B. D. Bojanov, H. A. Hakopian, and A. A. Sahakian, *Spline Functions and Multivariate Interpolations*, Mathematics and Its Applications, Vol. **248**, Kluwer Academic, 1993, ix + 276 pp.

Both spline functions and multivariate interpolation are extensive areas of mathematics and so it cannot be expected that this book is comprehensive. Instead it deals with selected topics in which the authors have conducted research. The first half is on univariate splines, reflecting interests of Bojanov, while the second half comprises interests of the other authors concerning polyhedral splines and multivariate polynomial interpolation. The two halves are fairly distinct, although the first three chapters contain some common introductory material. The emphasis is on theory rather than on practical application, while the exposition is almost self-contained and requires only a basic knowledge of analysis. Each chapter ends with a brief historical discussion and citation of relevant references. Although the authors have made some effort in this respect and have cited some interesting early papers, there are still some surprising omissions.

After three chapters introducing univariate spline functions and the B-spline basis, there is a chapter on total positivity and interpolation. The authors mention both Birkhoff interpolation (interpolation of non-consecutive derivatives) and Birkhoff splines (with continuity imposed on non-consecutive derivatives) but stop short of the full generality of Birkhoff interpolation by Birkhoff splines and do not make clear the elegant duality between the nodes of interpolation and the knots of the splines. The next two chapters deal with natural splines and perfect splines, with their respective optimality properties. The last two chapters on univariate splines concern monosplines, with their connection to quadrature formulae, and periodic splines.

In the second half, the first three chapters are on multivariate B-splines and box splines. Again the material must be selective, but included are all the basic recurrence relations and results on linear independence. The next chapter is on "mean-value interpolation" by multivariate polynomials, which includes Kergin interpolation (a "lifting" of univariate Hermite interpolation) and interpolation of integrals over simplices, which the authors are too modest to refer to as Hakopian interpolation. To my knowledge this is the first time this material has appeared outside scattered research papers, and it therefore seems a pity that it is not dealt with in a more comprehensive manner. The last two chapters continue the study of interpolation by multivariate polynomials and much of the material is the authors' own research. In the first the interpolation is on linear manifolds given as intersections of certain hyperplanes and includes as special cases finite element interpolants on simplices. The final chapter is on multivariate Birkhoff interpolation (see the review of the book "*Multivariate Birkhoff Interpolation*" by R. A. Lorentz, *J. Approx. Theory* **74** (1993), 361).

On the whole this book can be recommended as a clear, readable account of selected topics in approximation theory which will hopefully encourage the reader to delve further into these and related areas.

Tim Goodman

I. Daubechies, *Ten Lectures on Wavelets*, CBMS–NSF Regional Conference Series in Applied Mathematics, Vol. **61**, SIAM, 1992, xix + 357 pp.

Over the past decade, wavelets have become an important tool of mathematical analysis. They have found important applications in several areas of science. On the other hand, it has also become clear that very similar concepts have already been introduced in diverse fields: multigrid methods in numerical analysis, Calderón's formula in operator theory, affine coherent states in quantum physics, subband decompositions in signal processing, ... In that sense, wavelet theory can be viewed as a common language that is well adapted to describing