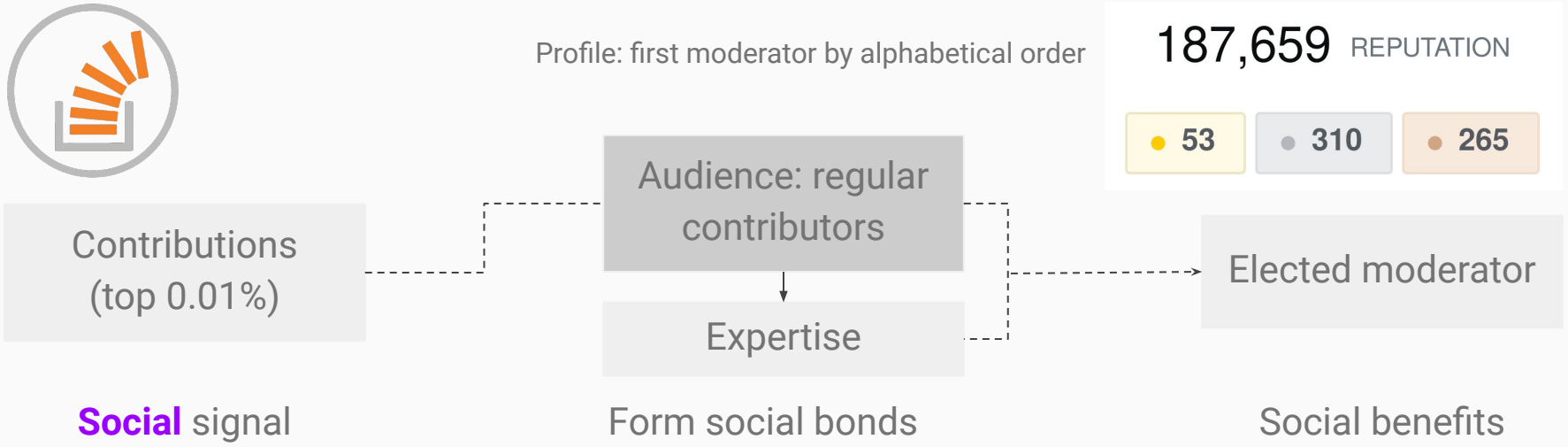
Elected moderator

Social signal

Form social bonds

Social benefits

Helping others on Stack Overflow



How can (online) altruistic behavior be explained from the standpoint of social signaling theory?

Presentation structure

Altruism (online): a theoretical puzzle

Framework: costly signal theory

Internship: altruistic suicide

Preliminary results and two-tier model

Perspectives

Altruistic suicide

Definition

Voluntary behavior

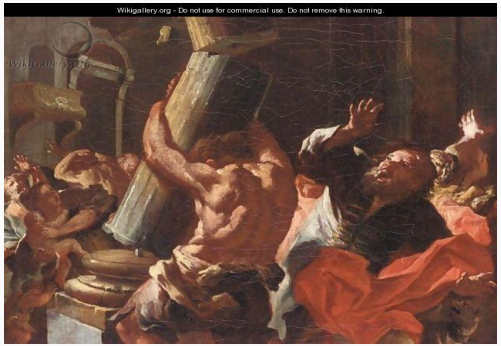
Results in death

For the sake of a **group**

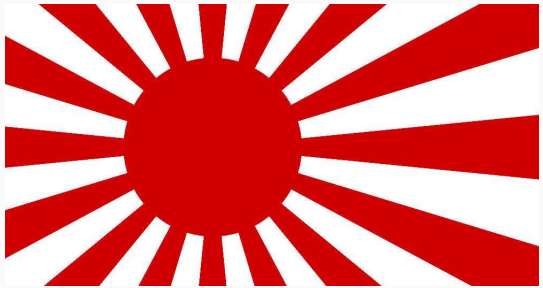
Altruistic suicide

Definition

- Voluntary behavior
- Results in death
- For the sake of a **group**



De Caro (XVIIth), *Sansom Destroying the House of Philistines*; from wikigallery.org



Flag of Imperial Japan; from wikipedia.org

Advertising poster for the movie *300*; from imdb.com

Altruistic suicide

Definition	Voluntary behavior
	Results in death
	For the sake of a **group**
Context	Recurrent in history
	For diverse groups

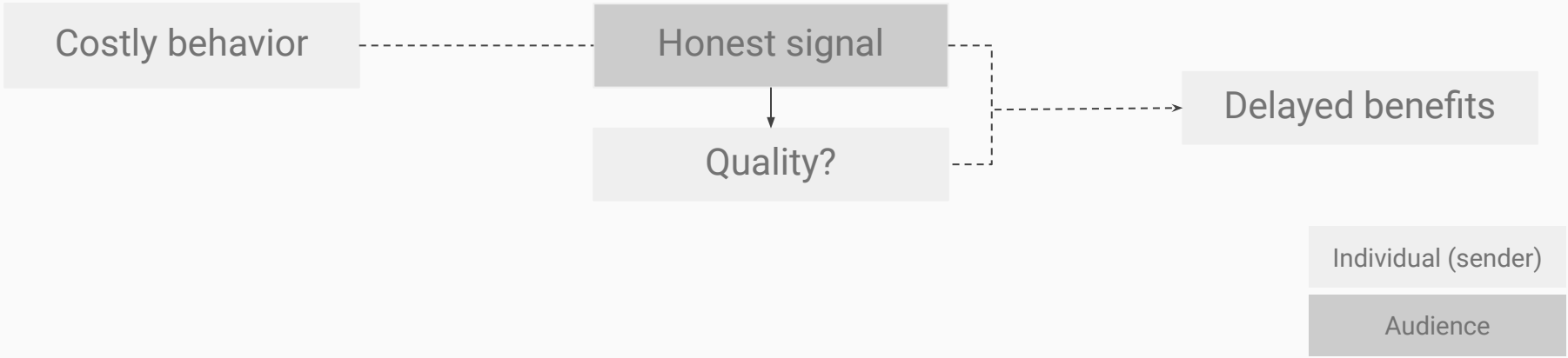
Advertising poster for the movie *300*; from imdb.com

Altruistic suicide

Definition	Voluntary behavior	
	Results in death	
	For the sake of a **group**	
Context	Recurrent in history	
	For diverse groups	
	Seems tied to **intergroup conflict**	Whitehouse (2018)
Outcome	“Martyrs” are often **revered**	Durkheim (1897)
	This may **benefit their family**	Blackwell (2008)

Advertising poster for the movie *300*; from imdb.com

Altruistic suicide as social signal?



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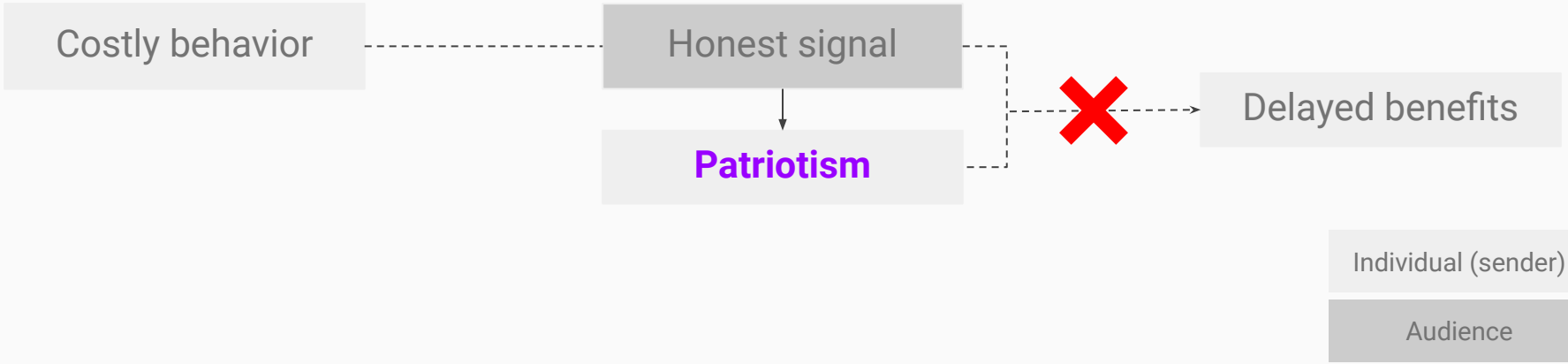
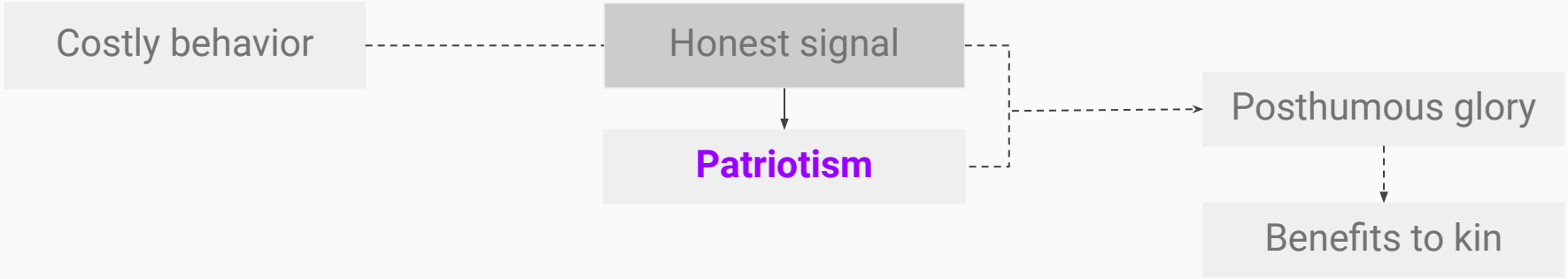


“Exogenous” model



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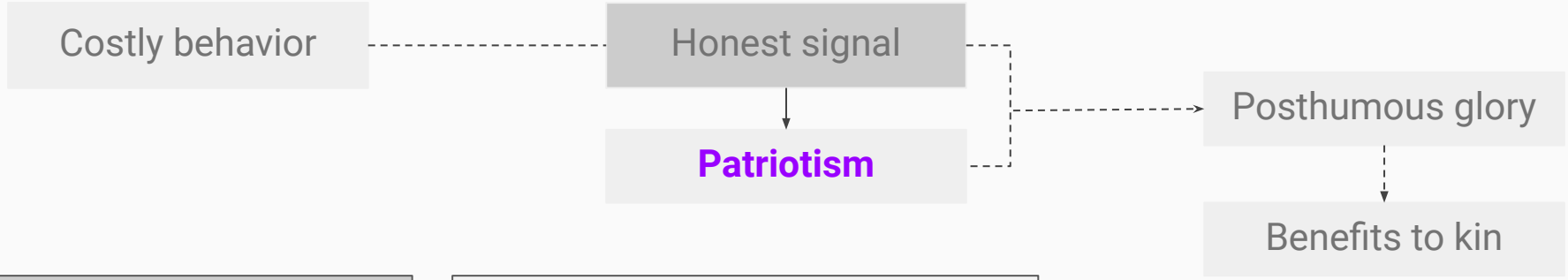

Hypotheses	During **intergroup conflict** “martyrs” are revered
	Social status is in part **heritable** (Service, 1971)
Conjecture	Altruistic suicide may emerge as a signal of one’s **patriotism**

Presentation structure

Altruism (online): a theoretical puzzle

Framework: costly signal theory

Internship: altruistic suicide

Preliminary results and two-tier model

Perspectives

“Exogenous” model: results

Hypotheses	During **intergroup conflict** “martyrs” are revered	Admiration parameter
	Social status is in part **heritable** (Service, 1971)	Admiration for a “hero” spills over to children
Conjecture	Altruistic suicide may emerge as a signal of one’s **patriotism**	Gene: propensity to **self-sacrifice**

“Exogenous” model: results

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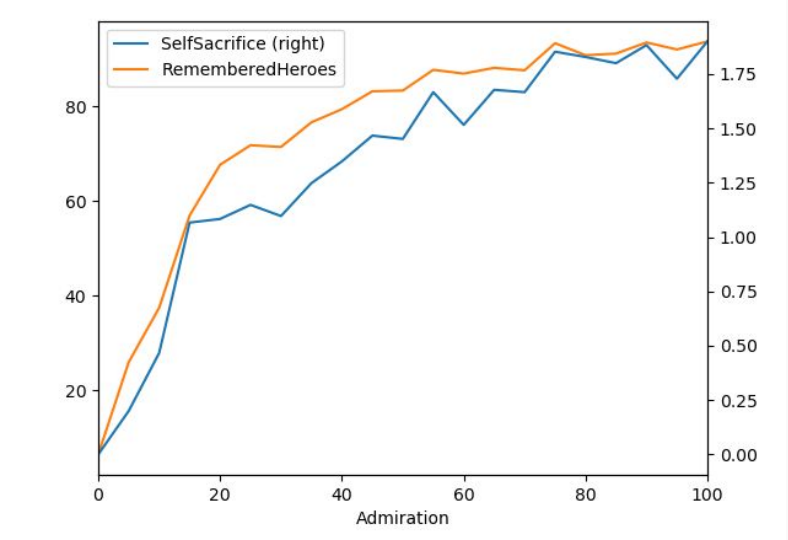

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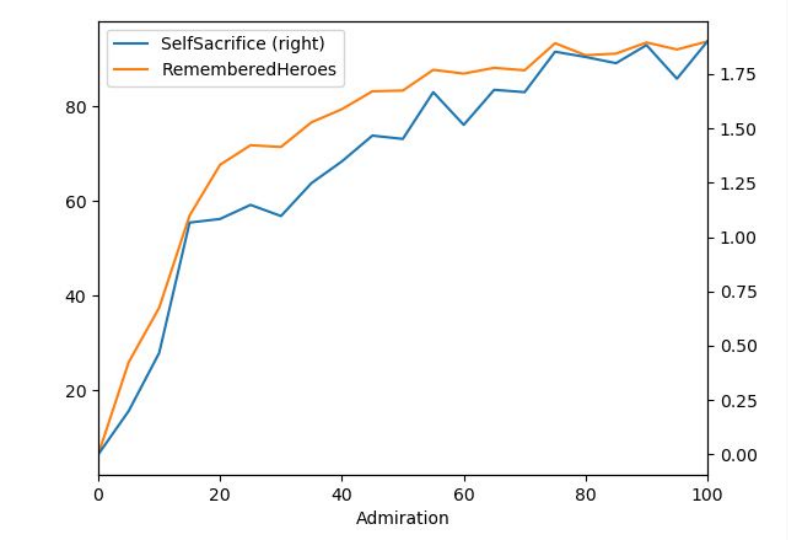
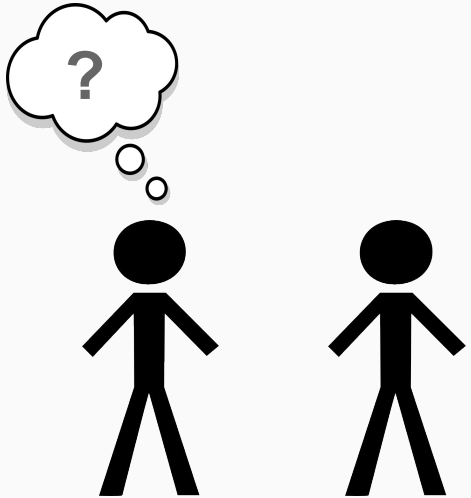


Under simplifying assumptions, a non-trivial Nash equilibrium exists, with:

$$f(S,p) = \frac{2}{S} * (1 - \frac{p * log(1+S)}{(1-p) * S})$$

“Endogenous” model: ideas

Hypotheses	Possible social signals
Intergroup conflict: **risk of betrayal** by friends	



Indiv 1
Group A

Indiv 2
Group = ?

Images taken from https://clipartxtras.com

“Endogenous” model: ideas

Hypotheses	Possible social signals
Intergroup conflict: **risk of betrayal** by friends	**Honor martyrs and their children** to signal patriotism

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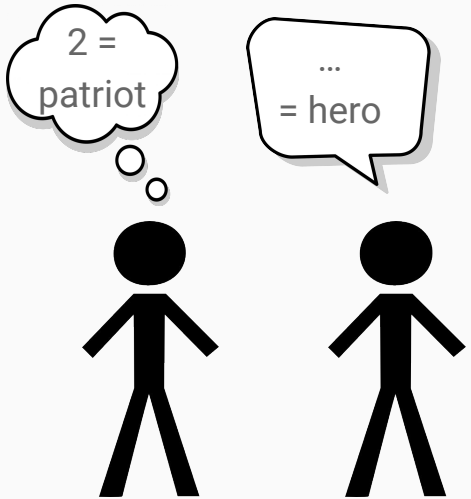

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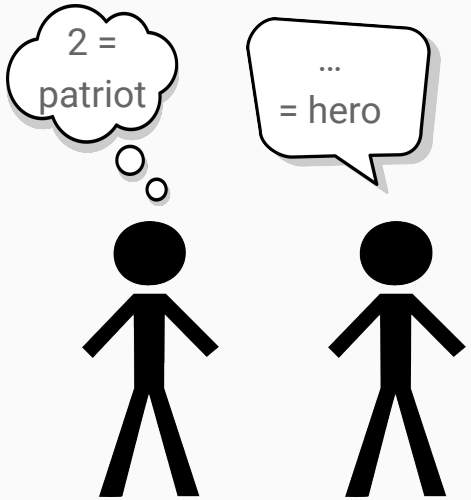
“Endogenous” model: ideas



Hypotheses	Possible social signals
Intergroup conflict: **risk of betrayal** by friends	**Honor martyrs and their children** to signal patriotism
Honoring is capped for potential ‘traitors’	⇄
	Self-sacrifice as **first-order signal**

Conjecture	During intergroup conflict, **honoring and self-sacrifice may co-emerge**, notably depending on expected cost of betrayal

Images taken from https://clipartxtras.com

“Endogenous” model: results

Hypotheses	Parameter
Intergroup conflict: **risk of betrayal**	Proportion **t/2**, cost **DC**
Honoring is capped for potential ‘traitors’	Cap **MO**

Possible social signals	
Altruistic suicide	Gene1: **Self-Sacrifice**
Honoring martyrs and their kin	Gene2a: **Patriot**
	Gene2b: **Non-Patriot**
	Gene3: **Demand**

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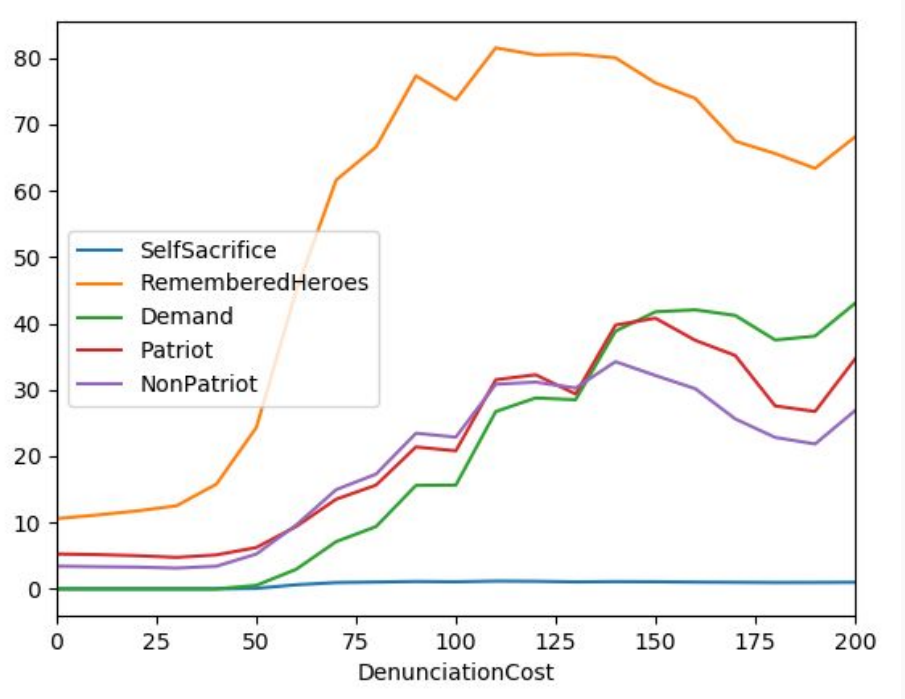

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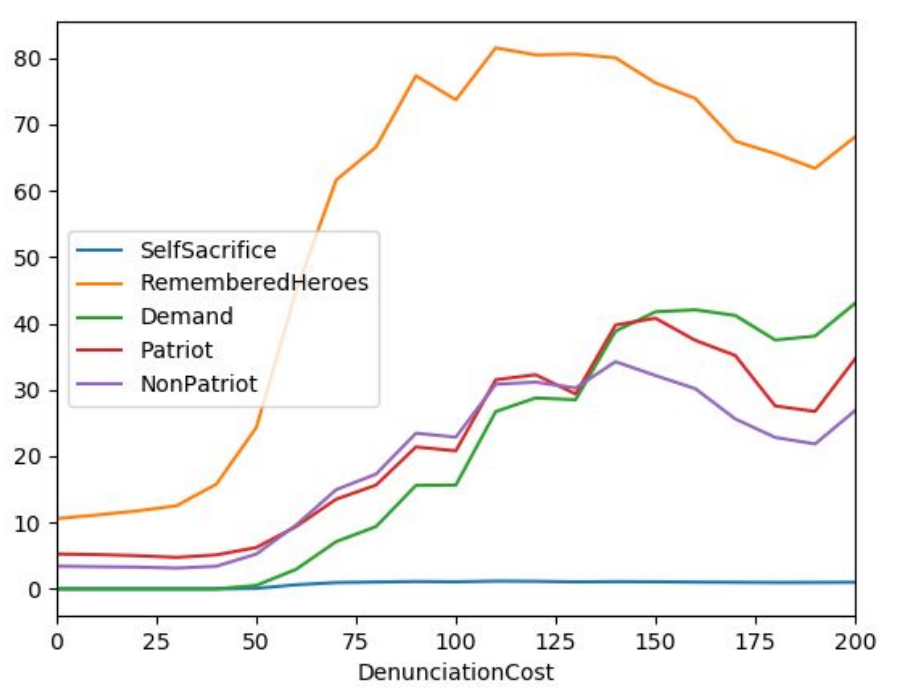

$$DC \geq DC_{crit} \Rightarrow (MO, MO, MO)$$

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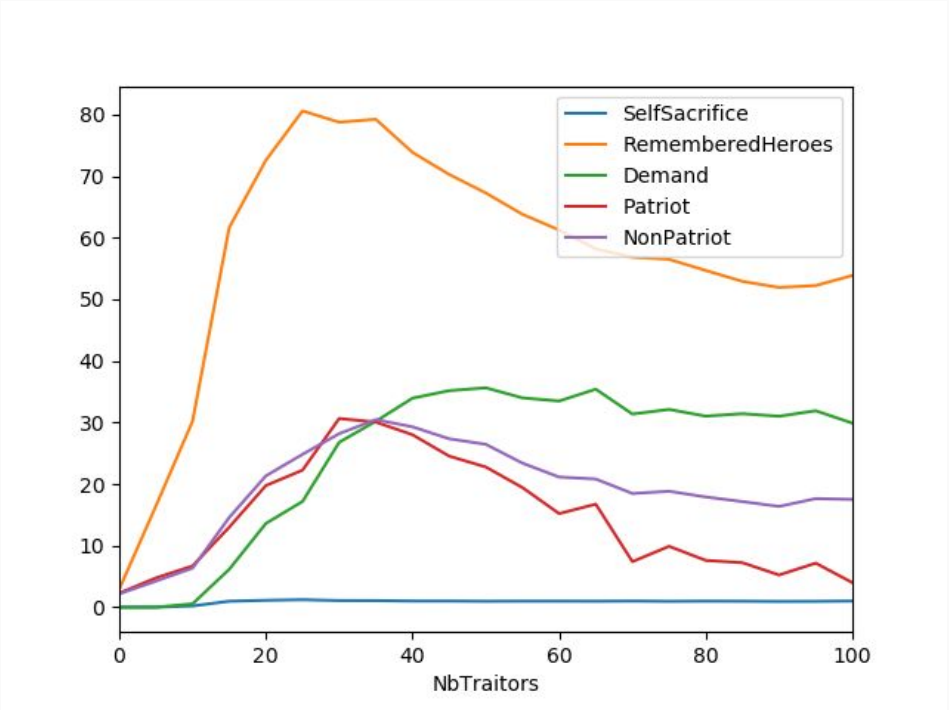
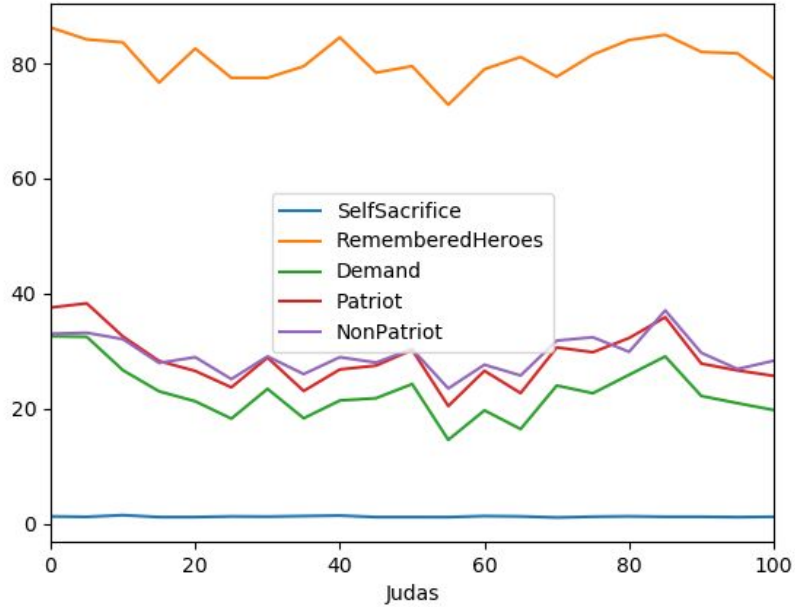
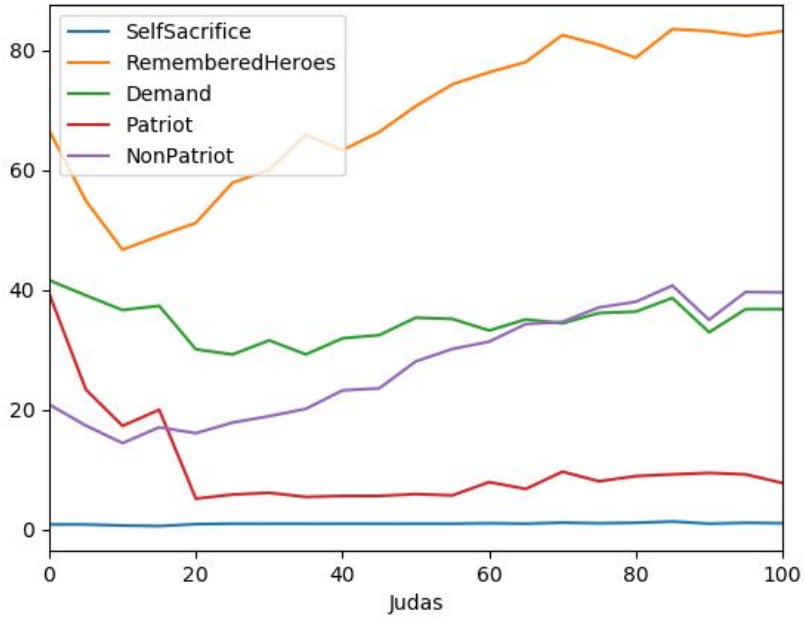


“Endogenous” model: results

t = 25%



t = 75%



“Endogenous” model: results

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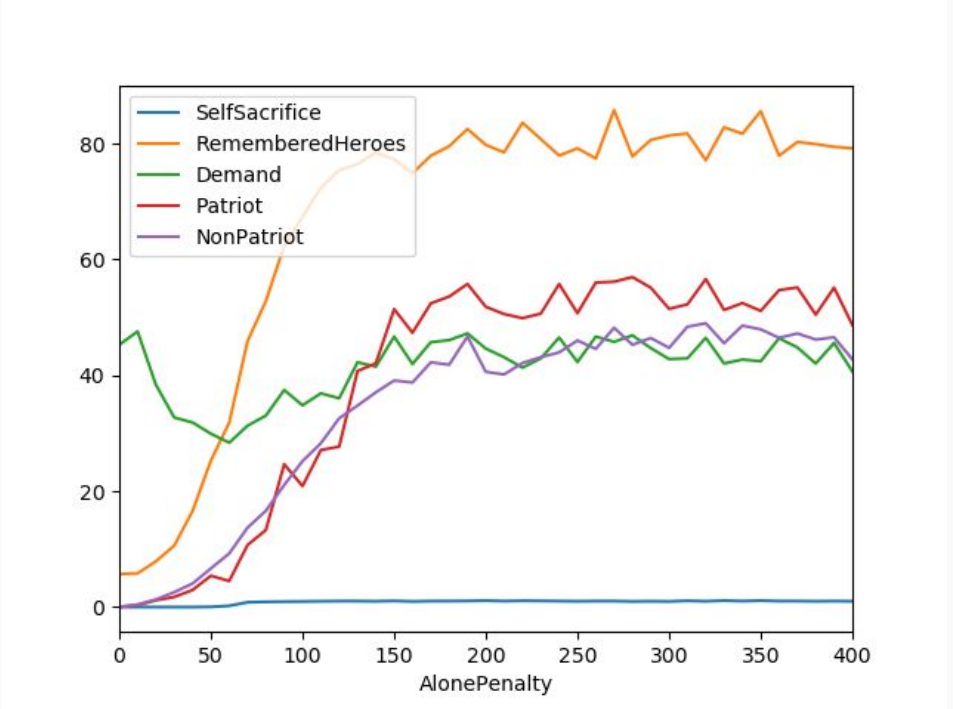

Presentation structure

Altruism (online): a theoretical puzzle

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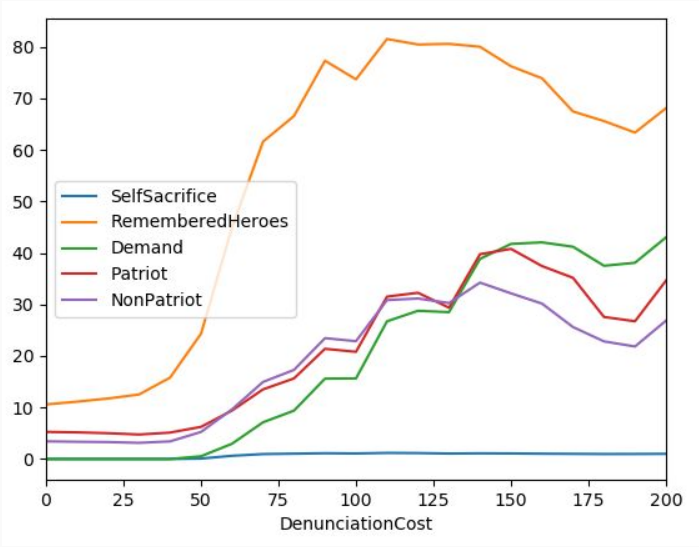
Preliminary results and two-tier model

Perspectives

Conclusion

	Social Benefits	Prediction
First-order signal	Posthumous glory	A **small fraction** of “martyrs” emerges
Second-order signal	Friendship	**Generalized** signaling; **radicalization?**
		Both levels are **mutually reinforcing**



Perspectives

	Social Benefits	Prediction
First-order signal	Asymmetrical, global bonds	An **elite** emerges, visible + intense signals
Second-order signal	Symmetrical, local bonds	**Generalized** signaling, at a low intensity
		Both levels are **mutually reinforcing**

Perspectives

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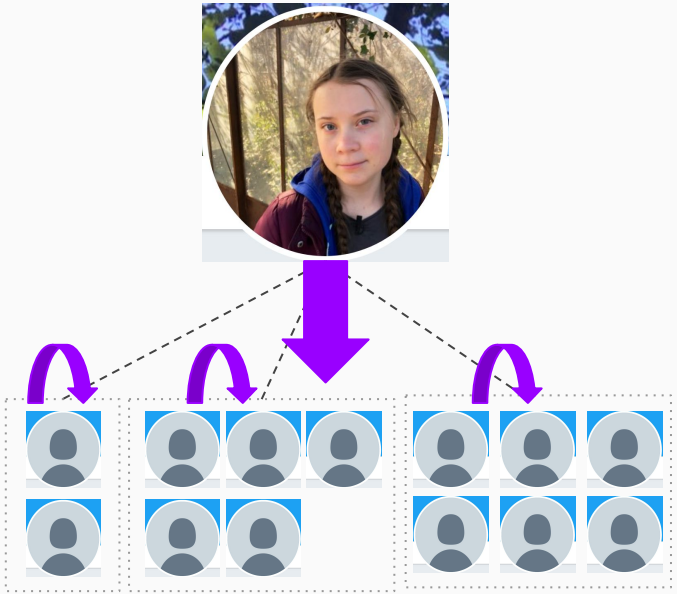
	Gp. of “friends”	Both levels are **mutually reinforcing**



Informational bubbles and (fake) news

“Pro-climate” information ✗

“Anti-climate” information ✓

“Pro-climate” information ✓

“Anti-climate” information ✗

Legend

“Friends”

ReTweet (positive)

Criticism

https://www.iconsdb.com

References

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