Belief, Credence, and Pragmatic Encroachment

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1. Two Questions and Two Theories

Q1: How is outright belief related to *credence*? Are these two separate kinds of mental state, or is one somehow reducible to the other?

Q2: How is outright belief related to *action*? And can a connection between *belief and action* explain a connection between *knowledge and action*?

Pragmatic Credal Reductivism: To believe that *p* is to have a sufficiently high credence in *p*, and, in particular, it is to have a credence in *p* that is high enough to rationalize acting as if *p* in any relevant choice situation.

Answer to Q1: We have only one fundamental kind of doxastic state, namely credences. Outright beliefs supervene on the Bayesian substratum of credences and preferences.

Answer to Q2: One counts as outright believing that *p* only if one's credence in *p* is high enough to rationalize act as if *p*. Hence, the belief that *p* is defined in terms of acting as if *p*, and it is guaranteed to rationalize the latter.

The Reasoning Disposition Account: The attitude of outright belief, like other attitudes, is defined by its functional role. Part of the functional role of outright belief is that the outright belief that *p* defeasibly disposes the believer to treat *p* as true in reasoning—where to *treat p as true* is to *reason as if* one were certain that *p*.

Answer to Q1: Outright beliefs are distinct from and irreducible to credences. For there is no level of credence that plays the functional role of belief. A credence of *less than one* does not involve any disposition to reason as if one were certain that *p*, and a credence of *one* involves an indefeasible disposition to reason as if one were certain that *p*.

Answer to Q2: The relation between belief and action is indirect, and is mediated by the relation of *treating as true*. Believing that *p* disposes one to treat *p* as true in one's reasoning. And a rational agent who treats *p* as true in her reasoning will thereby act as if *p*, i.e., she will act in ways that are optimal conditional on *p*.

2. Two Explanations of Pragmatic Encroachment

Low: Five minutes ago, Hannah made three sandwiches and placed them in the refrigerator. She told Sarah that she placed the peanut butter sandwich on the left, the tuna sandwich in the middle, and the almond butter sandwich on the right. Hannah then departed just as Sarah's friend Almira arrived for lunch. Sarah knows that Almira has no allergies. Almira says: "I'd love an almond butter sandwich." And so Sarah opens the refrigerator door, points to the sandwich on the right, and says: "The sandwich on the right is an almond butter sandwich. You can have it."

High: This case is just like Low, except here it is Sarah's nephew Algernon who is visiting for lunch, and he has a severe peanut allergy. He asks Sarah for a sandwich. Sarah knows that the peanut butter sandwich would be fatal to Algernon, but that the almond butter sandwich would be harmless. She also knows that he would slightly prefer the almond butter sandwich to the tuna sandwich. When Sarah goes to the fridge, she can tell, by visual inspection, which is the tuna sandwich, but she cannot tell, by visual inspection, which is the peanut butter sandwich and which is the almond butter sandwich. So she gives him the tuna sandwich.

Knowledge Action Principle: you know that *p* only if you have sufficient evidence to justify acting as if *p*.

The Pragmatic Credal Reductivist Explanation:

r: The almond butter sandwich is on the right.

Sarah knows that *r* in *Low*, but not in *High*, because in *Low*, but not in high, she is justified to have a credence in *r* that is high enough to constitute knowledge.

Indeed, assuming Sarah is rational, she won't even believe that *r* in *High*, though she will believe this in *Low*.

More generally, whenever one is in a context in which one is not justified to act as if *p*, one will not be justified to have a high enough credence in *p* to rationalize acting as if *p*. And since having such a credence is necessary for belief, one will not be justified in believing that *p*. Consequently, one will not know that *p*.

The Reasoning Disposition Explanation:

If Sarah is rational, then she will believe that *r* in both cases: she won't lose her disposition simply in virtue of entering the high stakes context. Instead, it will be overridden. Indeed, in both cases, she will be *justified* in believing that *r*.

We must distinguish, however, between believing in the *dispositional* sense and believing in the *occurrent* sense.

And while it is true, in both cases, that she is justified to believe that that *r* in the dispositional sense, in *High* she is not justified to believe that *r* in the occurrent sense.

For to be justified to believe that *r* in the occurrent sense, one must be justified to manifest whatever disposition is constitutive of believing that *r*. And (according to the reasoning disposition account) the disposition to treat *r* as true in reasoning is constitutive of believing that *r*. But, in *High*, Sarah is not justified to treat *r* as true in her reasoning, so she isn't justified to occurrently believe that *r*.

But if Sarah doesn't have sufficient evidence for *r* to justify occurrently believing that r, then she does not have sufficient evidence to count as knowing that *r*, in her circumstances.

Thus, in High, Sarah does not know that *r*.

More generally, whenever one is in a context in which one is not justified to act as if *p*, one will not be justified to treat *p* as true in one's reasoning. Hence, one will not be justified to occurrently believe that *p*. Hence, one will not know that *p*.

3. What's the Point of Outright Belief?

If we had infinite computational power, there would be no need for outright beliefs: we could do all our reasoning in an ideal Bayesian manner on the basis of our credences.

But, given our cognitive limitations, ideal Bayesian reasoning isn't feasible.

We need to simplify our reasoning tasks by treating uncertain propositions as though they were true.

Moreover, we cannot always reason about what to treat as true in our reasoning, or we'd have an infinite regress of reasoning tasks.

Thus we need automatic dispositions to treat certain propositions as true in our reasoning.

Two ends of outright beliefs:

- To enable us to reason well-reach good deliberative conclusions
- To enable us to reason efficiently-minimize the costs of reasoning

Plausibly, any account of the rationality conditions of belief will need to take into account these two ends.

Procedural Rationality Condition: A set of beliefs is rational only to the extent that it is licensed by rules or procedures that strike an optimal balance between minimizing expected cognitive costs and maximizing the expected value of the agent's deliberative conclusions.

4. Four Reasons for Preferring the Reasoning Disposition Account

4.1 Treating *p* as True vs. Acting as if *p*

	Broadway train stops at Canal St. (Pr = .5)	Broadway train doesn't stop at Canal St. (Pr = .5)
Take the Broadway train	Pay $2 and avoid fine; out $2.	Pay $2 and incur fine; out $7.
Take the Canal St. Express	Pay $3 and avoid fine; out $3.	Pay $3 and avoid fine; out $3.

	Ticket accepted; Broadway train stops at Canal St. (Pr = .49995)	Ticket accepted; Broadway train doesn't stop. (Pr = .49995)	Ticket rejected; Broadway train stops at Canal St. (Pr = .00005)	Ticket rejected; Broadway train doesn't stop. (Pr = .00005)
Take the Broadway train	Pay $2 and avoid fine; out $2.	Pay $2 and incur fine; out $7.	Pay $4 and avoid fine; out $4.	Pay $4 and incur fine; out $9.
Take Canal St. Express	Pay $3 and avoid fine; out $3.	Pay $3 and avoid fine; out $3.	Pay $6 and avoid fine; out $6.	Pay $6 and avoid fine; out $6.

Results of Simple Calculation:

EU(Broadway) = .5 * (-$2) + .5 * (-$7) = -$4.5

EU(Canal St.) = .5 * (-$3) + .5 * (-$3) = -$3

Results of More Complex Calculation:

EU(Broadway) = .49995 *(-$2) + .49995 *(-$7) + .00005 *(-$4) + .00005 *(-$9) = -$4.5002

EU(Canal St.) = .49995 *(-$3) + .49995 *(-$3) + .00005 *(-$6) + .00005 *(-$6) = -$3.0003

4.2 The Problem of Instability

Suppose Stella if offered a bet on the following proposition

S: Steel is stronger than Styrofoam.

If it's true, she gets a penny. If it's false, she's killed.

According to Pragmatic Credal Reductivism, she loses the belief that p.

According to the Reasoning Disposition account, she'll keep the belief, since she keeps the default disposition.

4.3 The Problem of Practically Irrelevant Propositions

PCR implies that you believe a proposition whenever your credence in it is high enough to rationalize acting as it it's true in the relevant choice situations.

But if a proposition is practically irrelevant, then any credence in it will suffice to rationalize acting as if it's true, so one will count as believing it no matter what credence one has in it.

Weatherson's solution: treat believing *p* as among the relevant options, and stipulate that your credence in *p* is high enough to rationalize believing that *p* only if your credence in p is above .5.

Problem: implies that, for (strongly) practically irrelevant propositions, any credence above .5 suffices

h: The next time an American penny is tossed by a Lithuanian xylophonist, it will come up heads.

If we accept the Reasoning Disposition account, together with the Procedural Rationality Condition, we can explain why it's irrational to believe low probability propositions: the optimific rules wouldn't license outright belief—and hence adopting a general disposition to treat as true—low probability propositions.

4.4 The Problem of Consistency

x: The number of hairs in the left half of Dali's mustache is not evenly divisible by three.

y: The number of hairs in the right half of Dali's mustache is not evenly divisible by three.

z: The number of hairs in one or other of the halves of Dali's mustache is evenly divisible by three.