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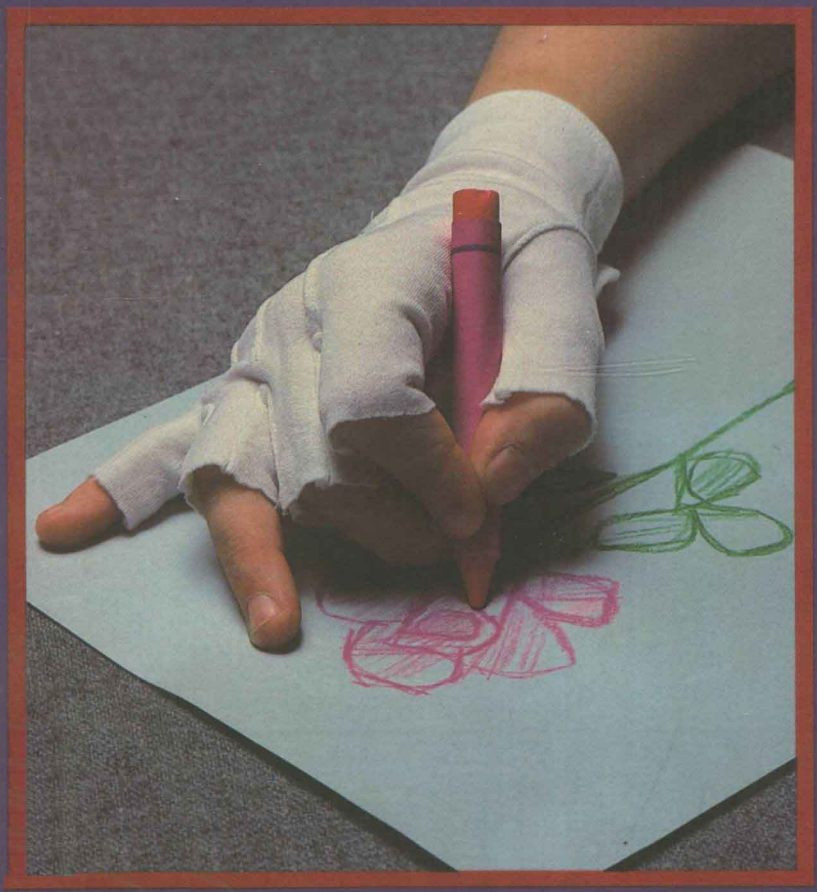
IBM PC*jr*™ Graphics

Daniel Illowsky
Michael Abrash



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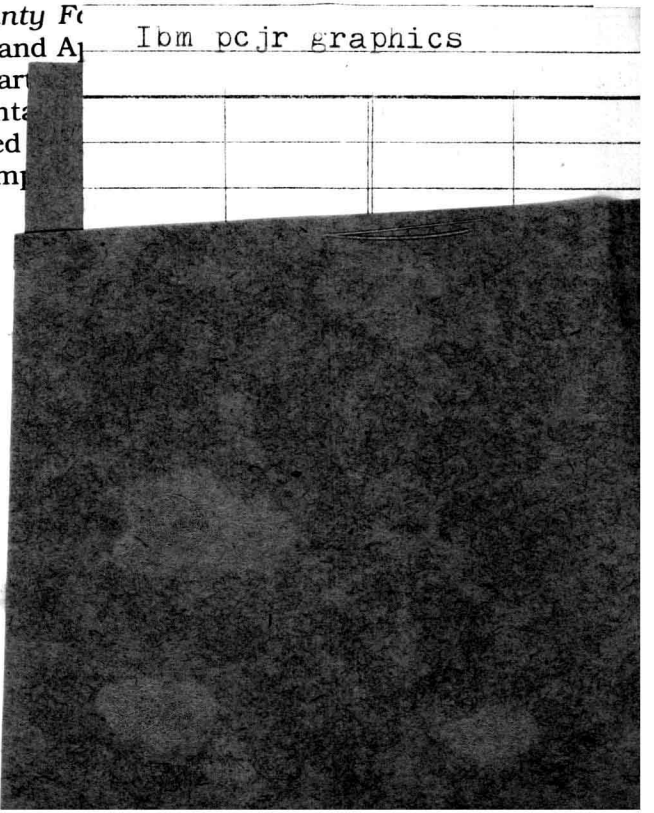

IBM PC*jr* Graphics

by Dan Illowsky and Michael Abrash

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PREFACE

The introduction of the IBM PC*jr* sparked an unprecedented wave of interest in home computers. The PC*jr* is a powerful machine, modeled after the popular IBM PC but with a number of added features suited to home use. In addition, the PC*jr* is priced affordably. While the PC*jr* is a particularly good all-around computer, it is excellent for graphics work, the creation of detailed and colorful screen images. The graphics features of the PC*jr* rank with the best in the microcomputer world—surpassing even those of the IBM PC—and, what's more, they are exceptionally easy to use.

This is as much a "why to" as a "how to" book. By going through the hands-on tutorial, you will develop and improve your ability to devise graphics programs on the PC*jr*.

The emphasis throughout is on developing the capability to pursue your own ideas. Instead of showing you pretty pictures, we provide you with the tools needed to create pictures, games, charts, diagrams, and artwork of all sorts. Rather than presenting you with dozens of program listings too long to type conveniently, we take you through each graphics command, with both short "hands-on" examples and carefully designed, thoroughly explained sample programs. We also take you through the process of designing two arcade-style games, several graphing programs, and a character-generator program that lets you define your own fonts. You will understand

how each program works, and, more importantly, how to apply this knowledge to building your own programs.

Cartridge BASIC for the PC*jr* is a powerful graphics language, vastly superior to earlier microcomputer BASICs. Cartridge BASIC makes sophisticated graphics features readily available to even the novice programmer, yet it has all the features that the experienced programmer requires. Whether you are a beginner or an expert, this book is designed to serve as both a guide and a reference. You can gain a comprehensive knowledge of the tools available, as well as a solid understanding of good program design. If you are already familiar with BASIC and the PC*jr*, this book can complement your skills, filling in the gaps in your knowledge. If you are not familiar with BASIC or the PC*jr*, it will get you started and, as an extra benefit, provide a good deal of useful, general experience with the BASIC language.

We expect that you will take this book off the shelf time and again for reference. We have provided you with immediately useful, hands-on information that will serve as the foundation for your graphics work. Included in this book is much of the information that we have gathered in two years of working with both the PC and the PC*jr*—useful applications, undocumented capabilities, and traps to avoid. The last two chapters cover more advanced topics, including handy items that we had to search for and information on the inner workings of the PC*jr*. We wish that we had had this book when we first got our PC*jr's*.

There are many books about specific graphics techniques, such as plotting three-dimensional surfaces, or windowing, clipping, and zooming, but this is not one. Such topics require a whole book simply for a proper introduction, and also are much more appropriate for high-powered mainframe computers than for microcomputers. The PC*jr* is ideal for producing colorful, detailed displays without years of special training, and we will tell you everything you need to know to produce such displays and to pursue your own interests. One of the great strengths of Cartridge BASIC is that all the fundamental graphics functions are part of the language, so that you

need not waste your time programming basics such as dots, lines, and circles. This permits you to spend more time designing your programs, with your imagination free. We help you become familiar with the graphics tools that BASIC makes available, and get you started in applying them—the imagination is up to you!

A related point is that the sample programs we will cover are interesting and often useful, but they are intended primarily to show you how to apply the instructions to your own programs. For instance, if we list a program that draws a pie chart, that's useful in a single case. If, however, you understand the principles underlying the pie-chart program, then you can handle a whole range of graphing applications.

In short, we have directed this book to a single goal—developing your skill in fully exploiting the graphics potential of the PC*jr*.

There's not a great deal that you must know before we start. You'll need a PC*jr* and a BASIC cartridge; either an entry or enhanced model PC*jr* is fine. Either a disk drive or attached cassette recorder is useful but not necessary. Likewise, familiarity with the PC*jr* and Cartridge BASIC is useful but not required. On the other hand, a willingness to type in the examples is essential for you to benefit from this book.

Let's get going—and welcome to the world of PC*jr* graphics!

DAN ILLOWSKY
MICHAEL ABRASH

A NOTE TO THE READER

The programs in this book were not written as applications software but as educational examples of what your personal computer can do. All of the programs have been tested and work on the machine configuration for which they were designed. The programs, or subroutines, are unprotected. This means that you can modify them to better understand how they work or to fit a different machine configuration.

What Is a Combo Pack?

A Combo Pack, like this package, is a step beyond your average technical book. While most books give you programming examples through printed listings (which we do here), Combo Packs provide the book and the listings recorded on magnetic media, either disk, cassette tape, or both.

Every effort has been made to be clear, concise, and informative about how these programs and routines work. If you experience any difficulty with the software operations, the solution can be found in the book or in your computer manuals.

We are rather proud of the time and effort that went into preparing the Combo Pack. If you have purchased the Combo Pack and have enjoyed using it, let us know your thoughts. Your comments will be valuable in preparing future Combo Packs.

LOADING INSTRUCTIONS

If you bought this book as part of a Combo Pack, a disk is included. Instructions for using the disk follow.

You will need to create a system disk with DOS and BASICA on it. Neither DOS nor BASICA is included with this disk. If you do not have them, they are available from your IBM dealer.

The following instructions assume that your PC*jr* has a single disk drive. If it has two drives, refer to the IBM *DOS*

manual for information specific to your hardware configuration.

1. Insert your IBM DOS System Disk in drive A (left-hand drive), then turn on your computer or reboot it by pressing **Ctrl Alt Del**. Type **FORMAT /S** and press Enter. You will then be prompted to place a new disk in the drive. Press Enter and the new disk will be formatted. Press the **N** key to return to the **A>** prompt when the formatting is done.
2. Insert the Combo Pack disk in the drive.
3. Type **COPY *.* B:** and press Enter and you will be prompted to switch back and forth from the Combo Pack disk (drive A disk) to your new program disk (drive B disk) until all the files are copied.
4. Put the Combo Pack disk in a safe place.
5. Label your new Combo Pack master disk.

You have created a system disk that includes the Combo Pack programs. You can use this disk to boot from. At this point, you can load and work with any of the files on the disk.

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