The seminar will meet three times this first week (1–3pm, T/W/R). I'll give 3 lectures—an overview of my book project. Next week, we will have (a) a Q&A session on Tuesday (1–3), and then (b) a “project pitch” session on Thursday (1–3).

- The Q&A session (Tuesday 6/10) will be an opportunity for you to ask questions to help shape your projects.
- Then, on Thursday 6/12, individuals (or project groups of 2) will give a 15-minute “pitch” of their project proposals.

Finally, we will have (c) 45-minute presentations of student projects, and (d) 10-page project reports will be due on the last class day (6/26). We have two options regarding (c).

- Some presentations on 6/17–6/18 & some in the final week. (c₁)
- Or, we could use 6/18 (Wed) as a “discussion section” in which we talk about projects and project preparations, informally. And, then, we could have all the presentations in four meetings held during the final week (6/23–6/26).

In these lectures, I will layout a general framework for grounding formal, synchronic, epistemic coherence requirements for various types of judgment sets.

- Formal coherence is to be distinguished from more substantive types of “coherence” in epistemology [1].
  - Our notions of coherence will (like deductive consistency) supervene on logical properties of judgment sets.
- Synchronic coherence has to do with the coherence of a set of judgments held by an agent $S$ at a single time $t$.
- Epistemic coherence involves distinctively epistemic values (specifically: accuracy [14] and evidential support [8]).
  - Not to be confused with pragmatic coherence [25, 13].
- Coherence has to do with how a set of judgments “hangs together”. CRs are wide-scope [2], non-local requirements.
- Requirements are evaluative; they give necessary conditions for (ideal) epistemic rationality of a doxastic state [27].

Our framework is a generalization of Joycean [16, 15] arguments for probabilism as a coherence requirement for sets of numerical confidence judgments (viz., credences).

These arguments trace back to de Finetti [9] and they have recently culminated in a vast generalization [24] which forms the basis of our approach to numerical credence.

Before discussing credences, however, I want to talk about evidential probabilities. It will be a basic slogan of our approach that “probabilities reflect evidence”. That is:

- Probabilities Reflect Evidence (PRE). For each epistemic context (where a context is determined by a body of total evidence $E$), there exists a probability function $Pr_E(\cdot)$ which measures the degree of evidential support in that context.

In this first lecture, I will explain how Joycean arguments allow us to provide a (partial) justification of (PRE). Then, we will use (PRE) as a key premise in our later arguments.
• Ultimately, our framework will be applicable to any types of judgment which satisfy the following four conditions.

1. **Alethic Ideal.** The *alethic ideal* for a set of judgments is the conditions under which the set is *perfectly accurate* (in a world). These *supervene on the truth-values* of judged $p$’s.

2. **Evidential Ideal.** The *evidential ideal* for a set of judgments is the conditions under which the set is supported by the *total evidence* (in a context of epistemic evaluation). Following (PRE), these will have a *probabilistic* explication.

3. **Non-Factivity.** The judgments in question are not assumed to be factive. That is, one may (sometimes) rationally hold judgments that are inaccurate (i.e., they may *fall short of* 1).

4. **Fallibility.** The judgments are not assumed to be infallible. One may (sometimes) rationally hold judgments that aren’t supported by the total evidence (they may *fall short of* 2).

• Some instances of non-factivity + fallibility will count as irrational. These will be the *incoherent* doxastic states.

I will look at the simplest instance of de Finetti’s Theorem, which involves an agenda $\{P, \neg P\}$ for some contingent $P$. Let us suppose (as a matter of convention) that $s(\cdot, E)$ takes values on the unit interval $[0, 1]$, with 0 corresponding to minimal support and 1 corresponding to maximal support.

Now, let’s consider assignments of *credences* (degrees of confidence) to $\{P, \neg P\}$. We’ll represent credal assignments $b(\cdot) \in [0, 1]$ on $\{P, \neg P\}$, as: $b(P) = x$ and $b(\neg P) = y$.

This allows us to visualize the salient space of possible credence functions on $\{P, \neg P\}$ via a simple Cartesian plot (of the unit square), with abscissa $b(P)$ and ordinate $b(\neg P)$.

Next, we assume the following alethic and evidential *ideals*.

• **Alethic Ideal.** As an *alethic ideal*, $b(\cdot)$ should assign a value of 1 to all (actual) truths and 0 to all (actual) falsehoods.

• **Evidential Ideal.** As an *evidential ideal*, $b(\cdot)$ should be *equal* to $s(\cdot, E)$, where $E$ is the (actual) total evidence.

Of course, credence functions which satisfy the evidential ideal will *not* typically satisfy the alethic ideal. The total evidence is *rarely* conclusive (for all $p$’s in any given $\mathcal{A}$).

But, the evidential ideal should only conflict with the alethic ideal *up to a point. Sufficiently radical conflicts* between the alethic and the evidential ideals should be prohibited (or, following the evidence could lead us *too far astray*).

If a credence function $b(\cdot)$ is *radically* inaccurate, then it must not reflect the total evidence. The Joycean explication of “radically inaccurate” involves *gradational inaccuracy*.

The (gradational) inaccuracy of a credal assignment $b(p)$ at a possible world $w$ is some function $i_b$ of $b(p)$ and the value assigned to $p$ by the *indicator function* $v_w(p) \in [0, 1]$, which assigns 1 (0) to all truths (falsehoods) in $w$.

Let $i_b(b(p), v_w(p)) \equiv (v_w(p) - b(p))^2$. [Note: this yields Euclidean distance $I_b$ between the vectors $b(\cdot)$ and $v_w(\cdot)$].
• Simplest case of dF’s Theorem [9]. The diagonal lines are the probabilistic b’s (on \( P, \neg P \)). The point (1, 0) ((0, 1)) corresponds to the world in which P is true (false).

Theorem (de Finetti [9]). b is non-probabilistic \( \iff \exists b'(\cdot) \) which is (Euclidean) closer to \( v_w(\cdot) \) in every possible world.

• The plot on the left (right) explains the \( \Rightarrow (\Leftarrow) \) direction.

We weren’t clear on Step 3 in our presentation of de Finetti’s argument. The fundamental epistemic principle there was:

**Weak Accuracy-Dominance Avoidance (WADA).** \( b(\cdot) \) should not be weakly dominated in inaccuracy (according to \( I_b \)). More formally, there should not exist a \( b'(\cdot) \) (on \( A \)) s.t.

(i) \( (\forall w) [I_b(b'(\cdot), v_w(\cdot)) \leq I_b(b(\cdot), v_w(\cdot))], \) and

(ii) \( (\exists w) [I_b(b'(\cdot), v_w(\cdot)) < I_b(b(\cdot), v_w(\cdot))]. \)

• Weak dominance principles are typically assumed to be requirements of rationality in the context of decision theory (think of \( I_b \) as an alethic measure of epistemic (dis)utility).

\( \exists \) If (a) we assume our inaccuracy measure \( I_b \) is Euclidean distance, and (b) we assume that violating (WADA) entails that \( b \) is “radically inaccurate,” then we can conclude that \( s(\cdot, E) \) must be a probability function. What justifies (a)?

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\(^2\)Weak and strict dominance are equivalent for Euclidean distance [26].
- $b'(P_i) = 0$ strictly dominates $b(P_i) = 1/3$, according to the Manhattan distance measure of credal inaccuracy.

Assuming that violations of (WADA) constitute “radically inaccurate” credences, using the Manhattan distance rules out $b(P_i) = 1/3$ as a candidate for $s(P_i, E)$ in this context.

- This seems wrong. $b(P_i) = 1/3$ seems like a good candidate for $s(P_i, E)$ in this context. Moreover, (PP) entails this.

- This “evidentialist” reply to Maher leads Joyce to endorse a more general claim, which we call **Probabilistic Admissibility**.

**Probabilistic Admissibility** (PA). A credal inaccuracy measure $I_b$ is **probabilistically admissible** just in case it fails to rule out any probability function $b(\cdot)$ via (WADA).

Joyce’s rationale for (PA) rests on the assumption that

**(PRE’)** Every probability function will correspond to the chances in some (possible) context. Thus, assuming (PP), every Pr-function describes some possible support function $s(\cdot, E)$.

- It is easy to show that propriety entails probabilistic admissibility (minimization of $I_b$-expectation entails non-$I_b$-dominance). But, the converse is an open question.

- **I.e.,** it is open whether propriety can be replaced by the (seemingly) weaker assumption (PA) in the argument of Predd et. al. Pettigrew [23] discusses this conjecture.

- In any case, it seems likely that any inaccuracy measure which runs afoul of (PA) will prove to be inadequate because it rules out some possible evidential support functions.

- If this proves to be right, then we would have a (partial) justification of (PRE), which makes use of the (**prima facie** more plausible) assumption (PRE’) + a (WADA)-based argument for **probabilism, as the evidential ideal for $b(\cdot)$**.

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3Strictly speaking, we need to assume **truth-directedness** (i.e., that uniform decreases in point-wise $I_b$-inaccuracy entail a decrease in overall $I_b$-inaccuracy) in addition to propriety/probabilistic admissibility (see [23]).
A third worry about Joyce’s argument for probabilism questions whether (a) credences have an alethic (or accuracy) ideal, and (b) this ideal is that \( b(p) = v_w(p) \).

- Re (a), one might worry that judgments of the form '\( b(p) = r \)' do not “aim at \( p \)'s truth” because such judgments *don't represent the world as being such that \( p \).*
  - One can still maintain that it is *epistemically better* to assign higher credence to truths than falsehoods. And, since this *supervenes on the truth-values* (of the \( p \)'s), it still counts as an *alethic ideal* (if not an “accuracy ideal”).

- Re (b), even if you agree that \( b(\cdot) \) should *match some function* \( f(\cdot) \) (on pain of inaccuracy), you might reject \( f(\cdot) = v_w(\cdot) \). Maybe \( f(\cdot) = \text{the chance function} \) (at \( w \)) [12].
  - This seems incorrect to me. The Principal Principle [18] is an *evidential norm* — it tells you what \( b(p) \) should match if \( S \) *doesn’t know the value of* \( v_w(p) \). In fact, (PP) implies that if \( S \) *does know* \( v_w(p) \), then \( b(p) \) should match \( v_w(p) \).

- See [12, 22, 21, 3] for further discussion of both (a) and (b).

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