

ECON 548: Topics in Economics of Information  
Bilkent University  
Spring 2023 - Part I  
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Lectures: Tue 13.30-15.20, Fri 09.30-10.20 (A-330)  
Office Hours: By appointment

## Course Objectives

This course aims to bring the graduate students to the research frontier in economic theory. The course will be situated between an advanced level topics class and a reading group.

In the first half of the class, we will focus on models of communication and information acquisition. We will cover Bayesian persuasion, cheap talk, disclosure of hard evidence, and delegation.

## Grading

**Presentations:** In the first half of the class, you will each make two presentations. The presentation will be about a paper that you choose from the reading list (provided below). A presentation should take 25-30 minutes: basically, read the paper, distill it, and then discuss with us what you think about it. You do not need to cover every detail in the paper or go through every step in the proof; indeed, it is better if you walk us through some toy example. What we need is some core idea on the contribution of the paper to kickstart the discussion, and a sense of what the paper's contribution is. We will schedule the presentations early in the semester so that you will have time to prepare.

**Homework:** I will also give one assignment, which will take the form of writing a referee report for a recent working paper. You will be assigned different working papers. Writing referee reports is an important academic skill and hopefully this will be an excuse for you to flex some muscles.

Your overall grade of the first half will be determined by:

Participation:	10%
Presentations:	25%
Assignment:	15%

## Outline

(The reading list will be updated as we proceed with the semester.)

\* denotes: to be presented by students

\*\* denotes: to be assigned as a referee report

## 1 Introduction: Experiments and the Value of Information

Bengt Holmström's lecture notes from 14.124. <https://ocw.mit.edu/courses/economics/14-124-microeconomic-theory-iv-spring-2017/index.htm>

Aumann, R. and M. Maschler (1995). "Repeated Games with Incomplete Information", MIT Press

Kleiner, Andreas, Benny Moldovanu, and Philipp Strack. "Extreme points and majorization: Economic applications." *Econometrica* 89.4 (2021): 1557-1593.

## 2 Bayesian Persuasion

### 2.1 Foundations: Information Design

Bergemann, Dirk, and Stephen Morris. "Information design: A unified perspective." *Journal of Economic Literature* 57.1 (2019): 44-95.

Taneva, Ina. "Information design." *American Economic Journal: Microeconomics* 11, no. 4 (2019): 151-85.

Mathevet, Laurent, Jacopo Peregó, and Ina Taneva. "On information design in games." *Journal of Political Economy* 128.4 (2020): 1370-1404.

### 2.2 Theory

#### Overview

Kamenica, Emir. "Bayesian persuasion and information design." *Annual Review of Economics* 11 (2019): 249-272.

Emir, Kamenica, Kyungmin Kim, and Andriy Zapechelnyuk. "Bayesian persuasion and information design: Perspectives and open issues." *Economic Theory* 72, no. 3 (2021): 701-704.

#### Basic Model

Kamenica, Emir, and Matthew Gentzkow. "Bayesian persuasion." *American Economic Review* 101.6 (2011): 2590-2615.

#### Microfoundations

\* Lin, Xiao, and Ce Liu. "Credible persuasion." arXiv preprint arXiv:2205.03495 (2022).

### 2.3 Extensions to the Basic Model: Bayesian Persuasion with...

#### Costly experiments

Gentzkow, Matthew, and Emir Kamenica. "Costly persuasion." *American Economic Review* 104.5 (2014): 457-62.

#### Information Acquisition

\* Matyskova, Ludmila, and Alfonso Montes. "Bayesian Persuasion With Costly Information Acquisition." forthcoming in *Journal of Economic Theory* (2022).

#### Dynamic settings

Ely, Jeffrey C. "Beeps." *American Economic Review* 107.1 (2017): 31-53.

\* Che, Yeon-Koo, Kyungmin Kim, and Konrad Mierendorff. "Keeping the listener engaged: a dynamic model of bayesian persuasion." forthcoming in *Journal of Political Economy* (2022).

\* Gáti, Laura. "Talking Over Time - Dynamic Central Bank Communication." forthcoming in *Journal of Money, Credit and Banking* (2022).

### **Multiple senders**

Gentzkow, Matthew, and Emir Kamenica. "Competition in persuasion." *The Review of Economic Studies* 84.1 (2016): 300-322.

Gentzkow, Matthew, and Emir Kamenica. "Bayesian persuasion with multiple senders and rich signal spaces." *Games and Economic Behavior* 104 (2017): 411-429.

Zapechelnuyk, Andy. "Sequential obfuscation and toxic argumentation." Working Paper (2022).

### **Multiple receivers**

Alonso, Ricardo, and Odilon Camara. "Persuading voters." *American Economic Review* 106.11 (2016): 3590-3605.

Bardhi, Arjada, and Yingni Guo. "Modes of persuasion toward unanimous consent." *Theoretical Economics* 13.3 (2018): 1111-1149.

Chan, Jimmy, et al. "Pivotal persuasion." *Journal of Economic Theory* 180 (2019): 178-202.

Arieli, Itai, and Yakov Babichenko. "Private bayesian persuasion." *Journal of Economic Theory* 182 (2019): 185-217.

Wang, Yun. "Bayesian persuasion with multiple receivers." Available at SSRN 2625399 (2013).

Kolotilin, Anton, et al. "Persuasion of a privately informed receiver." *Econometrica* 85.6 (2017): 1949-1964.

### **Comparative Statics**

\* Currello, Gregorio, and Ludvig Sinander. "The comparative statics of persuasion." arXiv preprint arXiv:2204.07474 (2022).

Kolotilin, Anton. "Experimental design to persuade." *Games and Economic Behavior* 90 (2015): 215-226.

Kolotilin, Anton, Timofiy Mylovanov, and Andriy Zapechelnuyk. "Censorship as optimal persuasion." *Theoretical Economics* 17.2 (2022): 561-585.

Sun, Junze, Arthur Schram, and Randolph Sloof. "Public Persuasion in Elections: Single-Crossing Property and the Optimality of Censorship." Working Paper (2022).

### **Heterogeneous priors**

Alonso, Ricardo, and Odilon Camara. "Bayesian persuasion with heterogeneous priors." *Journal of Economic Theory* 165 (2016): 672-706.

Laclau, Marie, and Ludovic Renou. "Public persuasion." Working paper (2017).

Kosterina, Svetlana. "Persuasion with unknown beliefs." *Theoretical Economics* 17, no. 3 (2022): 1075-1107.

## **2.4 Applications: Bayesian persuasion and...**

### **Coordination games**

Goldstein, Itay, and Chong Huang. "Bayesian persuasion in coordination games." *American Economic Review* 106.5 (2016): 592-96.

Inostroza, Nicolas, and Alessandro Pavan. “Adversarial Coordination and Public Information Design .” Working paper (2012).

## **Media**

Gehlbach, Scott, and Konstantin Sonin. “Government control of the media.” *Journal of public Economics* 118 (2014): 163-171.

Gratton, Gabriele, and Barton E. Lee. “Liberty, security, and accountability: The rise and fall of illiberal democracies.” forthcoming in *Review of Economic Studies* (2022).

Gitmez, A. Arda, and Pooya Molavi. “Polarization and Media Bias.” Working Paper (2022).

Gitmez, A. Arda, and Konstantin Sonin. “The Dictator’s Dilemma: A Theory of Propaganda and Repression.” Working Paper (2022).

\*\* Herrera, Helios, and Ravideep Sethi. “Identity-Based Elections.” Working Paper (2022).

## **Political Economy**

Kolotilin, Anton, and Alexander Wolitzky. “The economics of partisan gerrymandering.” Working Paper (2020).

## **Networks**

Egorov, Georgy, and Konstantin Sonin. “Persuasion on Networks.” NBER Working paper No. w27631 (2020).

## **Markets**

Bergemann, Dirk, Benjamin Brooks, and Stephen Morris. “The limits of price discrimination.” *American Economic Review* 105.3 (2015): 921-57.

\* Dworzak, Piotr, and Giorgio Martini. “The simple economics of optimal persuasion.” *Journal of Political Economy* 127.5 (2019): 1993-2048.

## **Contests**

Zhang, Jun, and Junjie Zhou. “Information disclosure in contests: A Bayesian persuasion approach.” *The Economic Journal* 126.597 (2016): 2197-2217.

## **Experiments**

Fréchette, Guillaume R., Alessandro Lizzeri, and Jacopo Perego. “Rules and commitment in communication: An experimental analysis.” *Econometrica* 90.5 (2022): 2283-2318.

# **3 Cheap Talk**

(This part is definitely not a full record of the literature. Cheap talk is a very deep literature – we will only scratch the surface.)

## **3.1 Theory**

### **Overview**

Sobel, Joel. “Giving and receiving advice.” *Advances in economics and econometrics* 1 (2013): 305-341.

## Basic Model

Crawford, Vincent P., and Joel Sobel. "Strategic information transmission." *Econometrica* (1982): 1431-1451.

## 3.2 Extensions: Cheap Talk where...

### Sender's preferences are unknown

Sobel, Joel. "A theory of credibility." *The Review of Economic Studies* 52.4 (1985): 557-573.

Morris, Stephen. "Political correctness." *Journal of Political Economy* 109.2 (2001): 231-265.

Ely, Jeffrey C., and Juuso Valimäki. "Bad reputation." *The Quarterly Journal of Economics* 118.3 (2003): 785-814.

### Sender has partial commitment

Chapter 6.7 of Myerson, R. (1991) "Game Theory", Harvard University Press

Blume, Andreas, Oliver J. Board, and Kohei Kawamura. "Noisy talk." *Theoretical Economics* 2.4 (2007): 395-440.

Goltsman, Maria, Johannes Hörner, Gregory Pavlov, and Francesco Squintani. "Mediation, arbitration and negotiation." *Journal of Economic Theory* 144.4 (2009): 1397-1420.

### Sender acquires information

\*\* Kreutzkamp, Sophie. "Endogenous Information Acquisition in Cheap-Talk Games." Working Paper (2022).

## 3.3 Connections: Cheap Talk and Bayesian Persuasion

\* Lipnowski, Elliot, and Doron Ravid. "Cheap talk with transparent motives." *Econometrica* 88.4 (2020): 1631-1660.

\* Lipnowski, Elliot, Doron Ravid, and Denis Shishkin. "Persuasion via weak institutions." *Journal of Political Economy* 130.10 (2022): 2705-2730.

# 4 Hard Evidence/Verifiable Disclosure

## 4.1 Overview

Milgrom, Paul. "What the seller won't tell you: Persuasion and disclosure in markets." *Journal of Economic Perspectives* 22.2 (2008): 115-131.

## 4.2 Basic Models

Milgrom, Paul R. "Good news and bad news: Representation theorems and applications." *The Bell Journal of Economics* (1981): 380-391.

Grossman, Sanford J. "The informational role of warranties and private disclosure about product quality." *The Journal of Law and Economics* 24.3 (1981): 461-483.

Milgrom, Paul, and John Roberts. "Relying on the information of interested parties." *The RAND Journal of Economics* (1986): 18-32.

### **4.3 Extensions to the Basic Model**

#### **To “break” full information revelation...**

Dye, Ronald A. “Disclosure of nonproprietary information.” *Journal of accounting research* (1985): 123-145.

Okuno-Fujiwara, Masahiro, Andrew Postlewaite, and Kotaro Suzumura. “Strategic information revelation.” *The Review of Economic Studies* 57.1 (1990): 25-47.

Dziuda, Wioletta. “Strategic argumentation.” *Journal of Economic Theory* 146.4 (2011): 1362-1397.

Shishkin, Denis. “Evidence Acquisition and Voluntary Disclosure.” Working Paper, 2019.

#### **Alternative preferences by the sender**

Seidmann, Daniel J., and Eyal Winter. “Strategic information transmission with verifiable messages.” *Econometrica* (1997): 163-169.

Wolinsky, Asher. “Information transmission when the sender’s preferences are uncertain.” *Games and Economic Behavior* 42.2 (2003): 319-326.

#### **Multiple senders**

Bhattacharya, Sourav, and Arijit Mukherjee. “Strategic information revelation when experts compete to influence.” *The RAND Journal of Economics* 44.3 (2013): 522-544.

#### **Dynamic settings**

Honryo, Takakazu. “Dynamic persuasion.” *Journal of Economic Theory* 178 (2018): 36-58.

#### **Multiple receivers**

Fishman, Michael J., and Kathleen M. Hagerty. “Mandatory versus voluntary disclosure in markets with informed and uninformed customers.” *Journal of Law, Economics, and Organization* 19.1 (2003): 45-63.

#### **General and alternative formulations**

Hart, Sergiu, Ilan Kremer, and Motty Perry. “Evidence games: Truth and commitment.” *American Economic Review* 107.3 (2017): 690-713.

Lipman, Barton L., and Duane J. Seppi. “Robust inference in communication games with partial provability.” *Journal of Economic Theory* 66.2 (1995): 370-405.

Ben-Porath, Elchanan, Eddie Dekel, and Barton L. Lipman. “Mechanisms with evidence: Commitment and robustness.” *Econometrica* 87.2 (2019): 529-566.

Rappoport, Daniel. “Evidence and skepticism in verifiable disclosure games.” Available at SSRN 2978288 (2020).

\* Haghtalab, Nika, Nicole Immorlica, Brendan Lucier, Markus Mobius, and Divyarthi Mohan. “Communicating with Anecdotes.” arXiv preprint arXiv:2205.13461 (2022).

#### **Applications**

Shin, Hyun Song. “The burden of proof in a game of persuasion.” *Journal of Economic Theory* 64.1 (1994): 253-264.

Song Shin, Hyun. “Disclosures and asset returns.” *Econometrica* 71.1 (2003): 105-133.

Jovanovic, Boyan. “Truthful disclosure of information.” *The Bell Journal of Economics* (1982): 36-44.

Froeb, Luke M., and Bruce H. Kobayashi. “Naive, biased, yet bayesian: Can juries interpret selectively produced evidence?” *The Journal of Law, Economics, and Organization* 12.1 (1996): 257-276.

\*\* Osun, Elif B. and Erkut Y. Ozbay. “Evidence Games: Lying Aversion and Commitment.” Working Paper (2022).

\*\* Vaidya, Udayan. “Regulating Disclosure: The Value of Discretion.” Working Paper (2022).

\*\* Titova, Maria. “Targeted Advertising in Elections.” Working Paper (2022).

#### **4.4 Connections: Verifiable Disclosure and Bayesian Persuasion**

\* Titova, Maria. “Persuasion with verifiable information.” Working Paper (2022).

### **5 Delegation**

(Not a full record of the literature.)

#### **5.1 Theory**

Holmström’s PhD Thesis (1977)

Holmström, Bengt. “On The Theory of Delegation” (1980).

Melumad, Nahum D., and Toshiyuki Shibano. “Communication in settings with no transfers.” *The RAND Journal of Economics* (1991): 173-198.

Alonso, Ricardo, and Niko Matouschek. “Optimal delegation.” *The Review of Economic Studies* 75.1 (2008): 259-293.

#### **Delegation where the sender’s preferences are unknown**

Frankel, Alexander. “Aligned delegation.” *American Economic Review* 104.1 (2014): 66-83.

#### **5.2 Applications**

\*\* Rappoport, Daniel. “Reputational Delegation.” Working Paper (2022).

Amador, Manuel, and Kyle Bagwell. “The theory of optimal delegation with an application to tariff caps.” *Econometrica* 81.4 (2013): 1541-1599.

Amador, Manuel, Ivan Werning, and George-Marios Angeletos. “Commitment vs. flexibility.” *Econometrica* 74.2 (2006): 365-396.

Maskin, Eric, and Jean Tirole. “The politician and the judge: Accountability in government.” *American Economic Review* 94.4 (2004): 1034-1054.

Acemoglu, Daron, and Matthew O. Jackson. “Social norms and the enforcement of laws.” *Journal of the European Economic Association* 15.2 (2017): 245-295.

### 5.3 Connections: Delegation and Bayesian Persuasion

\* Kolotilin, Anton, and Andriy Zapechelnuk. "Persuasion meets delegation." arXiv preprint arXiv:1902.02628 (2019).