

BOOK REVIEWS

Sequential Analysis Abraham Wald. John Wiley and Sons, Inc. pp. vi, 212, \$4.00.

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The development of sequential analysis as a new tool of statistics is by and large the work of Abraham Wald. This fact in itself would make the appearance of a book by him on this subject an important event. However, Wald in this book did more than discuss the present status of sequential theory. He has, in fact, written a very lucid treatise on the general subject of statistical inference—a treatise which is likely to have great influence on statistical thinking.

While this book is not written for the mathematically untrained, a knowledge of differential and integral calculus will suffice to follow all the arguments except perhaps for some sections in the appendix where the more complicated proofs have been placed.

The main body of this book is divided into 3 parts and 11 chapters. Part I, covering chapters 1 to 4 inclusive, deals with the general theory of the sequential probability ratio test. Chapter 1 introduces in an elementary fashion the notion of probability distributions, tests of hypotheses and the Neyman-Pearson theory of two-valued decisions based on a fixed sample size. In Chapter 2, the general notion of a sequential test procedure is introduced and the operating characteristics of such tests are discussed. Chapter 3 deals with the sequential probability ratio test for testing a single hypothesis against a single alternative. Here the boundaries of this sequential criterion are expressed in terms of the risks, the operating characteristic and the average sample number functions are developed and bounds are obtained for the errors arising from truncation and neglect of excess over the boundaries. Chapter 4 presents a sequential theory for testing simple and composite hypotheses against a set of alternatives. The fundamental idea introduced is the concept of a weight function in the parameter space which permits handling composite hypotheses, or simple hypotheses with many alternatives, by means of the sequential probability ratio test.

Part II of this book, consisting of chapters 5 to 9 inclusive, deals with the applications of sequential analysis to special problems. Chapter 5 contains a discussion of the binomial case with specific reference to lot-by-lot acceptance inspection. Of special interest in this chapter is the derivation of the exact characteristic function for a large class of tests and the development of upper and lower limits for the effect of grouping on the OC and ASN curves. Chapter 6 deals with the problem of double dichotomies. A procedure for testing the difference between the parameters of two binomial distributions is developed