(Strategic) Communication in Organizations

Daniel García[1]

[1]University of Vienna

IEOA Summer School, Cargèse. May 2016

A Problem

- *We can describe an* **organization** *as a* **decision-making process**. (Cyer and March, 1963)

A Problem

- *We can describe an* **organization** *as a* **decision-making process**. (Cyer and March, 1963)

Decision-Maker: Information $\rightarrow$ Advice $\rightarrow$ Choice

A Problem

- *We can describe an* **organization** *as a* **decision-making process**. (Cyer and March, 1963)

Decision-Maker: Information $\rightarrow$ Advice $\rightarrow$ Choice

- However

A Problem

- *We can describe an* **organization** *as a* **decision-making process**. (Cyer and March, 1963)

Decision-Maker: Information $\rightarrow$ Advice $\rightarrow$ Choice

- However
  - Advisors may not have the right incentives to report their information.

A Problem

- *We can describe an* **organization** *as a* **decision-making process**. (Cyer and March, 1963)

Decision-Maker: Information $\rightarrow$ Advice $\rightarrow$ Choice

- However
  - Advisors may not have the right incentives to report their information.
  - Decision makers may not *trust* their adivce

Classical Examples

- Project Selection

Classical Examples

- Project Selection
- Hiring Decisions

Classical Examples

- Project Selection
- Hiring Decisions
- Juries

Classical Examples

- Project Selection
- Hiring Decisions
- Juries
- Certification Agencies (FDA)

Overview of the Lecture

1. Description of the General Model

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)
    3. Bayesian Persuasion: Kamenica & Gentzkow (2010)

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)
    3. Bayesian Persuasion: Kamenica & Gentzkow (2010)
4. Extensions: Tying Decisions

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)
    3. Bayesian Persuasion: Kamenica & Gentzkow (2010)
4. Extensions: Tying Decisions
    1. Comparative Cheap Talk

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)
    3. Bayesian Persuasion: Kamenica & Gentzkow (2010)
4. Extensions: Tying Decisions
    1. Comparative Cheap Talk
    2. Repeated Delegation

Overview of the Lecture

1. Description of the General Model
2. Non-Strategic Interpretation
3. Canonical Strategic Models
    1. Pure (Unstructured) Communication: Crawford & Sobel (1982)
    2. Optimal Delegation: Holmstrom (1982), Alonso & Matouschek (2006)
    3. Bayesian Persuasion: Kamenica & Gentzkow (2010)
4. Extensions: Tying Decisions
    1. Comparative Cheap Talk
    2. Repeated Delegation
5. Future Research?

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.
2. Expert observes a signal $\theta \sim g(\theta \mid s)$.

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.
2. Expert observes a signal $\theta \sim g(\theta \mid s)$.
3. Expert chooses message $a \in A$.

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.
2. Expert observes a signal $\theta \sim g(\theta \mid s)$.
3. Expert chooses message $a \in A$.
4. DM observes a and chooses decision $d \in D$.

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.
2. Expert observes a signal $\theta \sim g(\theta \mid s)$.
3. Expert chooses message $a \in A$.
4. DM observes a and chooses decision $d \in D$.
5. Payoffs are realized: $U_i(d, \theta)$

General Model

1. State of the world $s \in S$ realizes according to $f(s)$.
2. Expert observes a signal $\theta \sim g(\theta \mid s)$.
3. Expert chooses message $a \in A$.
4. DM observes a and chooses decision $d \in D$.
5. Payoffs are realized: $U_i(d, \theta)$
6. No monetary incentives

Example: FDA

1. The state of the world is the social value of the drug.

Example: FDA

1. The state of the world is the social value of the drug.
2. The Pharmaceutical company performs tests and obtains an estimate of this social value.

Example: FDA

1. The state of the world is the social value of the drug.
2. The Pharmaceutical company performs tests and obtains an estimate of this social value.
3. The Pharmaceutical company provides information to the FDA relative to this estimate.

Example: FDA

1. The state of the world is the social value of the drug.
2. The Pharmaceutical company performs tests and obtains an estimate of this social value.
3. The Pharmaceutical company provides information to the FDA relative to this estimate.
4. FDA would like to approve the drug iff its expected social value is positive.

Example: FDA

1. The state of the world is the social value of the drug.
2. The Pharmaceutical company performs tests and obtains an estimate of this social value.
3. The Pharmaceutical company provides information to the FDA relative to this estimate.
4. FDA would like to approve the drug iff its expected social value is positive.
5. The Pharmaceutical company would like the drug to be approved iff its expected private value (profit) is positive.

Example: FDA

1. The state of the world is the social value of the drug.
2. The Pharmaceutical company performs tests and obtains an estimate of this social value.
3. The Pharmaceutical company provides information to the FDA relative to this estimate.
4. FDA would like to approve the drug iff its expected social value is positive.
5. The Pharmaceutical company would like the drug to be approved iff its expected private value (profit) is positive.
6. There are no explicit contracts between the FDA and the Pharma Company.

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)
- DM has no private signal of her own.

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)
- DM has no private signal of her own.
- Otherwise, very general

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)
- DM has no private signal of her own.
- Otherwise, very general
  1. Allows for perfect information if $g(\theta \mid s)$ becomes degenerate.

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)
- DM has no private signal of her own.
- Otherwise, very general
  1. Allows for perfect information if $g(\theta \mid s)$ becomes degenerate.
  2. Allows for different message spaces A, which may or may not be endogenous.

General Model

- Inherent assumptions: Action is costless for the agent (pure communication)
- DM has no private signal of her own.
- Otherwise, very general
  1. Allows for perfect information if $g(\theta \mid s)$ becomes degenerate.
  2. Allows for different message spaces A, which may or may not be endogenous.
  3. Allows for arbitrary alignment of incentives.

Three Key Applications

- Cheap Talk

Three Key Applications

- Cheap Talk
  - Expert can send any message and DM chooses the decision that maximizes her payoff given what she learned from the message.

Three Key Applications

- Cheap Talk
  - Expert can send any message and DM chooses the decision that maximizes her payoff given what she learned from the message.

- Delegation:

Three Key Applications

- Cheap Talk
  - Expert can send any message and DM chooses the decision that maximizes her payoff given what she learned from the message.

- Delegation:
  - DM chooses the possible messages available to the Expert and **commits** to a certain policy before learning the message chosen.

Three Key Applications

- Cheap Talk
  - Expert can send any message and DM chooses the decision that maximizes her payoff given what she learned from the message.
- Delegation:
  - DM chooses the possible messages available to the Expert and **commits** to a certain policy before learning the message chosen.
- Bayesian persuasion:

Three Key Applications

- Cheap Talk
  - Expert can send any message and DM chooses the decision that maximizes her payoff given what she learned from the message.
- Delegation:
  - DM chooses the possible messages available to the Expert and **commits** to a certain policy before learning the message chosen.
- Bayesian persuasion:
  - Expert commits to a certain message rule as a function of the signal and DM chooses the decision that maximizes her payoff given what she learned from the message.

Non-Strategic Communication

- This is the classical *team-theoretic* view of organizations.

Non-Strategic Communication

- This is the classical *team-theoretic* view of organizations.
- The expert observes a signal and reports it to the DM. $a(\theta) = \theta$

Non-Strategic Communication

- This is the classical *team-theoretic* view of organizations.
- The expert observes a signal and reports it to the DM. $a(\theta) = \theta$
- The DM then chooses the optimal action to maximize her payoff.

$$d(a) = \arg\max_{d} \mathbf{E}_a U_{DM}(d, s) \tag{1}$$

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$
  - Ask for certification if profits are positive

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$
  - Ask for certification if profits are positive

- Notice that, in general, $\tilde{d}(\theta) \neq d(\theta)$.

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$
  - Ask for certification if profits are positive

- Notice that, in general, $\tilde{d}(\theta) \neq d(\theta)$.
  - Pharma and FDA disagree if profits are positive but social value is negative (secondary effects)

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$
  - Ask for certification if profits are positive

- Notice that, in general, $\tilde{d}(\theta) \neq d(\theta)$.
  - Pharma and FDA disagree if profits are positive but social value is negative (secondary effects)

- Thus, the agent has incentives to misreport her information so that the DM chooses $\tilde{d}(\theta)$

Cheap Talk

- For a given θ, let $\tilde{d}(\theta) = \arg\max \mathbf{E}_\theta U_E(d, s)$
  - Ask for certification if profits are positive

- Notice that, in general, $\tilde{d}(\theta) \neq d(\theta)$.
  - Pharma and FDA disagree if profits are positive but social value is negative (secondary effects)

- Thus, the agent has incentives to misreport her information so that the DM chooses $\tilde{d}(\theta)$
  - If the FDA always approves following a certain report, then Pharma should provide that report if the profits are positive.

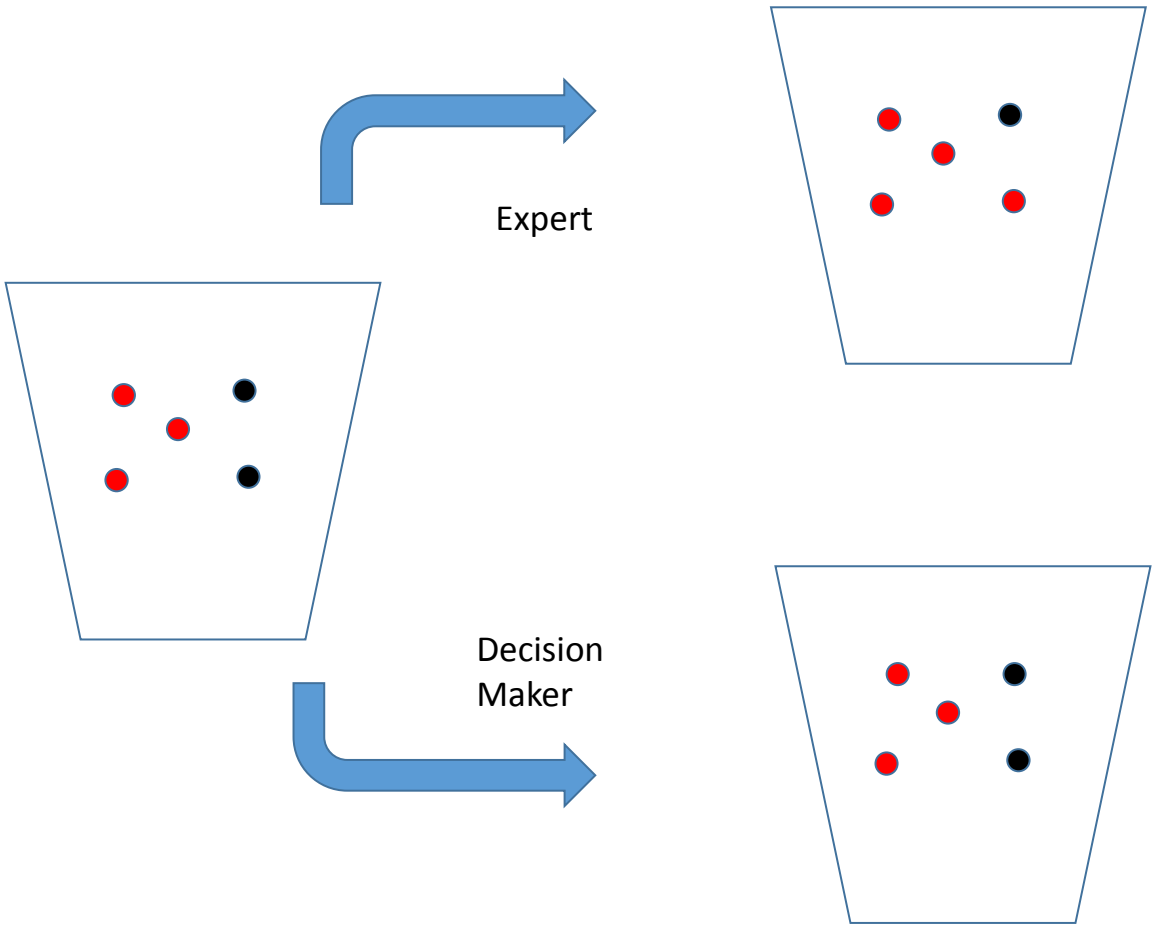


Figure: Biased Expert

Cheap Talk: Interpretation

- There is a conflict of interest between expert and decision-maker.

Cheap Talk: Interpretation

- There is a conflict of interest between expert and decision-maker.
- The decision-maker reduces the number of choices she is willing to make

Cheap Talk: Interpretation

- There is a conflict of interest between expert and decision-maker.
- The decision-maker reduces the number of choices she is willing to make
- The expert then *chooses* one of those elements by making a report.

Cheap Talk: Interpretation

- There is a conflict of interest between expert and decision-maker.
- The decision-maker reduces the number of choices she is willing to make
- The expert then *chooses* one of those elements by making a report.
- Since the number of options is now smaller, the incentives are better aligned.

Cheap Talk: Interpretation

- There is a conflict of interest between expert and decision-maker.
- The decision-maker reduces the number of choices she is willing to make
- The expert then *chooses* one of those elements by making a report.
- Since the number of options is now smaller, the incentives are better aligned.
- Communication is imprecise and there is a certain *interpretative adjustment* that corrects for the initial bias

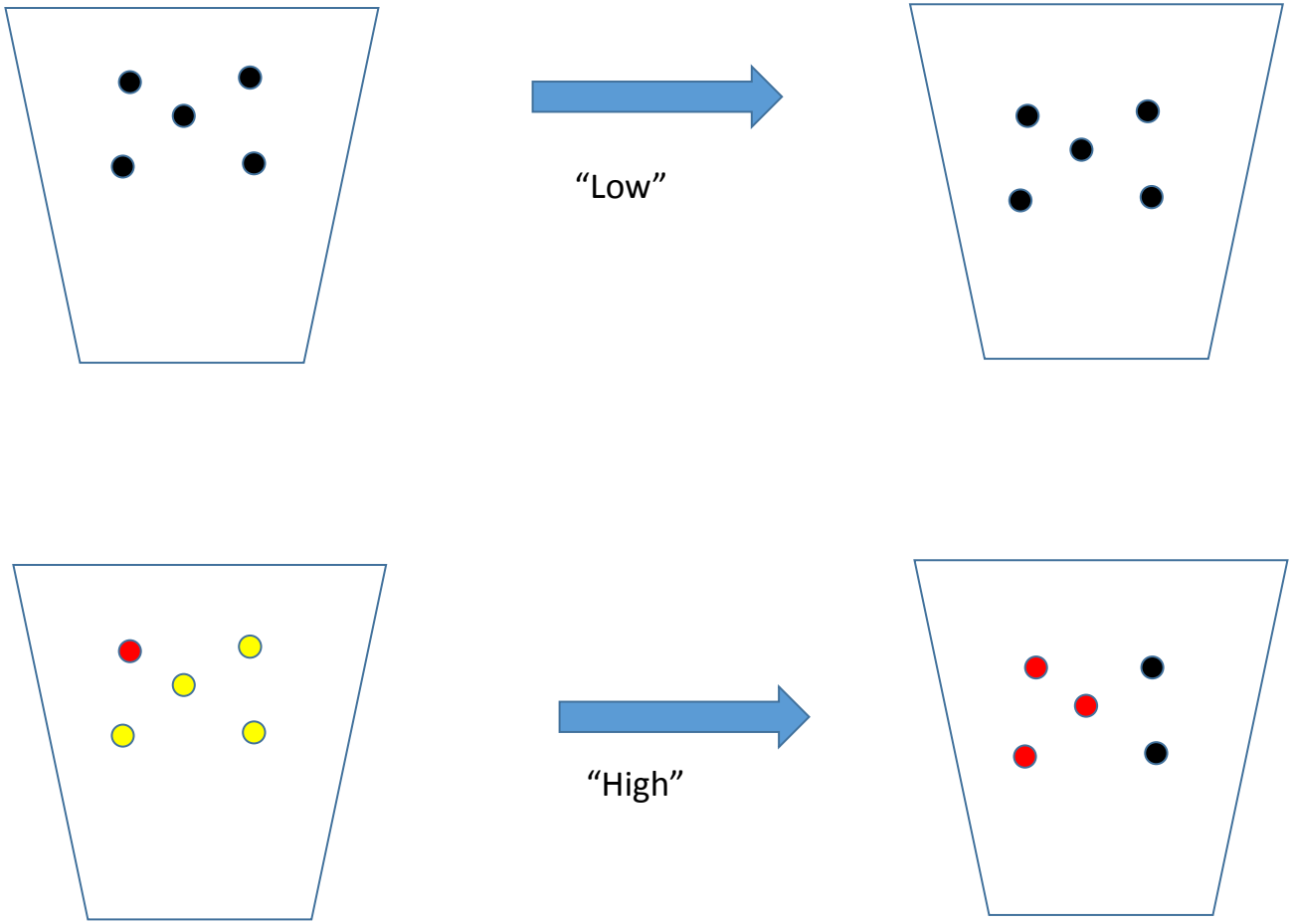


Figure: An Informative Equilibrium

Cheap Talk: Extensions

- Multiple Receivers (Farrel and Gibbons, 1989) $\rightarrow$ Heterogeneous Voters

Cheap Talk: Extensions

- Multiple Receivers (Farrel and Gibbons, 1989) $\rightarrow$ Heterogeneous Voters
- Multiple Senders (Alonso et. al. 2008) $\rightarrow$ Multiple Divisions in an Organization

Cheap Talk: Extensions

- Multiple Receivers (Farrel and Gibbons, 1989) $\rightarrow$ Heterogeneous Voters
- Multiple Senders (Alonso et. al. 2008) $\rightarrow$ Multiple Divisions in an Organization
- Networks (Galeotti et. al. 2014; Migrow 2015)

Cheap Talk: Extensions

- Multiple Receivers (Farrel and Gibbons, 1989) $\rightarrow$ Heterogeneous Voters
- Multiple Senders (Alonso et. al. 2008) $\rightarrow$ Multiple Divisions in an Organization
- Networks (Galeotti et. al. 2014; Migrow 2015)
- Comparative Statements (Chakabroty and Harborough, 2007,2010; Callander, 2014) $\rightarrow$ Multiple Issues

Delegation

- The outcome of the Cheap Talk game is puzzling

Delegation

- The outcome of the Cheap Talk game is puzzling
  1. If DM pretended *not to know* that the expert was lying, she would do better.

Delegation

- The outcome of the Cheap Talk game is puzzling
  1. If DM pretended *not to know* that the expert was lying, she would do better.

- Ex-post optimal decisions limit communication...

Delegation

- DM can commit to a policy rule $d(a)$ ex-ante.

Delegation

- DM can commit to a policy rule $d(a)$ ex-ante.
  1. For instance, DM commits to implement whatever policy does the agent recommend.

Delegation

- DM can commit to a policy rule $d(a)$ ex-ante.
  1. For instance, DM commits to implement whatever policy does the agent recommend.

- Commitment has two effects

Delegation

- DM can commit to a policy rule $d(a)$ ex-ante.
  1. For instance, DM commits to implement whatever policy does the agent recommend.

- Commitment has two effects
  1. Ex-Post decisions are suboptimal

Delegation

- DM can commit to a policy rule $d(a)$ ex-ante.
  1. For instance, DM commits to implement whatever policy does the agent recommend.

- Commitment has two effects
  1. Ex-Post decisions are suboptimal
  2. Ex-Ante communication is more precise

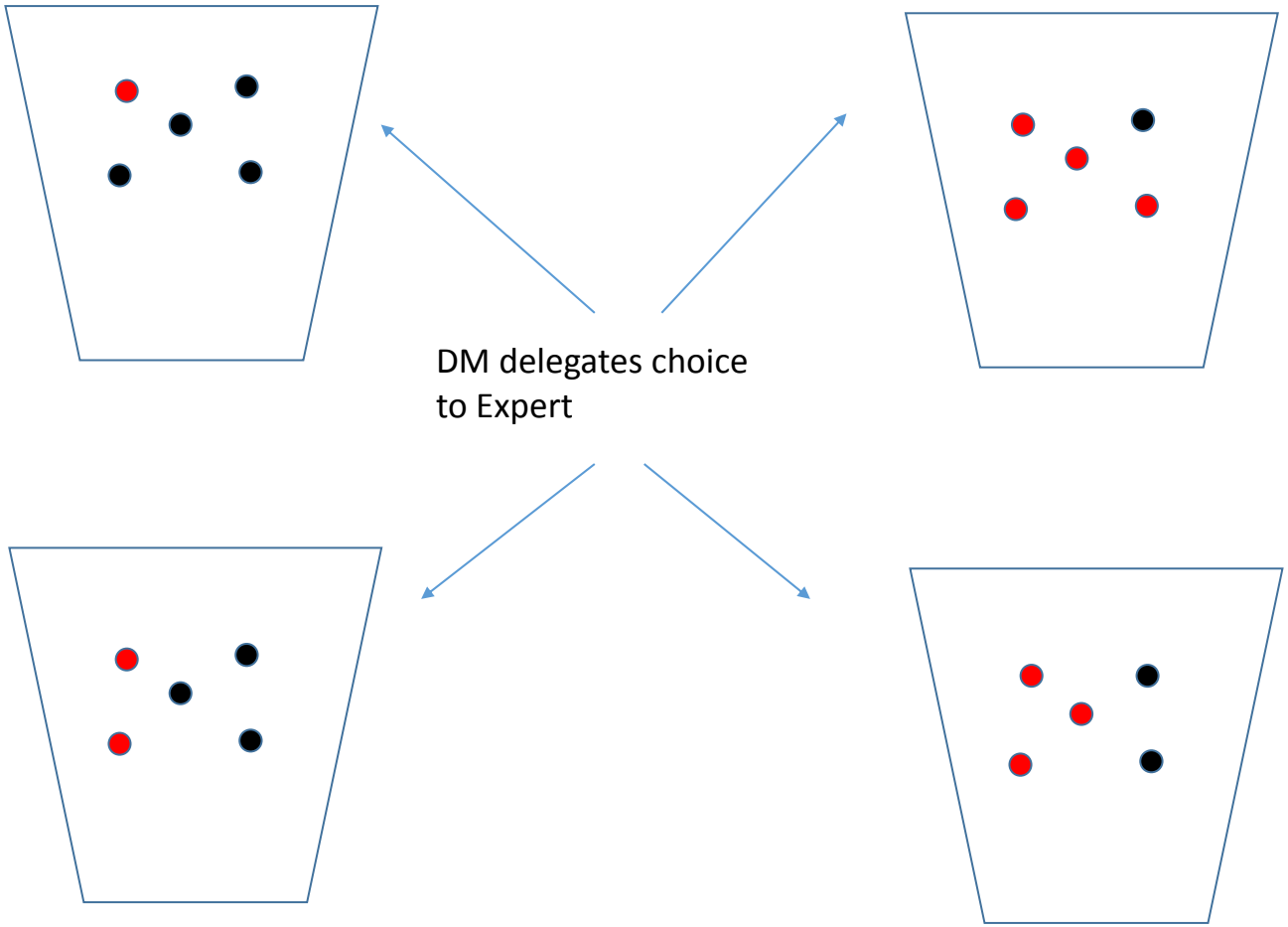


Figure: DM delegates decision to the agent

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)
- Therefore

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)
- Therefore
  - If $s \in [0, A - b]$, expert chooses $a = s + b$

Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0, 1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)
- Therefore
  - If $s \in [0, A - b]$, expert chooses $a = s + b$
  - If $s \in [A - b, 1]$, expert chooses $a = A$

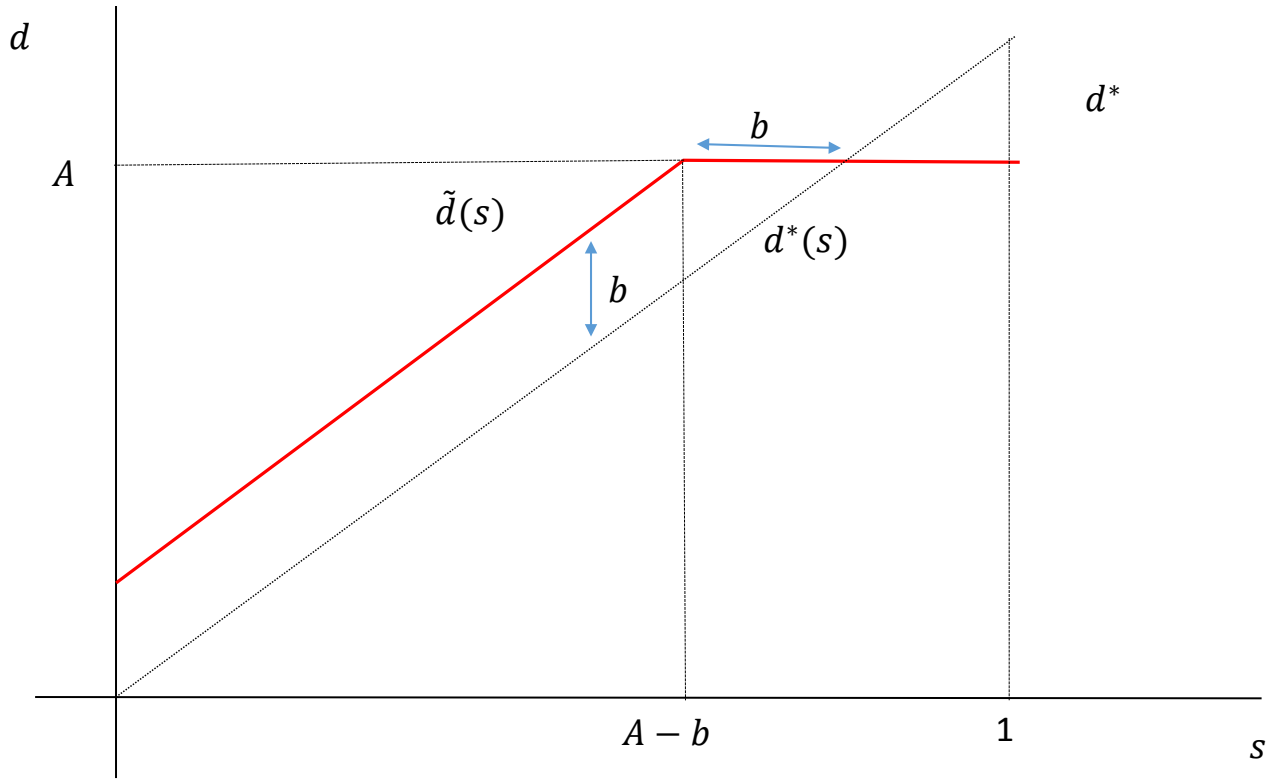
Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0,1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)
- Therefore
  - If $s \in [0, A - b]$, expert chooses $a = s + b$
  - If $s \in [A - b, 1]$, expert chooses $a = A$
- Example: CEO gives a fixed budget to a lower manager and commits not to overrule her.

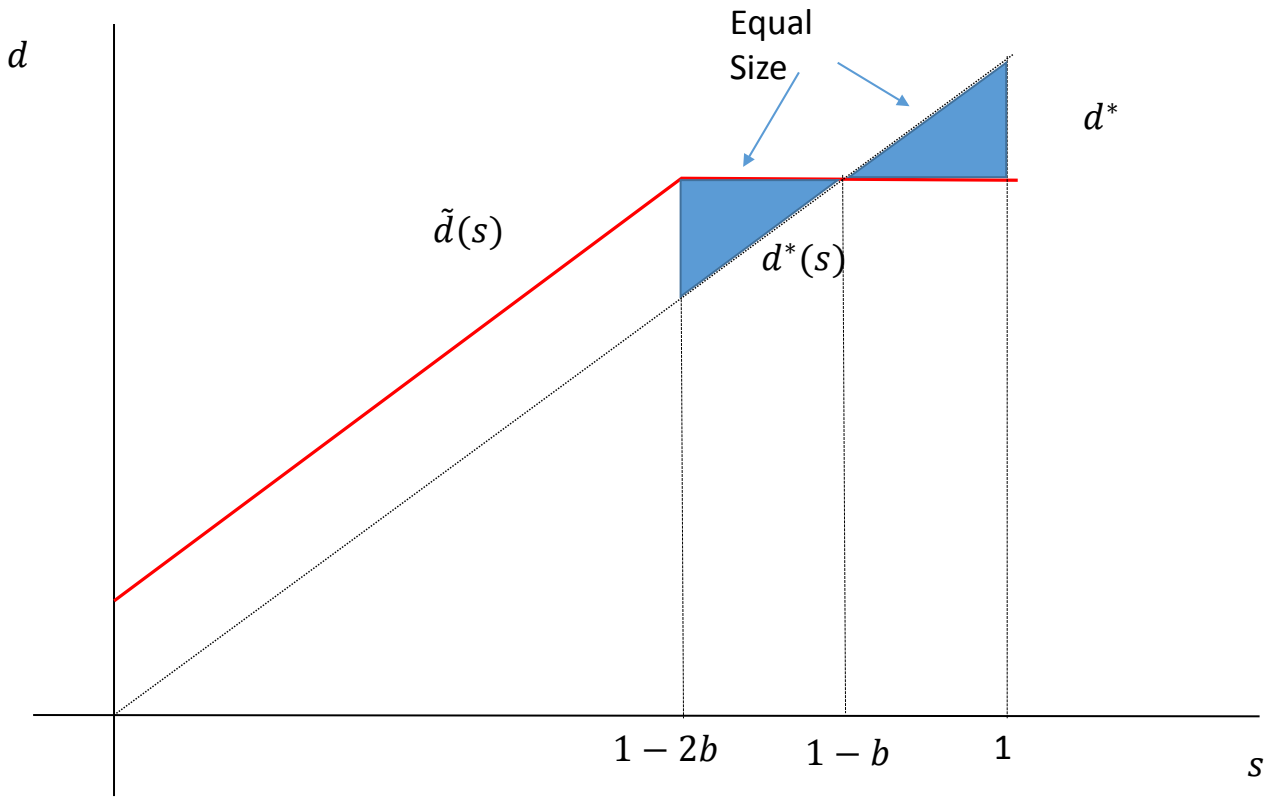
Delegation: Holmstrom

- Suppose that s is uniformly distributed in $[0,1]$ and $\tilde{d}(s) = s + b > s = d(s)$.
- DM delegates the decision to the agent $d(a) = a$ within a certain set A
- Optimal set is an interval $[0, A]$ (Alonso and Matouschek, 2007)
- Therefore
  - If $s \in [0, A - b]$, expert chooses $a = s + b$
  - If $s \in [A - b, 1]$, expert chooses $a = A$
- Example: CEO gives a fixed budget to a lower manager and commits not to overrule her.
- Both DM and Expert prefer Delegation to Communication

Delegation: Holmstrom



Delegation: Holmstrom



Communication Models: Some Evidence

- Cheap Talk

Communication Models: Some Evidence

- Cheap Talk
  - Experimental Evidence supports the main ideas of the Cheap-Talk model (Crawford 98)

Communication Models: Some Evidence

- Cheap Talk
  - Experimental Evidence supports the main ideas of the Cheap-Talk model (Crawford 98)
  - Grade Inflation (Universities, Rating Agencies).

Communication Models: Some Evidence

- Cheap Talk
  - Experimental Evidence supports the main ideas of the Cheap-Talk model (Crawford 98)
  - Grade Inflation (Universities, Rating Agencies).

- Delegation

Communication Models: Some Evidence

- Cheap Talk
  - Experimental Evidence supports the main ideas of the Cheap-Talk model (Crawford 98)
  - Grade Inflation (Universities, Rating Agencies).

- Delegation
  - Bloom et.al. find a relation between alignment and managerial discretion (size of the delegation set).

Communication Models: Some Evidence

- Cheap Talk
  - Experimental Evidence supports the main ideas of the Cheap-Talk model (Crawford 98)
  - Grade Inflation (Universities, Rating Agencies).

- Delegation
  - Bloom et.al. find a relation between alignment and managerial discretion (size of the delegation set).
  - Experimental literature suggests other advantages (empowerment, intrinsic preference for choice Herz et.al (2014))

Bayesian Persuasion

- Suppose the Expert could commit to a *disclosure policy*

Bayesian Persuasion

- Suppose the Expert could commit to a *disclosure policy*
  - For instance, a Pharma can commit to perform a certain number of tests to get a drug approved.

Bayesian Persuasion

- Suppose the Expert could commit to a *disclosure policy*
  - For instance, a Pharma can commit to perform a certain number of tests to get a drug approved.
  - An academic author commits to disclose conflicts of interest to a certain journal

Bayesian Persuasion

- Suppose the Expert could commit to a *disclosure policy*
  - For instance, a Pharma can commit to perform a certain number of tests to get a drug approved.
  - An academic author commits to disclose conflicts of interest to a certain journal

- Formally, the Expert chooses $a(\theta)$ and DM chooses $d(a) = \arg\max \mathbf{E} U_{DM}(d, s)$

Bayesian Persuasion: Example

- The Pharma observes the number of red balls in the urn R.

Table: Payoffs for FDA

	G	U
A	1	0
N	0.55	0.55

Table: Payoffs for Pharma

	G	U
A	2	1
N	0	0

Bayesian Persuasion: Example

- The Pharma observes the number of red balls in the urn R.
- The drug is good G with probability R or useless U with probability B

Table: Payoffs for FDA

	G	U
A	1	0
N	0.55	0.55

Table: Payoffs for Pharma

	G	U
A	2	1
N	0	0

Bayesian Persuasion: Example

- The Pharma observes the number of red balls in the urn R.
- The drug is good G with probability R or useless U with probability B
- Pharma company observes the number of red balls.

Table: Payoffs for FDA

	G	U
A	1	0
N	0.55	0.55

Table: Payoffs for Pharma

	G	U
A	2	1
N	0	0

Bayesian Persuasion

- Notice that the optimal decision for DM is to Approve iff $Pr(G) > 0.55$.

Bayesian Persuasion

- Notice that the optimal decision for DM is to Approve iff $Pr(G) > 0.55$.
- Cheap Talk and Delegation are useless

Bayesian Persuasion

- Notice that the optimal decision for DM is to Approve iff $Pr(G) > 0.55$.

- Cheap Talk and Delegation are useless
  - If a certain signal induces the DM to approve, E will always choose it.

Bayesian Persuasion

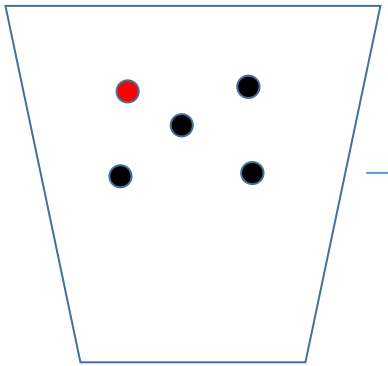
- Notice that the optimal decision for DM is to Approve iff $Pr(G) > 0.55$.

- Cheap Talk and Delegation are useless
  - If a certain signal induces the DM to approve, E will always choose it.
  - The problem is that the ranking of alternatives for E does not depend on the number of red balls ($A > N$)

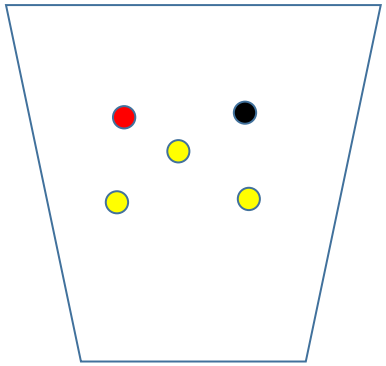
Bayesian Persuasion

- Notice that the optimal decision for DM is to Approve iff $Pr(G) > 0.55$.
- Cheap Talk and Delegation are useless
  - If a certain signal induces the DM to approve, E will always choose it.
  - The problem is that the ranking of alternatives for E does not depend on the number of red balls ($A > N$)
- We show now that Bayesian Persuasion induces some Information Transmission

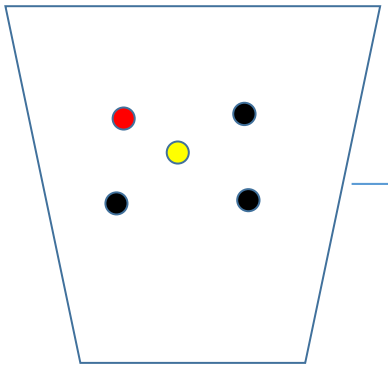
Bayesian Persuasion



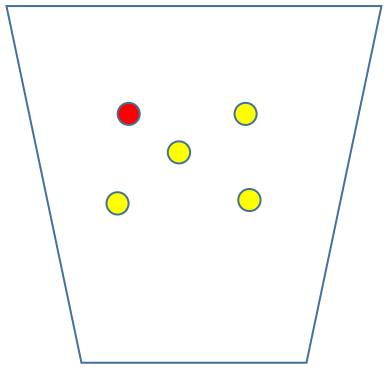
Pr(R>B)=1/2



Pr(R>B)=13/16



Pr(R>B)=1/2



Pr(R>B)=31/32

Bayesian Persuasion: Example

- The Expert discloses the color of one ball.

Bayesian Persuasion: Example

- The Expert discloses the color of one ball.
- He chooses the ball strategically: If there is at least one red ball, then he offers that one.

Bayesian Persuasion: Example

- The Expert discloses the color of one ball.
- He chooses the ball strategically: If there is at least one red ball, then he offers that one.
- If the ball is red, then $Pr(G \mid R) = 0.6 > 0.55$

Bayesian Persuasion: Example

- The Expert discloses the color of one ball.
- He chooses the ball strategically: If there is at least one red ball, then he offers that one.
- If the ball is red, then $Pr(G \mid R) = 0.6 > 0.55$
- If the ball is black, then $Pr(G \mid B) = 0$

Bayesian Persuasion: Example

- The Expert discloses the color of one ball.
- He chooses the ball strategically: If there is at least one red ball, then he offers that one.
- If the ball is red, then $Pr(G \mid R) = 0.6 > 0.55$
- If the ball is black, then $Pr(G \mid B) = 0$
- DM approves if at least one ball is Red!

Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.

Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.
- There are two different issues ($s = (s_1, s_2) \in [0, 1]^2$) (e.g. demand and cost shocks)

Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.
- There are two different issues ($s = (s_1, s_2) \in [0,1]^2$) (e.g. demand and cost shocks)
- There is an equilibrium in which the Expert reports truthfully

Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.
- There are two different issues ($s = (s_1, s_2) \in [0,1]^2$) (e.g. demand and cost shocks)
- There is an equilibrium in which the Expert reports truthfully
  - "No Action" if $s_1 < \alpha + \beta s_2$ and $s_2 < \alpha + \beta s_1$.

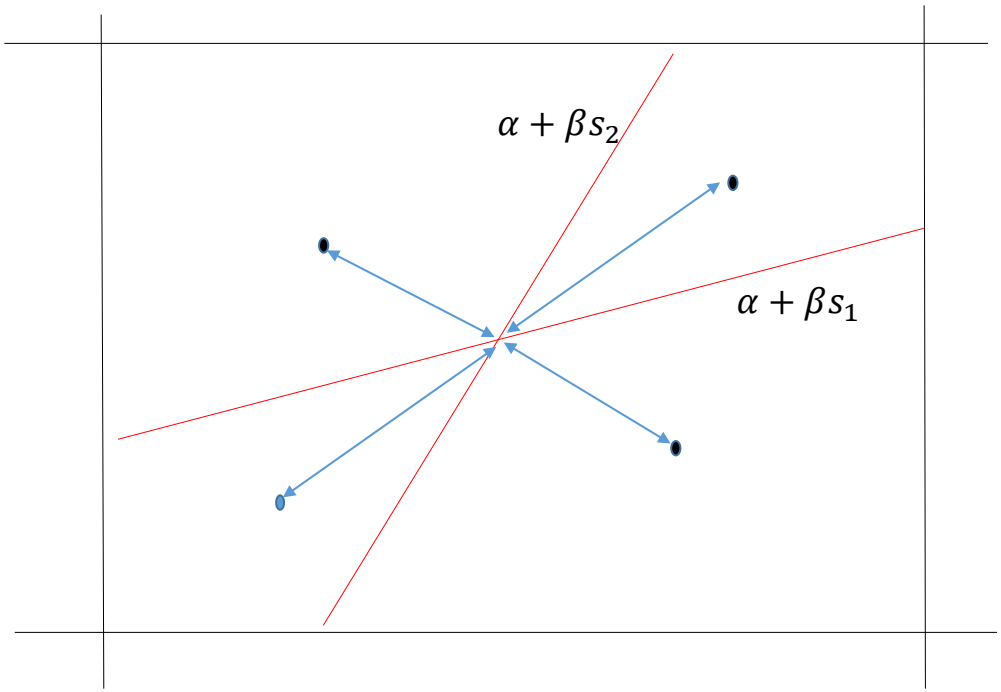
Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.
- There are two different issues ($s = (s_1, s_2) \in [0,1]^2$) (e.g. demand and cost shocks)
- There is an equilibrium in which the Expert reports truthfully
  - "No Action" if $s_1 < \alpha + \beta s_2$ and $s_2 < \alpha + \beta s_1$.
  - "Action i" if $s_i > \alpha + \beta s_j$ but $s_j < \alpha + \beta s_i$.

Tying Decisions: Communication

- Chakraborty and Harbrough (2007,2010) extend CS.
- There are two different issues ($s = (s_1, s_2) \in [0,1]^2$) (e.g. demand and cost shocks)
- There is an equilibrium in which the Expert reports truthfully
  - "No Action" if $s_1 < \alpha + \beta s_2$ and $s_2 < \alpha + \beta s_1$.
  - "Action i" if $s_i > \alpha + \beta s_j$ but $s_j < \alpha + \beta s_i$.
  - "Both Actions" if $s_1 > \alpha + \beta s_2$ and $s_2 > \alpha + \beta s_1$.

Comparative Cheap Talk



Tying Decisions: Delegation

- We extend the *Drug Approval Model* to account for *repeated interaction* (Frankel, 2014)

Tying Decisions: Delegation

- We extend the *Drug Approval Model* to account for *repeated interaction* (Frankel, 2014)

- The Expert observes the number of red balls in one urn in period 1 and in another urn in period 2.

Tying Decisions: Delegation

- We extend the *Drug Approval Model* to account for *repeated interaction* (Frankel, 2014)
- The Expert observes the number of red balls in one urn in period 1 and in another urn in period 2.
- The DM commits to two policy functions

Tying Decisions: Delegation

- We extend the *Drug Approval Model* to account for *repeated interaction* (Frankel, 2014)

- The Expert observes the number of red balls in one urn in period 1 and in another urn in period 2.

- The DM commits to two policy functions
  - Choose a decision as a function of the report in the first period ($d_1(a_1)$)

Tying Decisions: Delegation

- We extend the *Drug Approval Model* to account for *repeated interaction* (Frankel, 2014)

- The Expert observes the number of red balls in one urn in period 1 and in another urn in period 2.

- The DM commits to two policy functions
  - Choose a decision as a function of the report in the first period ($d_1(a_1)$)
  - Choose a decision as a function of *both reports* in the second period $d_2(a_2; a_1)$.

Tying Decisions: Delegation

- Consider the simple rule

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.
  - If the Expert implemented the project in the first period, then he cannot implement any project in the second period.

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.
  - If the Expert implemented the project in the first period, then he cannot implement any project in the second period.
  - If the Expert did not implement the project in the first period, then he can implement the project in the second period.

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.
  - If the Expert implemented the project in the first period, then he cannot implement any project in the second period.
  - If the Expert did not implement the project in the first period, then he can implement the project in the second period.

- The only relevant decision is whether to implement a project in the first period

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.
  - If the Expert implemented the project in the first period, then he cannot implement any project in the second period.
  - If the Expert did not implement the project in the first period, then he can implement the project in the second period.

- The only relevant decision is whether to implement a project in the first period
  - The expected value of having the option to implement tomorrow is $\frac{1}{2}(2) + \frac{1}{2}(1) = \frac{3}{2}$

Tying Decisions: Delegation

- Consider the simple rule
  - The Expert can implement the project if he so chooses in the first period.
  - If the Expert implemented the project in the first period, then he cannot implement any project in the second period.
  - If the Expert did not implement the project in the first period, then he can implement the project in the second period.

- The only relevant decision is whether to implement a project in the first period
  - The expected value of having the option to implement tomorrow is $\frac{1}{2}(2) + \frac{1}{2}(1) = \frac{3}{2}$
  - Therefore, he should implement in the first period iff $R > \frac{1}{2}$

Conclusions

- Communication is a crucial determinant of success in organizations.

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules
  - Tying multiple decisions

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules
  - Tying multiple decisions
- Future Research

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules
  - Tying multiple decisions
- Future Research
  - Information Acquisition

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules
  - Tying multiple decisions
- Future Research
  - Information Acquisition
  - Group Communication

Conclusions

- Communication is a crucial determinant of success in organizations.
- Structured communication is very effective
  - Choice of appropriate *codes*
  - Commitment to certain decision rules
  - Tying multiple decisions
- Future Research
  - Information Acquisition
  - Group Communication
  - Partial Contractibility