

Preface

Computer graphics is a growing application area. This growth can be attributed in part to the marketing of a wide variety of terminals with graphics capability, the development of graphics application packages, and the increasing documentation of graphics in the literature. New economies in computing have also affected graphics and have broadened its usage far beyond the traditional engineering and design applications.

This issue of the *IBM Systems Journal* explores some of the computer graphics activity within IBM. Papers focus on graphics techniques that range in complexity from the merging of text and simple line drawings on an IBM 3800 printer to high-resolution graphics. They also deal with software support for the unique characteristics of graphics that affect data bases, terminal interaction, and application development. The subject is introduced in an overview paper by Burchi that reviews the varying kinds of computer graphics applications and some of the hardware and software involved in these applications. A substantial bibliography is provided.

Interaction with a terminal plays an important role in graphics work. A prototype called the Picture Building System, developed at the IBM San Jose Research Center to test the concepts of high-level graphics interaction support—including the data base support for manipulating graphics data—is discussed in the paper by Weller, Carlson, Giddings, Palermo, Williams, and Zilles. An interactive computer graphics product using a dual-screen concept is the subject of the McManigal and Stevenson paper. This paper describes the architecture and application of the IBM 3277 Graphics Attachment, as a moderate-performance approach to interactive graphics.

Two different levels of complexity in graphics output are illustrated in the papers by Shepherd and Handelman. Shepherd describes an experimental program for the IBM 3800 raster printer that contains a character-graphic algorithm for simple drawings. Line art is merged with formatted text documents and produced on the IBM 3800 printer without the need for manual artwork or

paste-up. The subject of Handelman's paper is high-resolution graphics output. A graphics system incorporating an experimental high-resolution all-points-addressable printer at the IBM Thomas J. Watson Research Center has been used to produce high-quality printed text and graphics. This paper discusses the production of halftones, line drawings, and solid-filled areas by this system. Also, this system has been used in producing the cover design for this issue.

The final papers present two different APL software systems available for computer graphics development work. Niehoff and Jones discuss the use of APL in presentation graphics, that subset of computer graphics used to present data in pictorial form. This package supports the newest IBM color display and color printer terminals. The paper by Bleher, Caspers, Henn, and Maerker describes a comprehensive computer graphics software system designed to facilitate the implementation of graphics. The Graphics Interactive Application Monitor (GIAM) is designed to give a structured, systematic approach to graphics application development.

Computer graphics is available today with varying degrees of sophistication, depending upon the need and the application. This issue attempts to demonstrate some of that variety.

The *abstracts* section is now called *suggested reading*; it has been expanded to include more books and to provide more detailed synopses of the books and articles mentioned. *Suggested reading* is provided as a source of information about new books and articles that should be of particular interest to the readers of the *IBM Systems Journal*.

Connie Thiel
Editor