

## *Probability and the art of judgment*

Richard Jeffrey is indisputably one of the most distinguished and influential philosophers working in the field of decision theory and the theory of knowledge. His work is distinctive in showing the interplay of epistemological concerns with probability and utility theory. Not only has he made use of standard probabilistic and decision theoretic tools to clarify concepts of evidential support and informed choice, he has also proposed significant modifications of the standard Bayesian position in order that it provide a better fit with actual human experience. Probability logic is viewed not as a source of judgment but as a framework for explaining the implications of probabilistic judgments and testing their mutual compatibility.

This collection of essays spans a period of some 35 years and includes what have become some of the classic works in the literature. There is also one completely new piece, and in many instances Jeffrey includes afterthoughts on the older essays. The volume will be of particular interest to epistemologists, philosophers of science, probabilists, statisticians, decision theorists, and judgmental psychologists.

Cambridge University Press  
0521394597 - Probability and the Art of Judgment - Richard Jeffrey  
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**CAMBRIDGE**  
**UNIVERSITY PRESS**

Cambridge University Press  
 0521394597 - Probability and the Art of Judgment - Richard Jeffrey  
 Frontmatter/Prelims  
[More information](#)

Published by the Press Syndicate of the University of Cambridge  
 The Pitt Building, Trumpington Street, Cambridge CB2 1RP  
 40 West 20th Street, New York, NY 10011-4211, USA  
 10 Stamford Road, Oakleigh, Victoria 3166, Australia

© Cambridge University Press 1992

First published 1992

*Library of Congress Cataloging-in-Publication Data*

Jeffrey, Richard C.

Probability and the art of judgment / Richard Jeffrey.

p. cm. – (Cambridge studies in probability, induction, and  
 decision theory)

ISBN 0-521-39459-7. – ISBN 0-521-39770-7 (pbk.)

I. Probabilities. 2. Judgment. I. Title.

II. Series.

BC141.J44 1992

121'.63 – dc20

91-34257

CIP

A catalog record for this book is available from the British Library.

ISBN 0-521-39459-7 hardback

ISBN 0-521-39770-7 paperback

Transferred to digital printing 2003

*For Peter*

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## *Preface*

These essays explore a variety of topics, ranging from decision theory and the philosophy of mind to epistemology and scientific methodology, from a probabilistic viewpoint of a sort called subjective (Bruno de Finetti's term), personal (L. J. Savage's), and judgmental (mine). While the focus varies from historical and philosophical overviews to close technical studies, the point of view remains pretty steady (or, anyway, evolves pretty slowly). Its individuating features are a radical probabilism that accepts probability judgments as basic where the usual Bayesian position would root them in certainties, and a view of making up your mind as covering dynamics: how to change your mind. Thus, empirical data may well be coded not as probabilities or as odds but as factors to multiply probabilities or odds by in order to update them in the light of experience. The formal logic of that process identifies invariance of conditional probabilities as validating a certain generalization of the usual "Bayesian" updating scheme, but the judgment of invariance in particular cases is no formal matter. Probability logic is seen not as a source of judgment but as a framework for exploring the implications of probabilistic judgments and testing their mutual compatibility.

Essay 1 is new; the rest, going back over 35 years, appear here essentially unchanged, with afterthoughts clearly labeled, and mostly segregated in postscripts. Here is a brief guide.

1. "Radical probabilism" (1991) depicts the position elaborated here as a development out of logical empiricism, radicalizing Carnap's (and Reichenbach's) probabilism, probabilizing Quine's deductivism.

2. "Valuation and acceptance of scientific hypotheses" (1956) argues that the job of the scientist is not to accept and reject hypotheses but to assign them probabilities.

3. "Probable knowledge" (1968) promotes a generalization of



conditioning (“probability kinematics”) as a way of revising probability judgments in the light of uncertain data. Sited in a framework for practical deliberation, this is probabilism of the commonplace, on which probabilistic judgments about large questions impinge only indirectly.

4. “Probability and the art of judgment” (1985) bases an account of scientific method on such impingements, surveys the historical and philosophical context, and stakes some territorial claims.

5. “Bayesianism with a human face” (1983) floats a liberal version of probabilistic methodology. It defends probability kinematics against claims that ordinary conditioning is *the* right way to update probabilities, defends incomplete and indefinite probability judgments as useful probabilistic states of mind, considers how theories can gain probability by explaining previously known facts, and backs de Finetti’s view of the probability calculus as the logic of the probable.

6. Addressing puzzles about hard data in the framework of radical probabilism, “Alias Smith and Jones: the testimony of the senses” (1987) offers versions of probability kinematics in which the order of successive probability revisions makes no difference. Those versions code data as factors for revising probabilities or odds, as in essay 1.

7. “Conditioning, kinematics, and exchangeability” (1988) surveys connections between probability kinematics and recent developments in Bayesian statistics extending de Finetti’s work on partial exchangeability. Probability kinematics turns out to be equivalent to ordinary conditioning on new probabilities. A solution is offered to Bas van Fraassen’s puzzle about the relationship (“the reflection principle”) between current and anticipated probabilities. Rigidity conditions, under which it is appropriate to use probability kinematics, turn out to be identical with statistical sufficiency conditions. The study of successive updating begun in essay 6 is taken further.

8. “Preference among preferences” (1974) analyzes weakness of will as real preference for the worse, accompanied by real preference for preferring the better.

9, 10. “On interpersonal utility theory” (1971) and “Remarks on interpersonal utility theory” (1974) explore a solution to the prob-

lem of interpersonal comparisons. The second of these essays, written to illuminate the first, might be read first.

11. The 1960s saw the emergence of convincing accounts of randomness as algorithmic incompressibility in the finite case, and of other convincing accounts for infinite sequences. “Mises redux” (1977) rebuts the view that these finally make sense of von Mises’ notion of an irregular collective, and thus establish the credentials of a frequency view of probability.

12. “Statistical explanation vs. statistical relevance” (1969) offers an alternative to Hempel’s view of probabilistic explanation as inductive argument.

13, 14, 15, 16. “New foundations for Bayesian decision theory” (1965) summarizes the account of preference set forth in the first seven chapters of my book *The Logic of Decision* (1965, 1983), and “Frameworks for preference” (1974) contrasts it favorably with some of its competitors. “Axiomatizing the logic of decision” (1978) and “A note on the kinematics of preference” (1977) are close looks at some of its features.

Fair parts of the work represented here were supported by the History and Philosophy of Science section of the National Science Foundation, the John Simon Guggenheim Foundation, and the National Endowment for the Humanities.

This collection is gratefully dedicated to my dear friend and teacher C. G. (Peter) Hempel.