Bayesian Epistemology

Stockholm University, autumn 2016
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This course introduces the basics of Bayesian epistemology. Bayesian epistemology consists of three core theses: (1) Belief comes in degrees; (2) these degrees should satisfy the probability axioms; (3) one should change one's beliefs by conditionalizing on new evidence. The first part of the course will be devoted to discussing these three theses, the main arguments that have been made in their favour, and objections that have been raised against them. The second part will be devoted to Bayesian confirmation theory, according to which the tools and formalism of Bayesian epistemology provides the foundation for scientific reasoning. We will examine the claim that Bayesian confirmation theory has the resources to solve notorious philosophical puzzles, such as Hume's problem of induction and the paradox of the ravens. We conclude by discussing the worry that Bayesian confirmation theory, and Bayesian epistemology more generally, is too liberal when it comes to determining which beliefs are rational.

The course runs every day from November 28 to December 2. There will be two classes on each of these days, the first from 10-12 and the second from 14-16, except for the last day, when there will only be a morning class (10-12).

It is very important that you do all readings before class and show up prepared for a discussion. The grade for the course will be determined by an essay (90%), which should be handed in no later than December 12, and participation in class (10%).

All course material will be available here: www.orristefansson.is/bayesian-epistemology. You will be able to download from this website all the readings, except Bradley's (2015) book.

Although laptops are not banned from my class, I would strongly suggest you leave them at home, for the reasons explained in these two articles:
https://www.fastcodesign.com/3029713/the-best-way-to-remember-something-take-notes-by-hand
http://pss.sagepub.com/content/early/2014/04/22/0956797614524581.abstract (Summary of their findings: "The present research suggests that even when laptops are used solely to take notes, they may still be impairing learning because their use results in shallower processing.")

The two main texts of the course are:

- Darren Bradley (2015), *A Critical Introduction to Formal Epistemology*, Bloomsbury.

- Michael Strevens (2012), *Notes on Bayesian Confirmation Theory* (http://www.nyu.edu/classes/strevens/BCT/BCT.pdf)

Here are some good background readings:

- William Talbott (2008), "Bayesian Epistemology", *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/epistemology-bayesian/).
- Kenny Easwaran (2011a, 2011b), "Bayesianism I", "Bayesianism II" (https://dl.dropboxusercontent.com/u/10561191/Published/BayesI.pdf, https://dl.dropboxusercontent.com/u/10561191/Published/BayesII.pdf).

Additional readings (including "extra" readings):

- Arntzenius (2003), "Some problems for conditionalization and reflection", *Journal of Philosophy* 100(7): 356-370.
- Briggs (2009), "Distorted reflection", *Philosophical Review* 118(1): 59-85.
- Buchak (2014), "Belief, credence, and norms", *Philosophical Studies* 169(2): 285–311.
- Earman (1992), *Bayes or Bust? A Critical Examination of Bayesian Confirmation Theory*, MIT Press.
- Elga (2000), "Self-locating belief and the sleeping beauty problem", *Analysis* 60(2) :143–147.
- Eriksson and Hájek (2007) "What are degrees of belief?", *Studia Logica*, 86(2):183-213.
- Foley (2009), "Beliefs, degrees of belief, and the Lockean thesis", in Huber, Schmidt-Petri (eds.), *Degrees of Belief*, Synthese Library.
- Howson and Urbach (1993), *Scientific Reasoning: The Bayesian Approach*, Open Court.
- Jeffrey (1968), "Probable knowledge", reprinted in his 1992 *Probability and The Art of Judgement*, Cambridge University Press.
- Maher (1992), "Acceptance in Bayesian Philosophy of Science", *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association 1992*: 153-160
- Mahtani (2015), "Dutch books, coherence, and logical consistency", *Noûs* 49(3): 522-537.
- Hájek (2003), "What conditional probability could not be", *Synthese* 137(3): 273-323.
- Hájek (2008a), "Dutch book arguments", in Anand, Pattanaik & Puppe (eds.), *The Oxford Handbook of Rational and Social Choice*, Oxford University Press
- Hájek (2008b), "Interpretations of probability", *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/probability-interpret/);
- Lewis (1980), "A subjectivist's guide to objective chance", in Jeffrey (ed.), *Studies in Inductive Logic and Probability*, University of California.
- Lewis (2001), "Sleeping Beauty: reply to Elga", *Analysis*, 61(3): 171-176.
- Ramsey (1926), "Truth and Probability" reprinted in Mellor (ed.) (1990), *Philosophical Papers*, Cambridge University Press.
- Steele and Stefánsson (2015), "Decision Theory", *Stanford Encyclopedia of Philosophy* (http://plato.stanford.edu/entries/decision-theory/).
- Stefánsson (forthcoming), "What is 'Real' in Probabilism?", *Australasian Journal of Philosophy*.

COURSE SCHEDULE

(I) Monday: The core of Bayesian epistemology

1. Belief and degrees of belief.
   - Bradley (2015), ch.1; Strevens (2012), ch. 2.
   - Ramsey, (1926), only section 3 (i.e., the part titled "Degrees of belief"), and don't worry about the mathematical details.

2. Belief and acceptance.
   - Bradley (2015), ch. 2;
   - Foley (2009).

Extra readings: Jeffrey (1968), Maher (1992); Eriksson and Hájek (2007), Buchak 2014.

(II) Tuesday: Probabilism

3. Norms of Probabilism (+ Principal Principle).
   - Bradley (2015), ch. 3; Strevens (2012), ch. 3.

4. The Dutch book argument for Probabilism.
   - Hajek (2008a), sections 1-4 (pp. 1-23).

Extra readings: Lewis (1980); Bradley (2015), ch. 9; Stefansson (forthcoming); Easwaran (2011a); Eriksson and Hájek (2007); Hájek (2008a); Hajek (2008b); Steele and Stefansson (2015), section 3.

(III) Wednesday: Conditionalization and Bayes' theorem

5. Bayesian conditionalization (and Reflection).
   - Bradley (2015) ch. 4 & 10.1; Strevens (2012), ch. 4.
6. Challenge for conditionalization: Sleeping Beauty.
   - Bradley (2015), pp. 152-155; Elga (2000); Lewis (2001).

Extra readings: Hájek (2008a), section 5; Hajek (2003); Easwaran (2011a); Briggs (2009); Mahtani (2015); Arntzenius (2003).

(IV) Thursday: Bayesian confirmation theory

7. Bayesian machinery.
   - Strevens (2012), ch. 5-6.2.
8. Problem of induction and the paradox of the ravens.
   - Strevens (2012), ch. 7-8.1; Bradley (2015), chs. 6 & 8.

Extra readings: Howson and Urbach (1993), chs. 1 and 4a-4d; Easwaran (2011b); Bradley (2015), ch. 7.

(V) Friday: Subjectivity and Bayesianism

9. Convergence and constraining the priors.
   - Strevens (2012), ch. 9,

Extra readings: Earman (1992), ch. 6; Easwaran (2011b).