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Frank Zenker

Reasoning
2020
edition



mu.edu.pl

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1 About the course

The course is aimed at deepening participants' insights into contemporary theory and practice of reasoning and inference. On the theoretical side, we shall discuss the very notions of reasoning and inference from the point of view of cognitive science, considering the impact of the new influential psychologistic paradigm in logical research. On the practical side, we shall examine certain important developments in analysis of reasoning and inference processes and their applications, concerning moral reasoning and decision making, abductive reasoning, the concept of rationality, as well as some methodological issues of empirical research on human reasoning.

All the materials are here: Everything: mu.edu.pl ⇒ [Teaching](#) ⇒ [Reasoning](#)

1.1 Teachers & topics

[Mariusz Urbański](#) (mental logic perspective, mostly):

- Reasoning: perspectives, definitions, typologies; reasoning as social phenomenon.
- Two system theories of reasoning: proponents and critics.
- Moral reasoning.
- Abduction.
- Rationality.

[Frank Zenker](#) (Bayesian probabilistic perspective):

- Standard methodological issues of empirical research on human reasoning
- Choice of normative standard; Meaning coordination between experimenter and subject; Verbatim protocols
- Assessing the formal model 1 (logical models)
- Assessing the formal model 2 (probabilistic models)
- Course Summary

1.2 Assessment

110 pts possible:

- Tutorials (80 pts):
 - 5 tasks (6 pts each), at the end of each in-class tutorial, concerning topics just covered;
 - term paper (50 pts); topic of your choice, but approved.
- Final exam (30 pts): open-book.

The scale:

Pts (tutorials)	Grade	Pts (total)	Grade
more than 65 – 80	5	more than 100 – 110	5
more than 55 – 65	4,5	more than 90 – 100	4,5
more than 50 – 55	4	more than 80 – 90	4
more than 45 – 50	3,5	more than 70 – 80	3,5
more than 35 – 45	3	more than 55 – 70	3
0 – 35	2	0 – 55	2

1.3 Term papers

- Your individual work.
- ca. 7 pages of text (excluding references), and a separate title page.
- In Polish or, preferably, English.
- Topic of your choice, related to the course themes.
- Topic and abstract (ca. 250 words) need to be approved; use the first round of individual appointments for discussion (this appointment is compulsory for a paper to count towards the final grade). The second appointment is optional (if you'll feel a bit lost, you know). At the third round (again, compulsory) you are expected to provide a detailed outline of the paper. The fourth one is optional (extinguishing the fires, if needed be).
- Deadline for submitting the paper is one week before the fifth appointment, at which we shall discuss the paper itself. This one is compulsory for a paper to count towards the final grade.

As for formatting:

- Standard \LaTeX article class.
- 11 pt font.
- Author-year citations (apacite will do).
- If you don't want to or can't install LaTeX, use e. g. [Overleaf](#).
- Title page: author's first and last name, e-mail address, student index number, title of the paper, abstract, 3 to 5 keywords.

Evaluation criteria are these:

- Form (10 pts):
 - Does the content of the paper correspond to the topic specified in the title? (2)
 - Is the content well-structured? (3)
 - Is the paper well-written? (3)
 - Are the references adequate? (2)
- Content (40 pts):
 - Is the thesis and argumentation clear? (15)
 - Are there any author's own arguments? Are they sufficiently justified? (15)
 - Is there any novel perspective involved? (10)

1.4 Calendar

12.03.2020–09.04.2020 MU classes, with readings assigned (9.45–13.00, room 70, AB¹).

16.04.2020–17.04.2020 Individual appointments, first round (compulsory: discussions on topics and abstracts of term papers).

20.04.2020–24.04.2020 FZ classes (15.00–17.15, room 70, AB).

30.04.2020 Individual appointments, second round (optional: how's going?).

21.05.2020–22.05.2020 Individual appointments, third round (compulsory: reporting on the progress).

25.05.2020 Final versions of abstracts due.

28.05.2020 Individual appointments, fourth round (optional: extinguishing the fires).

28.05.2020–04.06.2020 Term papers due, depending on the date of fifth appointment.

04.06.2020–11.06.2020 Individual appointments, fifth round: term papers vivas.

June 2020 Exams, sometime.

For booking individual appointments please use <https://mu-reasoning.youcanbook.me>.

2 MU-part: readings and tasks

12.03.2020 Reasoning: perspectives, definitions, typologies; reasoning as a social phenomenon

Reading: Stenning and van Lambalgen (2008). *Human Reasoning and Cognitive Science*, The MIT Press (ch. 2: The Anatomy of Logic, 19–41).

19.03.2020 Two system theories of reasoning: proponents and critics

Reading: Stenning and van Lambalgen (2008). *Human Reasoning and Cognitive Science*, The MIT Press (ch. 5: From the Laboratory to the Wild and Back Again, 117–137).

26.03.2020 Moral reasoning

Reading: Haidt (2008). *The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment* (ch. 53 of J. E. Adler & L. Rips (eds.) *Reasoning. Studies of Human Inference and Its Foundations*, Cambridge UP).

02.04.2020 Abduction

Reading: Magnani (2014). *Abductive Theory of Cognition. The Eco-Cognitive Model*. *Rivista Italiana di Filosofia del Linguaggio*, 54–69.

09.04.2020 Rationality

Readings: (1) Stenning and van Lambalgen (2008). *Human Reasoning and Cognitive Science*, The MIT Press (ch. 11: Rationality Revisited, 347–366); (2) Sorensen (2004). *Paradoxes of Rationality* (ch. 14 of A. R. Mele & P. Rawling (eds.) *The Oxford Handbook of Rationality*, Oxford UP).

Stenning and van Lambalgen's book is available on EBSCOhost via USOS or [here](#); Adler and Rips' is [here](#)).

¹The place may be subject to change.

2.1 Reasoning: perspectives, definitions, typologies; reasoning as a social phenomenon

12.03.2020

Reasoning: perspectives, definitions, typologies; reasoning as a social phenomenon

Readings: Stenning and van Lambalgen, "The Anatomy of Logic"

(ch. 2 of *Human Reasoning and Cognitive Science*, The MIT Press, 2008)

1. Characterize the parameters defining:
 - (a) classical logic,
 - (b) extensional many-valued logics,
 - (c) intuitionistic logic,
 - (d) deontic logic,
 - (e) closed-world reasoning.
2. What is the parametrical difference between Kleene's three valued logic and Lukasiewicz's one?
3. What does it mean that logical languages are "topic neutral"?
4. Explain the difference between reasoning to an interpretation vs reasoning from an interpretation.
5. Devise an example of exploitation of one of the Gricean conversational maxims. Apply credulous and skeptical stance to a reasoning involved in it.
6. Apply the type-token distinction to the semantics of first-order logic (to the notion of interpretation, or model, in particular).
7. What does it mean that logics are local? What a global logic would be applicable to?
8. Explain the difference between closed-world assumption and closed-world assumption with abnormalities.
9. Give an example of application of "principle of inertia". Analyse your example in terms of credulous vs skeptical stance.
10. What does it mean that "the logics are in the mind"?

2.2 Two system theories of reasoning: proponents and critics

19.03.2020

Two system theories of reasoning: proponents and critics
Readings: Stenning and van Lambalgen, "From the Laboratory to the Wild and Back Again"
(ch. 5 of *Human Reasoning and Cognitive Science*, The MIT Press, 2008)

1. Recall what is the difference between reasoning *to* vs reasoning *from* an interpretation. Give examples of both.
2. Apply Marr's Tri-Level Hypothesis of analysis of information processing system (computational / algorithmic / implementational) to the study of reasoning.
3. Give a one-sentence (could be a compound one) summary of the main claims of each of the three "schools" in psychology of reasoning.
4. Explain the claim that "Reasoning is the idle pastime of the academy, but not the bread and butter of the real world".
5. Explain the distinction between system 1 and system 2 processes discussed in dual process theories of reasoning. Apply it to the claim of task 4.
6. Explain the authors' account on Luria's "white bear" dialogue in terms of Ajdukiewicz's distinction between reasoning and inference.

Additional materials

- Keith Frankish (2010) "[Dual-Process and Dual-System Theories of Reasoning](#)", *Philosophy Compass*, 5/10, 914–926.
- Arie W. Kruglanski, Gerd Gigerenzer (2011) "[Intuitive and Deliberate Judgments Are Based on Common Principles](#)", *Psychological Review*, Vol. 118, No. 1, 97–109.

2.3 Moral reasoning

26.03.2020

Moral reasoning

Readings: Jonathan Haidt, "The Emotional Dog and Its Rational Tail: A Social Intuitionist Approach to Moral Judgment"

(ch. 53 of J. E. Adler & L. Rips (eds.) *Reasoning. Studies of Human Inference and Its Foundations.*, Cambridge UP, 2008)

1. First, have a look at these Plato's allegories:
 - (a) allegory of the cave (or den): *The Republic*, 514a–520a ([the very beginning of the Book VII; Polish translation](#)),
 - (b) chariot allegory: *Phaedrus*, 245c–249d ([here](#) look for "a pair of winged horses and a charioteer" and then for "I divided each soul into three"; [Polish translation](#)).
2. Characterise the basic assumptions of the rationalist approach in moral psychology.
3. Do the same for the social intuitionist model. Then describe the model in details.
4. Find out more about experimental setups employed by Kohlberg and Turiel *et al.*. Examine them (critically, perhaps).
5. Is there – in your opinion – any kind of a fundamental difference between Kohlberg's 'Heinz the robber' story and Haidt *et al.*'s eating one's dead pet dog and the remaining ones?
6. What does it mean: "morally dumbfounded"?
7. Examine (again, critically), the definitions of moral judgement, moral reasoning and moral intuition.
8. Which of the four reasons (to doubt the causal importance of reason) are most compelling from your point of view?
9. Where the moral intuitions come from?
10. Characterise the five foundations addressed in the Moral Foundations Theory.

Additional materials

- Jesse Graham *et al.* (2009) "Liberals and Conservatives Rely on Different Sets of Moral Foundations", *Journal of Personality and Social Psychology*, Vol. 96, No. 5, 1029–1046 (available via Ebsco) and Haidt's [TED talk](#),
- Bert Musschenga (2013) "The promises of moral foundations theory", *Journal of Moral Education*, Vol. 42, No. 3, 330–345 (available via Ebsco).
- Jesse Graham *et al.*, [Moral Foundations Theory: On the Advantages of Moral Pluralism Over Moral Monism](#),
- <https://www.moralfoundations.org/>.

Additionally additional materials

- Tal Eyal *et al.* (2008) "[Judging near and distant virtue and vice](#)", *Journal of Experimental Social Psychology*, Vol. 44, 1204–1209.
- Iris L. Žeželj, and Biljana R. Jokić (2014) "[Replication of Experiments Evaluating Impact of Psychological Distance on Moral Judgment](#)", *Social Psychology*, Vol. 45, No. 3, 223–231.

2.4 Abduction

02.04.2020

Abduction
Readings: Magnani, "Abductive Theory of Cognition. The Eco-Cognitive Model"
(*Rivista Italiana di Filosofia del Linguaggio*, 2014, pp. 54–69)

1. What does it mean that abduction is ignorance-preserving?
2. What are possible solutions (or responses) to an ignorance problem?
3. What is the meaning of \rightsquigarrow in GW-schema of abduction?
4. Explain the difference between attainment and presumptive attainment (of an abductive goal on the basis of a certain knowledge base) in terms of Ajdukiewicz's distinction of reasoning vs inference.
5. Characterize the structure of Inference to the Best Explanation.
6. Evaluate to what extent it is justified to consider diagnostic reasoning as a case of selective abduction, as opposed to creative abduction.
7. What is so creative in counterinduction?
8. Give examples of abductions: sentential, perceptual and manipulative one.
9. Account for considerations of subsection 2.2 in terms of alethic vs epistemic perspectives in analysing abduction.
10. Interpret the quotation from Peirce on p. 65 in terms of Rips' loose vs strict views of reasoning.
11. Find out what Peircean *synechism* is. Is it possible to express this view in terms of embodied cognition?
12. Why scientific theories are not just good fictions?

Additional materials

- Woods, J. (2017). "Reorienting the Logic of Abduction"; published in: L. Magnani & T. Bertolotti, [Springer Handbook of Model-Based Science](#), p. 137–150.
- Urbański, M., Klawiter, A. (2018). "Abduction: some conceptual issues". *Logic and Logical Philosophy*, 27(4), p. 583–597.
- Urbański M. (2009). "Rozumowania abdukcyjne. Modele i procedury". Adam Mickiewicz University Press, Poznań (ch. 1st and 8th).

2.5 Rationality

09.04.2020

Rationality

Reading: Roy Sorensen, "Paradoxes of Rationality"

(ch. 14 of A. R. Mele & P. Rawling (eds.) *The Oxford Handbook of Rationality*, Oxford UP, 2004)

Readings: Stenning and van Lambalgen, "Rationality Revisited"

(ch. 11 of *Human Reasoning and Cognitive Science*, The MIT Press, 2008)

Just one task (it is also your fifth and last assignment; individual work, please): formulate five to seven questions or issues you would like to discuss; they may arise from reading Sorensen's chapter or just concern the topic of rationality in general. Send them in by midnight, Tuesday, April 7th, at the usual e-mail address.

Additional materials

- Chapters of A. R. Mele & P. Rawling (eds.) *The Oxford Handbook of Rationality*, Oxford UP, 2004:
 - Robert Audi, "Theoretical Rationality: Its Sources, Structure, and Scope", ch. 2.
 - Alfred R. Mele, "Motivated Irrationality", ch. 13.
- Entries in the "Stanford Encyclopedia of Philosophy":
 - [Instrumental Rationality](#).
 - [Practical Reason](#).
 - [Historicist Theories of Scientific Rationality](#).

3 FZ-part: topics

20.04.2020 Standard Methodological Issues of Empirical Research on Human Reasoning

21.04.2020 Choice of Normative Standard; Meaning Coordination between Experimenter and Subject; Verbatim Protocols; Mock Empirical Study ("Linda Problem")

22.04.2020 Results of Mock Study and Discussion; Assessing the formal model 1 (logical models); Student Presentation and Feedback 1

23.04.2020 Quiz, Assessing the formal model 2 (probabilistic models); Student Presentation and Feedback 2

24.04.2020 Course Summary; key lessons; directions for future research; final discussion