Newspeak with translations into the Oldspeak that most of us still use.

Reference

1. N. D. Mermin, *Phys. Rev. Lett.* **74**, 831 (1995).

N. David Mermin
(ndm4@cornell.edu)
Cornell University
Ithaca, New York

The Letters reply by Yakir Aharonov, Sandu Popescu, and Jeff Tollaksen gives a misleading impression of the consistent histories interpretation of quantum mechanics. As I pointed out in the same issue, consistent histories is an alternative to their time-symmetric formulation. It resolves the "collapse problem" of quantum foundations, which Aharonov and coauthors admit they have failed to do. However, that is not its only or even its principal virtue. It also solves what I call the second quantum measurement problem: how to infer from the measurement outcome the state of the measured system at an earlier time before the measurement took place. Thus the consistent histories approach, without any fuzzy references to "ensembles," provides a proper probabilistic framework for inferring that S_x for a spin-½ particle actually was $-\frac{1}{2}$ before the measurement took place. This approach evades the criticisms expressed by Michael Nauenberg and Art Hobson in their letters in the same issue.

Furthermore, consistent histories, unlike certain aspects of the approach of Aharonov and coauthors, is fully consistent with the Hilbert-space structure of quantum mechanics introduced by John von Neumann and now taught to all students of the subject. Indeed, with a consistent histories analysis one can locate fairly precisely[1] the error in reasoning that leads to claims such as that the measured spin of a spin-½ particle can equal 100.[2] Claims about what weak measurements actually measure, when made by those who have not yet solved either the collapse problem or the second measurement problem, should be treated with great caution.

The claim that the consistent histories approach is controversial was true back in the 1990s, and the controversy led to a clearer formulation of the interpretation. However, no significant problems have come to light in the decade since the publication of my book.[3] The fact that something has been ignored does not imply it is controversial. Admirers of Richard Feynman, some of whose writings were cited by Aharonov and coauthors in their reply, may be interested to know that shortly before his death he was quite sympathetic to an early form of the consistent histories or decoherent histories approach to understanding quantum mechanics (see PHYSICS TODAY, February 1999, page 11)—an open-mindedness worth imitating.

References

1. R. E. Kastner, *Stud. Hist. Phil. Mod. Phys.* **35**, 57 (2004), http://arxiv.org/abs/quant-ph/0207182.
2. Y. Aharonov, D. Z. Albert, L. Vaidman, *Phys. Rev. Lett.* **60**, 1351 (1988).
3. R. B. Griffiths, *Consistent Quantum Theory*, Cambridge U. Press, New York (2002), http://quantum.phys.cmu.edu/CQT/.

Robert B. Griffiths
(rgrif@cmu.edu)
Carnegie Mellon University
Pittsburgh, Pennsylvania

Aharonov, Popescu, and Tollaksen reply: We are grateful to David Mermin for stating loud and clear, in his unmistakable style, that "the authors are correct." As for the rest of his letter, a lesson on clear writing from a great master of the subject is always welcome. We did strive for clarity in our article, but there is always space for improvement, and Freudian slips of Newspeak often creep in—that's their very nature.