Lying with a kernel of truth: propaganda with generics

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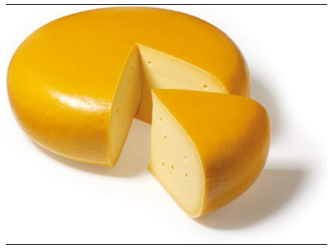

Persuasion and Propaganda by indirect communication

- People are persuaded to do things that go against their better interests
- They would have never been persuaded if they saw through this
- Successful propaganda makes heavy use of indirect communication, weak truth conditions + strong pragmatics using biases of audience
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  Birds fly, Dogs bark, Rubber stretches, John is a smoker

Generics and Political Rhetorics

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- PVV-voters are racist — says the RSM

Is the use of generics lying?

- Many/some uses of propagandic generics are not obvious lies
- Most importantly,
  1. they work(ed)
  2. Although they are misleading

Questions to be addressed

1. What is semantics of generics?

2. What is strong pragmatics that makes them misleading?
   and where does this come from?

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1. What is semantics of generics?

   It has something to do with typicality

2. What is strong pragmatics that makes them misleading?
   and where does this come from?

   cognitive limitations

From cooperative pragmatics to rhetorics

- Standard Pragmatics: well-studied, but limited
- based on Gricean cooperativity
- Assumption: people are only interested in truth
- Most talk: less idealistic
- Game theory, as the theory of rational interaction, seems to be ideal for this.

Persuasion and decision problems

- You face a decision problem: $\langle S, P, A, u \rangle$
  S: states P: probability over states
  A: actions to choose u utility function

- I know the actual state better, and I have a preference over what *you* choose.

- Persuasion: influence you in my favor by communication.

- Involves actions of speaker and hearer: game theory.

When credible communication?

-

	P	a	b
t_1	0.4	1	0
t_2	0.1	0	1.2
t_3	0.3	1	0
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  - '$\{t_3, t_4\}$' but H will still do a.
  - '$\{t_2, t_3, t_4\}$' would result in b, but not credible

Problem

- If it is common knowledge what is hearer's decision problem,
- it is clear what the speaker's preferences are,
- and both are perfectly rational,
  (all these assumptions are made in standard game theory)
- Then, persuasion is predicted as incredible, if preferences not aligned.
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  (Unraveling): hearer will see through the intention of the speaker
- **Challenge**: How to predict that persuasion can also now be credible?
  to understand that people also communicate in these circumstances. How can propaganda work?

Natural solutions

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- Less common knowledge than usually assumed.

- Hearers make reasoning mistakes because of cognitively limitations
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  - Cognitive biases
- To account for cognitive biases
  - Tversky & Kahneman & others (1970-1990s): alternatives to probability & decision theory
  - More recently: try to incorporate biases within standard theories

Some biases

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  2. Availability bias
  3. Causality bias
  4. Framing
  5. ...

  Kahneman: Thinking, Fast and Slow thinking, Systems 1 and 2

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- (Note: Bayesians try to account for biases as well. Making use of noise, and limited memory. We will see, this is not so different)

Representiviness

Conjunction fallacy

> *Linda is a young woman who is a stereotypical leftist, and in particular was a college activist.*

Which alternative is more probable?

- Linda is a bankteller
- Linda is a bankteller and a feminist.

Although $P(BT/--) \geq P(BT \wedge F/--)$, many subjects say otherwise.

Tversky and Kahneman: Linda is more similar to, or representative for, a feminist bankteller than for a bankteller.

We will analyse representativiness i.t.o. contingency between c and e

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- Thus a rat responds with fear to a tone even when 90% of the time this is the wrong respons as long as
  - the shocks without tone occur less frequently, and
  - the cost of error (wasted fear) is less than cost of being unexpectedly shocked

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- Gluck & Bower (1988): humans behave similarly

A technical note

- $\Delta P_Q^f > 0$ iff $\frac{P(f/Q)}{P(f/\neg Q)} > 1$ iff $P(f/Q) > P(f)$ iff $P(Q/f) > P(Q)$
- Bayes rule: $P(Q/f) = \frac{P(f/Q) \times P(Q)}{P(f)}$ $\quad$ $P(\neg Q/f) = \frac{P(f/\neg Q) \times P(\neg Q)}{P(f)}$
- $\frac{P(Q/f)}{P(\neg Q/f)} = \frac{P(f/Q)}{P(f/\neg Q)} \times \frac{P(Q)}{P(\neg Q)}$
- $\frac{P(Q/f)}{P(\neg Q/f)} > \frac{P(Q/g)}{P(\neg Q/g)}$ $\quad$ iff $\quad$ $\frac{P(f/Q)}{P(f/\neg Q)} > \frac{P(g/Q)}{P(g/\neg Q)}$
- f is a good clue of Q $\quad$ iff $\quad$ Q is a good clue of f

Represent properties by salient features

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	f_1	f_2	f_3	f_4	$\cdots$
Q_1	x	y	$\cdots$	$\cdots$	$\cdots$
Q_2	z	v	$\cdots$	$\cdots$	$\cdots$
$\cdots$	$\cdots$	$\cdots$	$\cdots$	$\cdots$	$\cdots$

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- Represent Q_1 by feature $argmax_f P(f/Q_1) - P(f/Q_2)$
  Compared to its alternative (i.e. Q_2) there is a relatively high chance that Q_1 has feature f, f is distinctive for Q_1

Represent properties with salient features

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  $r(Q_1) = f_1, \quad$ iff $\frac{x}{x+y} - \frac{z}{z+v} > \frac{y}{x+y} - \frac{v}{z+v}$

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- Strong Generalization: Confuse $argmax_f P(f/Q)$ with $argmax_f P(f/Q_1) - P(f/Q_2)$

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- x and v taken to be larger $\quad$ y and z taken smaller

When is it 'correct'?

	f_1	f_2
Q_1	0.15	0.025
Q_2	0.025	0.8

- $P^*(Q_1) = \frac{P(Q_1 \wedge f_1)}{P(Q \wedge f_1) + P(Q_2 \wedge f_2)} \approx P(Q_1)$
- Works well if $(Q_1 \wedge f_1) \vee (Q_2 \wedge f_2)$ covers most of state space.

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- Although 'familiar' is representative for 'qualified', being familiar (with candidate) does hardly give any information about being qualified : bad representative

Conjunction fallacy

Activist	F	$\neg F$
BT	$\frac{1}{3}$	$\frac{1}{6}$
$\neg BT$	$\frac{9}{20}$	$\frac{1}{20}$

- $P(\neg F/BT) - P(\neg F/\neg BT) > P(F/BT) - P(F/\neg BT)$
  $\Rightarrow \quad r(BT) = \neg F_{BT}$
- But now $r(BT \wedge F) = BT \wedge F$
- $P(r(BT)) = P(BT \wedge \neg F) = \frac{1}{6}$
- $P(r(BT \wedge F)) = P(BT \wedge F) = \frac{1}{3}$

Our game again

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t_1	0.4	1,1	0,0
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	f_1		f_2	
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- Hearer represents Q by f_2 because $\Delta_Q^{f_2} > \Delta_Q^{f1}$
- Now saying 'Q' has effect that $P(\{t_4\}) > P(\{t_3\})$, and b is done. This is as desired by S, but bad for H $\rightsquigarrow$ misleading

Back to generics

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     3. + fear

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     *Dogs sleep

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   - Mosquitoes carry the West Nile virus

striking often means 'horrific or appalling'

Leslie's subdivision of generics

1. Characterizing generics — Necessary condition
   Triangles have three sides
2. Normative generics
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  features are independent of kind/group — *Books are paperbacks

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- Representative features/individuals: clues for behavior

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  3. $Value(f)$ is high (f is 'horrific or appaling') — (if $\Delta P^f_G > 0$)

Compositionality of representativiness

- Good: $W(f, G) = log \frac{P(f/G)}{P(f/\neg G)}$
- Behaves monotone w.r.t. ΔP_G^f
- But behaves more 'compositional'

1. $W(f, \neg G) = -W(f, G)$
2. $W(f, G \wedge H) = W(f, G) + W(f, H)$, if $[G \perp H | f]_P$
3. $W(f, G \vee H) = \exists \alpha \in [0, 1] : \alpha W(f, G) + (1 - \alpha) W(f, H)$, if $G \cap H = \emptyset$

Some properties of this analysis of representativeness

- motivated by limited recall/attention, and guided by contrast
- Representative features are context-sensitive
- Looks for distinctive features
- They highlight/exaggerate real differences between groups
- They can be 'false' in case there is much overlap

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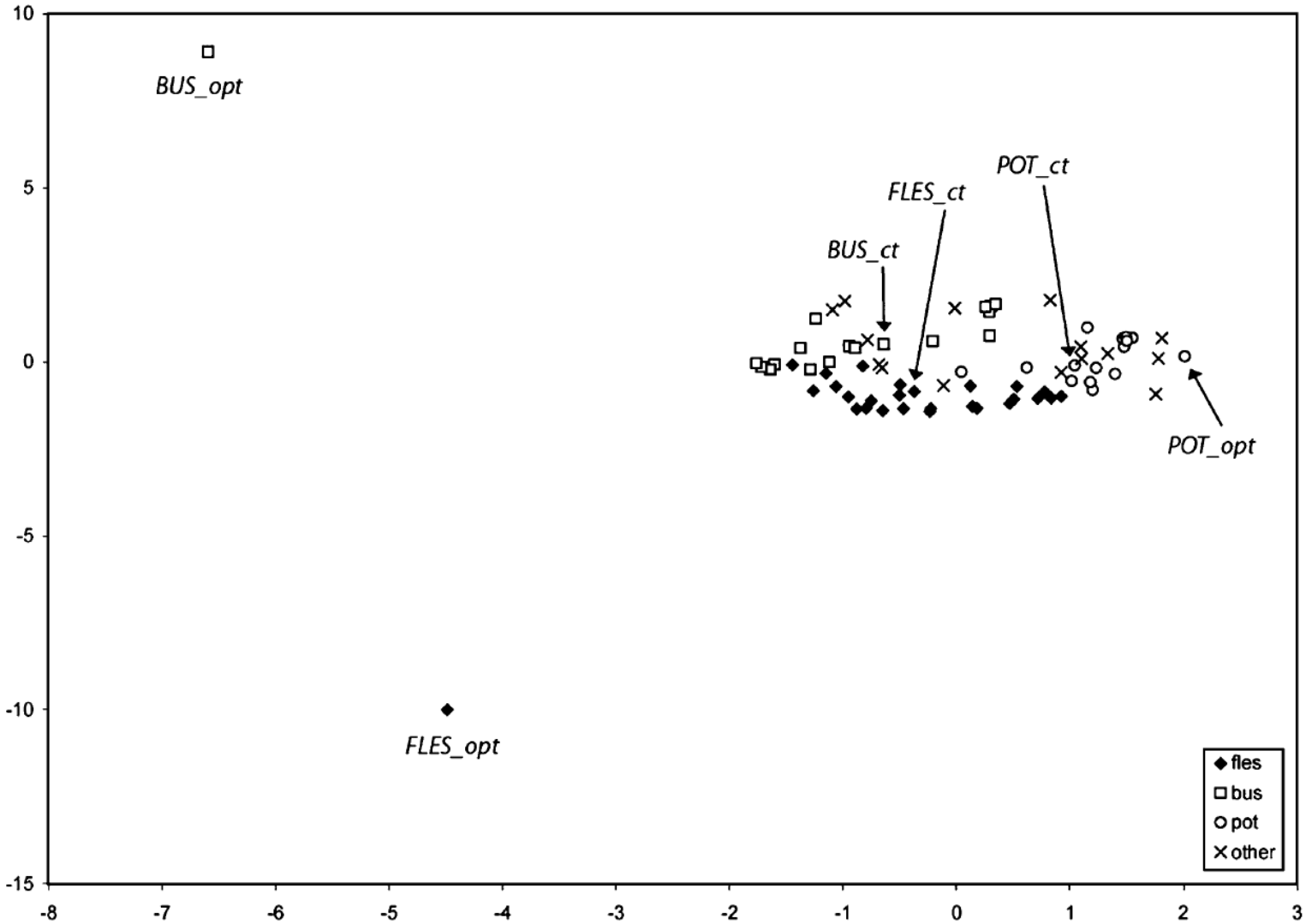
- Typical is Ideal (cf. Plato) or exagerated individual — Stereotype

Ideal representatives of groups (Bus, Fles, Pot)



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- The analysis correctly predicts conjunction fallacy for generics:
  Only male lions have manes: $P(manes/lion) < P(male/lion)$

  1. Lions have manes — is true
  2. Lions are male — is false

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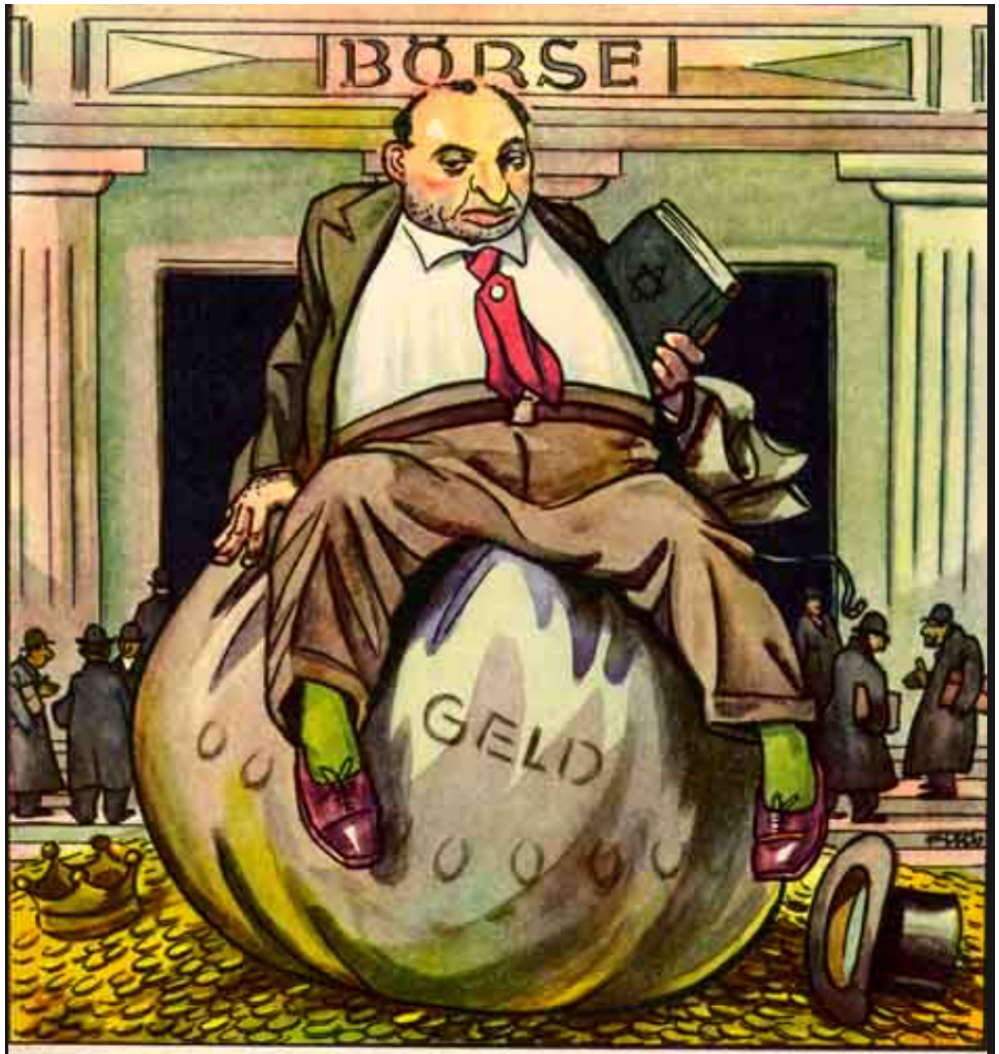
Jews are bankers/capitalists



„Der Gott des Juden ist das Geld. Und um Geld zu verdienen, begeht er die größten Verbrechen. Er ruht nicht eher, bis er auf einem großen Geldsack sitzen kann, bis er zum König des Geldes geworden ist."

Jews are bolshevists

Generation/accepting and Interpretation of generics

- There is a difference between
  - Saying when generic is true, or accepting generic
  - Interpreting a generic sentence
- A. Cimpian, A. Brandone, and S. Gelman, Cognitive Science, 2010
  https://www.psychologytoday.com/blog/ulterior-motives/201011/the-power-generic-statements

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- Notice if $g = argmax_f P(f/Q)$, then probably $P(g/Q) \gg 0.5$

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