Round Table on Coherence (Part II)

Branden Fitelson[1]

Department of Philosophy
Rutgers University
&
Munich Center for Mathematical Philosophy
Ludwig-Maximilians-Universität München

branden@fitelson.org
http://fitelson.org/

[1]These slides include joint work with Daniel Berntson (Princeton), Rachael Briggs (ANU), Fabrizio Cariani (NU), Kenny Easwaran (USC), and David McCarthy (HKU). Please do not cite or quote without permission.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

 Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

 Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

 Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- We saw in Part I that — *using only considerations of accuracy and dominance* — our framework yielded a coherence requirement for $\mathfrak{B}$ that is *entailed by* (EB).
- In this (critical) Part II, I will explain why we think there is an "evidential gap" in Joycean arguments for probabilism.
- As Richard explained, the typical way to go through the "3 Steps" for credence involves the following choices:

  Step 1: define the *vindicated* set of credences at a world w ($\mathring{\mathfrak{b}}_w$). We agree that $\mathring{\mathfrak{b}}_w$ assigns 1 to the truths at w and 0 to the falsehoods at w [$\mathring{\mathfrak{b}}_w$ *matches the indicator function* v_w].

  Step 2: define distance [$\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$] between a credal set $\mathfrak{b}$ and $\mathring{\mathfrak{b}}_w$. I'll discuss Joyce's [9] argument for *Euclidean distance*.

  Step 3: choose a *fundamental principle* (of *epistemic decision theory*) which uses $\delta(\mathfrak{b}, \mathring{\mathfrak{b}}_w)$ to ground a CR for $\mathfrak{b}$. [*Dominance* is typical. Richard has new principle as well.]

- As Richard explained, these choices imply $\mathfrak{b}$-*probabilism* as a CR for credal sets. But, we [1] are not quite convinced.

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sum_p \left| b(p) - v_w(p) \right|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sqrt{\sum_p \left| b(p) - v_w(p) \right|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \overset{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows* ***only*** *that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1...

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sum_p \left| b(p) - v_w(p) \right|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sqrt{\sum_p \left| b(p) - v_w(p) \right|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \overset{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose *$S$ knows **only** that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1 . . .

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sum_p |b(p) - v_w(p)|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sqrt{\sum_p |b(p) - v_w(p)|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \overset{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows **only** that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1…

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sum_p |b(p) - v_w(p)|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sqrt{\sum_p |b(p) - v_w(p)|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \stackrel{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows **only** that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1...

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sum_p |b(p) - v_w(p)|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sqrt{\sum_p |b(p) - v_w(p)|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \stackrel{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows **only** that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1...

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sum_p |b(p) - v_w(p)|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sqrt{\sum_p |b(p) - v_w(p)|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \stackrel{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows **only** that the die is fair* (*i.e.*, S has *no other P_i-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1…

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sum_p \left| b(p) - v_w(p) \right|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \overset{\text{def}}{=} \sqrt{\sum_p \left| b(p) - v_w(p) \right|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \overset{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows* ***only*** *that the die is fair* (*i.e.*, S has *no other* P_i*-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1...

- Consider the following two possible choices for δ:
  - $\delta_1(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sum_p \left| b(p) - v_w(p) \right|$
  - $\delta_2(\mathfrak{b}, \mathring{\mathfrak{b}}_w) \stackrel{\text{def}}{=} \sqrt{\sum_p \left| b(p) - v_w(p) \right|^2}$
- These measures *disagree radically* regarding the norms they entail *via accuracy-dominance* in our framework [15].
- Joyce [9] gives an interesting "evidentialist" argument for δ_2 (over δ_1). The argument concerns a specific, simple agent S.
- Let $P_i \stackrel{\text{def}}{=}$ a fair, 3-sided die comes up "i". Suppose S has the credal set $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$. And, suppose S *knows* ***only*** *that the die is fair* (*i.e.*, S has *no other* P_i*-relevant evidence*).
- Joyce claims that such an S clearly has the "evidentially correct" credences. Here, Joyce appeals to an *evidential requirement* for credences: *The Principal Principle* (PP) [14].
- So far, so good. But, *bad news lurks* for δ_1...

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ S faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA$_{\delta_1}$)]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:

  (†) If S adopts a *proper* measure (*e.g.*, δ_2), then S's evidential requirements *cannot conflict with* S's coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if S adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]

- To see why Joyce needs an argument for (†), consider an agent S with a non-probabilistic b s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.

- Suppose S adopts δ_2. So, S is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]

- Now, what if S's evidence *requires* (*exactly*) that $b(P) \leq 0.3$?

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ *S* faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA$_{\delta_1}$)]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:

  (†) If *S* adopts a *proper* measure (*e.g.*, δ_2), then *S*'s evidential requirements *cannot conflict with S*'s coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if *S* adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]

- To see why Joyce needs an argument for (†), consider an agent *S* with a non-probabilistic *b* s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.

- Suppose *S* adopts δ_2. So, *S* is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]

- Now, what if *S*'s evidence *requires* (*exactly*) that $b(P) \leq 0.3$?

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ *S* faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA$_{\delta_1}$)]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:

  (†) If *S* adopts a *proper* measure (*e.g.*, δ_2), then *S*'s evidential requirements *cannot conflict with S*'s coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if *S* adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]

- To see why Joyce needs an argument for (†), consider an agent *S* with a non-probabilistic *b* s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.

- Suppose *S* adopts δ_2. So, *S* is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]

- Now, what if *S*'s evidence *requires* (*exactly*) that $b(P) \leq 0.3$?

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ *S* faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA$_{\delta_1}$)]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:
  - (†) If *S* adopts a *proper* measure (*e.g.*, δ_2), then *S*'s evidential requirements *cannot conflict with S*'s coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if *S* adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]

- To see why Joyce needs an argument for (†), consider an agent *S* with a non-probabilistic *b* s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.

- Suppose *S* adopts δ_2. So, *S* is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]

- Now, what if *S*'s evidence *requires* (***exactly***) that $b(P) \leq 0.3$?

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ S faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA_{δ_1})]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:

  (†) If S adopts a *proper* measure (*e.g.*, δ_2), then S's evidential requirements *cannot conflict with* S's coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if S adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]

- To see why Joyce needs an argument for (†), consider an agent S with a non-probabilistic b s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.

- Suppose S adopts δ_2. So, S is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]

- Now, what if S's evidence *requires* (***exactly***) that $b(P) \leq 0.3$?

- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly* δ_1*-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

☞ *S* faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA$_{\delta_1}$)]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:
  - (†) If *S* adopts a *proper* measure (*e.g.*, δ_2), then *S*'s evidential requirements *cannot conflict with S*'s coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if *S* adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]
- To see why Joyce needs an argument for (†), consider an agent *S* with a non-probabilistic *b* s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.
- Suppose *S* adopts δ_2. So, *S* is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]
- Now, what if *S*'s evidence *requires* (***exactly***) that $b(P) \leq 0.3$?

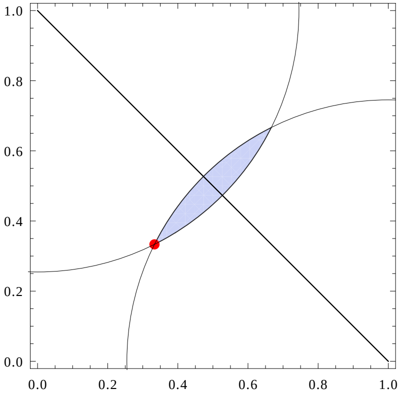
- $\mathfrak{b}' = \langle 0, 0, 0 \rangle$ *strictly δ_1-dominates* $\mathfrak{b} = \langle \frac{1}{3}, \frac{1}{3}, \frac{1}{3} \rangle$!

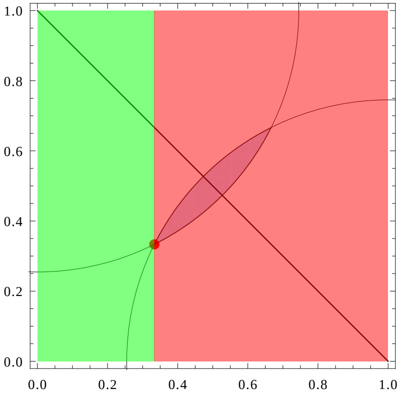
☞ *S* faces a *conflict between an evidential requirement* [(PP)] *and a coherence requirement* [(WADA_{δ_1})]. Joyce thinks the evidential requirement *trumps here*. We're inclined to agree.

- But, we [2] think this sets Joyce himself up for a potential "evidentialist" objection. Joyce needs to argue that:
  - (†) If *S* adopts a *proper* measure (*e.g.*, δ_2), then *S*'s evidential requirements *cannot conflict with S*'s coherence (*viz.*, non-δ-dominance) requirements. [But, this *can* happen if *S* adopts an *improper* measure (*e.g.*, δ_1), as in the case above.]
- To see why Joyce needs an argument for (†), consider an agent *S* with a non-probabilistic *b* s.t.: $b(P) = \frac{1}{3}$, $b(\neg P) = \frac{1}{3}$.
- Suppose *S* adopts δ_2. So, *S* is (strictly) δ-dominated by each member b' of a set of (probabilistic) credence functions $\mathbf{b}'$. [Note that *no member of* $\mathbf{b}'$ *can be such that* $b(P) \leq 0.3$.]
- Now, what if *S*'s evidence *requires* (***exactly***) that $b(P) \leq 0.3$?

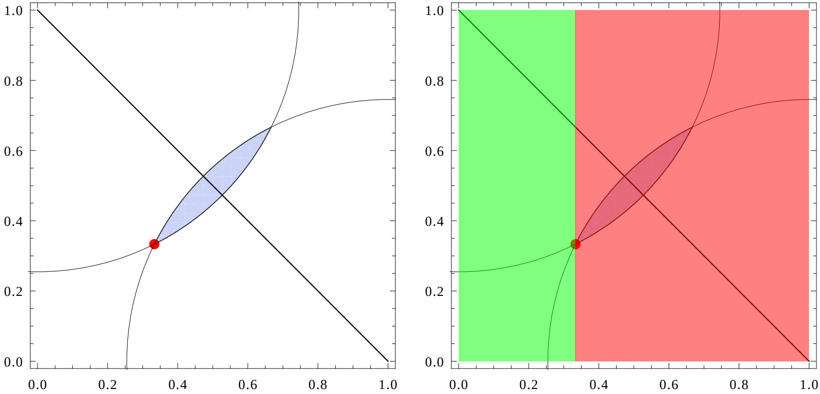
- It helps to visualize what things look like, both before and after the agent learns what her evidence requires.

- It helps to visualize what things look like, both before and after the agent learns what her evidence requires.



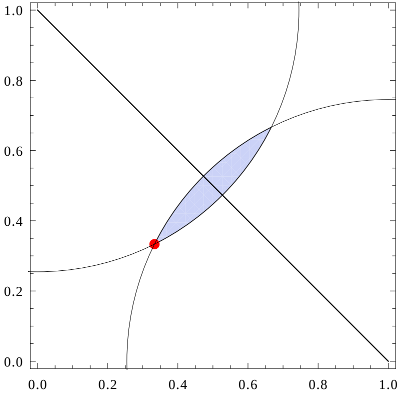


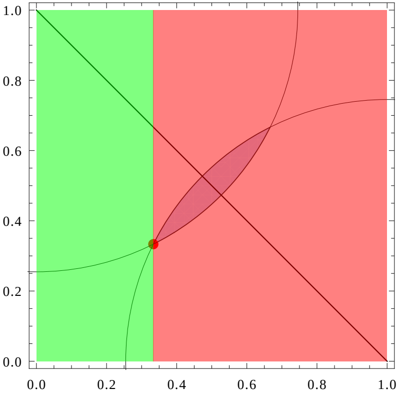
- It helps to visualize what things look like, both before and after the agent learns what her evidence requires.



☞ Note: what the agent learns here is that *her evidence rules-out all of the functions* $\mathbf{b}'$ *that* δ_2*-dominate her*.

- It helps to visualize what things look like, both before and after the agent learns what her evidence requires.





☞ Note: what the agent learns here is that *her evidence rules-out all of the functions* **b**′ *that* δ_2*-dominate her*.

- This conflict is similar to the one that led us to reject δ_1. But, here, we're using it for a different dialectical purpose.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
(PV$_d$) S's $\mathfrak{B}$ should be *consistent*.	(PV$_\delta$) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
(WADA$_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	(WADA$_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow \not\Downarrow$	$\Uparrow ?\ \Downarrow ?$
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the b-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ (WADA$_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV$_d$) S's $\mathfrak{B}$ should be *consistent*.	(PV$_\delta$) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(WADA$_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	(WADA$_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.

- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ (WADA$_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) *S*'s *B*/*D*'s ($\mathfrak{B}$) should be *vindicated*.	(Tb) *S*'s credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow\ \not\Uparrow$	$\Downarrow\ \not\Uparrow$
(PV_d) *S*'s $\mathfrak{B}$ should be *consistent*.	(PV_δ) *S*'s $\mathfrak{b}$ should be *extremal*.
$\Downarrow\ \not\Uparrow$	$\Downarrow\ \not\Uparrow$
($WADA_d$) *S*'s $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) *S*'s $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow\ \not\Downarrow$	$\Uparrow?\ \Downarrow?$
(EB) *S*'s $\mathfrak{B}$ should be *supported by E*.	(Eb) *S*'s $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow \not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.

- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow \; \not\Uparrow$	$\Downarrow \; \not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow \; \not\Uparrow$	$\Downarrow \; \not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow \; \not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.

- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.

- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
(PV$_d$) S's $\mathfrak{B}$ should be *consistent*.	(PV$_\delta$) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow \not\Uparrow$	$\Downarrow \not\Uparrow$
(WADA$_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	(WADA$_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow \not\Downarrow$	$\Uparrow ?\ \Downarrow ?$
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) ⇒ (WADA$_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the b-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

- It is useful to compare the structures of norms for $\mathfrak{B}$ *vs* $\mathfrak{b}$.

Full Belief/Disbelief ($\mathfrak{B}$)	Credence ($\mathfrak{b}$)
(TB) S's B/D's ($\mathfrak{B}$) should be *vindicated*.	(Tb) S's credences ($\mathfrak{b}$) should be *vindicated*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
(PV_d) S's $\mathfrak{B}$ should be *consistent*.	(PV_δ) S's $\mathfrak{b}$ should be *extremal*.
$\Downarrow$ $\not\Uparrow$	$\Downarrow$ $\not\Uparrow$
($WADA_d$) S's $\mathfrak{B}$ should be *non-d-dominated*.	($WADA_\delta$) S's $\mathfrak{b}$ should be *non-δ-dominated*.
$\Uparrow$ $\not\Downarrow$	$\Uparrow$? $\Downarrow$?
(EB) S's $\mathfrak{B}$ should be *supported by E*.	(Eb) S's $\mathfrak{b}$ should be *supported by E*.

- Because Joyce does not articulate a *general evidential norm* (Eb) for credences, it is unclear what to say (generally) about the bottom arrows on the *b*-side — an important *dis*analogy.
- In this sense, the structure of norms for $\mathfrak{B}$ seems *more complete/articulated than* the analogous structure for $\mathfrak{b}$.

☞ *We need an independent argument for* (Eb) $\Rightarrow$ ($WADA_\delta$).

- Richard will describe one possible way to fill this gap.

[1] K. Easwaran and B. Fitelson, *Accuracy, Coherence & Evidence*, in progress, 2012.

[2] ______, *An "Evidentialist" Worry about Joyce's Argument for Probabilism*, *Dialectica*, to appear, 2012.

[3] R. Carnap, *Logical Foundations of Probability*, U. of Chicago, 2nd ed., 1962.

[4] D. Christensen, *Putting Logic in its Place*, OUP, 2007.

[5] B. de Finetti, *The Theory of Probability*, Wiley, 1974.

[6] I. Douven and T. Williamson, *Generalizing the Lottery Paradox*, *BJPS*, 2006.

[7] B. Fitelson and D. McCarthy, *Steps Toward a New Foundation for Subjective Probability*, in progress, 2012.

[8] R. Fumerton, *Metaepistemology and Skepticism*, Rowman & Littlefield, 1995.

[9] J. Joyce, *Accuracy and Coherence: Prospects for an Alethic Epistemology of Partial Belief*, in F. Huber and C. Schmidt-Petri (*eds.*), *Degrees of Belief*, 2009.

[10] ______, *A Nonpragmatic Vindication of Probabilism*, *Philosophy of Science*, 1998.

[11] N. Kolodny, *How Does Coherence Matter?*, *Proc. of the Aristotelian Society*, 2007.

[12] H. Kyburg, *Probability and the Logic of Belief*, Wesleyan, 1961.

[13] H. Leitgeb, *Reducing Belief Simpliciter to Degrees of Belief*, manuscript, 2010.

[14] D. Lewis, *A Subjectivists's Guide to Objective Chance*, 1980.

[15] ______, *Joyce's Argument for Probabilism*, *Philosophy of Science*, 2002.

[16] D. Makinson, *The Paradox of the Preface*, *Analysis*, 1965.

[17] J. Pollock, *The Paradox of the Preface*, *Philosophy of Science*, 1986.

[18] T. Williamson, *Knowledge and its Limits*, Oxford University Press, 2000.