Lecture 2: The initial point of view

Richard Pettigrew 7^{th} *May 2025*

Handout (with references) & appendix: RICHARDPETTIGREW.COM/LOCKE

What came before...

(i) Norms for credences (synchronic coherence norms; updating norms); (ii) teleological justifications for them (both pragmatic and non-pragmatic).

...and what's to come

Two lacunae: (iii) further synchronic norms; (iv) norms governing the evolution of your credences when your space of personal possibilities changes; (v) life without logical or evidential probabilities.

Chances and credences

The Principal Principle Rationality requires that your credence in A, conditional on the chance of A being r, is r.[1]

Objective Expected Credal Utility Argument for the PP If your credences don't obey the Principal Principle, there are alternative credences that do obey it that are guaranteed to have greater expected credal utility.[2]

[1] E.g. conditional on a coin being fair, you should be 50% confident it will land heads; conditional on a die being unbiased, you should be 1/6 confident it will land six. (Lewis, 1980; Hall, 1994; Ismael, 2008; Pettigrew, 2014).

In fact, this is the version for self-recommending chances. The general principle says: If you are uncertain which of $ch_1, \ldots, ch_n$ gives the chances, your credences should be a mixture of them; that is, there are $0 \leq \alpha_1, \ldots, \alpha_n \leq 1$ such that $\alpha_1 + \ldots + \alpha_n = 1$ and, for all X in $\mathcal{F}$,

$$C(X) = \alpha_1 ch_1(X) + \ldots + \alpha_n ch_n(X)$$

(Pettigrew, 2016a, Chapter 11).

[2] (Pettigrew, 2013).

What are your priors?

The credences you have at the beginning of your epistemic life, i.e., prior to receiving any evidence? ✗

Hypothetical credences we posit in order to determine whether your credences at later times are rational? ✓

Epistemic Risk and 'The Will to Believe'

	Red	*Blue*	*Yellow*
Verity's credences	90%	5%	5%

KINGDON: These are surely irrational!

VERITY: I am a risk-seeker in the epistemic realm.[3]

[3] Compare (Kelly, 2014; Fraser, 2020).

> Believe truth! Shun error!—these, we see, are two materially different laws; and by choosing between them we may end by coloring differently our whole intellectual life. We may regard the chase for truth as paramount, and the avoidance of error as secondary; or we may, on the other hand, treat the avoidance of error as more imperative, and let truth take its chance. [...] Clifford [...] exhorts us to [...] [b]elieve nothing [...] keep your mind in suspense forever, rather than by closing it on insufficient evidence incur the awful risk of believing lies. You, on the other hand, may think that the risk of being in error is a very small matter when compared with the blessings of real knowledge, and be ready to be duped many times in your investigation rather than postpone indefinitely the chance of guessing true. I myself find it impossible to go with Clifford. [...] It is like a general informing his soldiers that it is better to keep out of battle forever than to risk a single wound. Not so are victories either over enemies or over nature gained.[4]

[4] (James, 1896/2000).

Two Risk-Sensitive Decision Theories without Probabilities

The Generalized Hurwicz Criterion

Maximin Score each option by its worst-case utility; maximize scores.[5]

Hurwicz criterion Score each option by a weighted sum of its best-case and worst-case utilities; maximize scores.[6]

Generalized Hurwicz criterion Score each option by a weighted sum of its best-case, second-best-case, ..., second-worst-case, and worst-case utilities; maximize scores.[7,8] See Figures 1 and 2.

[5] This is maximally risk-averse. (Wald, 1945).

[6] The higher the weight for best-case utility, the more risk-seeking you are; the higher the weight for the worst-case utility, the more risk-averse you are. (Hurwicz, 1952; Pettigrew, 2016b).

[7] The higher the weight for better-case utilities, the more risk-seeking you are; the higher the weight for the worse-case utilities, the more risk-averse you are. (Pettigrew, 2022).

[8] Suppose $W = \{w_1, w_2, w_3\}$ and $\Lambda = (\lambda_1, \lambda_2, \lambda_3)$ and $u(a, w_1) \leq u(a, w_2) \leq u(a, w_3)$. Then the *generalized Hurwicz score of a* is

$$\lambda_1 u(a, w_1) + \lambda_2 u(a, w_2) + \lambda_3 u(a, w_3)$$

Risk Threshold Decision Theory

Risk threshold decision theory Set a minimum threshold and a maximum threshold. Pick an option that clears the minimum for sure, and might clear the maximum.[9] See Figures 3 and 4.

[9] Set $l < h$. Then, very roughly: a is permissible if

(i) a is not dominated;

(ii) $l \leq u(a, w)$, for all w in W;

(iii) $h \leq u(a, w)$, for some w in W.

Inspired by a suggestion by Sophie Horowitz (2017).

Problems for Permissivism

KINGDON: How can you rationally have high credence in *Red* when you know it's also rationally permissible to have low credence in *Red*?

VERITY: What's the alternative?

> "Do not decide, but leave the question open," is itself a passional decision,—just like deciding yes or no,—and is attended with the same risk of losing the truth.[10]

[10] (James, 1896/2000).

KINGDON: Why not roll a three-sided die to pick between the permissible credences?

VERITY: There is an alternative that dominates that mixed act.[11]

KINGDON: What's wrong with shifting from one permissible credence function to another?[12]

VERITY: You fail to maximize expected epistemic utility from your current point of view.

KINGDON: Why think you should maximize expected epistemic utility from that point of view?

VERITY: While I retain my commitment to my credences, I must; but I can question that commitment, and then I may change.[13]

KINGDON: So you can flip-flop rationally?

VERITY: That would be rationally permitted at each point, but not rationally permitted as a strategy.[14]

Awareness Growth and Doxastic Crises

Original credences:

Kingdon is liberal	*Kingdon is centrist*	*Kingdon is conservative*
1/4	1/2	1/4

Awareness growth by expansion:

Kingdon is leftist	*Kingdon is liberal*	*Kingdon is centrist*	*Kingdon is conservative*
?	?	?	?

Awareness growth by refinement:

K is liberal			*K is centrist*	*K is conservative*
K is ordoliberal	*K is classical liberal*	*K is neoliberal*	*K is centrist*	*K is conservative*
?	?	?	?	?

Reverse Bayesianism[15]: the ratio between the original credences assigned to two possibilities that belong to the original set should be preserved in the credences assigned to the new set.

But:

Kingdon is ordoliberal	*Kingdon is classical liberal*	*Kingdon is neoliberal*	*Kingdon is centrist*	*Kingdon is conservative*
1/6	1/6	1/6	1/3	1/6

[11] Suppose CU is a measure of credal utility that is continuous on the probabilistic credence functions and strictly proper. Now, suppose $P_1, \ldots, P_n$ are credence functions, and α is a randomizing procedure that gives chance α_i of having credence function P_i. And define the credal utility of α as follows:

$$\mathrm{CU}(\alpha, w) = \sum_{i=1}^{n} \alpha_i \mathrm{CU}(P_i, n).$$

Then, if $P_i \neq P_j$, for some i, j, there is $P^\star$ such that, for all w,

$$\mathrm{CU}(\alpha, w) < \mathrm{CU}(P^\star, w).$$

[12] (White, 2005; Meacham, 2014; Horowitz, 2019; Schoenfield, 2022; Horowitz et al., 2024).

[13] Compare Wittgenstein (1969):

96. It might be imagined that some propositions, of the form of empirical propositions, were hardened and functioned as channels for such empirical propositions as were not hardened but fluid; and that this relation altered with time, in that fluid propositions hardened, and hard ones became fluid.
97. The mythology may change back into a state of flux, the river-bed of thoughts may shift. But I distinguish between the movement of the waters on the river-bed and the shift of the bed itself; though there is not a sharp division of the one from the other.

[14] Suppose $P_1, \ldots, P_n$ are credence functions. If $P_i \neq P_j$, for some i, j, there is $P^\star$ such that, for all w in W,

$$\mathrm{CU}(P_1, w) + \ldots + \mathrm{CU}(P_n, w) < \mathrm{CU}(P^\star, w) + \ldots + \mathrm{CU}(P^\star, w).$$

Compare Gardiner (2022) on patterns of attention. David Enoch also pointed out to me the analogy with Quinn's (1990) paradox of the self-torturer.

[15] (Karni & Vierø, 2013).

What about the strategies we used to justify Conditionalization? Too conservative. (More conservative even than Reverse Bayesianism!)

Proposal: Awareness growth throws us back into the situation we faced at the beginning of our epistemic life. We must pick a prior over our new personal possibilities, and then update it on the evidence we've received so far.[16]

[16] (Pettigrew, 2024).

Awareness growth is akin to a doxastic crisis: e.g., genealogical anxiety,[17] *epoché*,[18] receiving sceptical challenges.[19]

[17] (White, 2011; Schoenfield, 2014; Srinivasan, 2019; Schoenfield, 2022).

[18] (Carel, 2014, Section 2)

[19] (Cavell, 1979; McDowell, 1979; Pritchard, 2021).

Worry: How can we ever rationally choose to grow our awareness on this account?[20]

[20] Thanks to Miriam Schoenfield for raising this.

Whence evidential probabilities?

The Teleological Objection: What is *good* about matching your credences to the evidential probabilities conditional on your evidence? What goes *wrong* for you if you don't? What makes it *better* to do so? What do you *lose* if you don't?

Cf. Keynes' (1921) logical probabilities (graded versions of logical entailment); Carnap's (1950) logical probabilities (probabilities based on priors that respect logical symmetries); Jaynes' (1957; 2003) and Paris & Vencovská's (1990; 1997) unbiased inference (probabilities that do not 'go beyond' the evidence).

KINGDON: But surely we do often talk as if there are such things as evidential probabilities. We say this evidence makes that conclusion likely; we say certain hypotheses are 'intrinsically plausible'.[21]

[21] (Williamson, 2000, 211).

VERITY: In most conversations, we take it to be common ground that the actual range of credence functions inhabited by the people we're discussing is narrow. Why is this? Perhaps our shared cognitive apparatus fixes everyone's credence functions in a small neighbourhood; perhaps we all have similar attitudes to epistemic risk; perhaps it's socially beneficial if they cluster like this.[22]

[22] (Dogramaci & Horowitz, 2016; Pettigrew & Weisberg, 2024).

Whatever the reason, we then often speak and act as if these credence functions play the role that we often take the evidential probability function to play. They give measures of what people in fact tend to find intrinsically plausible, but they don't give an objective measure of that property. One attraction of this view is that it predicts evidential probabilities are imprecise, and that seems closer to the way we actually talk.

I think this evades the objection from the conditional fallacy that Williamson (2000) ascribes to the usual subjectivist analysis of the evidential probability of X in the presence of E as the credence you'd have in X were you rational and were E your total evidence.[23]

[23] Cf. (Asunta Eder, 2023).

Appendix: Figures

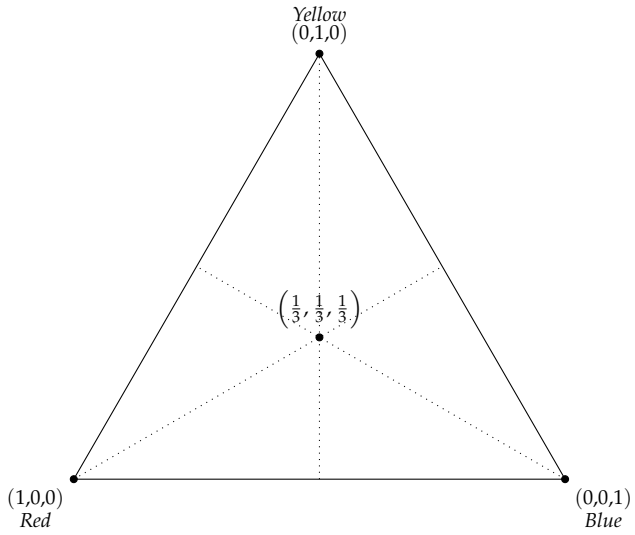

Figure 1: The barycentric plot of the credence functions permitted by any weights that lie between risk-neutral—i.e. 1/3 to the best-case, 1/3 to the middle case, and 1/3 to the worst-case—and maximally risk-averse—i.e. 0 to the best-case, 0 to the middle case, and 1 to the worst-case. These are the credence functions that gives 1/3 to each possibility.

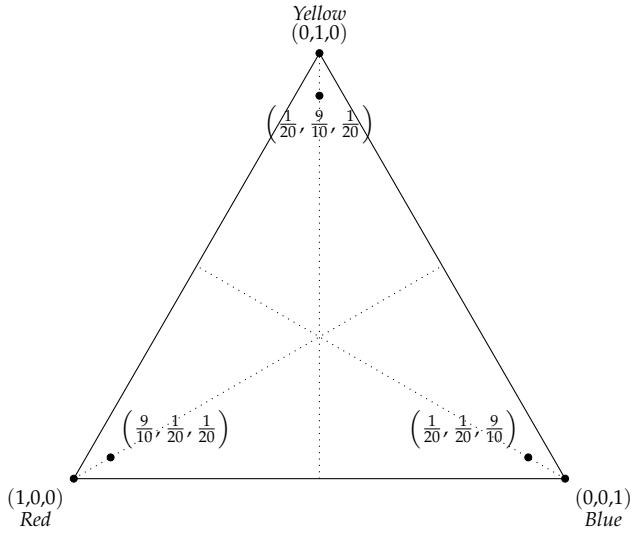

Figure 2: The barycentric plot of the credence functions permitted by any weights that lie between those that give 9/10 to the best-case, 1/20 to the middle case, and 1/20 to the worst-case and those that give 9/10 to the best-case, 0 to the middle case, and 1/10 to the worst-case. These are the credence functions that gives 90% to one possibility and 5% to each of the two remaining ones.

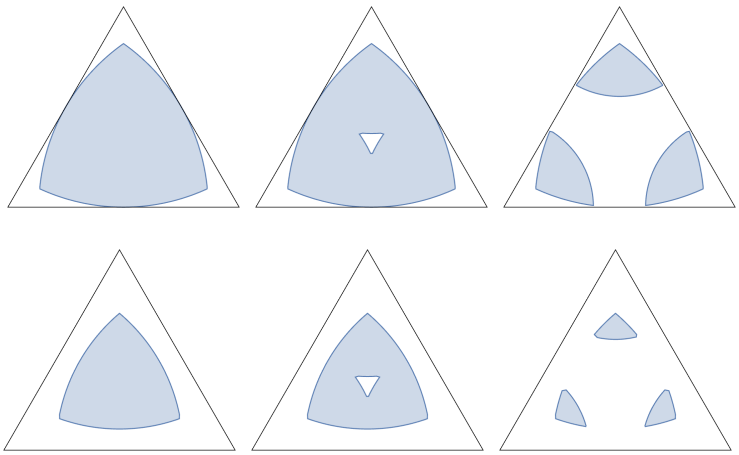

Figure 3: (i) epistemic utility is measured by the Brier score, (ii) the lower threshold is (top) $l = 0.5$, (bottom) $l = 0.6$, and (iii) the upper threshold is (left) $h = 0.7$, (middle) $h = 0.8$, and (right) $h = 0.9$.

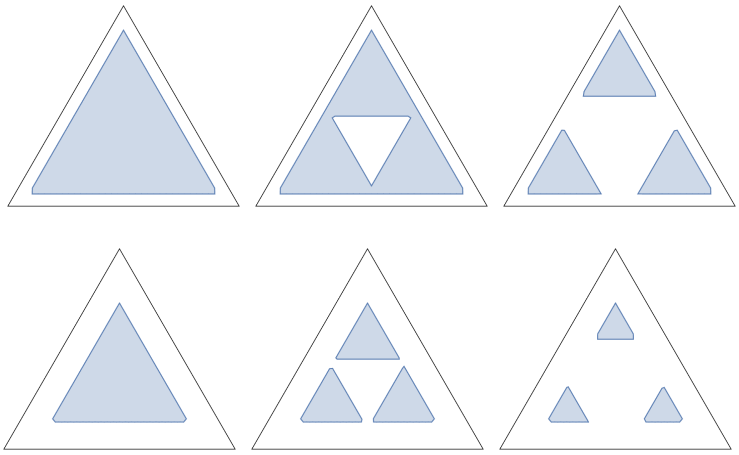

Figure 4: (i) epistemic utility is measured by enhanced logarithmic score, (ii) the lower threshold is (top) $l = -2.8$, (bottom) $l = -2$, and (iii) the upper threshold is (left) $h = -1.2$, (middle) $h = -0.8$, and (right) $h = -0.6$.