## List of Contents for Volume 1


Chapter 1 Introduction

Chapter 2 Concerning Certainty and Uncertainty

Chapter 3 Prevision and Probability

Chapter 4 Conditional Prevision and Probability

Chapter 5 The Evaluation of Probabilities

Chapter 6 Distributions

Index


Bruno de Finetti gained his degree in Applied Mathematics at the University of Milan in 1927. In his research he has always viewed mathematics more as an instrument for application (in physics, biology, economics, statistics) and for the understanding of conceptual problems (logic, psychology, probability) rather than an abstract exercise in its own right. After 1938 he taught financial and actuarial mathematics at the Universities of Trieste and Rome and in 1961 he became Professor of the Theory of Probability at the University of Rome, where he has been ever since.

# *Contents*


CHAPTER 7 A PRELIMINARY SURVEY 1

7.1 *Why a survey at this stage?* 1
7.2 *Heads and Tails: preliminary considerations* 3
7.3 *Heads and Tails: the random process* 13
7.4 *Some particular distributions* 22
7.5 *Laws of 'large numbers'* 33
7.6 *The 'central limit theorem'; the normal distribution* 44
7.7 *Proof of the central limit theorem* 64

CHAPTER 8 RANDOM PROCESSES WITH INDEPENDENT INCREMENTS 71

8.1 *Introduction* 71
8.2 *The general case; the case of asymptotic normality* 78
8.3 *The Wiener–Lévy process* 92
8.4 *Stable distributions and other important examples* 98
8.5 *Behaviour and asymptotic behaviour* 107
8.6 *Ruin problems; the probability of ruin; the prevision of the duration of the game* 110
8.7 *Ballot problems; returns to equilibrium; strings* 123
8.8 *The clarification of some so-called paradoxes* 141
8.9 *Properties of the Wiener–Lévy process* 153

CHAPTER 9 AN INTRODUCTION TO OTHER TYPES OF STOCHASTIC PROCESS 165

9.1 *Markov processes* 165
9.2 *Stationary processes* 168

CHAPTER 10 PROBLEMS IN HIGHER DIMENSIONS 173

10.1 *Introduction* 173
10.2 *Second-order characteristics and the normal distribution* 176
10.3 *Some particular distributions: the discrete case* 180

10.4 *Some particular distributions: the continuous case* 185
10.5 *The case of spherical symmetry* 190

CHAPTER 11 INDUCTIVE REASONING; STATISTICAL INFERENCE 195

11.1 *Introduction* 195
11.2 *The basic formulation and preliminary clarifications* 202
11.3 *The case of independence and the case of dependence* 208
11.4 *Exchangeability* 215

CHAPTER 12 MATHEMATICAL STATISTICS 225

12.1 *The scope and limits of the treatment* 225
12.2 *Some preliminary remarks* 226
12.3 *Examples involving the normal distribution* 234
12.4 *The likelihood principle and sufficient statistics* 240
12.5 *A Bayesian approach to 'estimation' and 'hypothesis testing'* 243
12.6 *Other approaches to 'estimation' and 'hypothesis testing'* 245
12.7 *The connections with decision theory* 251

APPENDIX 256

1 *Concerning various aspects of the different approaches* 256
2 *Events (True, False, and . . .)* 264
3 *Events in an unrestricted field* 267
4 *Questions concerning 'possibility'* 276
5 *Verifiability and the time factor* 280
6 *Verifiability and the operational factor* 284
7 *Verifiability and the precision factor* 289
8 *Continuation: the higher (or infinite) dimensional case* 298
9 *Verifiability and 'indeterminism'* 302
10 *Verifiability and 'complementarity'* 309
11 *Some notions required for a study of the quantum theory case* 313
12 *The relationship with 'three-valued logic'* 321
13 *Verifiability and distorting factors* 325
14 *From 'possibility' to 'probability'* 333
15 *The first and second axioms* 335
16 *The third axiom* 338
17 *Connections with aspects of the interpretations* 340
18 *Questions concerning the mathematical aspects* 343
19 *Questions concerning qualitative formulations* 361
20 *Conclusions (?)* 371

*Index* 373