

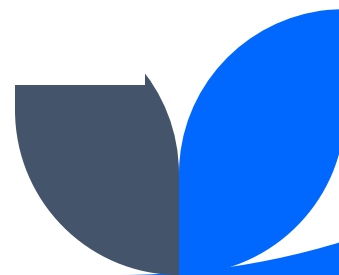


# **Lecture 2 part 2: Communicative agents and incentives**

**Linguistics, NLP, and PolComm  
ESSLI 2025, Bochum**

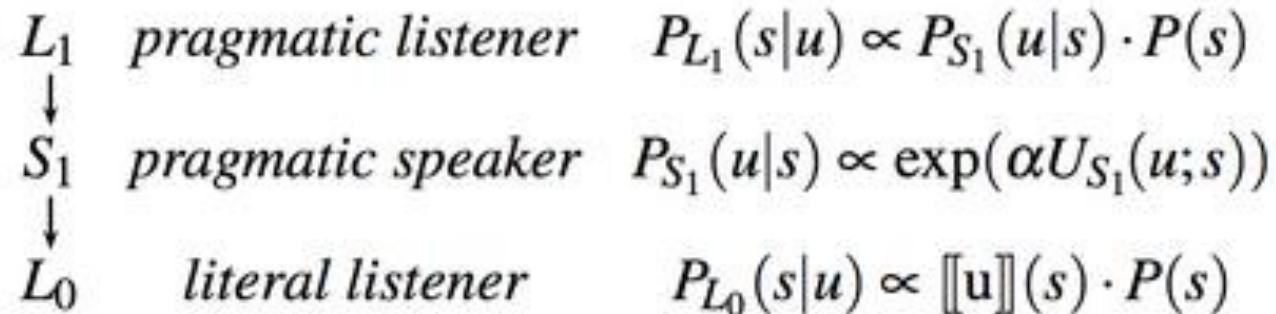
**Asad Sayeed and Ellen Breitholtz**





# Rational speakers

L1 uses a probability function over what S1 is expected to say to get  $s$ .



Speaker S1 uses a utility tradeoff function  $U$  to decide what  $u$  to use to signal  $s$  to L0.

L0 just interprets utterances  $u$  as being true and finds entities  $s$  compatible with  $u$ .



# Intuition: political communication is strategic.

- Politicians ( $S_0$ ) say things in order to get a "naïve" listener ( $L_0$ ) to respond by giving them votes, etc.
- Voters ( $L_1$ ) attempt to ferret out what  $S_0$  actually wants them to do and decide whether they want to do it.
- Utility is updated accordingly (e.g., when they win/lose elections etc).





# Spherical cows

- Useful theoretical model that you can refine to take particular situations into account (e.g. Henderson and McCready...).
- Scalability, intractability issues.
- Difficulty grounding directly in the linguistic environment

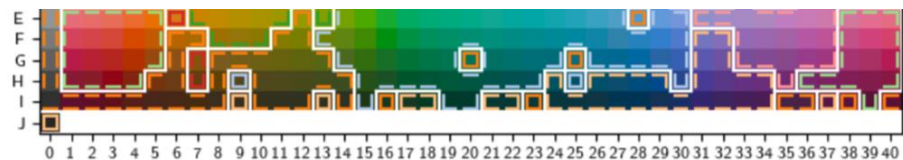


# Cooperation

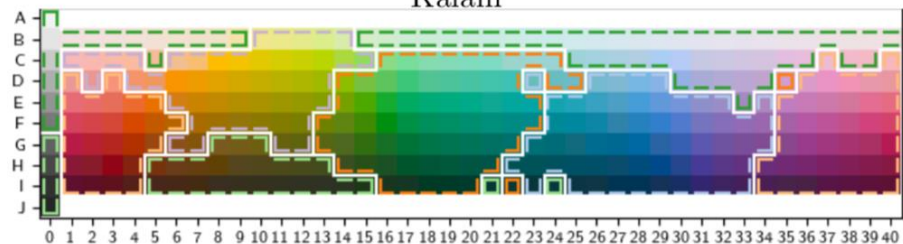
Even assuming full cooperation, hard to operationalize.

Political communication involves some amount of "bad faith" (e.g. dogwhistles).

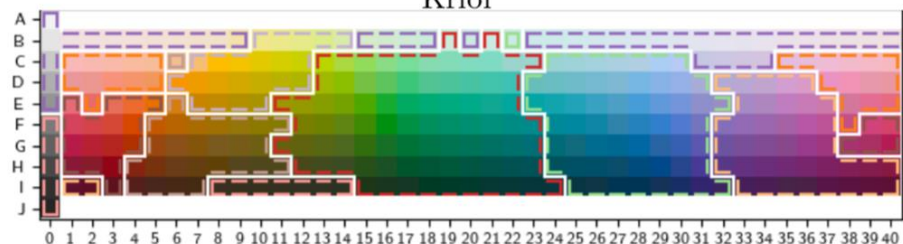




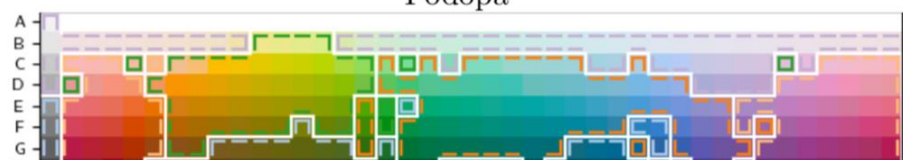
Kalam



Kriol



Podopa



# But lets assume "good faith".

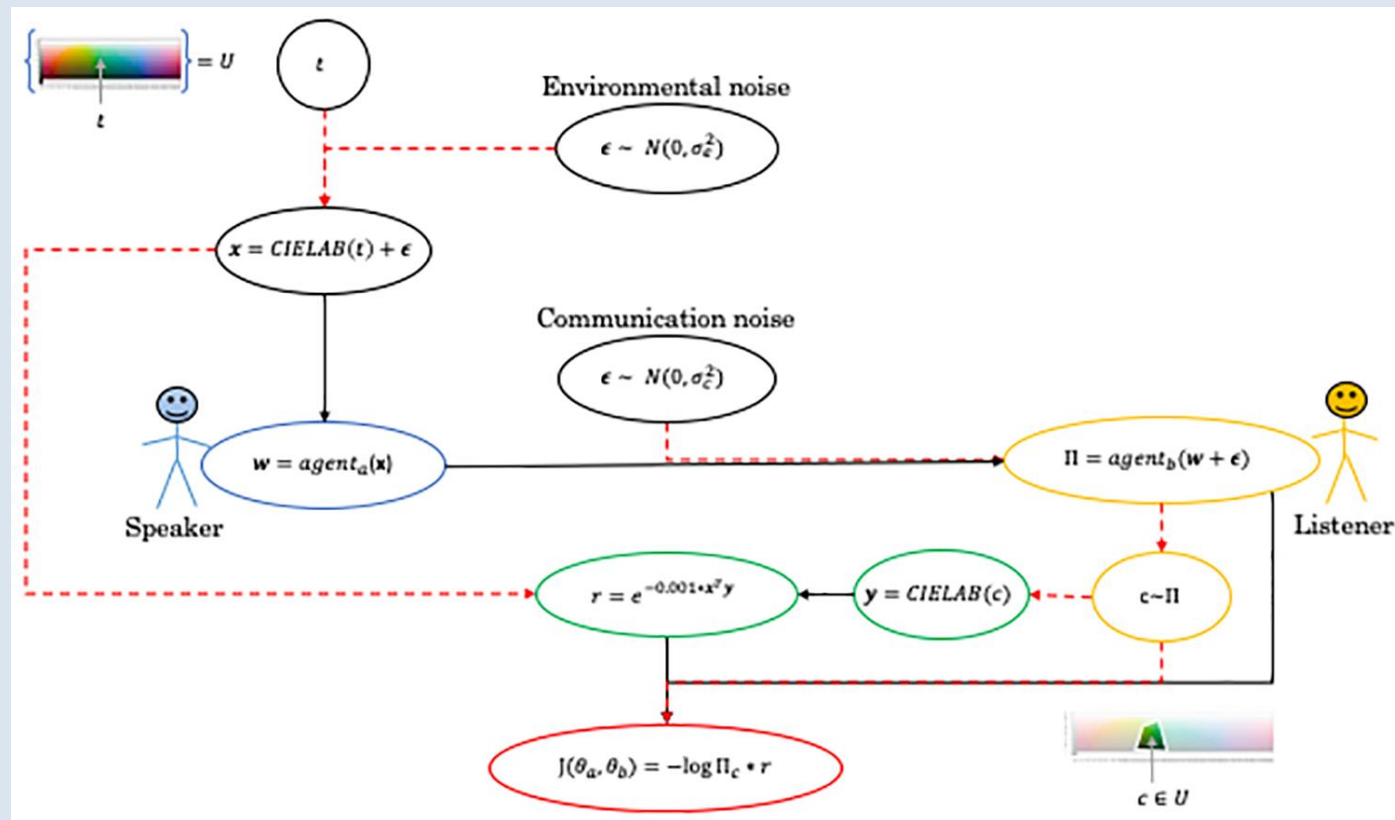
- World Colour Survey (Berlin and Kay, 1969).



# Simulating human colour maps

Speaker and listener agents separately trained through reinforcement learning in a dual-agent simulation.  
(Kågebäck, Carlsson, Dubhashi, Sayeed, 2020)

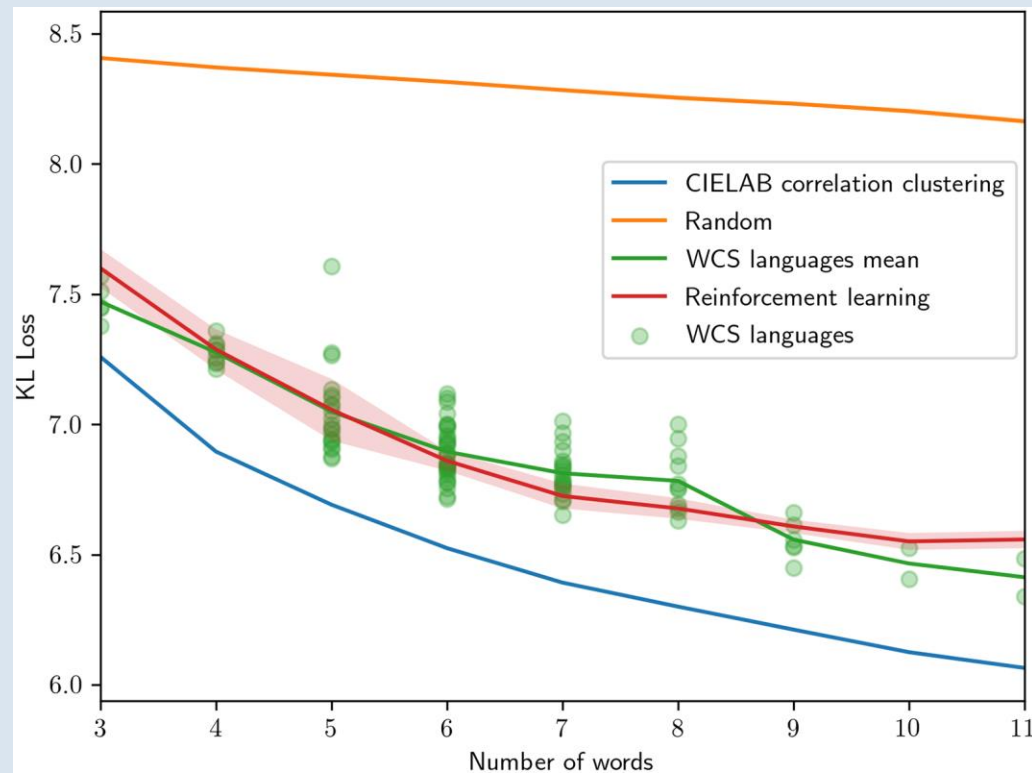
Approximate operationalization of RSA?





# Matches what humans do?

Uncertainty vs number of colour terms approximately matches in both human and simulated settings.



# Cooperation

Even assuming full cooperation, hard to operationalize.

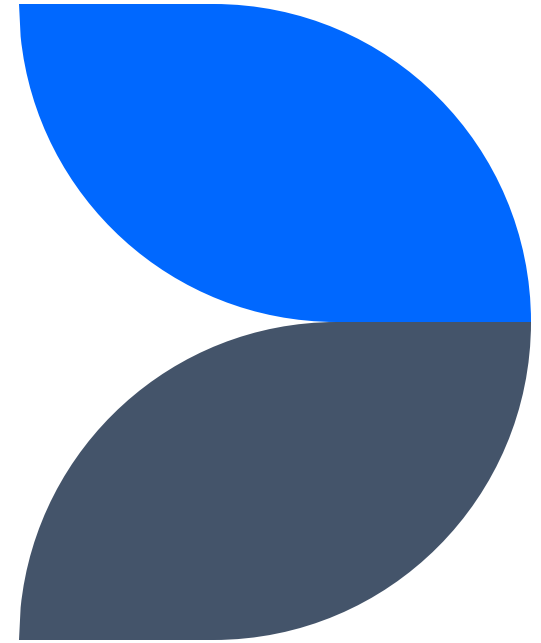
Political communication involves some amount of "bad faith" (e.g. dogwhistles).

**Future research question: model utility in a reinforcement-learning simulation where it is costly to be understood?**



# Sidney Sweeny

A postscript

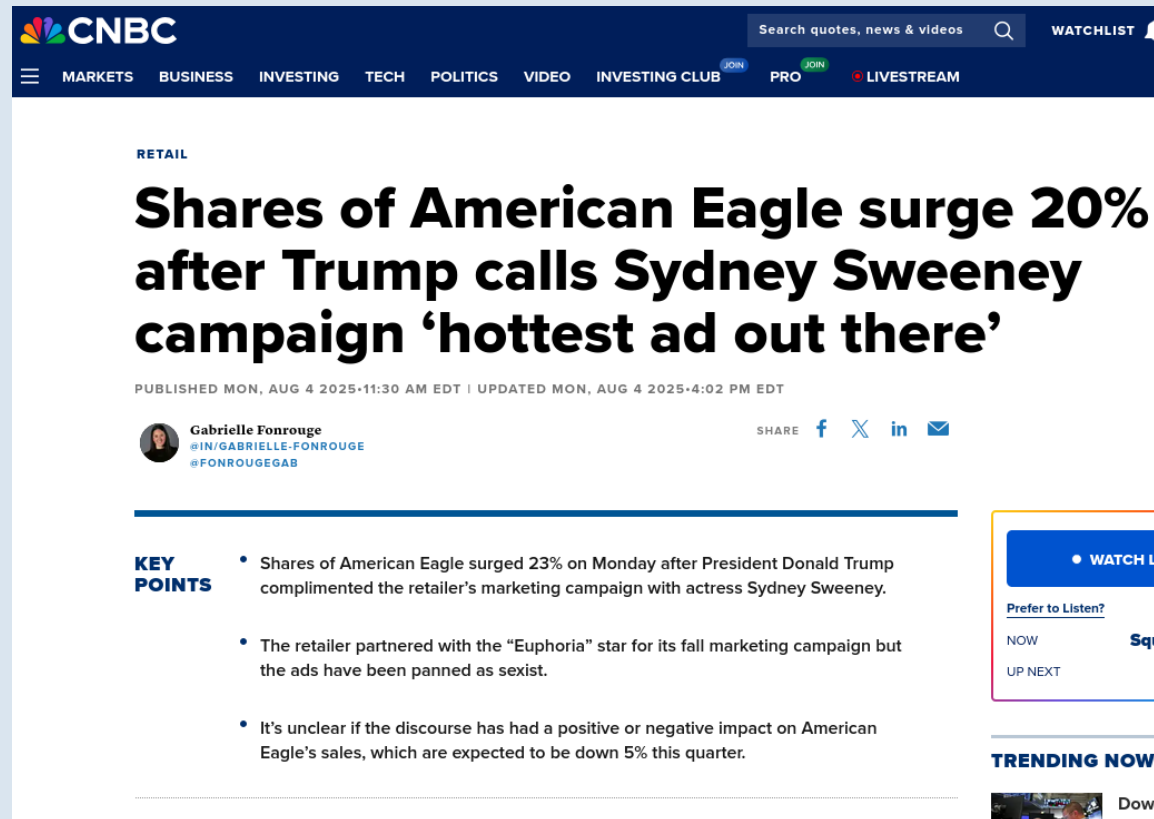


# Jeans/Genes



# What to make of this?

Activity for tomorrow.  
Think about it.



The screenshot shows a CNBC news article. The header includes the CNBC logo, a search bar, and navigation links for Markets, Business, Investing, Tech, Politics, Video, Investing Club, Pro, and Livestream. The article is categorized under 'RETAIL' and has a main headline: 'Shares of American Eagle surge 20% after Trump calls Sydney Sweeney campaign 'hottest ad out there''. It was published on Monday, August 4, 2025, at 11:30 AM EDT and updated at 4:02 PM EDT. The author is Gabrielle Fonrouge, with social media handles @IN/GABRIELLE-FONROUGE and @FONROUGGAB. There are share buttons for Facebook, X, LinkedIn, and Email. A 'KEY POINTS' section lists three bullet points: 1) Shares of American Eagle surged 23% on Monday after President Donald Trump complimented the retailer's marketing campaign with actress Sydney Sweeney. 2) The retailer partnered with the 'Euphoria' star for its fall marketing campaign but the ads have been panned as sexist. 3) It's unclear if the discourse has had a positive or negative impact on American Eagle's sales, which are expected to be down 5% this quarter. On the right side, there is a 'WATCH LIVE' button and a 'TRENDING NOW' section with a small image and the text 'Dow fi'.

**CNBC** Search quotes, news & videos WATCHLIST

MARKETS BUSINESS INVESTING TECH POLITICS VIDEO INVESTING CLUB PRO LIVESTREAM

RETAIL

## Shares of American Eagle surge 20% after Trump calls Sydney Sweeney campaign 'hottest ad out there'

PUBLISHED MON, AUG 4 2025-11:30 AM EDT | UPDATED MON, AUG 4 2025-4:02 PM EDT

**Gabrielle Fonrouge**  
@IN/GABRIELLE-FONROUGE  
@FONROUGGAB

SHARE f X in e

**KEY POINTS**

- Shares of American Eagle surged 23% on Monday after President Donald Trump complimented the retailer's marketing campaign with actress Sydney Sweeney.
- The retailer partnered with the "Euphoria" star for its fall marketing campaign but the ads have been panned as sexist.
- It's unclear if the discourse has had a positive or negative impact on American Eagle's sales, which are expected to be down 5% this quarter.

**WATCH LIVE**

Prefer to Listen?

NOW Squa

UP NEXT

**TRENDING NOW**

Dow fi