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Office Hours: TTH 1:00-2:00pm & By Appointment

Course Objectives and Overview:

The term "rational action" as used in the economic approach is generally equated with maximizing behavior. Individual human agents are assumed to have consistent and stable preferences over alternatives each of which is assigned some "utility." Maximization entails choosing the course of action that yields the highest expected utility. One is rational to the extent one uses the best means to achieve one's goals.

In this course we will learn a variety of social and political models based on such a notion of *individual rationality* and to investigate its *collective consequences*. In particular, we will find through the "Prisoner's Dilemma," the "Tragedy of the Commons," and the "Free-Rider Problem" a contrast between *rational man* and *irrational society*. Self-serving behavior of individuals does not usually lead to collectively satisfactory results.

So this course is about the stories of the Prisoners, the Herdsmen, and the Free-Riders. As a matter of fact, we will show that the Dilemma, the Tragedy, and the Problem share essentially the same mathematical structure, and hence they are essentially the same story - a story about human destiny. We will then explore the ways by which we might be able to escape such a destiny.

The Prisoner's Dilemma: To C, Or Not To C?

This is the story of the Prisoners as told by Dennis Chong: "Two apprehended suspects to a serious crime are detained incommunicado and faced with the following choice: each has been given the opportunity to turn state's witness for the purpose of convicting the other; if one prisoner agrees to confess while the other keeps silent, the confessor will get off scot-free while the other prisoner will be convicted and sentenced to ten years in prison. If neither prisoner confesses, both will escape prosecution for the serious crime, but will nevertheless be prosecuted and convicted for a minor crime that carries a one-year prison term. Finally - and herein lies the dilemma - if both prisoners elect to confess to the authorities, both will end up being convicted for the crime, although they will receive a slightly reduced sentence (e.g., five years) for having cooperated with the police." (Dennis Chong, *Collective Action and the Civil Rights Movement*, p. 6)

The Classical Prisoner's Dilemma		Suspect 2	
		Stay Mum	Confess
Suspect 1	Stay Mum	(-1, -1)	(-10, 0)
	Confess	(0,-10)	(-5, -5)

The question is, of course, to C, or not to C?

<u>The Tragedy of the Commons: the "Remorseless Working of Things"</u>

Here is the story as told by Garrett Hardin: Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy.

Required Readings:

1. Thomas C. Schelling (1978), *Micromotives and Macrobehavior* (Norton). (中譯本: 《微觀動機與宏觀行為》, 湯瑪斯‧謝林著, 高一中譯, 臉譜出版社)
2. William Poundstone (1992), *Prisoner's Dilemma: John von Neumann, Game Theory, and the Puzzle of the Bomb* (Doubleday). (中譯本: 《囚犯的兩難: 賽局理論與數學天才馮紐曼》, 威廉‧龐士東著, 葉家興譯, 左岸文化出版社)
3. Robert Axelrod (1984), *The Evolution of Cooperation* (Basic Books). (中譯本: 《合作的競化》, 羅伯特‧艾瑟羅德著, 胡瑋珊譯, 大塊文化出版社)
4. Martin A. Nowak (2011), SuperCooperators: Altruism, Evolution, and Why We Need Each Other to Succeed (Free Press). (中譯本: 《超級合作者》, 马丁‧诺瓦克、罗杰‧海菲尔德著, 龍志勇、魏薇譯, 浙江人民出版社)
5. Elinor Ostrom (1990), *Governing the Commons: The Evolution of Institutions for Collective Action* (Cambridge). (中譯本:《公共事務的治理之道: 集體行動制度的演進》, 埃莉諾‧奧斯特羅姆著, 上海譯文出版社)
6. 以下文章見於【泛科學】https://pansci.asia/archives/author/tml
   a. 囚徒困局系列：【一】金球的囚徒
   b. 囚徒困局系列：【二】電影〈史密斯任務〉中婚姻的囚徒
   c. 囚徒困局系列：【三】學生與政府的「墨西哥對峙」僵局
   d. 囚徒困局系列：【四】衝破囚徒困局的公民快閃政治
   e. 囚徒困局系列：【五】教改二十年之「公有地的悲劇」
   f. 囚徒困局系列：【六】告白的遊戲: 紀念約翰‧納許
   g. 囚徒困局系列：【七】我們為什麼不信任政治人物?
   h. 囚徒困局系列：【八】台灣選民會願意在投票時進行換票嗎?
   i. 囚徒困局系列：【九】媒體在臉書上的「公有地的悲劇」
   j. 囚徒困局系列：【十】從《冰風暴》看劈腿的囚徒困局

Optional:

1. Dennis Chong (1991), *Collective Action and the Civil Rights Movement* (Chicago).
2. Peter Miller (2010), *The Smart Swarm* (Avery). (中譯本: 《群的智慧》, 彼得‧米樂著, 林俊宏譯, 天下文化出版社)
3. Howard Rheingold (2002), *Smart Mobs: The Next Social Revolution* (Basic Books)

Other Course Materials:

\# A package of journal articles and book chapters are either already available online (e.g., JSTOR or NTU E-Resources) or will be made available.

\# Recommended Movie Titles:
1. The Postman Always Rings Twice (1946, Director: Tay Garnett, Warner Bros.)
2. Mr. & Mrs. Smith (2005, Director: Doug Liman, Fox)
3. The Ice Storm (1997, Director: Ang Lee, Good Machine)
4. Joint Security Area (2000, Director: Park Chun-wook, Myung Films)
5. The Life of Pi (2012, Director: Ang Lee, Fox)
6. A Beautiful Mind (2001, Director: Ron Howard, Universal)
7. 刺客聶隱娘 (2015, 導演: 侯孝賢, 光點影業股份有限公司等)

Course Requirements and Grading:

1. First Paper (9-10 pages): A case of the two-person prisoner's dilemma (50%).
2. Second Paper (8-10 pages): a case of collective action or n-person prisoner's dilemma (50%).

Tentative Paper Due Dates: First Paper 6/18; Second paper 7/2.

Course Outline and Assignments:
(Note: "#" indicates articles that are available online.)

Session 1-2 (5/26, 5/28): Introduction

\# T. Lin, 囚徒困局系列【一】—【十】
\# Avinash K. Dixit and Barry J. Nalebuff. 2008. "Prisoners' Dilemma and How to Resolve Them." Chapter 3 of *The Art of Strategy: A Game Theorist's Guide to Success in Business & Life* (New York: W. W. Norton and Company).

Session 3 (6/2): The 2-Person and N-Person Prisoner's Dilemma

Schelling, 3, 4
Poundstone, 1-6

Session 4 (6/4): Formal Models of the 2-Person Prisoner's Dilemma

Poundstone, 8, 10, 11

Session 5 (6/9): The Evolution of Cooperation I

Poundstone, 12-13
Axelrod, 1-4
\# D. R. Hofstadter, "Computer Tournaments of the Prisoner's Dilemma Suggest How Cooperation Evolves." *Scientific American*, May 1983, Vol. 248, No. 5, pp. 16-26.
\# M. A. Nowak, R. M. May, and K. Sigmund, "The Arithmetics of Mutual Help." *Scientific*

American, June 1995, Vol. 272, No. 6, pp. 76-81.
M. Milinsky, "Tit for Tat in Sticklebacks and the Evolution of Cooperation." *Nature*, January 29, 1987, Vol. 325, No. 6103, pp. 433-435.
C. Packer and A. E. Pusey, "Divided We Fall: Cooperation among Lions." *Scientific American*, May 1997, Vol. 276, No. 5, pp. 52-59.
G. S. Wilkinson, "Food Sharing in Vampire Bats." *Scientific American*, February 1990, Vol. 262, No. 2, pp. 76-82.

Session 6 (6/11): The Evolution of Cooperation II

Axelrod, 5-9
K. Schneider, "Unbending Regulations Incite Move to Alter Pollution Laws." *The New York Times*, November 29, 1993.
C. C. Mann and M. L. Plummer, "The Butterfly Problem" *Atlantic Monthly*, January 1992, Vol. 269, No. 1, pp. 47-70.
R. B. Parks, "What if 'Fools Die'?: A Comment on Axelrod." *American Political Science Review*, December 1985, Vol. 79, No. 4, pp. 1173-1174. [JSTOR]
A. Lloyd. "Computing Bouts of the Prisoner's Dilemma." *Scientific American*, June 1995, Vol. 272, No. 6, pp. 110-115.

Session 7 (6/16): Reputational Concerns

Nowak, Whole book, especially 1-5.
M. Deutsch, "Trust and Suspicion." *The Journal of Conflict Resolution*. December 1958, Vol. 2, No. 2, pp. 265-279. [JSTOR]
D. M. Kreps, "Corporate Culture and Economic Theory." In J. E. Alt & K. A. Shepsle, eds., *Perspectives on Positive Political Economy*. Cambridge: Cambridge, 1990.

Session 8 (6/18): The Problem of Collective Action

Schelling, 7
林澤民、蘇彥斌合著,〈台灣快閃政治 ― 新媒體、政黨與社會運動〉,台灣民主季刊,第十二卷,第二期,二零一五年六月,123-159。
R. Hardin, "Collection Action and Prisoner's Dilemma." In his *Collective Action*, Baltimore, Johns Hopkins University Press, 1982, pp. 16-37.
N. S. Glance and B. A. Huberman, "The Dynamics of Social Dilemmas." *Scientific American*, March 1994, Vol.270, No. 3, pp. 76-81.
J. Bendor and D. Mookherjee, "Institutional Structure and the Logic of Ongoing Collective Action." *American Political Science Review*, March, 1987, Vol. 81, No. 1, pp. 129-154. (Optional)

Session 9 (6/23): Governing the Commons I

Ostrom, 1-5
G. Hardin, "The Tragedy of the Commons," *Science* (New Series), December 13, 1968, Vol. 162, No. 3859, pp. 1243-1248. [JSTOR]

Session 10 (6/25): 端午節假日

Session 11 (6/30): Governing the Commons II

Ostrom, 6
湯京平與呂嘉泓,〈永續發展與公共行政－從山美與里佳經驗談社區自治與「共享性資源」的管理〉. 人文及社會科學集刊 ； 14卷2期 (2002 / 06 / 01) ， P261 – 287.
P. Kollock and M. Smith, "Managing the Virtual Commons: Cooperation and Conflict in Computer Communities." In S. Herring, ed., *Computer-Mediated Communication: Linguistic, Social, and Cross-Cultural Perspectives*. Amsterdam: John Benjamins, 1996, pp.109-128.

Session 12 (7/2): Review & Catch-up