Group Epistemology Essay

Adam Chalmers

November 3, 2016

1 Group Epistemology

Epistemology is the study and philosophy of learning, belief and knowledge. Traditionally, epistemology is centered around the individual — how one person should learn about the world around them, what knowledge a person has, and what justifies a certain level of belief in a proposition. Group epistemology asks these questions not of individual agents, but *group* agents.

It often makes sense to ask what a group believes. For example, does a board of investors anticipate their company becoming profitable? Does a jury believe a defendent is innocent? What is the consensus opinion of a panel of climate scientists? What does a team of pundits jointly anticipate the Liberal Party's primary vote percentage to be? In each of these cases, we're not interested in the opinions of any individuals in the group. We're interested in the group's overall opinion, because the group itself has some sort of authority over and above the individuals who comprise it.

Although group and individual epistemology share the goals and concerns, group epistemology involves several problems which individual epistemology does not face. For example, how do we aggregate the beliefs of many individuals into one group belief? How many individuals in a group are required to possess some piece of evidence before we can safely say the group as a whole possesses it? How do we resolve contradictions between the beliefs of different group members? These issues simply don't present themselves when considering the beliefs, knowledge and reasoning of individuals. This paper aims examines the specific question of *group credence*: how do we determine the credence[1] a group has in a given proposition?

[1] In this paper I will use 'belief' to designate a binary propositional attitude (agents do or don't believe a certain proposition) and credences as probability assignments (an agent may assign probability 0.3 to a proposition being true).

One intuitive solution to the group credence problem is known as *unweighted linear averaging*. In this scheme, groups should just average every individual's credence in a proposition to get the overall group credence. Unfortunately this approach yields poor results in a number of cases, which I shall examine below. A variety of more complicated procedures have been proposed which aim to succeed where unweighted linear averaging (or other approaches) fail. In this paper, I will examine a recently-published theory, Dietrich & List (2013)'s *Probabilistic Opinion Pooling* (hereafter POP) and evaluate its success as a solution to the group credence problem.

2 Troublesome scenarios for group credences

To demonstrate the complications inherent in group credence functions, I will examine scenarios where the unweighted linear averaging rule yields poor outcomes. Later in this paper I will use these same scenarios to evaluate how successful POP is as a group credence procedure.

In order to outline unweighted linear averaging I must first define some terminology. Call a *credence function* a function which maps propositions to probabilities (between zero and one). Given a group G of n individuals and a list of their credence functions $CR = \langle cr_1, cr_2, ..., cr_n \rangle$, unweighted linear averaging says that the credence function for the entire group G is

$$cr_G(P, CR) = \frac{1}{n} \times \sum_{cr \in CR} cr(P)$$

Russell et al. (2015) outlines a number of properties which are *prima facie* desirable in group credence functions. Unweighted linear averaging has a number of these properties, such as

- **Anonymity**: if CR' is a permutation of CR, $cr_G(P, CR) = cr_G(P, CR')$ (i.e. the identity of each individual doesn't matter, only their credence).
- **Systematicity**: the credence of a specific proposition P is a pure function of each individual's credence in P, and nothing else — neither credences for other propositions, nor outside information beyond credences will affect the output of CR.
- **Unanimity**: if each individual in the group has the same credence for P, then the group should have that credence too.

- **Independence preservation**: if all individuals have independent credences for propositions P and Q, then the group credence function for P and Q should also be independent.
- **Continuity**: small changes in the input individual credences should lead to small changes in the output group credence, i.e. $cr_G(-, CR)$ should be a continuous function.

References

Dietrich, F., & List, C. (2013). Probabilistic opinion pooling generalized Part two: The premise-based approach.

Russell, J. S., Hawthorne, J., & Buchak, L. (2015). Groupthink. *Philosophical studies*, *172*(5), 1287–1309.