Hauptseminar/V-Seminar WiSe 2024/25

Game Theory for the Masses

LECTURERS
Prof. Dr. Stefan Napel
Prof. Dr. Olivier Roy

OBJECTIVE
Can game-theoretic reasoning help us understand Jane Austen novels or the *Odyssey*? *The Dark Knight* or the *Game of Thrones*? Wagner's operas or biblical stories? Penalty kicks and tennis serves? Bluffing in Poker? Some scholars have argued that it can. The aim of this seminar is to look at these claims and assess them critically. How much game theory is there really in the analysis of these contributions to literature, cinema and/or popular culture? What does the game-theoretic analysis contribute to their understanding? Can these works, in turn, contribute to game theory?

TARGET GROUP
Advanced Bachelor students from:
- Philosophy & Economics
- Economics
- Internationale Wirtschaft & Entwicklung

Basic knowledge of game theory is required (games in normal and extensive form, Nash equilibrium in pure or mixed strategies, subgame perfection).

SEMINAR PLACES
- 16

LANGUAGE OF INSTRUCTION/ASSESSMENT
- Seminar: English
- Written work: English

DATES AND DEADLINES
- Introduction and Organization Session: **October 23, 2024, 12 noon (c.t.), room tba**
- Seminar: **December 6-8, 2024.**
- Submission of seminar papers: **March 31, 2025.**

Deadlines are final and will be strictly enforced.

ASSESSMENT

Philosophy & Economics:
- SI/SIO seminar 5 cp: presentation, comment, participation + 3500-4000 word seminar paper.
- CP4*/CP5* seminar 2 cp: presentation, comment, participation.

Economics, IWE
- SPEZ 1-3/Mikroök. Seminar, VET7 5 cp: presentation, comment, participation, 3500–4500

ENROLMENT/REGISTRATION:

The registration proceeds in two steps.
1. Course Registration on CampusOnline. You will then be automatically placed on the "waiting list" for the course.
2. Topic selection by contact with the lecturers (Napel and Roy). Topics will be allocated on a **first-come-first-served** basis.

Registration is complete when the topic has been agreed on and you have been assigned a place on CampusOnline.   Deadline for a complete registration: **November 18th, 2024, 12:00.**

SEMINAR INSTRUCTIONS
1. Time allowed: presentation of 45 min., comment of 5 min, discussion of 30 mins.
2. Presentations should be a concise and systematic overview of the topic in the form of a "teaching lecture".
3. Each presentation will be assigned to one other participant, who is to comment on/ initiate the discussion of the contents of the presentation. Presenters are required to send their presentations to *both instructors* and the respective *commenter at least seven days* before the seminar session.
4. The literature given below is a *starting point* for your lecture. You are typically expected to find additional material yourself.
5. The order of presentations need not correspond to the ordering of topics found below. All participants shall be ready to give their presentation on the first seminar day.

SEMINAR PAPERS

Your *seminar paper* should be on a well-defined issue related to your presentation topic. The focus and the intended key references/data sources of your seminar paper must be coordinated with the instructors before you start writing.

Please make sure when writing your paper that you maintain scholarly standards of presentation and citation (incl. consistent typesetting of text *and* references, careful spell-checking, an informative title page, consecutive numbering of sections/subsections, justified text, etc.). Use the within-text "… Author and Author (year) …" Harvard-style referencing system. Double-check that your reference list is in alphabetical order of surnames and that it uses consistent capitalization, italics, and so on. Add a declaration confirming that you have written your paper by yourself and that you have not used help (including from generative AI tools) or sources other than those that are explicitly acknowledged in the paper. For guidance, you may consult any of the research papers that can be found on either of our websites.

THEMES

T1. Game Theory in Literature.
Number of slots: 2 to 5.
Starting points for literature research:

Steven J. Brams (2011), *Game Theory and the Humanities*, Cambridge, MA: MIT Press.
[ch. 1 can be browsed at http://mitp-content-server.mit.edu:18180/books/content/sectbyfn?collid=books_pres_0&fn=9780262015226_sch_0001.pdf&id=8806]

Michael Suk-Young Chwe (2013), *Jane Austen, Game Theorist*, Princeton, NJ: Princeton University Press.

Possibilities include coordination games, backward induction, or games between multiple selves in Jane Austen's novels, commitment problems in Homer's *Odyssey*, strategic issues in the work of Sophocles or Shakespeare, power politics in Schiller's *Wallenstein*, fatal miscoordination in Arthur Miller's *The Crucible*, conflict games as in Joseph Heller's *Catch-22*, and so forth.

T2. Game Theory and the Bible.
Number of slots: 2 to 4.
Starting points for literature research:

Steven J. Brams (1980), *Biblical Games: Game Theory and the Hebrew Bible*, Cambridge, MA: MIT Press.

Steven J. Brams (2011), *Game Theory and the Humanities*, Cambridge, MA: MIT Press.

Possibilities include: Abraham's Sacrifice, Samson and Delilah, non-proportional division in bankruptcy problems in the Talmud (cf. Aumann and Maschler, *Journal of Economic Theory 36*(2), 195-213), the parable of the Good Samaritan, etc.

T3. Game Theory and Opera.
Number of slots: 1 to 3.
Starting points for literature research:

Steffen Huck (2008), "Why Elsa asks from when[ce] he came: an epistemological analysis of Richard Wagner's Lohengrin." Manuscript available on discovery.ucl.ac.uk/id/eprint/14337/1/14337.pdf.

Heike Harmgart, Steffen Huck, and Wieland Müller (2009), "The miracle as a randomization device: A lesson from Richard Wagner's romantic opera Tannhäuser und der Sängerkrieg auf Wartburg." *Economics Letters* 102(1), 33-35.

Possibilities include: the limits of non-cooperative analysis in Puccini's Tosca, Agreement theorems and Wagner's *Lohengrin*, mixed strategies in Wagner's *Tannhäuser*.

T4. Game Theory and Sports.
Number of slots: 1 to 3.
Starting points for literature research:

Ignacio Palacios-Huerta. (2014). *Beautiful Game Theory – How Soccer Can Help Economics*, Chs. 1 and 2. Princeton University Press.

Ignacio Palacios-Huerta and Oscar Volij (2009). "Field Centipedes."*American Economic Review*, 99(4): 1619-35.

Steven D. Levitt, John A. List and Sally E. Sadoff (2011). "Checkmate: Exploring Backward Induction among Chess Players." *American Economic Review* 101(2), 975-90.

Romain Gauriot, Lionel Page and John Wooders (2023). "Expertise, gender, and equilibrium play [in professional tennis]", *Quantitative Economics* 14(3), 981-1020.

Possibilities include: backward induction among chess players, play of minimax strategies in football, tennis, cricket, etc. Also have a look at https://gametheory.life/

T5. Game Theory and Popular Games.
Number of slots: 1 to 4.
Starting points for literature research:

Arthur T. Benjamin and Alan J. Goldman (2002). "Analysis of the N-card version of the game Le Her." *Journal of Optimization Theory and Applications* 114(3): 695-704.

Jörg Bewersdorf (2018). *Glück, Logik und Bluff*, 7. Auflage. Springer Spektrum

Michael Bowling, Neil Burch, Michael Johanson, and Oskari Tammelin (2015). "Heads-up limit hold'em poker is solved." *Science* 347 (6218), 145-149.

Ken G. Binmore (2007). *Playing for Real – A Text on Game Theory*, Chs. 2 and 15. Oxford University Press.

Peter Duersch, Marco Lambrecht and Joerg Oechssler (2020). "Measuring skill and chance in games." *European Economic Review* 127 (2020): 103472.

Jonathan Schaeffer, Neil Burch, Yngvi Björnsson, Akihiro Kishimoto, Martin Müller, Robert Lake, Paul Lu, Steve Sutphen (2007). "Checkers is solved." *Science* 317 (5844), 1518-1522.

Possibilities include: strategic analysis of "Tic-Tac-Toe" and "Nim", picking the right numbers in Lotto, estimating winning probabilities in Backgammon, backward induction in checkers or chess, the historical card game "Le Her", von Neumann's simplified Poker, the (legally important) question: is Poker a game of skill or chance?, epistemic analysis of "Cluedo" or "Scotland Yard", etc.

T6. Game Theory in Cinema or Television.
Number of slots: 3 to 5.
Check out "Movies" and "Television" at www.gametheory.net/popular/

Possibilities include the analysis of truels (as, e.g., in *The Good, the Bad and the Ugly*, *Reservoir Dogs*, or *Pirates of the Caribbean: Dead Man's Chest*), the role of efficiency (as, e.g., in *A Beautiful Mind*), chicken games (as in *Rebel Without a Cause* and many other movies),

the role of commitment   (e.g., *Dr. Strangelove*), various bits of game theory in *Batman - The Dark Knight*, the *Sherlock* TV series, "Split or Steal" in *Golden Balls*, the "Monty Hall problem" in *Let's Make a Deal*, etc.

NB: Please bear in mind that some topics, esp. in Theme T6, are well-suited for 2 cp. seminar credits, but not necessarily also for 5 cp. This depends on how much related scientific literature is available. The same applies to any of your own topic suggestions. Feel free to make the latter. For instance, check out the blog entries relating to work of Erving Goffman on https://gametheory.life/.