

Volume II

Selected Statistical Papers of Sir David Cox

Foundations of Statistical Inference,
Theoretical Statistics, Time Series and
Stochastic Processes

EDITED BY

D. J. Hand

Imperial College, London

A. M. Herzberg

Queen's University, Kingston



CAMBRIDGE
UNIVERSITY PRESS

Contents

<i>Foreword, by D. J. Hand and A. M. Herzberg</i>	<i>page ix</i>
<i>Preface, by D. R. Cox</i>	<i>xi</i>
4 Foundations of Statistical Inference	1
Commentaries	3
Original papers	9
F1 Some problems connected with statistical inference	9
F2 The choice between alternative ancillary statistics	25
F3 The role of significance tests	31
F4 Statistical significance tests	47
F5 Foundations of statistical inference: the case for eclecticism	55
F6 Theory and general principle in statistics	69
F7 Role of models in statistical analysis	75
F8 Causality: some statistical aspects	81
5 Theoretical Statistics	93
Commentaries	95
Original papers	107
Th1 Tests of separate families of hypotheses	107
Th2 Further results on tests of separate families of hypotheses	127
Th3 Fieller's theorem and a generalization	147
Th4 A note on the efficiency of least-squares estimates (with D. V. Hinkley)	153
Th5 The continuity correction	159
Th6 Prediction intervals and empirical Bayes confidence intervals	161
Th7 A note on data-splitting for the evaluation of significance levels	171
Th8 Partial likelihood	175
Th9 A note on partially Bayes inference and the linear model	183
Th10 A note on empirical Bayes inference in a finite Poisson process	187
Th11 Edgeworth and saddle-point approximations with statistical applications (with O. E. Barndorff-Nielsen)	191
Th12 Local ancillarity	213

Th13	Some remarks on overdispersion	221
Th14	Effective degrees of freedom and the likelihood ratio test	227
Th15	The effect of sampling rules on likelihood statistics (with O. E. Barndorff-Nielsen)	235
Th16	Two new tests associated with analysis of variance (with A. Azzalini)	253
Th17	Barlett adjustments to the likelihood ratio statistic and the distribution of the maximum likelihood estimator (with O. E. Barndorff-Nielsen)	263
Th18	Some general aspects of the theory of statistics	277
Th19	Invariants and likelihood ratio statistics (with P. McCullagh)	287
Th20	Approximations to noncentral distributions (with N. Reid)	299
Th21	Parameter orthogonality and approximate conditional inference (with N. Reid)	309
Th22	An approximation to maximum likelihood estimates in reduced models (with N. Wermuth)	329
6	Time Series	345
	Commentaries	347
	Original papers	351
TS1	Prediction by exponentially weighted moving averages and related methods	351
TS2	Statistical analysis of time series: some recent developments	361
TS3	Long-range dependence: a review	379
TS4	Long-range dependence, non-linearity and time irreversibility	399
7	Stochastic Processes	407
	Commentaries	409
	Original papers	417
SP1	The superposition of several strictly periodic sequences of events (with W. L. Smith)	417
SP2	On the superposition of renewal processes (with W. L. Smith)	429
SP3	A use of complex probabilities in the theory of stochastic processes	439
SP4	The analysis of non-Markovian stochastic processes by the inclusion of supplementary variables	447
SP5	On a statistical problem of E. A. Milne (with A. M. Herzberg)	457
SP6	A low traffic approximation for queues (with P. Bloomfield)	469
SP7	A bivariate point process connected with electronic counters (with V. Isham)	479
SP8	The virtual waiting-time and related processes (with V. Isham)	491
SP9	Spatial modelling of total storm rainfall (with I. Rodriguez-Iturbe and P. S. Eagleson)	507

SP10 Some models for rainfall based on stochastic point processes (with I. Rodríguez-Iturbe and V. Isham)	531
SP11 A simple spatial-temporal model of rainfall (with V. Isham)	551
Publications of Sir David Cox	563
<i>Acknowledgements</i>	587