Comments on Caie

I. I begin with a stripped-down version of the basic paradox of Section 2 of the paper.

Let γ be, or be uncontroversially equivalent to,

> I don't believe $<\gamma>$.

Abbreviate this as: $\neg B(<\gamma>)$.

Suppose I'm *somewhat rational* and *a very good introspector*. Let $X \models Y$ here mean that Y follows from X *together with (a precisification of) these assumptions about me*.

The argument to paradox:

1a. $B(<\neg B(<\gamma>)>) \models B(<\gamma>)$

1b. $B(<B(<\gamma>)>) \models B(<\neg\gamma>)$

> These are weakened versions of what Caie gets using his "Evidence". Basically the point is just that since the equivalence of γ to $\neg B(<\gamma>)$ and hence by contraposition of $B(<\gamma>)$ to $\neg\gamma$ are simple theorems, failing to satisfy these would be a gross failure of rationality.

2a: $B(<\gamma>) \models B(<B(<\gamma>)>)$

2b: $\neg B(<\gamma>) \models B(<\neg B(<\gamma>)>)$

> These are the assumptions about introspection ("transparency assumptions").

3. $\boldsymbol{\neg B(<\gamma>) \models B(<\gamma>)}$ by 2b and 1a

4. $B(<\gamma>) \models B(<\neg\gamma>)$, by 2a and 1b

5. $B(<\neg\gamma>) \models \neg B(<\gamma>)$ a weakening of his consistency assumption.

6. $\boldsymbol{B(<\gamma>) \models \neg B(<\gamma>)}$ by 4 and 5.

So assuming reasoning by cases, **the assumption that either I believe it or don't leads to contradiction from reasonable assumptions about me.**

(From 3 we get

$$\neg B(<\gamma>) \models B(<\gamma>) \wedge \neg B(<\gamma>),$$

and from 6 we get

$$B(<\gamma>) \models B(<\gamma>) \wedge \neg B(<\gamma>);$$

so reasoning by cases gives

$$B(<\gamma>) \vee \neg B(<\gamma>) \models B(<\gamma>) \wedge \neg B(<\gamma>).)$$

The law of excluded middle (LEM) thus leads to contradiction, given the transparency assumptions.

If one doesn't question the transparency assumptions, the only obvious options are (i) the dialetheic option of accepting some contradictions but limiting their impact by restricting explosion, and (ii) the option that Caie wants, of saying that **LEM is not validly applied here.**

The advantage of this stripped down version is that it doesn't rely on the full principles of CONSISTENCY and EVIDENCE that Caie states, but only very minimal ones. I think an upholder of classical logic would be pretty much forced to focus his critique on the transparency assumptions. That may well be possible, but I won't discuss them.

II. I turn now to the issue of (REJECTION) v. (INDETERMINACY), which occupies the last half of the paper (starting in Section 5).

> REJECTION: If one ought to believe *A* indeterminate, one ought to reject both it and its negation (in a sense of rejection that precludes acceptance, i.e. belief).
>
> INDETERMINACY: If one ought to believe *A* indeterminate, one ought to be such that it's indeterminate whether one believes *A* and indeterminate whether one believes its negation.

These are supposed to be the options both in the case when *A* is a Liar sentence and when it's a sentence like γ above; and Caie says that it would be *ad hoc* to treat the two cases differently.

IIA. A first question is, why assume that the antecedent of REJECTION and INDETERMINACY applies to γ? The conclusions about γ reached earlier were (i) that the γ-instance of LEM leads to contradiction given certain natural assumptions, and so (ii) we shouldn't assume that excluded middle can validly apply to γ. But there was no claim that γ is "indeterminate".

Caie notes that in the logic I've advocated, which he's assuming, we can introduce a notion of indeterminacy for which the Liar sentence can be declared indeterminate. But it's also a feature of this logic that lots of paradoxical sentences can't be so declared: they can only be declared not determinately determinate, or not determinately determinately determinate, or not determinately$^{\omega \cdot \omega}$ determinate, or .... There's no weakest indeterminacy-type predicate. And with vague sentences (and some paradoxical sentences too) there will typically not even be an α for which we can declare the sentence not determinately$^{\alpha}$ determinate. If we could in the vagueness case, we'd be introducing sharp boundaries, making the restriction of LEM pointless.

Since a natural moral to draw from the failure of LEM for γ is that 'believes' is crucially vague, there's reason not to think that γ is literally indeterminate.

(I think this tends to undermine Caie's official argument against REJECTION, but will leave that to discussion.)

IIB. Putting REJECTION and INDETERMINACY as formulated aside, here's an argument that we should reject the specific claim γ:

Rej-γ We've concluded that B(<γ>) ∨ ¬B(<γ>) leads to contradiction (in conjunction with acceptable premises); indeed, given that we're accepting a logic with explosion, it leads to any absurdity one chooses. Hence we should reject that instance of LEM. But if we reject a disjunction, we should reject each disjunct. So we should reject ¬B(<γ>). But that's equivalent to γ, so we should reject γ.

Here's an argument that we better not reject it:

Ind-γ To reject γ is to preclude ourselves from believing it. So we shouldn't believe it. But then we're back in the same paradox as before. So we better not reject γ (but just: not determinately accept it).

Each initially seems to have force. It's possible to question Ind-γ, but I'm tentatively inclined to agree with Caie that this isn't the best way to go.

Caie's resolution is to say that there's an error in Rej-γ: the fact that B(<γ>) ∨ ¬B(<γ>) leads to absurdity doesn't show that we *should reject* it, but only that we *shouldn't determinately accept* it.

I'm tentatively inclined to agree, but one worry about it: consider a sentence γ* that is equivalent to "I don't determinately believe <γ*>". An analog of the argument in Section 2 would show that the assumption

Either I determinately believe γ* or I don't

leads to contradiction. So we can't resolve this by saying that I don't determinately believe γ*.

I assume that what Caie would say to the worry is that the resolution is that I don't *determinately* determinately believe γ* (and don't *determinately* determinately believe DB(<γ*>) ∨ ¬DB(<γ*>)). And for γ** equivalent to "I don't determinately determinately believe <γ**>", the resolution is that I don't *determinately determinately* determinately believe γ** (and don't *determinately determinately* determinately believe DDB(<γ**>) ∨ ¬DDB(<γ**>)).

But then we need to have different attitudes for different paradoxical sentences. That suggests that maybe for ordinary paradoxical sentences like the Liar, we might have the simpler attitude of not believing it? Recall that Caie argues that it's ad hoc to have different attitudes in the case of Liar sentences and γ. But if we already have different ones for γ, γ*, γ**, ..., this argument loses its force.

III. A further issue: are (REJECTION) and (INDETERMINACY) as distinct as Caie assumes?

In various places I've pointed out that there is a verbal issue about how to talk about non-classical degrees of belief.

For logics like the one under consideration, my primary formulation tends to be in terms of nonstandard point-valued credences: nonstandard in that Cr(A) + Cr(¬A) will be less than 1 when excluded middle for A isn't accepted. (It can be as low as 0.) Acceptance of A is credence over some high threshold T, rejection is credence below 1−T, so in cases where Cr(A) + Cr(¬A) is sufficiently small we can simultaneously reject A and ¬A.

But in most of these places I've pointed out that there's an obviously-equivalent re-description: take the degree of belief in A to be not the point Cr(A), but the interval [Cr(A), 1 − Cr(¬A)].

And this suggests a third re-description: it is indeterminate what the agent's degree of belief in A is, the legitimate candidates for it are the members of the interval [Cr(A), 1 − Cr(¬A)].

If there's substance to the distinction between these three descriptions, I don't see it.

And if there's no substance to the distinction, then rejecting both A and its negation, in the sense of Cr(A) and Cr(¬A) both being 0 or close to it, looks pretty much identical to having highly indeterminate degree of belief (i.e. having [Cr(A), 1 − Cr(¬A)] be the whole unit interval or close to it).

So are (REJECTION) and (INDETERMINACY) notational variants?

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