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General Editor: Ian Birnbaum
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Advanced Graphics with the Commodore 128

M. M. Novak

University of Bristol

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Preface

Computer graphics is one of the newest and most exciting areas in computing. The images produced on the screen are often fascinating, and our direct involvement with their creation is very rewarding. In recent years, with the availability of more powerful processors, the implementation of computer graphics became possible even on microcomputers. The field of graphics is currently undergoing rapid expansion and it is being used in many different walks of life.

In this book I cover most of the essential topics involving computer graphics. As no prior knowledge of graphics is required, the introduction of new concepts begins at an elementary level. This book does not pretend to teach BASIC and it is assumed that you are familiar with the version as supplied on the Commodore 128.

The large number of programs found throughout the book illustrate how the theoretical concepts can be implemented in practice. These programs are designed to clarify and teach various aspects of computer graphics. To enhance your understanding, many programs deal with simple objects. Extension to more complicated shapes is, in principle, straightforward.

The book begins by introducing various topics essential to computer graphics. These cover picture representation, some graphic commands, saving and restoring the generated image and some of the graphic peripherals.

Computer graphics is closely connected to elementary geometry. In Chapter 2, we revise the basic notions, such as scalars, vectors, and lines as described in the Cartesian system of coordinates.

In Chapter 3 the common data display techniques are explained. That chapter covers the creation of histograms, pie-charts and graphs, and illustrates how to label your graphic displays. In addition, the ultra high resolution available on many good printers is presented.

The essential part of computer graphics entails various transformations. The most frequent of these, such as translation, rotation, and scaling, that occur in two dimensions are detailed in Chapter 4. That chapter concludes with a description of a clipping routine that can be used to create graphic windows.

Hatching, B-splines, and contours are discussed in Chapter 5. You will also find out how to create fantastic fractal images and Escher-like patterns.

Lines, planes, and their mutual positions in three dimensions are described in Chapter 6. This is followed, in Chapter 7, by various transformations as used in three-dimensional space.

Having learnt the required background theory, in Chapter 8 you find how to display objects on the screen. Both parallel and perspective projections are explained, as is the analysis of creating bodies of revolutions.

The final chapter introduces the complex problem of suppression of invisible lines and surfaces.

After studying this book you should have sufficient knowledge to develop numerous graphic programs of your own, whether for business, teaching, or enjoyment.

Bristol 1985

M.M. NOVAK

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Software Diskette

A diskette containing all the major programs in this book is available. It costs £10 (price subject to change) and can be obtained from the author. Please write to:

Dr. M.M.Novak
Dept. of Theoretical Chemistry
University of Bristol
Cantocks Close
BRISTOL
Avon BS8 1TS