1 Motivation and overview

Morality that values cooperation is a universal characteristic of human societies, as demonstrated by anthropological studies and analyses of ethnographic records from all over the world. Our readiness to cooperate (along with the sophistication we bring to the table, made possible by the use of language) has propelled our species to planetary dominance. In this seminar, we shall take up some of the central questions arising in connection with the evolutionary origins, the psychological underpinnings, and the social dynamics of human cooperation.

The central insight that unifies the explanations of cooperation offered by the relevant disciplines is that human cooperation is conditional. It has been noted already by Darwin that unconditional cooperation with non-kin (pure altruism) is evolutionarily unsustainable. Theoretical analyses and, more recently, computational simulations, have shown how cooperation can nevertheless emerge and persist if it is conditioned on cultural-evolutionary processes such as niche construction (which can enable cooperation among non-kin), reputation tracking (which helps identify repeat non-cooperators), and altruistic punishment (which can amortize the cost of confronting a non-cooperator). The choice of readings for this seminar reflects the importance of these and other factors in understanding the nature of humans as conditional cooperators.

Attaining such understanding requires mastery of computational methods in social sciences. While evolutionary science, social psychology, and sociology are of key importance to the understanding of the world we live in, the complexity of the processes they study presents a challenge to the traditional scientific method, which tries to derive mathematical models from experimental data. This is why in these disciplines, scientists often resort to simulation, using an agent-based modeling (ABM) approach. In evolutionary ABM, simulated actors (agents) carrying various traits of interest share an environment in which
they undertake actions and compete for resources. The agent’s cumulative outcomes determine its fitness, which in turn affects its chances for reproduction. The effectiveness of traits can then be assessed by tracking their prevalence in the population over evolutionary time. Similarly, in computational social science, the ABM approach involves simulated agents with controlled cognitive abilities, “personalities,” and interpersonal attitudes. The social dynamics that arises out of the agents’ interactions is then analyzed and used to support theory development.

2 Notes for participants

This section contains essential information for participants: format description, inclusion statement, ground rules for discussion, and credit requirements.

2.1 Format

The prerequisites. At least one course in a social science (psychology, sociology, anthropology), or permission of instructor. In addition, students who choose to include computer simulations in their final project (see below) must be able to write code (preferably in Python).

The plan for the course. The course consists of three parts:

Part I Lectures by the instructor, introducing the themes, the readings, and the necessary conceptual tools.

Part II Project topic presentations by the students, who will state and motivate their choice of topic for the final project and will offer an overview of the relevant readings.

Part III Final project presentations by the students.

The final project. Students, in groups of 2-3, will complete a final project, which will include a written report and, optionally, the results of computer simulations. Each group will submit one report.

For the projects that involve programming. The preferred tool for writing ABM simulations is the Python programming environment, which can be easily mastered by anyone with prior experience in Java, Scheme, or any other popular language. Playing with Python before the course starts will make it easier for you to keep up with the material (see https://mesa.readthedocs.io/en/master/).

2.2 Diversity, inclusion, and ground rules for discussion

Unlike in a large-enrollment lecture-based course, in which some students may choose, and succeed, to remain virtually anonymous, in a small-class seminar setting you are required to speak in front of the class (when presenting) and are expected to contribute to the discussion on other occasions. Because your informed opinion on every aspect of the material is unique and valuable, I shall strive to facilitate the conversation so as to make all voices heard. In this, I’ll be counting on your help, and on the help of your classmates.

1The remarks in section 2.2 which are specific to this course, are intended to supplement the official Cornell statement on diversity and inclusion, which covers dimensions such as gender, race, socio-economic background, etc., and which can be found here: http://diversity.cornell.edu/
Even matters of “consensus” are not always easy to talk about, as the rare dissenters who dare voice their opposition know full well; how then should we approach potentially controversial topics? With care and compassion, diligence, openness, and daring: care for our shared humanity; diligence with regard to the relevant knowledge and findings; openness to informed dissent; and daring to venture into uncharted territory, as befits good education.

If at any point during the semester (no matter whether in class or after hours) you feel that you need to talk about any of these things, please let me know immediately — doing so will be my top priority.

### 2.3 Credit and grading

There are four components to getting credit for this seminar:

1. **Attend** and contribute to the discussion during the weekly meetings.

2. By noon on each Monday for which readings have been assigned, submit via the Canvas discussion board questions on the material. Be prepared to ask these questions in class.

3. By the end of Part I of the seminar, **choose** your topic for the final project and **present** it during one of the meetings of Part II.

   A typical presentation should include

   - a brief introduction to the topic and an overview of the background to the paper(s) and the relevant methodology;
   - the findings, as illustrated by the plots or (in the absence of graphics) by a concise verbal description;
   - a critique of the approach;
   - a summary of the conclusions and their significance for the seminar’s themes.
   - a description of your plan for the final project based on the chosen paper(s).

   The presenting teams are required to meet with the instructor ahead of their presentation, to address any questions and coordinate the details.

4. During Part III of the seminar, present your **project** in class; submit a written report by the due date.

**Final grade components:**

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Weekly questions</td>
<td>30%</td>
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<tr>
<td>Participation in the discussions</td>
<td>10%</td>
</tr>
<tr>
<td>Project presentation</td>
<td>30%</td>
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<tr>
<td>Project report</td>
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3 Weekly topics and readings

3.1 Part I: introductory lectures (4 weeks).

1. (February 8) Overview. Morality as cooperation: review.

2. (February 15) Morality as cooperation: findings.

3. (February 22) Questions to ask. Extended evolutionary synthesis.

4. (March 1) Agent-based modeling.

3.2 Part II: selected project topic presentations (7 weeks)

5. **(March 8)** ALTRUISTIC PUNISHMENT.


6. **(March 15)** EVOLUTION OF CONSCIENCE AND THE INTERNALIZATION OF NORMS.


7. **(March 22)** COMMON MORALITY. POLARIZATION.


8. **(March 29)** EVOLUTION OF POWER. SOCIAL CONFLICT AND CIVIL VIOLENCE.


9. (April 5) Public policy and culture.


12. (April 26) [Wellness break — no class]

3.3 Part III: final project presentations (2 weeks)

13. (May 3) Final project presentations.

14. (May 10) Final project presentations and general discussion.

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References


