Comments on Levinstein

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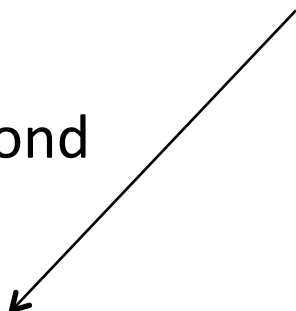
Background

- Uncertain Evidential Situation (UES): Situations where one updates on a weighted evidence partition. (E.g. {E:0.6 , -E:0.4}.)

- L+P's Surprising Result: In UES's, epistemic expected utility arguments using a quadratic scoring rule lead to Leitgeb-Pettigrew Conditionalization (LP-Cond), not Jeffrey Conditionalization (J-Cond).
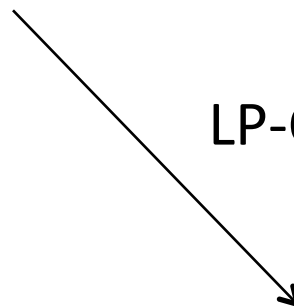
J-Cond vs. LP-Cond

w1 | w2 | w3 | w4

| 0.1 | 0.2 | 0.3 | 0.4 |

J-Cond

LP-Cond

+0.1 | +0.2 | -0.13 | -0.17

| 0.2 | 0.4 | 0.17 | 0.23 |

0.6   0.4

+0.15 | +0.15 | -0.15 | -0.15

| 0.25 | 0.35 | 0.15 | 0.25 |

0.6   0.4

Worries for LP-Cond

- Should we adopt J-Cond or LP-Cond?
- Three *prima facie* worries for LP-Cond:
  - 1. LP-Cond allows credence shifts from 0 to non-0.
  - 2. LP-Cond doesn't converge to S-Cond when partition is {E:1 , -E:0}.
  - 3. LP-Cond violates Rigidity.
- Levinstein shows how violations of Rigidity lead to odd-looking belief changes.
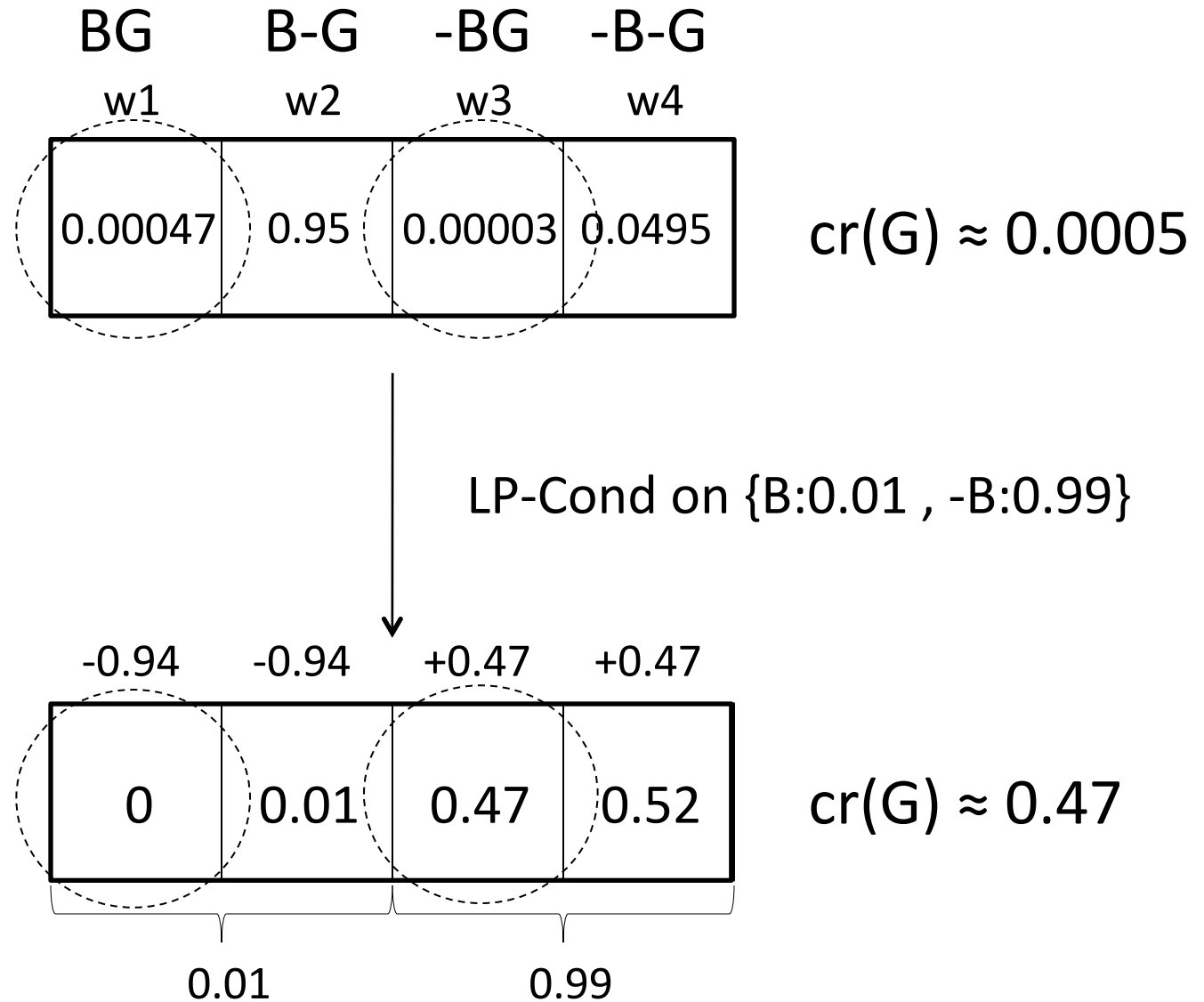
Three Potential Responses

- Three Potential Responses:
- Response 1. Changing #s of Worlds
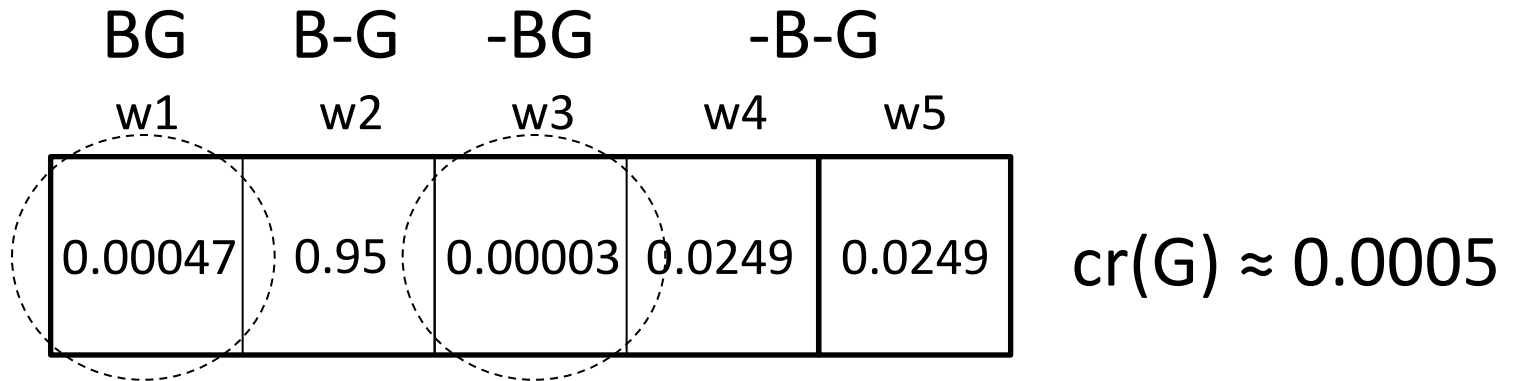- Response 2. Reject UES's
- Response 3. Reinterpret UES's

Response 1. Changing #s of Worlds

- LP-Cond's prescriptions are sensitive to the number of worlds compatible with each hypotheses.

- Could defuse Levinstein's counterintuitive consequences by adjusting the number of worlds assigned to each hypothesis.

EX: Blue Cars and Ghosts

	BG	B-G	-BG	-B-G
	w1	w2	w3	w4
	0.00047	0.95	0.00003	0.0495

cr(G) ≈ 0.0005

LP-Cond on {B:0.01 , -B:0.99}

	-0.94	-0.94	+0.47	+0.47
	0	0.01	0.47	0.52

cr(G) ≈ 0.47

0.01   0.99

EX: Blue Cars and Ghosts v2

	BG	B-G	-BG	-B-G	
	w1	w2	w3	w4	w5

| 0.00047 | 0.95 | 0.00003 | 0.0249 | 0.0249 |

cr(G) ≈ 0.0005

LP-Cond on {B:0.01 , -B:0.99}

	-0.94	-0.94	+0.31	+0.31	+0.31

| 0 | 0.01 | 0.31 | 0.34 | 0.34 |

cr(G) ≈ 0.33

0.01   0.99
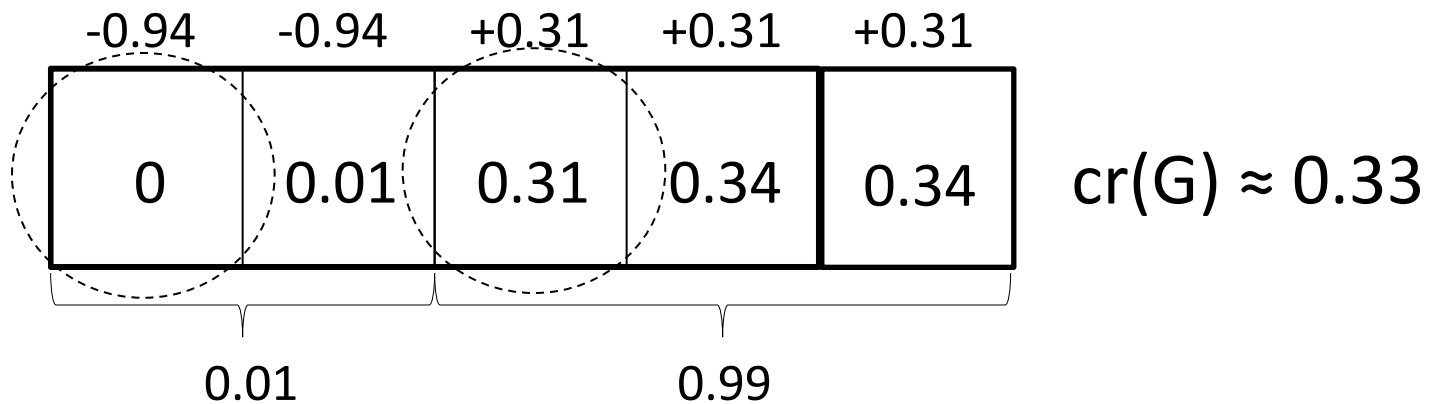
Assessing Response 1

- Problem: Levinstein's worry seems equally pressing if we swap B and -B, and/or G and -G.

- So claims about how many worlds belong to each hypothesis can't avoid counterintuitive consequences in both the original case and its permutations.

- (Aside: LP-Cond's dependence on #s of worlds raises worries about infinite cases...)

Response 2. Reject UES's

- Potential complaints about UES-updating:
  - 1. Without a substantive account of evidence, UES-rules are trivial.
  - 2. Hard to provide a principled way of picking out the appropriate weighted evidence partition.
  - 3. Principled reasons for taking evidence to be a proposition, not a weighted evidence partition. (Williamson)
- L+P could reject UES's for reasons like these. This would remove the need for a UES-updating rule.

Assessing Response 2

- This is one way to get around the worries Levinstein raises. But:
    - It requires rejecting LP-Cond as well as J-Cond.
    - It leaves open the question of whether we should use a quadratic scoring rule vs. (say) a logarithmic one.

Response 3. Reinterpret UES's

- LP-Cond doesn't converge to S-Cond in the special case where the evidence partition is {1,E; 0,-E}.

- Suggests LP-Cond is a qualitatively different kind of updating rule than S-Cond.

- L+P: A difference between eliminating non-E possibilities (S-Cond) and adding the side constraint that one's credence in E go to 1 (LP-Cond).

- L+P: Various non-standard features of LP-Cond could be taken to be perks in certain cases:
  - allowing 0s to become non-0 (in cases of memory loss),
  - violating Rigidity (in cases of priors correction, cases discussed by Bradley, Weisberg).

Response 3. Reinterpret UES's

- Possible Response: There's two qualitatively different kinds of belief changes:
  - 1. "Eliminating possibilities" belief changes. (S-Cond)
  - 2. "Side constraint" belief changes. (LP-Cond)
- L+P could argue that the cases Levinstein describes aren't the kinds of situations in which LP-Cond should be applied.
- Q: When *should* LP-Cond be applied?
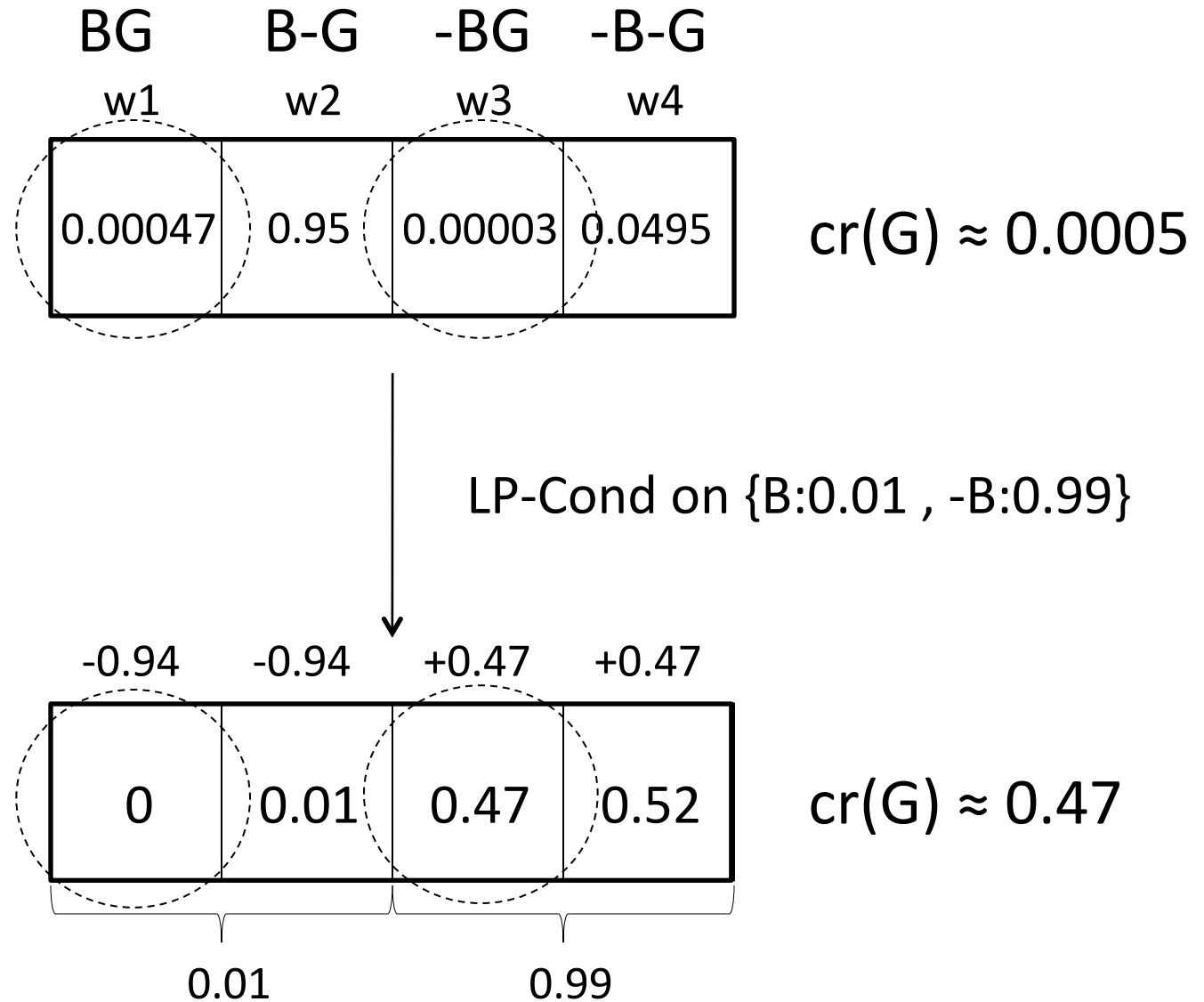
Possibility 1: Memory Loss

- Employ LP-Cond in cases of memory loss?
- Simple Case:
  - t0: Initially believe Amy or Betty is guilty (but not both).
    - (E=T, and believe that A-B or B-A.)
  - t1: Learn that Amy is not guilty.
    - (S-Cond on E=-A.)
  - t2: Forget your t1 evidence.
    - (LP-Cond on partition that resets credence in -A/A?)
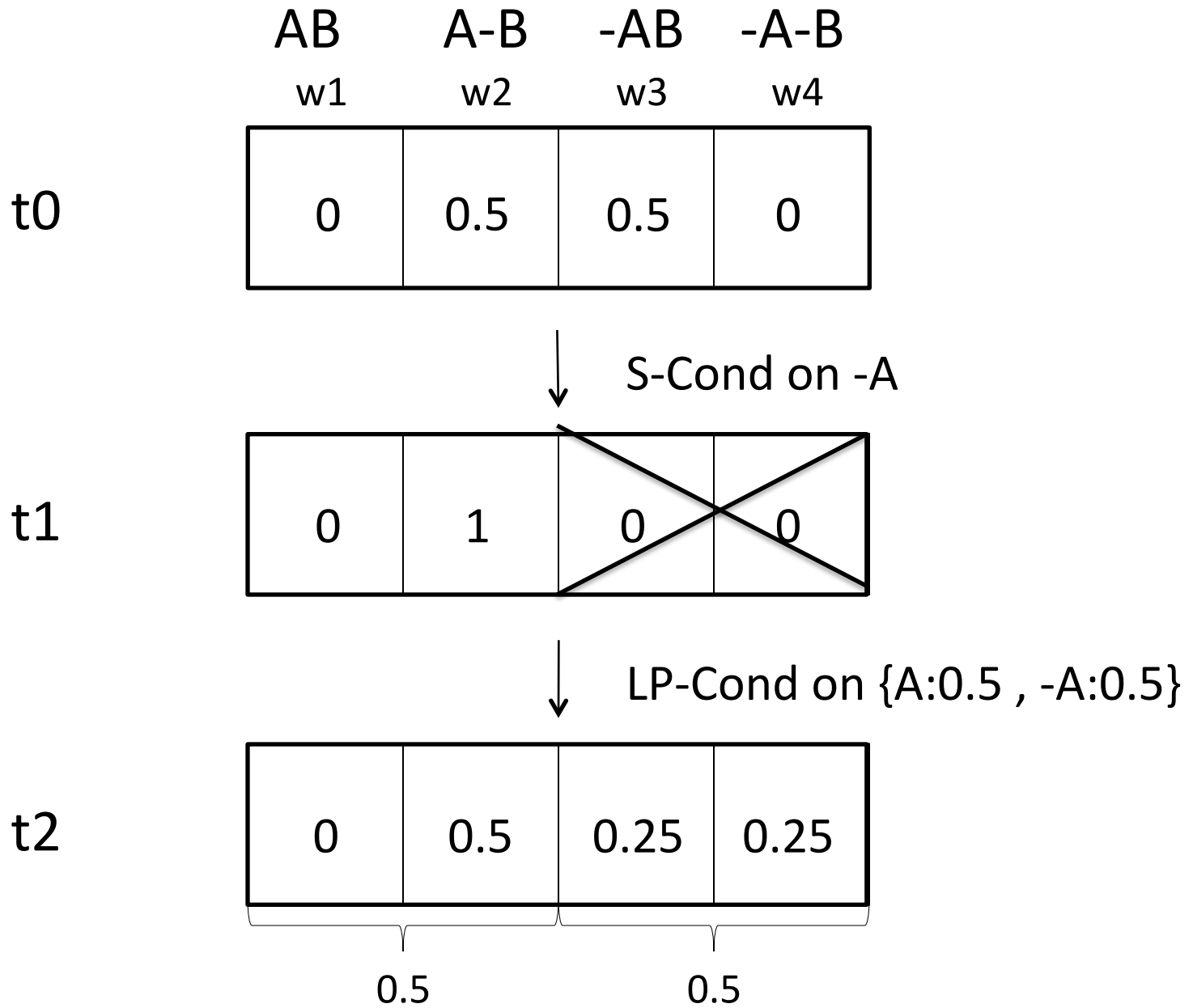
Possibility 2: Priors Corrections

- Employ LP-Cond for priors correction? (E.g., realize your credences violate the PP?)

- Variant of Levinstein's Blue Cars + Ghosts Case:

  - t0: Know chance of Blue Car is 0.01, but have irrational belief that car is Blue (cr(B)=0.99).

    - (Same credences as in Levintsein's original case.)

  - t1: Realize this is irrational, and revise credences to line up with the chances.

    - (LP-Cond on {B:0.01 , -B:0.99}.)

EX: Blue Cars and Ghosts Variant

BG   B-G   -BG   -B-G

w1   w2   w3   w4

| 0.00047 | 0.95 | 0.00003 | 0.0495 |

$cr(G) \approx 0.0005$

LP-Cond on {B:0.01 , -B:0.99}

-0.94   -0.94   +0.47   +0.47

| 0 | 0.01 | 0.47 | 0.52 |

$cr(G) \approx 0.47$

0.01   0.99

Assessing Response 3

- To make this response plausible, we need:
  - 1. A description of the kinds of situations in which LP-Cond should be applied,

  - 2. A demonstration that LP-Cond provides plausible prescriptions in these cases.

- My (admittedly limited) forays into some of these possibilities haven't yet revealed a good way to do this...