ADRIAN BOWYER & JOHN WOODWARD
Introduction to Computing with Geometry, Information Geometers Ltd., 170 pp, hardbound, ISBN 1-874728-03-8 £??

Make no mistake, this is no book describing how to draw pretty pictures on your machine's display screen! The text begins with an introduction to different applications in which computer geometry is used: also included is a section describing some of the problems encountered when translating a geometric concept into a computer program. Following a chapter on some geometric basics is a chapter on parametric curves and surfaces, with sections on interpolation, splines and surface patches. Then Bernstein-basis curves and surfaces, their advantages and disadvantages and Bernstein–Bezier curves are introduced. Chapter 5, 'General implicit curves and surfaces', contains material on blends and some of the properties of implicit equations. Tessellations and approximations are the subjects of the next two chapters, and Chapter 8 is concerned with methods for storing the numbers involved in the computer. Transforms and ways of implementing them followed by a discussion of intersections and the problems of finding and representing them are then covered. Chapter 11 is concerned with distances and offsets. Chapter 12 is on geometric algorithms, and in four pages discusses their importance and how to judge their performance. The final chapter on geometric programming concentrates on accuracy and use of storage when implementing a geometric operation on a machine.

The book is quite informal with the main aim of introducing some of the important ideas relevant to the subject. Topics are given an equal amount of coverage, hence some are explained in greater detail than others. Short understandable sections with plenty of titles make for easy reading: even the maths involved is presented in a comprehensible manner. Plenty of diagrams aid the assimilation of the ideas being expounded although it would be preferable to have the diagram and corresponding text on the same page every time.

Code written in either C. FORTRAN or PROLOG accompanies a number of the main ideas. Specific knowledge of these languages is not necessary because of the comments included and the clear explanations given before the program is presented.

For such a short book the index and bibliography are extensive. There are many references in the text to other books which give more detailed accounts of all the topic areas. This is definitely, as the title states, just an introduction to the whole subject of computer geometry.

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VIJAY SARASWAT
Concurrent Constraint Programming. MIT Press, Cambridge, MA. ISBN 0-262-19297-7. £40.50. 486 pp.

This book investigates the family of concurrent constraint (CC) programming languages. CC is a new framework of parallel programming that was introduced by the author in the late 1980s. This book is based on the author's PhD thesis at Carnegie Mellon University which was also submitted to the ACM–MIT Press Doctoral Dissertation competition in 1989 and awarded the first prize. It is a very frequently referred source in the theory of concurrent logic programming languages.

This published version includes almost all contents of the thesis except the 'stream merge' section. It also contains some new topics such as the model theory of CC and relations to linear logic which were investigated after the thesis.

CC is an extension of Jean-Louis Lassez's constraint logic programming framework with features for concurrent computations. However, CC is not a cheap combination of a concurrent language and a constraint logic language. This book presents a family of concurrent languages that includes existing concurrent logic languages as its instances by introducing 'Ask' and 'Tell' primitives. With these primitives the author formalizes the notions of 'communication' and 'synchronization' which are most important and interesting issues for concurrent computations. Furthermore, he shows that many existing and interesting methods of parallel programming are also possible in CC languages using 'Ask' and 'Tell' primitives elegantly. "Computation as *controlled* deduction" is a well known slogan of logic programming. The author's very important contribution with this new framework is that he formalized the 'control' part of the notion of 'controlled deduction' using Scott's theory of the information system. 'Control' means the mechanism of communication and synchronization in concurrent computation here. The origin of the author's idea was an attempt to give an abstract form with an elegant formal semantics to the synchronization mechanism of committed choice concurrent logic languages.

However, this is not only a book on semantics. It presents not only the semantics of the languages but also simple and efficient implementations and applications of the new family of languages. Thus this book has more than 480 pages. It seems very heavy to read from cover to cover. However, not all readers need read all chapters of this book. The author gives "suggestions to the reader" for selected reading in the preface.

CC is an interesting framework not only for theoretical people but also for application and implementation people. However, the author's thesis has not been referred in the areas of applications and implementation as frequently as in the area of the theory. I hope that publication of this book improves the situation.

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