Bronfman's argument: Conditionalization can go wrong when KK failures obtain. *Note: does not assume KK! This is a conditional claim.* **Some Guiding Questions:**

1. How should we think about "**exogenous**" evidence?
2. What is *externalism* about knowledge and evidence?
3. What is *conditionalization* and why should we conditionalize?

2 | Basic Framework

The framework: "(i) an initial set of beliefs, represented as a credence function, (ii) new evidence, and (iii) an update rule, represented as a mapping from an initial credence function and new evidence to a new credence function."

$$\langle P_{old}, E \rangle \mapsto P_{new} \qquad \text{(The Framework)}$$

E is **exogenous** evidence: it "comes to the agent from outside her update rule" – e.g. through sense perception rather than through inference on.

A standard update method is *conditionalization*:

$$P_{new}(p) = P_{old}(p \mid E) =_{def} \frac{P_{old}(p \,\&\, E)}{P_{old}(E)} \qquad \text{(Conditionalization)}$$

The idea of conditionalization is that you ignore all the $\neg E$ possibilities, and you don't assume anything more fine-grained than that an E possibility obtains.

Left: *P_{old}'s opinions on the possibilities $P_{old}(grey) = 7/12$.*
Right: *P_{new}'s opinions after learning E: $P_{new}(grey) = \frac{P_{old}(grey \,\&\, E)}{P_{old}(E)} = \frac{5/12}{6/12} = 5/6$.*
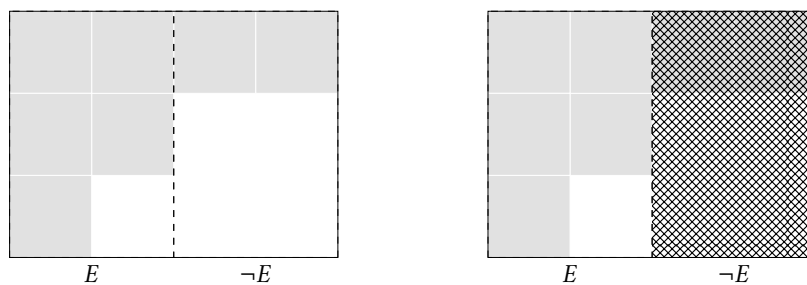
Iteration Principles (Principles of Self Knowledge): with ("at t" removed)

- **KK** If S **knows** that p, then S is in a position to know that she **knows** that p.
- **KB** If S **knows** that p, then S is in a position to know that she **believes** that p.
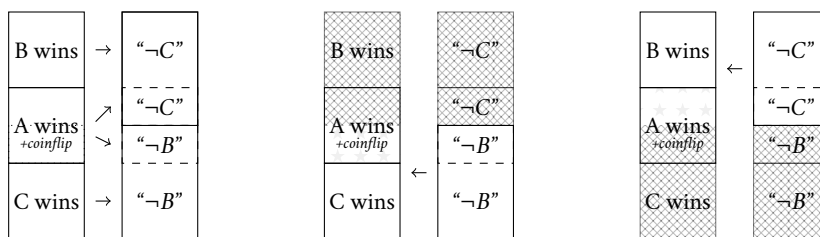- **LB** If S **learns** that p, then S is in a position to know that she **believes** that p.

Similar to KK: **EE** If p is part of S's evidence, then "p is part of S's evidence" is part of S's evidence. **LL** If S learns that p, then S learns that she learns that p. Often **externalism** can be characterized as a denial of an iteration principle like this.
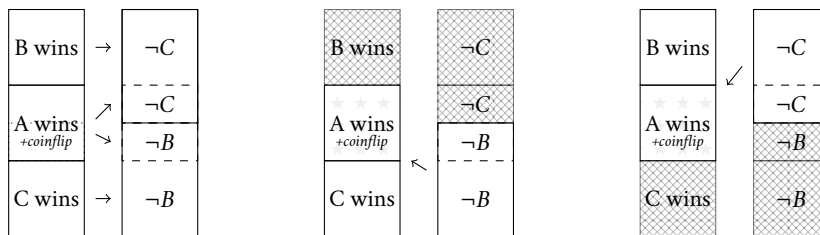
3 | Failures of Self-Knowledge

Cases: (1) **Carl** knows (and thus believes) his first teacher's name, but he isn't in a position to know that he knows it or in a position to know that he believes it (failure of KK & KB). (2) **Eve** learns (and thus knows and believes) her colleague is angry, but isn't in a position to know that she knows or believes it (failures of KK, KB, & LB).

4 | Lotteries With and Without KK

Lottery with KK. *Conditionalization given KK delivers a 1/3 credence in A regardless of what the conditionalizer learns.*

B wins	→	"¬C"
A wins +coinflip	↗ ↘	"¬C" / "¬B"
C wins	→	"¬B"

B wins		"¬C"
A wins +coinflip		"¬C" / "¬B"
C wins	←	"¬B"

B wins	←	"¬C"
A wins +coinflip		"¬C" / "¬B"
C wins		"¬B"

Lottery without KK. *Conditionalization given ¬KK delivers a 1/2 credence in A regardless of what the conditionalizer learns.*

B wins	→	¬C
A wins +coinflip	↗ ↘	¬C / ¬B
C wins	→	¬B

B wins		¬C
A wins +coinflip		¬C / ¬B
C wins	↖	¬B

B wins		¬C
A wins +coinflip	↙	¬C / ¬B
C wins		¬B

5 | Prima Facie Irrationalities

1. The conditionalizer expects her future self to be less accurate: she starts off knowing she has a 1/100 chance, but she knows that she will end up thinking she has a 1/2 chance. "This experience would, she thinks, lead her to have credence 1/2 in a proposition which is almost certainly false."
2. "The conditionalizer plans to set her credences in a way that divergences from her known long-run win frequency." If we calculate her expected number of wins over *n* trials based on the setup, it is $n/100$. But if we calculated her *Pnew* expectations, she calculates an expected number of $n/2$ wins: far too confident.
3. "The conditionalizer fails to defer to a future self of hers whom she regards as being in an excellent epistemic position." If the conditionalizer knows she will later learn what she learned, and satisfy KK, she should defer to her future self. But the conditionalizer now knows that the future self in question would have credence 1/3, and she now has credence 1/2. So she does not defer.