

## Comment

Simon French

This is an excellent review of the literature: all-embracing, scholarly, thought-provoking. Genest and Zidek are to be congratulated on organizing and summarizing such a wide body of the literature so very effectively. I, for one, am very grateful to them. Given the paper's undoubted virtues, it seems almost churlish to criticize; but praise alone makes for dull, unconstructive discussion, and I do take issue with the sentiments behind their opening paragraphs.

Genest and Zidek suggest that a common motive for studying the aggregation of opinion problem is to find some concept of consensus, which might replace the concept of objectivity which is supposedly central to the scientific method. While this is certainly a commonly expressed motive, it is not one that bears inspection by those of us who call ourselves subjectivists.

De Finetti begins his treatise with the now famous sentence "probability does not exist." Probabilities do not model some physical properties or propensities that exist in some objective sense within a system. If one tries to interpret them as such, as indeed the frequentists do, one is led into a maze of paradox and inconsistency from which ad hocery provides the only escape. To a subjectivist, probabilities model the beliefs of an observer of a system. But, in fact, they do more than this. The probability calculus provides procedures whereby the observer may guide the evolution of his beliefs in such a way that he is led to self-consistency. Probabilities are truly subjective. They

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## Comment

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I would like to congratulate Genest and Zidek on an excellent job of reviewing a wide variety of work involving the combining of probability distributions. The increasing interest in using subjective probabili-

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belong to an individual observer; they are part of his thought processes.

Accepting this, one is immediately led to the question: what to one person is a second person's probability? The answer a subjectivist must give is: "not a probability." For once it has left the second person's mind it is no longer part of his thought processes and, therefore, not a probability. Thus an average or aggregate "probability" taken over a group of observers is certainly not a probability. It belongs to no one. Averaging over individuals does not make probabilities more "objective" in any sense. It destroys probabilities.

Genest and Zidek are right to point to the move toward identifying intersubjectivity currently being made within the Bayesian community. But intersubjectivity and averaging are very different. Intersubjectivity studies are certainly concerned with groups of observers of the same system, but they are not concerned with identifying an average opinion. Rather, these studies are concerned with identifying circumstances under which the thought processes of the group members will run in parallel. When will their individual probabilities happen to take the same numerical values or, more generally, when will their individual probability distributions happen to share a common functional form? Intersubjectivity is about consensus in the *strict* sense of that word, that of unanimous agreement.

In the light of these points it will be understood why in my own work on the aggregation problem I have always addressed the question of how one individual should update his beliefs on hearing the opinions of others. It will also be understood why I do not believe that any of the work on aggregation will lead to a replacement for the concept of objectivity.

ties in practice has led to greater attention being given to the problem of combining such probabilities, making this review and bibliography particularly welcome and timely. In this discussion I will indicate my own biases about fruitful approaches for combining probabilities and probability distributions.

As indicated by Genest and Zidek, one stream of work has focused on the form of the combining rule,