Economics 201: Advanced Topics in Game Theory
Fall 2008, Nageeb Ali and Joel Watson

This course will be divided into three sections, featuring three different topics taught by two different faculty members and a visitor. The common theme is "issues with information transmission and communication." During weeks 0 through 4, Watson will give an overview of methods to analyze contractual settings with complete but unverifiable information, where there are strategic complications in the process of transmitting information about the relationship to third party enforcers. In weeks 5 and 6, visitor Andreas Blume will lecture on language and strategy. During weeks 7 through 10, Ali will cover material on social learning.

There is no textbook for the course; most of the readings are journal articles. Each student is required to (a) read the articles as directed by the instructors, (b) attend class and learn from lectures, (c) participate in discussions, (d) prepare a short presentation on an article in the topic area, and (e) write a research proposal and literature review. Students will be evaluated on the basis of their participation, quality of presentations, and written work.

Course schedule: Tuesdays and Thursdays from 4:00 to 5:20 p.m., starting Thursday, September 25, and ending Thursday, December 4.

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Office hours will be announced.

The following pages list some of the readings for the three parts of the course.

Watson's section on contracting with complete information

In this part of the course, we will discuss methods of modeling contractual settings, emphasizing the use of implementation theory and game-theoretic structures that incorporate real-world institutional constraints. We will survey some of the issues and concepts that have dominated the literature in recent years (verifiability constraints, contracting costs, renegotiation opportunities, incompleteness, specific contractual forms, etc.).

We will aim to cover the following in order:

1. Some technical tools — implementation theory, bargaining theory
2. Renegotiation; the hold-up problem
3. Accounting for the technology of trade, dynamics
4. Basic team production models
5. Use of third parties to absorb resources
6. Some models of overlapping contractual relationships

Some relevant papers:

Watson, "Introduction to Mechanism Design and Contract: The Case of Two Players and Complete Information" (some notes for class).

Maskin, "Nash Equilibrium and Welfare Optimality," *Review of Economic Studies* 66 (1999): 23-38.

Nash, "The Bargaining Problem," *Econometrica* 18 (1950): 155-162.

Maskin and Moore, "Implementation and Renegotiation," *Review of Economic Studies* 66 (1999): 39-56.

Segal and Whinston, "The Mirrlees Approach to Mechanism Design with Renegotiation (with Applications to Hold-Up and Risk-Sharing)," *Econometrica* 70 (2002): 1-45.

Watson, "Contract, Mechanism Design, and Technological Detail," *Econometrica* 75 (2007): 55-81.

Brennan and Watson, "The Renegotiation-Proofness Principle and Costly Renegotiation," 2002 working paper.

Watson, "Contract and Game Theory: Basic Concepts for Settings with Finite Horizons," 2006 working paper.

Watson, J. (2005): "Contract and Mechanism Design in Settings with Multi-Period Trade," 2006 working paper.

Watson and Wignall, "Hold-Up and Durable Trading Opportunities" 2007 working paper.

Holmström, "Moral Hazard in Teams," *Bell Journal of Economics* 13 (1982): 324–340.

Legros and Matthews, "Efficient and Nearly-Efficient Partnerships," *Review of Economic Studies* 68 (1993): 599–611.

Bull and Watson, "Evidence Disclosure and Verifiability," *Journal of Economic Theory* 118 (2004): 1-31.

Eswaran and Kotwal, "The moral hazard of budget-breaking." *Rand Journal of Economics* 14 (1984): 579–581.

Baliga and Sjöström, "Contracting with Third parties," forthcoming in *AEJ: Microeconomics*.

Prat and Rustichini, "Games Played Through Agents," *Econometrica* 71 (2003): 989-1026.

Galasso, "Multi-Agent and Common Agency Games with Complete Information: A Survey,"

Segal, "Contracting With Externalities," *Quarterly Journal of Economics* 114 (1999): 337-388.

Language and Strategy

Reading List

I.a Strategic Information Transmission

★ Crawford, V.P. and J. Sobel [1982], "Strategic Information Transmission," *Econometrica* **50**, 1431–1451.

Lewis, D. [1969], *Convention: A Philosophical Study*, Harvard University Press.

Farrell, J. [1993], "Meaning and Credibility in Cheap-Talk Games," *Games and Economic Behavior*, **5**, 514–531.

I.b Communicating Information with Natural Language

Grice, H. Paul [1975], "Logic and Conversation," *Syntax and Semantics*, vol. 3, Peter Cole and Jerry L. Morgan, eds., New York: Academic Press.

★ Pinker, Steven, Martin A. Nowak and James J. Lee [2008], "The Logic of Indirect Speech," *Proceedings of the National Academy of Sciences,* **105**, 833–838.

Nowak, Martin A., David C. Krakauer and Andreas Dress [1999]: "An Error Limit for the Evolution of Language," *Proceedings of the Royal Society B: Biological Sciences* **266**, 2131–2136.

★ Lipman, Barton L. [2006], "Why is Language Vague?," manuscript, Boston University.

Jäger, Gerhard [2008]: "Applications of Game Theory in Linguistics," *Language and Linguistics Compass* **2**, 1–16.

Jäger, Gerhard [2008]: "Game Theory in Semantics and Pragmatics," Universitäet Bielefeld Working Paper.

II. Communication Errors

★ Myerson, R.B. [1991], *Game Theory: Analysis of Conflict*, Harvard University Press, Cambridge, Massachusetts. (pages 285 – 288)

★ Blume, A., O.J. Board, and K. Kawamura [2007], "Noisy Talk," *Theoretical Economics* **2**, 395–440.

Goltsman, M., J. Hörner, G. Pavlov and F. Squintani [2007], "Mediation, Arbitration and Negotiation", Working Paper.

III. Intentional Vagueness

★ Blume, A. and O.J. Board [2008], "Intentional Vagueness," in progress

Reading List (for Nageeb's Section): Social Learning

a) Herding and Information Cascades: Bikhchandani et al. (1992, 1998), Smith and Sorensen (2000).

b) Experiments on Information Cascades: Goeree et al. (2007).

c) Endogenous Timing and Applications to Finance and Social Networks: Gul and Lundholm (1995), Chari and Kehoe (2003), Avery and Zemsky (1998), Bala and Goyal (1998), Acemoglu et al. (2008).

d) Global Games and Dynamic Coordination: Carlsson and Van Damme (1993), Angeletos et al. (2007), Abreu and Brunnermeier (2003).

References

Abreu, D. and M. Brunnermeier (2003): "Bubbles and Crashes," *Econometrica*, 71, 173–204.

Acemoglu, D., M. Dahleh, I. Lobel, and A. Ozdaglar (2008): "Bayesian Learning in Social Networks," *NBER Working Paper*.

Angeletos, G., C. Hellwig, and A. Pavan (2007): "Dynamic Global Games of Regime Change: Learning, Multiplicity, and the Timing of Attacks," *Econometrica*, 75, 711–756.

Avery, C. and P. Zemsky (1998): "Multi-Dimensional Uncertainty and Herd Behavior in Financial Markets," *American Economic Review*, 88, 724–48.

Bala, V. and S. Goyal (1998): "Learning from Neighbours," *The Review of Economic Studies*, 65, 595–621.

Bikhchandani, S., D. Hirshleifer, and I. Welch (1992): "A Theory of Fads, Fashion, Custom, and Cultural Change as Informational Cascades," *Journal of Political Economy*, 100, 992–1026.

——— (1998): "Learning from the Behavior of Others: Conformity, Fads, and Informational Cascades," *The Journal of Economic Perspectives*, 12, 151–170.

Carlsson, H. and E. Van Damme (1993): "Global games and equilibrium selection," *Econometrica*, 61, 989–1018.

Chari, V. V. and P. Kehoe (2003): "Hot Money," *Journal of Political Economy*, 111, 1262–1292.

Goeree, J., T. Palfrey, B. Rogers, and R. McKelvey (2007): "Self-correcting Information Cascades," *Review of Economic Studies*, 74, 733–762.

Gul, F. and R. Lundholm (1995): "Endogenous Timing and the Clustering of Agents' Decisions," *Journal of Political Economy*, 103, 1039–1066.

Smith, L. and P. Sorensen (2000): "Pathological Outcomes of Observational Learning," *Econometrica*, 68, 371–398.