# Information, Authority, and Communication in Organizations

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## Information, Authority, and Communication in Organizations

- Combination and comparison of persuasion and conmunication

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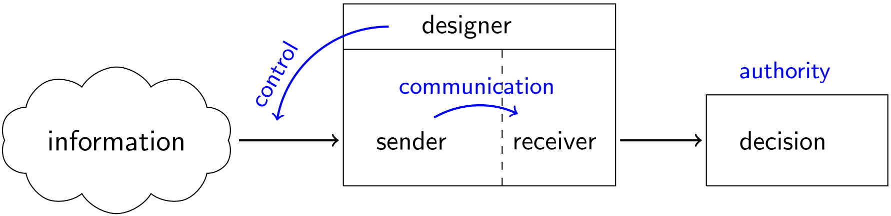

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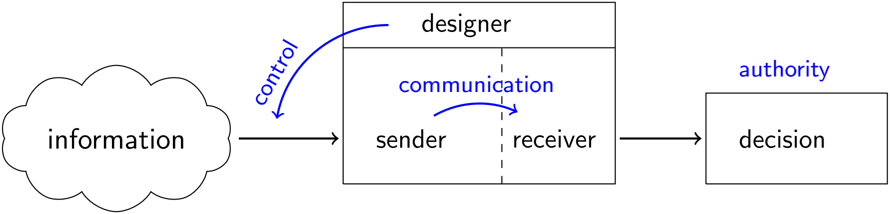



- Formal and real authority (Aghion & Tirole (1997))
- Strategic information transmission (Crawford & Sobel (1982))
- Bayesian Persuasion (Kamenica & Gentzkow (2011))

How does strategic communication within the organization affect the optimal choice of information?

# Formal and real authority

Aghion and Tirole (1997)

- An organization can implement a new project
- The principal (receiver) has the formal authority
- Both, principal and agent (sender) have access to information
- Success at information acquisition provides real authority
- If solely the agent is informed, he effectively decides

This paper:

- Only the sender gets information
- Decisions are made based on the new information
- Communication is modeled cheap talk a la Crawford and Sobel

# Strategic information transmission

Crawford and Sobel (1982)

- Sender-receiver game
- The sender's information is exogenously given
- The bias is exogenously given and unidirectional
- Communication is partitional

This paper:

- Information is endogenously chosen by the designer
- The bias arises as a function of the information
- Communication can be fully revealing

# Bayesian Persuasion

Kamenica and Gentzkow (2011)

- Sender (designer) chooses an experiment to influence receiver
- Receiver directly observes the outcome and decides

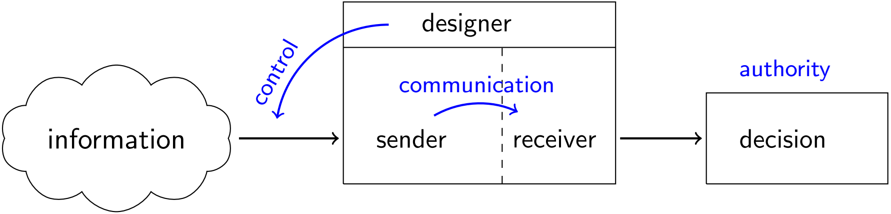
We add some twists:

- We add the sender as a third player
- The designer chooses an experiment
- The outcome is observed by the sender
- The sender communicates strategically with the receiver
- The designer indirectly steers the decision via the sender
- We constrain the set of possible information structures

# An inflexible organizational structure

- Decision-making authority is separated from information
- New information generates conflicts in the organization
- Information is communicated strategically

- We consider a range of designer' objectives:
  from sender-optimal to joint-surplus-optimal
  - The information structure under pure persuasion is not affected
  - Under persuasion with cheap talk a new compromise arises



# An application

Market demand

- The designer is the headquarters of two divisions, S and R
- S and R sell widgets in two markets with one common price
- The levels of demand in the markets are uncertain
- S is responsible for market research
- R is in charge of setting the price

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- $(\omega, \eta, \varepsilon_\omega, \varepsilon_\eta)$ follows a logconcave elliptical distribution with linear tail conditional expectations
- Equal prior means and state variances $\sigma^2$

# Analysis summary

- Communication is only about the sender's posterior mean $\mathbb{E}\left[\eta|s_\omega, s_\eta\right] \equiv \theta$
- $V \equiv Cov(\eta, \theta)$ measures the relevance for the sender
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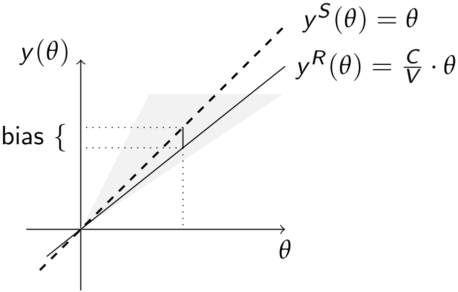

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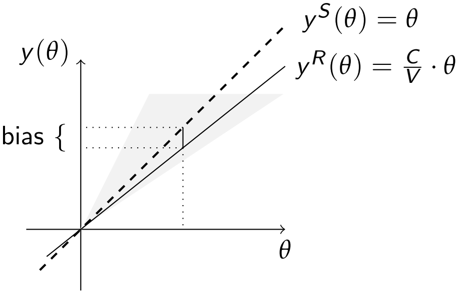


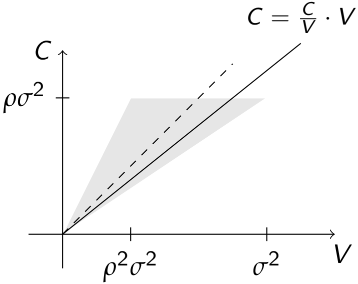

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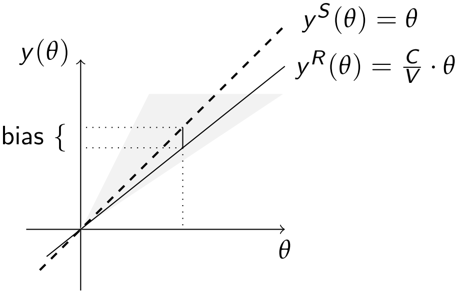
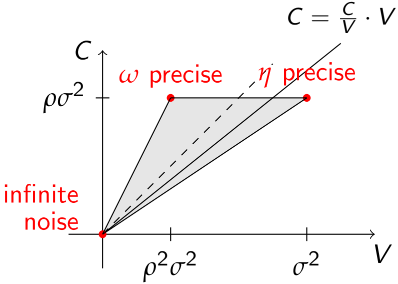


# Results – First-best benchmark

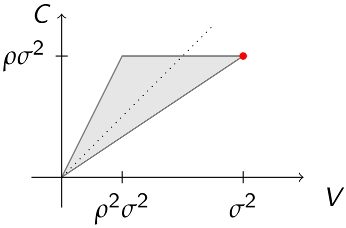
First-best: The designer chooses the information structure, observes the information, and makes the decision.

- The first-best decision-rule features perfect information about **both** ideal decisions.

# Results – Persuasion benchmark

Second-best: Information is processed by the sender but the result is directly observed by the receiver (no strategic communication).

- The second-best decision-rule depends on only **one** source of information: it can be induced by providing access to the sender's ideal decisions only.



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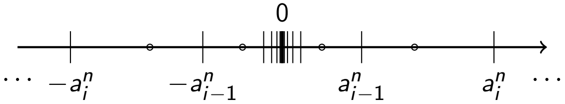
- We characterize communication equilibria for all logconcave elliptical distributions.
  - Partitional equilibria

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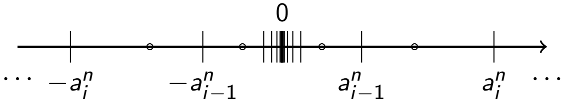
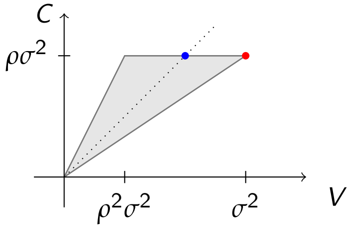



  - Fully revealing equilibrium
- Strategic communication changes the optimal information structure.
  - The nature of the information that the sender observes, changes his incentives to transmit the information.
  - The amount of information that is transmitted in equilibrium decreases with the extent of conflicts within the organization.

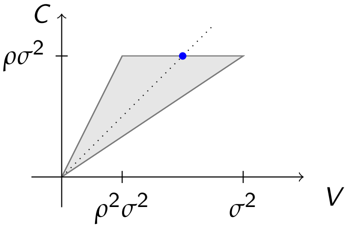
# Results – Communication II

- We derive a threshold $\lambda^* = \frac{1}{2-\alpha}$ with $\alpha \in [0.5, 1]$.
- Only if the sender is extremely important ($\lambda > \lambda^*$), the same information as in the persuasion benchmark is provided.
- If sender and receiver are about equally relevant ($\lambda \leq \lambda^*$), the information provided creates a balance.



# Results – Communication III

- To get this balance, the optimal information structure is noisy
- The decision-rule divides benefits from information acquisition equally between sender and receiver
- Sender and receiver appear to be in perfect harmony
- Communication is fully revealing
- A reallocation of decision-rights would not affect the decision



# Summary of main insights

- Information changes the conflict between sender and receiver.
- The designer can (partially) undo the consequences of a suboptimal allocation of decision-rights (and does so optimally) by providing the organization with the right kind of information.
- Information and authority are substitutes.
- Strategic communication in the organization results in a new, balanced optimal information structure compared to the benchmarks with nonstrategic communication.

Thank you!