

Referee Report:

Augustin's Concessions: A Problem for Indeterminate Credal States

This is a competent paper. It expresses misgivings that are 'in the air', so to speak, regarding the motivations for the indeterminate representation of credence, but that haven't yet, as far as I am aware, been articulated in print. Note that I find the elaborate names for the various positions—'Plebeian Boolean', 'Aristocratic Boolean' etc.—a bit over-the-top, but that is a matter of personal taste.

Main critical concerns:

- It ought to be clearer in the set-up for the paper (in Section 2 on 'Partial Beliefs'), what exactly, is taken to be the main (Plebeian-style) motivation for the indeterminate representation of credence, or what the author calls 'instates'.

The author claims that the paper focuses on three supposed advantages of instates that are labelled 'INTERN', 'INCOMP' and 'INFORM'. It is not clear, however, how the first two of these should be distinguished from each other. Some interesting skeptical points are made about the latter supposed advantage—INFORM—concerning the measure of information for a credal state, but this issue is left for another paper. So INTERN and INCOMP are the main motivations for instates addressed in this paper, and yet they are not very clearly specified, and it is furthermore not clear how they relate to the idea that partial beliefs amount to full beliefs about objective chances (the so-called 'chance-grounding thesis'), or to skepticism about the use of the 'Principle of Indifference' and the prior selection problem (mentioned only in the very final section of the paper) or to the point that is emphasized a great deal towards the end of the paper that the goal of the Plebeian is for our representation of credence to be 'sufficient for inference, updating and decision-making'. It seems crucial that the reader get a clear sense upfront of the main reasons for representing indeterminate credence, and, in particular, how these reasons relate to each other, i.e. the supposed advantages of the unsharp over the sharp representation of credence, otherwise the rest of the dialectic in the paper is not tight.

In the final paragraphs of Section 2, further motivations for representing indeterminacy are given in a list. One of these is in fact discussed later in the paper (the representation of incomplete preferences) but the rest are not apparently discussed in the paper. (Moreover, further, or perhaps differently worded, motivations are added in Section 3 in the course of elaborating the 'Plebeian' versus 'Aristocratic' positions.) This adds to the confusion as to what are the main motivations for representing indeterminate credence/instates that will play a role in the paper.

- The problems for the 'Plebeian' position and the 'Aristocratic' fixes for these problems follows the various turns in the literature too closely. The debate can be better summarized for a non-specialist audience.

For dilation (raised in 4.1 and addressed in 5.1) in particular: It is not clear why the supposed problems of 'Retention' and 'Repetition' (and Example 7) are raised if the author does not in the end think these to be the real problems and that there are mistakes in Joyce's interpretation of the example. The real action, according to the author, is the problem of Reflection; it would be more succinct to simply focus on this issue.

- This point is very much related to the first one I make above: it could be made clearer how Augustin's confessions relate to (conflict with) the original motivation for representing indeterminate credence/instates, given this is the main move of the paper. Basically, AC1 and AC2 look to be precisely the contrary or complements of the main motivations for instates. One might ask: Can the original motivations simply be summarized as \sim AC1 and \sim AC2 (rather than INCOMP and INTERN and all the rest)?
- On the overall dialectic: The author questions whether there are advantages, from an epistemic perspective, of representing indeterminate credence, given that the notion of partial belief as full belief about objective chances presents large problems for learning, and moreover any sensible notion of instates does not take them to be a complete representation of an agent's doxastic state. This naturally leads to the question of whether there remains any good reason to deviate from sharp credences. It would be clearer for the reader if the further discussion of this question was better organized in the paper—at present, some of the further discussion appears in Section 5.1 (in addressing whether instates nonetheless **better** represent doxastic states, to which the author responds that there is no good reason to think so) and the rest appears in the latter part of Section 6; having established that there is no epistemic reason for deviating from sharp credences, the author concludes, via reasoning along the (modus tollens) lines of Williamson, that we therefore should not accept incomplete preferences.

More detailed points:

Section 1:

- Nice introduction. I like the analogy between the 'divide and conquer' argumentative strategy and Simpson's Paradox (although a fairly esoteric analogy one might say).

Section 2:

- In the second paragraph, the author introduces the notion of reconciling full and partial belief. It is never clear in the paper what the author takes this 'reconciliation problem' to be or why it is relevant to the paper (notwithstanding the fact that one interpretation of instates is that they represent full beliefs about objective chances).
- It is not clear how INCOMP and INTERN come apart in relation to the coin examples.
- As mentioned earlier, final paragraph listing other motivations for instates that mostly will not be discussed in the paper is an odd way to finish the section.

Section 3:

- A crucial point in the paper is the supposed Plebeian claim that 'credal state be sufficient for inference, updating and decision making'. But it is never made clear what all this means (even though a specialist may be able to infer the meaning). The author needs to elaborate what it means for a credal state to be sufficient in these various respects.
- Later in this section the point is made that for Plebeians, learning about chances requires belief revision, not simply updating. If this point is not elaborated and is comprehensible only to a specialist, then I would suggest it is a footnote.

Section 4:

- Why include the points about supervaluation in 4.2? Is this relevant for understanding Example 6?

Section 5:

- Again, the points about the need for a 'substantial reconciliation project between full belief and partial belief epistemology' are obscure.
- What does the second part of this phrase mean?: '...but also that aristocratic Booleans fails to summon arguments against the Laplacean position without relapsing into an unrefined version of indeterminacy.'
- Again, in Section 5.1, the quote from Augustin – 'The imprecise posterior does no longer contain all the relevant information to produce optimal decisions. Inference and decision do not coincide anymore.' – needs unpacking. It is not clear what this means.
- As noted above, why include Example 7 if it is used mistakenly in the literature?

- The discussion of the Principal Principle here and the subsequent two pages of discussion is distracting for the reader, given that it only serves to dismiss one of the supposed 'problems' regarding dilation. I suggest cutting this out. In general, this section follows the twists and turns of Joyce's argument too much. It reads like an intellectual journey following Joyce's main papers (as noted above).

Section 6:

- Again on lack of clarity about what full representation of doxastic state means: the author makes the point that for credence we rather 'need evidence representation in background'. Not clear what this means.
- What does Example 11 achieve that is not already illustrated by the skittles example or the doctor example introduced by Hajek and Smithson?
- Is the discussion of 'exportability' important? Here the author seems to be addressing the issue that sharp credences may be, to some extent arbitrary, and that is not a problem. But it is not clear.