

LSP 112
Focal Point Seminar: Philosophy of Chess
SPRING 2020 (REMOTE)
DEPAUL UNIVERSITY

Instructor: Daniel Rosiak,

Time and Location: Tuesdays, Thursdays 9:40-11:10am, Zoom (D2L homepage has link)

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Office Hours: Thursdays 12:00-1:30pm, “Zoom office” (see D2L link)

Course Description

There is a great deal of interesting culture and theoretical problems surrounding the game of chess, and it is beneficial for critical thinking to learn to play the game of chess and to improve one’s play. No chess experience is required for taking this course. We will undoubtedly have students in the course at all levels of play (including beginners and some who may be better players than the instructor). In the first week or two we will learn the basics of the game and also certain techniques for thinking about the game, and we will help each other to improve throughout the quarter. We will spend the first part of each class meeting playing chess, and working on chess problems, “backwards chess” problems, notation, etc. In most classes the instructor will present a brief lecture and guide discussion on some aspect of chess and its relation to philosophical, cultural, and other theoretical questions. Among the theoretical issues we will deal with are chess in relation to artificial intelligence and the nature of computation; some connections between chess and fundamental results in logic and pressing questions in mathematics; some more philosophical questions surrounding the nature of “rule-following”; analogies between chess and military strategies; the history of the game as it relates to certain political and cultural issues and events; comparison to other games (like Go) and looking at their respective “philosophies”; the role of *play* in society more generally.

Overview and Objectives

As part of the Liberal Studies Program Focal Point Seminar series, this course provides first-year students with the opportunity to learn how to closely examine a single topic, and to discover the complexity of a subject by studying it from the perspectives of multiple disciplines and different fields of inquiry, and by reading and writing extensively about it. Because the class is a seminar, students also debate the topic through lively class discussions. Throughout the quarter, you will also learn how to develop and write a research paper, on a topic related to the main material. In this course,

1. Students will discuss and analyze work from at least three different fields in their written work for the course.
2. Students will participate actively in advancing the collective intellectual understanding of the course topic through class discussions.
3. Students will be able to distinguish between primary and secondary sources, and to assess varying degrees of mediation and interpretation in specific source materials.
4. Students will construct arguments based on evidence and the work and interpretations of other sources.
5. Students will revise papers in response to the instructors comments.
6. Students will produce a project with a central argument, in which all parts of the project support the central argument.

Required Texts and Materials

- Pandolfini, Bruce. *Pandolfini's Ultimate Guide to Chess (Basic to Advanced Strategies with America's Foremost Chess Instructor)*. Fireside, 2003.
- Smullyan, Raymond. *The Chess Mysteries of Sherlock Holmes: Fifty Tantalizing Problems of Chess Detection*. Dover, 2011.

All other readings and materials will be posted to D2L (so do not need to be purchased). These include:

Additional Readings (on D2L)

On Games in General

- Notes and Lecture materials from your Instructor

On Aspects of the History of Chess

- Selections from *The Immortal Game: A History of Chess, or How 32 Carved Pieces on a Board Illuminated Our Understanding of War, Art, Science and the Human Brain* (David Shenk)
- Selections from *Birth of a Chess Queen* (Marilyn Yalom)
- Brief History of Computer Chess
- Selections from *Game Changer: AlphaZero's Groundbreaking Chess Strategies and the Promise* (Natasha Regan, Matthew Sadler)
- "Chess, What is it Good for?"

On Philosophy and Chess

- Selections from *Philosophical Investigations* (Ludwig Wittgenstein)
- “Computing Machinery and Intelligence” (Alan Turing)
- Selection (pages 4-5) from *Nomadology: the War Machine* (Giles Deleuze)
- Selections from *The Grasshopper: Games, Life and Utopia* (Bernard Suits)

On Math and Games (and on Chess in particular)

- Notes from your Instructor
- Selections from *Winning Ways for your Mathematical Plays: Volume 1* (Conway, Guy)

On Play in General

- Selections from *Play Anything: The Pleasure of Limits, the Uses of Boredom, and the Secret of Games* (Ian Bogost)
- Selections from *Homo Ludens* (Johan Huizinga)

Course Assignments and Grade Distribution

- **In Class (Virtual) Presentation:** you will be responsible for creating a 15 minute presentation to your classmates, on a particular topic related to the course.
See “Class Presentation Guide” and “How to Make your Presentation Video” on D2L for details and deadlines.
20% of your final grade in the course
- **Thesis Writing Part 1** (guide on D2L)
5% of final grade
- **Thesis Outline** (guide on D2L)
5 % of final grade
- **Midterm** (8-page First Draft of Research Paper) (guide on D2L)
30 % of final grade
- **Final** (12-page Final Draft of Thesis Paper) (guide on D2L)
30% of final grade
- **Participation/Attendance:** evaluated from your weekly contributions to the Discussion Boards on D2L, and your activeness in playing classmates online
10% of final grade

Course Schedule

*Note: The readings and assignments are the homework—this means, for instance, the Reading and Assignment(s) listed under the Meeting 1 heading are to be **completed** by the beginning of the next class meeting, Meeting 2.*

Week 1

Course Introduction and Beginning with Chess

Description: this week, you will be introduced to the main goals and approach of the course; you will learn (or review) the basics of the game of chess; you will get set up playing your classmates; and you will get introduced to “backwards chess.”

- Meeting 1: Overview of Course and Topics Covered

Reading: *Pandolfini* (Lesson 1)

Assignment: answer Week 1 Discussion Board questions; create profile and start playing games with classmates on chess.com

- Meeting 2: Continuing with Basics of Chess, and an Introduction to “Backwards Chess”

Reading: *Pandolfini* (Lesson 2); *Smullyan’s Chess Mysteries* (Intro, “A Matter of Direction,” “A Delightful Variation,” “A Little Exercise”)

Assignment: Play at least 2 games with 2 different classmates; Try to Solve “Retrograde Puzzle 1” on D2L

Week 2

A Closer Look at the Game of Chess

Description: this week we start to look at some of the abstract features of chess as a *game* (narrowly construed, for now). In particular, you will learn some useful basic distinctions, for instance: that chess is a *sequential* game (with a “back and forth” action, as opposed to a *simultaneous* game, like rock-paper-scissors); that it is a game of *perfect information* (as opposed to a game of *imperfect information*, like many card games); that it is *non-cooperative* or *strategic* (as opposed to *cooperative* games, an example of which would be a coalition of people taking a decision by gaining a majority vote); that it is *zero-sum* (one contestant’s gain is the other’s loss; this is opposed to *non-zero-sum* games, which describe situations in which the players’ total gains and losses can be more or less than zero, i.e., participants can have overlapping interests and can all gain or suffer together); and more.

We will also formulate and make precise the question of whether or not chess, as a game, has been *solved*, and what this means more generally. Finally, we will get a glimpse of some prominent *variants of chess* (like infinite chess, chess 960, chess in other dimensions), and end with a closer look at the *idea* of backwards chess.

- Meeting 3: Some General Features of Chess as a Game

Reading: “Notes on Chess and Math (Part 1)” (Rosiak); *Pandolfini* (Lesson 3); *Smullyan’s Chess Mysteries* (“Which Color?”, “Another Monochromatic”, “A Question of Survival”)

Assignment: Week 2 Discussion Board question; “Retrograde Puzzle 2” on D2L

- Meeting 4: More on Backwards Chess and What it Can Teach Us

Reading: *Pandolfini* (Lesson 4); *Smullyan’s Chess Mysteries* (“Mystery of the Missing Piece”, “You Really Can’t, You Know!”)

Assignments: “Retrograde Puzzle 3”; “Regular Chess Puzzle 1”; watch Working backward to solve problems (Maurice Ashley)

Week 3

History of the Game

Description: this week we look at some of the important history of the game—what we know of its emergence and early development, the changing role of different pieces (and the historical context of such changes), and the evolution of distinct styles of play

- Meeting 5: Chess History

Reading: *Pandolfini* (Lesson 5); *Smullyan’s Chess Mysteries* (“Two Bagatelles”, “Sir Reginald’s Jest”, “A Return Visit”); *The Immortal Game: A History of Chess* (Selection 1); “Brief Overview of Styles of Chess Play throughout History” (Rosiak)

Assignment: Review game from class and answer the two questions from that presentation

- Meeting 6: More on Chess History

Reading: *Pandolfini* (Lesson 6); *Smullyan’s Chess Mysteries* (“Mycroft’s Problem”, “A Little Question of Location”, “To Know the Past”, “A Study in Imaginary Checks”, “An Unsolved Problem”); *The Immortal Game: A History of Chess* (Selection 2); *Birth of the Chess Queen* (Selection)

Assignments: Week 3 Discussion Board questions; prepare Thesis Statement

Week 4

Special Topic in History and Philosophy of Chess: Chess as a Model of Conflict

Description: this week we look at how chess has been used to *model conflict* and simulate military strategies. We compare chess’s particular model of conflict, and warfare, to two other games: Kriegspiel and Go.

- Meeting 7: Some History and Context for the Military Use of Chess

Reading: *Pandolfini* (Lesson 8); *The Immortal Game: A History of Chess* (Selection 3); *Smullyan’s Chess Mysteries* (pages 83-92); “Chess: What is it Good for?”

Assignment: Answer question from end of class lecture

- Meeting 8: Introduction to Kriegsspiel and Go; Different Models of Conflict
Reading: *Pandolfini* (Lesson 9); *Smullyan's Chess Mysteries* (pages 93-96); "Introduction to Kriegspiel" (Rosiak); *Nomadology: the War Machine* (Selection)
Assignment: Week 4 Discussion Board; prepare Outline of paper

Week 5

Wait, but what *is* a Game?!

Description: this week we step back a bit and re-consider what it even is to be a *game*? What sorts of things are games? Is music a game? Is a conversation a game? Is a story a game? What, if anything, do all games have in common?

- Meeting 9: What is a Game? And on Rule-Following
Reading: *Pandolfini* (Lesson 10); *Smullyan's Chess Mysteries* (pages 97-111); *Wittgenstein's Philosophical Investigations* (Selection 1)
Exercise: Answer questions from my feedback on your Outline
- Meeting 10: More on Rule-Following and the Concept of a Game
Reading: *Pandolfini* (Lesson 11); *Smullyan's Chess Mysteries* (pages 112-121); *Wittgenstein's Philosophical Investigations* (Selection 2); *Suit's The Grasshopper: Games, Life and Utopia* (Selection)
Assignment: Finish Midterm paper!

Midterm Paper Due on 05/10 by midnight

Week 6

History and Fundamentals of Computer Chess

Description: this week we start to look at computer chess, specifically its history and some of the basic ideas involved in approaching chess algorithmically

- Meeting 11: Background on Computer Chess
Reading: Brief History of Computer Chess; *Pandolfini* (Lesson 12); *Smullyan's Chess Mysteries* (pages 129-144)
Assignment: Review Deep Blue game coverage on D2L
- Meeting 12: More on Computer Chess and Software Fundamentals
Reading: browse Chess Software Basics; *AlphaZero's Groundbreaking Chess Strategies* (Selection 1); *Pandolfini* (Lesson 13)
Assignment: Answer Week 6 Discussion Board questions

Week 7

Chess and Math in General

Description: this week we consider some properties of chess as a game that can be analyzed mathematically, and compare it to other mathematical games. We also look at some general questions having to do with *decidability* that relate to chess. We briefly return to some nuances in the question of whether or not chess has been *solved*, and further explore what it means, in general, for a game to be solved.

- Meeting 13: Chess as Formal System; Decidability, Solvability, and other Connections
Reading: “Notes on Chess and Math: Part 2” (Rosiak); *Smullyan’s Chess Mysteries* (“Thoughts of a Logician”)
Assignment: Play games listed on D2L under “Week 7 materials”
- Meeting 14: Chess compared to other Mathematical Games
Reading: *Winning Ways for your Mathematical Plays* (Selection); *Smullyan’s Chess Mysteries* (“Moriarty’s Problems”)
Assignment: Week 7 Discussion Board questions

Week 8

Chess and AI: Some Philosophical Questions

Description: this week explores some more general philosophical questions having to do with artificial intelligence and the very idea of machine intelligence. We will begin by looking at the Turing Test and some philosophical questions surrounding this. Then, building on the previous week’s work, we will examine one attempt to extrapolate from certain mathematical results to conclusions about the possibility of machine intelligence.

- Meeting 15: Turing Test and the Idea of Machine Intelligence
Reading: *Turing’s Computing Machinery and Intelligence*
Assignment: Listen to Musical Selection from Cope on D2L
- Meeting 16: More on the Idea of Machine Intelligence
Reading: *Hofstadter’s A Coffeehouse Conversation on the Turing Test; Lucas’s On Minds, Machines, and Gödel* (Selection); Review “Slides on Lucas” (Rosiak)
Assignment: Week 8 Discussion Board questions

Week 9

More on AI; The Future of Chess

Description: this week, we delve a little deeper into the “cutting edge” of chess engines, and then explore what such things mean for the future of the game.

- Meeting 17: AlphaGo and AlphaZero

Reading: *Pandolfini* (Lesson 14); *AlphaZero's Groundbreaking Chess Strategies* (Selection 2); watch *AlphaGo*, the movie

Assignment: Watch AlphaZero game coverage on D2L

- Meeting 18: Chess Engines in General; How they Affect the Game

Reading: *Pandolfini* (Lesson 15)

Assignment: Week 9 Discussion Board

Week 10

The Need to Play

Description: this final week we step back and consider some bigger questions, for instance: why do we play at all? what would a society that valued play above all else look like? why should we care about defending everyone's ability to play (including our own)?

- Meeting 19: Why do we play?

Reading: *Pandolfini* (Lesson 16 and Epilogue); *Suit's Grasshopper* (Selection 2); *Huizinga's Homo Ludens* (Selection)

Assignment: Answer question on D2L Week 10 about different games

- Meeting 20: More on Play

Reading: *Bogost's Play Anything: The Pleasure of Limits, the Uses of Boredom, and the Secret of Games* (Selection)

Assignment: Week 10 Discussion Board; finish writing Final Paper!

Final Paper Assignment Due 06/15 at midnight