Deference Done for All-or-Nothing Beliefs

Patrick Neal Rooyakkers

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1 Introduction

Much admirable work has been done on developing a theory of (epistemic) deference for credences (Lewis, 1980) (van Fraassen, 1984) (Christensen, 2007) (Christensen, 2010) (Pettigrew & Titelbaum, 2014) (Gallow, 2017) (Mahtani, 2017) (Levinstein, 2019) (Dorst et al, 2021).[1] In contrast, not much work has been done on developing a theory of qualitative deference for all-or-nothing beliefs simpliciter. If you learn that the weatherlady believes that it's gonna rain tomorrow and you think her an expert worthy of deference, what constraints does this impose on your own beliefs? In this short note, we develop and propose a theory of qualitative deference answering just these kinds of questions. Let's get to it.

2 Deference for All-or-Nothing Beliefs

Unlike the credal case, we don't have an obvious way to use expectations in our study of qualitative deference. After all, we only have a belief-set and a belief-frame.[2] Thus, instead of evaluating beliefs using expected-accuracy, we are going to appeal to accuracy-dominance. (We note that a similar point should be made in the credal case, with the suggested paper title of: "Deference Done Best".) From an epistemic point of view, a necessary condition for B to defer to belief-frame $< W, \tilde{B} >$ is that there must *not* be a way of evaluating B as strongly accuracy-dominating $\tilde{B}$. In other words, you should not think beliefs worthy of deference as being less accurate than your own. You shouldn't be able to think yourself better than an expert. Let's characterize this.

Deferers Don't Strongly[3]**Accuracy-Dominate Theorem**: There *doesn't*

[1] To name just a few. See the works cited of (Dorst et al, 2021) for a more complete list.

[2] A belief-frame $< W, \tilde{B} >$ is a pair consisting of the relevant set of possible worlds W and a function $\tilde{B}$ from worlds to a set of propositions, with the interpretation being that the expert's belief-set at world w is $\tilde{B}_w$. This notion is defined in analogy with the probability-frames of (Dorst et al, 2021).

[3] A similar result can be proven for the weak case. Furthermore, a similar result can be proven for belief-plans and belief/belief-plan pairings, which gets us a Qualitative Trust principle in analogy with the credal Trust principle of (Dorst et al, 2021).

exist a legitimate accuracy-measure A (with threshold t) such that $A(B, w) > A(\tilde{B}_w, w)$ for all worlds $w \in W$ iff there exists a probabilistic c that satisfies Qualitative Simple Trust[4] (with threshold t) for all $p \in (B - \tilde{B}) \cup (\tilde{B} - B)$[5]:
(1): if $p \in \tilde{B} - B$, then $c(p|p \in \tilde{B}) \geq t$. And,
(2): if $p \in B - \tilde{B}$, then $c(p|p \notin \tilde{B}) \leq t$.
Proof: apply the usual Farkas-Rothschild Lemma and the Rothschild substitutions. $\diamond$.

This is an elegant result. Basically, it says that, where you and the expert disagree, there must be a probabilistic credence function that, upon learning that the expert believes/disbelieves p, it becomes permissible (according to that relevant credence function) to also believe/disbelieve p (via the Lockean Thesis inequalities). This is a necessary condition for avoiding thinking yourself more accurate than an expert. While this condition is presumably necessary for deference, it doesn't seem to be sufficient. When deferring to someone else's beliefs, we don't just think ourselves not better than them, we also think them better than us. Let's characterize this.

Experts Strongly[6]Accuracy-Dominate Theorem: There exists a legitimate accuracy-measure A (with threshold t) such that $A(\tilde{B}_w, w) > A(B, w)$ for all worlds $w \in W$ iff there *doesn't* exist a probabilistic c that satisfies Qualitative Simple Anti-Trust for all $p \in (B - \tilde{B}) \cup (\tilde{B} - B)$:
(1): if $p \in B - \tilde{B}$, then $c(p|p \notin \tilde{B}) \geq t$. And,
(2): if $p \in \tilde{B} - B$, then $c(p|p \in \tilde{B}) \leq t$.
Proof: apply the usual Farkas-Rothschild Lemma and the Rothschild substitutions. $\diamond$.

Thus, if you have a belief-plan β such that (B, β) is jointly Almost Lockean Complete and B strongly defers to $\tilde{B}$, then you must plan to match $\tilde{B}$ in the sense of dropping or gaining at least one belief/disbelief held by $\tilde{B}$ but not priorly believed/disbelieved.

With these results in mind, my suggested theory of qualitative deference is their conjunction. (I mean, what more could be asked of just accuracy-dominance reasoning? Perhaps, there is a more plausible theory of qualitative deference, but any such theory must go beyond dominance reasoning. I leave it for future investigation whether or not qualitative deference can be done better still.)

[4]In analogy with the credal case of (Dorst et al, 2021), we call the consequents in (1) and (2) *Qualitative* Simple Trust.

[5]In a slight misuse of notation, when I write something like $p \in \tilde{B}$, we are there interpreting $\tilde{B}$ as the definite description: "the expert's belief-set", in analogy with (Dorst et al, 2021)'s convention.

[6]Once again a similar theorem can be proven for the weak case.

3 Deference Done for All-or-Nothing Belief/Credence Pairings

When it comes to the case of a belief-plan/credal pair (β, c) deferring to belief/probability-frame $(\tilde{B}, \tilde{c})$, we are going to piggyback on the credal case and apply the Almost Lockean Thesis and Plan Almost Lockean Revision. For the credal case, we are going to follow (Dorst et al, 2021) and adopt Simple Trust. Putting these results together gets us that, if you learn that it's permissible for the expert to (dis)believe p, $(\tilde{c}(p) \leq t)$ $\tilde{c}(p) \geq t$, then it must be permissible to plan to (dis)believe p. Done.

4 Future Projects

As suggested above, it might be valuable to apply accuracy-dominance reasoning to the case of credal deference. Furthermore, it might be worthwhile to develop some concrete examples of qualitative deference, with special regard being shown towards the local/global deference distinction. Finally, developing a theory of pragmatic qualitative deference, in which you would prefer to give the expert's beliefs/disbeliefs power of attorney, seems desirable.