

**DISK
INSIDE!**

#1 GUIDE TO THE ATARI ST

START[®]

Volume 3, Number 8

March 1989

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Yes, But Is It Art?
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All taxes and other expenses not specified herein are sole responsibility of winners. All winners will be notified in writing.



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ATARI™ 520X

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5. Monthly entries must be received no later than the last day of the month in which a drawing will take place in order to participate in the month's drawing. Drawings will be held from December, 1988 through April 1989, inclusive. Final entries must be received by 4/30/89.
6. Contest open to legal residents of the U.S.A. and Canada (other than Quebec).
7. Odds of winning depend on number of eligible entries received.
8. Contest subject to complete official rules.

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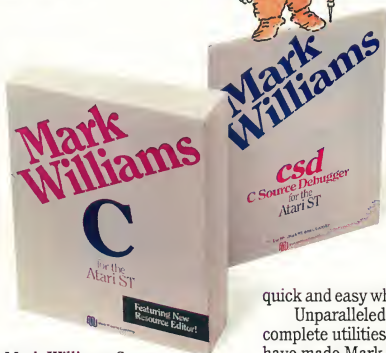
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B
JP13A

Mark Williams Raises C Programming To A New Level.

New source level debugger, *csd*, cuts development time in half!



Now, on top of the world's best C compiler, Mark Williams brings you *csd*, the world's only source level debugger for the Atari ST!

With *csd*, you actually debug in C. Forget about trying to find bugs in clunky assembler and struggling with long dumps. *csd* gives you the interactive advantages of an interpreter plus the speed of a compiler. An indispensable companion for Mark Williams C.

Reviewers have been raving about the IBM version of *csd* for years:

"csd is close to the ideal debugging environment... a definite aid to learning C and an indispensable tool for program development."

—William G. Wong, *BYTE*

"This is a powerful and sophisticated debugger built on a well-designed, 'serious' compiler."

—Jonathan Sachs, *Micro/Systems Journal*

WE'VE UPPED COMPILER PERFORMANCE, TOO!

Our new **Resource Editor** makes creating window driven interfaces with icons, alerts, pull down menus and dialogue boxes a snap. And its exclusive compiler/decompiler lets you directly access resources, making changes

quick and easy while simplifying project management.

Unparalleled compiler speed, fast, compact code, complete utilities and outstanding documentation have made Mark Williams C the preferred compiler for the Atari ST. Reviewers enthusiastically agree:

"Mark Williams C may be the best implementation of C on the Atari ST to date... not only for the experienced, professional developer, but also for the weekend programmer."

—George Miller, *COMPUTE!'S Atari ST Disk and Magazine*

"... the all-around best choice for serious software development on the ST."

—Douglas Weir, *Analog Computing*

COUNT ON AN UPSTANDING REPUTATION.

Mark Williams has been producing and improving quality programming tools since 1976. A good reason why the Mark Williams C compiler is the one chosen by Atari. And just one more reason you should choose Mark Williams, too.

SPECIAL UPDATE OFFER AVAILABLE NOW!

If you already own Mark Williams C, a special update offer is available for version 3.0 and *csd* by calling Mark Williams. If not, there's never been a better time to ask your Atari dealer about Mark Williams C and *csd*. Or you can order by calling 1-800-MWC-1700.

FEATURES

Mark Williams C For the Atari ST

- ★ New! Resource Editor includes compiler/decompiler for direct access to resource text
- ★ New! Peephole optimization—faster compile times and faster code
 - Full access to AES/VDI libraries with complete documentation and examples
 - Source and object code for RAM disk cuts compile time in half
- Integrated edit/compile cycle: editor automatically points to errors.
- MicroMACS full-screen editor with commented source code
- Full K & R plus ANSI extensions
- Microshell Command Processor, a powerful UNIX style shell
- Complete symbolic debugger and assembler

- Powerful utilities: make, linker, archiver, egrep, sort, diff and more
- Over 600 pages of documentation with more than 100 sample programs

New! *csd* C SOURCE DEBUGGER:

- Cuts development time in half!
- Debug in C source code not assembler
- Provides separate source, evaluation, program and history windows
- Ability to set trace points and monitor variables
- Can interactively evaluate any C expression
- Can execute any C function in your program
- Trace back function
- On-line help screens

NEW VERSION 3.0!

MARK WILLIAMS C FOR THE ATARI ST: \$179.95
csd C SOURCE DEBUGGER: \$69.95
60 DAY MONEY BACK GUARANTEE

 Mark Williams Company

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START[®] #1 GUIDE TO THE ATARI ST

MARCH 1989

VOLUME 3, NUMBER 8

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It's been a year since we last focused on graphics in START. It's time that we take another look at the state of graphics and animation on the ST.

To lead off, in **Yes, But Is It Art?**, we look over the shoulders of three artists who use their STs as a part of their creative processes. Jon Fordyce is a sculptor, Marcus Badgley runs a commercial graphics business and Darrel Anderson is one of the sharpest computer artists around. Despite the ST's relatively limited palette, these artists have made excellent use of the computer's power to create works of art that may well survive them. How much am I bid for a *genuine* Anderson?

We've also focused our START disk on graphics this issue, and oh, what a disk it is! Tom Hudson's DE GAS Elite may have set the standard for ST graphics programs, but this issue we offer SEURAT as serious competition. SEURAT runs in all three resolutions and offers up to eight screens, each with its own palette, powerful block options and more fills and features than you can imagine. We think SEURAT will find a place in every ST artist's program library.

We've also included the ST Coloring Book, a marvelous "little" program that's supposedly for the younger artists among us. It's so good and so much fun that adults will enjoy it as much as kids. Take a look at this program even if you don't have children.

Assembly language programming is the next step for many BASIC programmers seeking greater control over the ST's innards. It's not easy to master assembly language techniques for handling graphics and sound, but our demonstration program, **Assembled Saucers**, will give you budding assembly language programmers insights into how to handle the tricky stuff.

Commercial graphics and CAD programs have a long way in the past year. Marcus Badgley, our resident graphics guru, has placed three of the best graphics programs, Art/Film Director, Unispec and Cyber Paint, on his palette and gives you his evaluations this issue. And Dave Edwards, a CAD professional, has updated his Electronic T-Square CAD overview in **CAD Goes Pro** to focus on the newest and best CAD software.

There are also a few minor changes this issue: We're taking a short break from Programming in BASIC to give you a look at Prolog, the language of artificial intelligence. And Dave Small has been building Spectre 128 cartridges so fast and furiously that we decided to give him a break from Small Tools this issue. He will return next issue with even more on Hard Disks.

Finally, we have a Special Offer this issue: if you use your ST to make beautiful music, then you'll definitely want to read **Online With START**. Through a special arrangement with PAN, the Professional Artist's Network, we are able to offer START readers a free sign-on. This is only available during the month of February, so act fast!

We think that we've put together a great issue for you. We hope that you'll enjoy it. ■



Andrew Reese

Editor

START, The #1 Guide to the Atari ST

LASER C

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Whether you're an amateur or a professional, LaserC is the right C language development system for you. LaserC has everything you need to develop commercial grade applications or desk accessories for the ST.

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ate C expressions interactively. Multiple windows and easy command structure make debugging fast and efficient.

Get LaserC and LaserDB—the ultimate C development system for your ST.

"We converted Dungeon Master to Laser C and doubled or tripled our productivity. We now use Laser C exclusively for our ST Development."

—Wayne Holder,
President, FTL Games

	Laser C			Mark Williams C v3.0		
	Compile/ Link	Run	Error	Compile/ Link	Run	Error
Hello.c	2.43	—	—	15.98	—	—
Apskel.c	8.88	—	—	26.5	—	—
Sieve.c	4.59	2.45	—	23.9	2.77	—
AES	35.6	—	—	103	—	—
Savage	6.31	36.4	1.73 × 10 ⁻¹⁸	30.82	83.0	1.18 × 10 ⁻⁷

All times in seconds.
AES consists of nine source files totaling 1142 lines of code.
AES is built using Make.
Mark Williams C using RAM disk.

Megamax, Inc.
DEVELOPMENT SYSTEMS

Box 851521, Richardson, Texas 75085-1521
(214) 699-7400

©Megamax, Inc. 1988, LaserC and LaserDB sold separately.
If you currently own Megamax C for the ST, update to LaserC for \$20. Call for details. (214) 699-7400. Now available through distributors. UNIX™ is a trademark of AT&T.

COMPILER:

One-pass generating relocatable code. Absolute addressing of globals allows program's code and data to be as large as memory allows. Ultrafast linker accepts both Laser C and DRI format object files.

EDITOR/SHELL:

Integrated editor and development shell. Cut, copy, and paste between files. Pull-down menus and dialog boxes to control editor and run compiler. Fast scrolling and text entry—supports large files. Special window can be used as a command line interpreter. Built-in dynamic disk cache and facilities for RAM resident compiler and other Laser utilities.

UTILITIES:

Resource Construction Program, full-featured Make utility, linker, disassembler, archiver/librarian accept Laser C and DRI objects files.

LASER DB:

Source and assembly level debugger. Evaluate any C expression to print or set variables. Source and assembly mode allows interaction with compiler output. Disassemble or dump memory. Set breakpoints with the mouse on C lines or machine instructions. Watch C variables or machine registers. Multi-window user interface. Simple command structure.





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The disk cartridge has a 5 year media life rating under normal use, and is very durable (1000G shock rating without data loss). The light weight disk cartridge is ideal for transporting data with guaranteed drive / cartridge interchange. The ISS-1 provides a virtually head crash free technology that is not available from any other mass storage solution.

Since there's no such thing as a perfect world, we also cover the ISS-1 hardware with a 1-year limited warranty, and the disk cartridges with a 90-day limited warranty.

Compatibility

ISS-1 is fully compatible with all Atari ST™, Mega ST™ computers and Atari ST software emulation products. The ISS-1 works with existing Bernoulli boxes*, and is disk format compatible with PC DOS disks

Product list:

ISS-1:	ISS-STint, ISS-1a and software
ISS-STint:	ST Interface
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ISS-1b:	21.4 MB Slave drive
ISS-c21:	Single removable disk cartridge
ISS-p21:	Tri-pack of disk cartridges
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Dialog Box

Letters From Our Readers

Surprise! A Speed Adjustment! (Maybe)

In the "Small Tools" column (START Special Issue #4) on floppy drive speeds, I was a little surprised by David Small's remark that "as far as I know, these things aren't adjustable; I have yet to see an ST drive with a speed adjustment in it." In fact, there is a speed adjustment in both of the SF354 drives I have. It is VR02 on the motor control board, inside the shielded section and accessible through a hole in the shield. (Unfortunately, it is misidentified as VR01 in the Sams Computerfacts CSCS12-A on the ST disk drives.) After considerable jerry-rigging to get my drives set up where I could run them and adjust this potentiometer at the same time, I was able to tweak both of them to 300 rpm (plus or minus 1 rpm).

Back now to some early issues. Since my recent purchase of an NEC P2200 24-pin printer, I find myself having to use Tom Hudson's screen dump printer driver (Premiere Issue) and the corresponding printer driver creator (Spring 1987). My question is, why do I now drop out of Caps Lock mode when I do a screen dump?

Finally, would it be possible for you to print the address and phone number of whatever company is now handling support for Batteries Included's software, particularly DEGAS Elite?

Robert E. Wildman
Greenland Ice Cap
APO New York

Atari has used a number of different disk drive suppliers over the years. They have varied in quality, but the current supplier, Epson, is known throughout the industry for its excellent, reliable drives. Depending upon which drive you have, it may have a drive speed adjustment. If you have the technical familiarity, if you are either beyond your disk drive's warranty period (or don't mind violating your warranty) and if your drive has an adjustment, you may use it to adjust the drive's speed. If any of those three factors are missing, we recommend taking your off-speed drive to an authorized Atari service center for correction.

We aren't sure why you drop out of Caps Lock when you do a screen dump. If it occurs within a word processing program, it may be the result of the interaction of the driver and that particular program. Any suggestions, readers?

Marketing of Batteries Included's premier product, DEGAS Elite, has been taken over by Electronics Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171. Although EA's responses to our inquiries have varied from "What is DEGAS Elite?" to "We aren't supporting that product," the last word we received was that EA would continue to sell and support DEGAS Elite. By the way, if you're looking for an alternative, try SEURAT on this issue's START Disk. — START Editor ■

Where's the Update?

I decided to subscribe to START mainly because I liked the fact that you and Bruce D. Noonan gave your readers updates to ST Writer. I bought the issue

that had the Version 2.0 at the newsstand. In that issue you promised constant updates of ST Writer. I decided to subscribe because I didn't want to miss any of these updates.

As of the latest issue (December 1988), I've yet to see even a hint as to when the next ST Writer update is to come. If you're not going to give your readers updates to ST Writer, I'll just cancel my subscription and buy the issue off the newsstand when you finally do get around to it. If you have written off future updates, let everyone know so we can all write off START magazine. Thanks again.

Thomas McGeehan
Santa Ana, California

A number of readers have written asking for the latest version of ST Writer and Version 3.0 will appear in the April 1989 issue of START. Dr. Bruce Noonan has outdone himself with this new GEM version, which is fully debugged, allows true ASCII file-saving and direct conversion of Atari Writer files. In addition, we asked Dr. Noonan to write a word processor file conversion program, which converts files accurately between ST Writer, WordPerfect, 1ST Word Plus and Word Writer; it's also scheduled for the same issue.—START Editor

Ricoh Review Reviewed

The article by Frank Hayes in the December 1988 issue concerning the Ricoh 6000 laser printer was very irresponsible. Mr. Hayes neglected to mention that this fine printer has both ▶

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IMAGEN Corporation
P.O. Box 58101
Santa Clara, CA 95052-8101
or call 800/635-3997

HP Laser Jet II Plus and Epson emulation cards available. The printer works very well with Timeworks Desktop Publisher, WordPerfect, 1ST Word Plus and even the Old Express letter processor.

Also Mr. Hayes fails to mention that the Ricoh comes with a full megabyte of memory, plenty of toner and a drum cartridge all for a price that is the lowest on the market today.

Roymond E. McAlpin
Park Ridge, Illinois

We tested the least expensive, "plain vanilla version" of Ricoh's laser printer without any add-in emulation cards. As equipped, the Ricoh performed adequately, but not exceptionally. We thank you for bringing this additional information to our readers, however.—START Editor

Disk Cache-less

As an Atari 8-bit user and Antic subscriber, I subscribed to START as soon as I decided that I had to have an ST. I purchased my 1040ST about a year ago and the SH240 hard-disk drive a few months later.

David Plotkin's review, "The Indispensable Peripheral" (December 1988), stated that the SH204 boot disk includes a disk cache program. I can't locate this program on my boot disk or find any reference to it in my owner's manual.

Could you please advise me as to how to create a disk cache? I have also written to Atari Customer Support but I have found them slow to respond.

I am not a programmer, I leave that to the experts. I am, however, an avid user and an electronics technician by occupation. I find most Atari user's manuals lacking all but the basic instructions on how to plug the equipment in and turn it on in "Dick and

Jane" terminology. They have little for the user with a basic computer understanding. I depend mostly on START for the information I need. Thanks.

Ron Ritzman
Marietta, Georgia

We were in error; Atari's disk cache program is a part of the second generation of Atari hard disk utilities. These should be released early in 1989 and Atari may allow free distribution of their disk cache program, but they have not announced their policy as of presstime. However, there are several commercial disk cache programs that work well. Check the ads in this issue for names and availabilities. — START Editor

Satisfied Customer

I am writing to tell you how much I appreciated "The Indispensable Peripheral," the five-brand comparison of ST hard drives by David Plotkin in the December issue.

Since I am in the market for a hard drive for my 1040ST, I found this article very informative and timely.

Also, congratulations on going monthly! I have been buying START since the very first issue and enjoy it very much. It is the best computer magazine on the market for the ST computer. I read every issue from cover to cover and thanks to your increased frequency I can now enjoy it more than ever.

Robert G. Hull
Easthampton, Massachusetts

Thank you.—START Editor

Needs BASIC Help

I am the ST disk librarian for the Atari Computer Enthusiasts of New South Wales in Sydney, Australia. Both the

club and its individual members enjoy your magazine immensely. I have had my ST for 11 months and just love it, hence my involvement in our club.

Unfortunately no one over here likes or uses ST BASIC. Since it's free I hope to at least gain some mastery over it before I progress to a more complex, and commercial, language. John Hutchinson, who has recently written articles for you, claims that GFA BASIC is the only language. Is it really that good?

Also, I would like to write some easy BASIC programs for my very young children, so how do I import DEGAS or NEOchrome pictures into my programs? Can I do this with ST BASIC or should I get ahold of GFA BASIC to do it?

I would be ecstatic if you could help. Thank you for the greatest magazine and for the issues to come.

Cathy Tuck
Sidney, Australia

We agree that GFA BASIC is just as good as John Hutchinson says. In fact, if you'll check your January 1989 START Disk, you'll see that the GFA BASIC 2.0 Interpreter was included on the disk for just the price of the disk. Now you can try the current "standard" BASIC for the ST. Also, take a look at Putmaker in the November 1988 issue; it's an easy way to incorporate graphics into a GFA BASIC program.—START Editor ■

SUBMISSION INFORMATION

START Welcomes submissions. Please include both hard copy printouts of articles and program listings as well as disk files on ST compatible disks. Media will be returned if self-addressed, stamped mailer is supplied. START assumes no responsibility for unsolicited editorial materials.

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COMING SOON, THE CLASSIC MIND GAME, QIX.

News, Notes & Quotes

What's Happening in the Atari World

by Stephen Mortimer
and the START Staff

Solid Gold

The Fall Computer Dealer's Exposition (COMDEX) trade show was held in Las Vegas, Nevada from November 14-18, 1988. Well over a hundred thousand attendees plodded the floors of the Las Vegas Convention Center, seven other venues and numerous hotel suites during the five-day event.

Atari sprung for the 6,000-square-foot Gold Room in the Las Vegas Convention Center and established a solid presence, themed "Solid Gold." Though Atari's own product showings were conservative at best, it did make its space available to over 60 third-party developers. Among the products displayed by Atari were UltraScript, DeskSet II, the Atari Transputer Workstation (ATW), 80286 and 80386 PC clones and a software/hardware package called Robokit. The long-awaited Atari laptop was finally unveiled to a U.S. audience during the mid-week developer's gathering. Atari also played host in the Gold Room to a short concert by Fleetwood Mac.

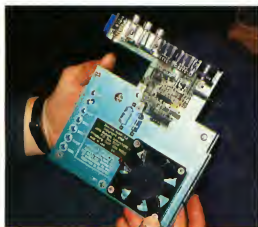


Mick Fleetwood startled the normally blasé COMDEX crowd with this demonstration of his MIDI vest in Atari's Gold Room.

Third-Party Hardware at COMDEX

With Atari showing so few new products, the third-party developers had their chance to shine. Some of the highlights:

- Navarone Industries introduced ST Copy, a peripheral that allows its ST Scan image scanner and the Atari Laser Printer to act as a copy machine when coupled together through an ST or Mega.
- John Russell Innovations (JRI) displayed its Genlock System hardware for the Mega that allows low- and medium-resolution graphics to be superimposed over standard NTSC video from a TV, VCR or video camera. Genlock is pending FCC certification and is tentatively priced at \$500.
- ICD unveiled its new FA-ST Tape Backup which can store up to 155 megabytes of data on one cassette. Both file and image backups are available.
- Australian-based Neriki Computer Graphics showed its Image Master, an interface to the Polaroid Palette priced at \$650. Image Master allows color slides or Polaroids to be produced directly from an ST.
- IBP, a West German company, showed the first repackaging of the ST. Their industrial 190ST uses Mega components and is assembled as a series of rugged modules integrated into a 19-inch metal case. It sports all the features of a normal ST in addition to an optional math coprocessor and blitter chip.
- Nite Lite Systems demonstrated their Lantext RS232 Local Area Network for the ST. The LAN supports up to seven nodes from a single host system. ▶



JRI's Genlock, a hardware add-in for the Mega, was shown by John Russell in near-final form. The FCC is now grinding through its testing and approval process for this excellent \$500 package.

Third-Party Software Highlights at COMDEX

- Masterlink, a new telecommunications package from Intersect Software, was demonstrated in its prototype form. It offers multiple buffers and a programmable script language. An early 1989 release is scheduled.
- British company Mirrorsoft came to the show with their latest version of Fleet Street Publisher. Spectrum Holobyte is no longer distributing Fleet Street in the U.S., and Mirrorsoft is looking for a new distributor.
- Spectrum Holobyte's Falcon (set for review in the April 1989 START) is an accurate F-16 fighter simulation that features unsurpassed animation and the ability to conduct dogfights and weapon deliveries. FTL introduced Chaos Strikes Back, the sequel to Dungeon Master. Electronic Arts showed its Monopoly and a miniature golf game called Zany Golf. Falcon, Chaos Strikes Back, Monopoly and Zany Golf should be available as you read this.
- OMIKRON.BASIC was being shown in the U.S. for the first time. Currently available in Europe, OMIKRON.BASIC is GW BASIC compatible and will soon be available here.
- From French company Digital Laboratory Research come two programs of note. Amadeus ST is a computer-assisted music-study program that teaches you to read music. Lazergraph is a desktop music publisher that allows the Atari Laser to produce musical scores. Other popular software came from Dr. T's, Hybrid Arts, Sonus and others.
- MichIron announced that it will no longer distribute GFA BASIC and related products from GFA in Germany. Instead, they will sell Hi-Soft BASIC and Power BASIC in the U.S. GFA is currently seeking an alternative distributor for the product line in the United States, or it may open its own offices.

Background GDOS Output

OSpooler from Migraph is a desk accessory that spools output from GDOS-based programs to a printer. Operating in a background mode, which allows the computer to be used for other tasks, OSpooler eliminates the time previously wasted while waiting for the printer to finish. Another feature supported by OSpooler is the ability to redirect output to disk. The resulting file can later be output to a device on any computer without the need for GDOS, assuming that the GDOS driver present in the originating ST system corresponds to the final output device. This could be an HP LaserJet, a Roland plotter or any one of Migraph's other device drivers.

The spooler includes a buffer that will intercept other printer tasks to preserve the integrity of the current file being printed. Up to 25 files can be placed in a queue for output to either serial or parallel devices. A nine-pin printer driver for OSpooler is included in the package. OSpooler retails for \$39.95. For more information, contact Migraph at 720 South 333 Street #202, Federal Way, Washington 98003. (206) 838-4677. ▶



The four gold-colored chips on this ATW add-in card are Inmos T800 transputers. Each card will nearly quintuple the ATW's processing power at a price of only \$4,000-\$5,000 per card. Naw if there were any software. . .



The Atari Transputer Workstation (ATW) has been engineered into a floor-standing tower design. It will enter production in early 1989.



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Personal Publishing, September 1988

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ST Used In Parts Catalog System

Kar Technologies is offering a car parts catalog system based on the 1040ST and a Sony CD-ROM player. The system can be run on either monochrome or color monitors and is encased in a metal box that houses the computer and CD player. According to Ron Sprun-

ger, Kar Technologies has developed their own CD-ROM interface for the ST in order to use the Sony player. The interface may be used for other commercial applications if warranted by future demand.

The KarMate system offers access to over 15 million records, graphics, and diagrams. It retails for \$2,995. For more information, contact Kar Technologies at 74-050 Highway 111, Palm Desert, California 92260. (619) 340-5900.

Atari Hardware at Comdex

Given Atari's policy of not showing products before they're (nearly) ready for shipment, the 68030 Unix TT and the enhanced STs were nowhere to be seen. Atari did, however, demonstrate an almost final version of the Atari Transputer Workstation (ATW), scheduled for early 1989 European release. Formerly called the Abaq, the ATW was developed in England by Perihelion and is packaged in a sleek tower design. The Mega 4, formerly necessary as a front-end for the ATW has been incorporated into the main box. Also shown were 4-chip transputer add-in cards for the ATW at a cool \$4,000-\$5,000 a pop.

The PC4 and PC5 IBM-compatible computers and Robokit were also displayed by Atari. The PC4 uses an 80286 processor, while the PC5 is an 80386-based machine. Both are set for 1989 U.S. release, complete with integrated VGA graphics. Robokit allows for manipulation and design of robots and includes a special interface that plugs into the ST's cartridge port.

At the informal developer's get-together, held on Wednesday night of COMDEX week, Atari President Sam Tramiel wowed the crowd with the Atari laptop. Still in prototype stage, the Laptop is scheduled for a mid-1989 release. Some of its features include up to one megabyte of RAM, a minimum 20 megabytes of hard-disk storage and a choice of one or two floppy drives. A small trackball replaces the mouse. ■

If you have a hot tip let us know at News, Notes & Quotes, START Magazine, 544 Second Street, San Francisco, CA 94107.



"I want one of those" was the most heard comment at Atari's developer's party. They were referring to the new ST laptop computer, shown here in both mack-up and engineering prototype form. A bright backlit supertwist LCD screen provides a full 640 X 480 monochrome compatible screen.

Atari Software at Comdex

Atari's most impressive new product was its PostScript emulator, UltraScript. Displayed for Atari by Soft Logik, UltraScript is the result of a joint project between Atari and Imagen. In its present form, the emulator is a stand-alone program that requires the user to print a PostScript file to disk, then output it to the Atari laser printer via UltraScript. Several disk-based scalable fonts are included with the package. UltraScript requires four megabytes of memory and five megabytes of free disk space to operate efficiently. It was scheduled to be released before the end of 1988. As of presstime, no price had been set.

DeskSet II, a new high-end desktop publishing package, was introduced at COMDEX by Atari. This updated version of DeskSet (shown at last year's Fall COMDEX) sports a full GEM interface with windows and icons, along with their keyboard equivalents. Developed in conjunction with G.O. Graphics, DeskSet II uses CompuGraphic scalable outline fonts available in half-point sizes from 5 to 127 points. According to Elizabeth Shook, newsletter coordinator at Atari, an interface board will be available that allows direct connection of a Mega to a CompuGraphic photo-typesetting machine. DeskSet II is priced at \$299.

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1ST Word 1.0	37	35	34	41
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Interlink 1.8	53	63	46	71
ST BASIC 1.0	221	517	219	567
ST Writer 3.0	18	116	17	127
Word Writer 2.0	34	31	35	37

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Turbo ST does not speed up programs that use GDOS fonts or that bypass the GEM operating system, such as PC Dillo, but is compatible with them. TOS, ST BASIC, ST Writer, 520 ST, 1040 ST, and Mega ST are trademarks or registered trademarks of Atari Corp.

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You have become my favorite ST magazine by far. By and by, you are also the most expensive ST magazine I know of, a testimony to the fact that no one minds paying for high quality, an area where you excel. ❑

- Christopher H., CO



I'm writing to express my appreciation of the BYTE MECHANIC program. It provided exactly the facilities I needed to convert a client's file for import into Publishing Partner. ❑

-Martyn D., U.K.

Thank you very much for the program SCIPLOT. That has to be one of the best programs I have received from an ST magazine ever. ❑

- Ivan T., CA



In the last special issue #4, the NAVAL BATTLE was so addictive to play again and again. I personally congratulate J. Hutchinson for making the right stuff. It's a winner! ❑

-Alistaire E., CA



I especially enjoyed this last issue, with Tom Hudson's program CREATION! I have found that anything with Tom's name on it will be great. ❑

-Mark L., OK



The START disks are loaded with great programs, and every month they get better. Subscribing to your magazine was the next best thing to buying my Mega 2 ST. As acting president of a users group, I tell my fellow ST users to subscribe to START. ❑

Jonathan D., NY

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Products Update

New ST Software and Hardware

Compiled by Tom Byron
START Assistant Editor

New Games from Epyx

Two new games from Epyx promise all-out-and-out fun!

Battleship, the computer version of the classic strategic board game from Milton Bradley pits you against either the computer or a friend.

Secretly position your aircraft carriers, submarines, destroyers, torpedo boats and battleships on the grid map. Then the action begins and the "game" becomes a deadly version of hide and seek. Players place their hits to try and destroy their opponent's fleet—without having their own ships blown out of the water! One mistake could mean a watery grave in this furious high-seas skirmish.

Seasoned Seadogs battle black forces who possess bizarre architectural abilities in **Tower Toppler**. On the planet



In Epyx's computer version of the classic Milton Bradley game Battleship, players race to see who can be first to sink the other's fleet.

Nebulus, your MK-7 Mini-Sub takes you to eight mysterious, rotating towers that have risen ominously from the toxic sea. As a senior operative for Destructo, Inc., you have been sent to topple these terrible towers down into the putrid depths.

Speed, coordination and quick judg-

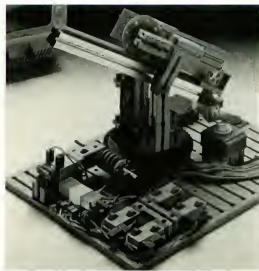
ment are the only traits that will get you to the top in Tower Toppler. Stunning 3D graphics and challenging gameplay will have you hooked from the word "go." Battleship, \$29.95. Tower Toppler, \$49.95. Epyx, 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063, (415) 368-3200.

Computing Experimental

Explore the wonders of computers with a new construction kit from Fischer America. It's called **Computing Experimental** and it promises hours of educational fun.

The kit comes complete with all the switches, lights and wires you'll need to start experimenting with your computer. A comprehensive guide to the construction kit provides an introduction to the programming of machines and robots. All of the experiments are described in detail and only a minimum knowledge of computers and BASIC is required. Simplified instructions and a new wiring harness make assembly easy. \$379 (includes kit, interface, software and power supply).

Fischer America, Inc., 175 Route 46 West, Fairfield, NJ 07006, (201) 227-9283.

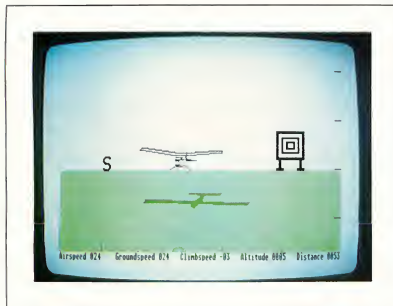


Radio-Controlled Flight Simulation System

Learning to fly your radio-controlled plane or helicopter just became easier. The R/C Aerochopper radio-controlled flight simulation system for your ST puts you as close to real R/C flying as you can get, without the worry of crashing or bad weather.

Developed by Ambrosia Microcomputer Products, Inc., R/C Aerochopper is manufactured by Futaba Corporation and uses the same transmitter box and controls as the Futaba Conquest series of radios. R/C Aerochopper is designed to simulate the experience of real R/C flight and puts you at the controls of a number of different airplanes, helicopters, ducted fan jets and even a glider.

Each R/C Aerochopper Flight Simulation System includes a Futaba Conquest dual-stick radio with interface cable, programmed computer interface cartridge and complete owners reference manual. R/C Aerochopper, \$189.95. Ambrosia Microcomputer, Suite 371, 98 West 63rd Street, Willowbrook, IL 60514, (312) 655-0610.



R/C Aerochopper teaches you to fly radio-controlled planes, jets and helicopters with your ST.

The Magic Playground

Water Fountain Software brings to your children the enchanting world of reading while teaching them the complexities of their computer. The Magic Playground is an interactive animated story that parents and children can read together from the computer screen. Easy to use, it's designed to be just like reading a book.

The Magic Playground's story is simple. There are two playgrounds. On one you can interactively play on the swings or on the slide, with the water fountain or in the sandbox; the other is the Magic Playground, where anything can happen and often does.

As the story unfolds, your children are exposed to many of the things a computer can do. They will also learn to use the mouse, keyboard, return key, function keys and arrow keys. In other words, your children will have a good time and become computer literate without realizing it. Runs in medium and high resolution. The Magic Playground, \$20. Water Fountain Software, 13 East 17th Street, New York, NY 10003.

STonehenge

An ST memory-expansion alternative in a solid-state disk drive is now available as a kit from RONSAT Technologies, Inc. The STonehenge kit, based on an Application Specific Integrated Circuit (ASIC), emulates a hard disk by interfacing the ST's DMA port with a block of DRAM.

The STonehenge advantages over internal memory expansion include the

ability to utilize lower-cost 200 nanosecond DRAM parts, memory expansion in 256-kilobyte increments (eight DRAMs per bank) and nondependence on the ST's power supply. Plus it's external, you don't take your ST apart and data is preserved even through an ST power cycle.

When the kit is fully assembled it provides up to two megabytes of very fast external storage. If you need more than two megabytes, the DMA pass-thru

feature can be utilized to daisy chain more kits or mechanical hard drives. STonehenge, \$169.95. RONSAT Technologies, Inc., 368 Lexington Drive, Buffalo Grove, IL 60089, (312) 520-8003. ■

Do you have a new ST product? If so, we'd like to hear from you. Please send your press release and product photos to Products Update, START Magazine, 544 Second Street, San Francisco, CA 94107.

TWO NEW, SENSUOUS GAME TITLES

Look out, Indiana Jones! Step aside, Bogie! Crash Garrett's in town!

Don't wait 'till Sunday to catch-up on your favorite action comic — play **CRASH GARRETT** instead!

No other adventure game is quite like this...



Let ace flyer **CRASH GARRETT** escort you through Hollywood in the '30s to rescue sultry, sexy gossip columnist, Cynthia Sleeze, from the sinister Nazi



mastermind Baron von Engel Krul and his cronies. Help **CRASH** stop this perverse Nazi spy-ring from kidnapping glamorous, American beauties to use as breeding stock for an Aryan race of



superhumans. Be the voice in **CRASH**'s head as he encounters adventure after adventure with a whole group of wacky, depraved characters including Caleb Thorn, psychoanalyst

to the stars, and Lotta Linebacker, a female wrestler who knows what she wants from a man!

CRASH GARRETT is style and pizzazz—an animated comic book with a slick, continental look. It's about as much

terror, intrigue and suspense you'll want from any game!

Play Stir Crazy With Bobo—

Your idea of "doing time" will definitely change!

Had a little too much violence lately? Still want fun and action? Well, grab your joystick and join poor Bobo in six of the most graphically amusing adventure games ever on disk.



Bobo's in prison—**INZEESLAM-MER**—where he spends most of his time performing menial chores and planning his escape. Bobo's no penal pushover!

Bobo starts his day feeding porridge to hungry, irritable prisoners. Don't



let him get too befuddled, or else he'll end up with the porridge bucket on his head.

K.P.'s next. Speed is the key here. Don't let Bobo get buried underneath a pile of spuds!

An exhausted Bobo tries to catch up on his beauty sleep, but is constantly interrupted by the relentless snoring of his cell mates.

Finally Bobo makes his escape and hurtles off into the sunset, right onto electric train cables. Bobo needs some pretty fancy footwork to avoid the pulsating current!



Available for Atari ST* and Amiga* Computers at your favorite store. To order by phone, call 800-234-7001.

CRASH GARRETT—\$39⁹⁵
STIR CRAZY with Bobo—\$34⁹⁵

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Yes But Is It Art?

Computer technology has been seen as a threat by many artists, but Marcus Badgley, Darrel Anderson and Jon Fordyce have embraced the new technology and have shown that the computer can be as much a tool of the artist as a brush or cbisel.

by Heather Leitch

A cross between Smurfs and California Raisins, Beschnoones could be a merchandiser's dream (if they were so inclined), but they're hard to find. These colorful creatures live in the country Poony on the planet Universillion. Beschnoones are the main inhabitants of the planet and subsist on gourmet bubbles put out by flying bubble makers called Gourmet Bubble Bumpers. But sometimes their mortal enemies, the Phalangens, creatures that resemble giant hands, follow the bubble makers around and quite literally burst their bubbles. This is bad news for our friends the Beschnoones, because then there's a famine. Beschnoones are basically peaceful creatures, unlike the evil Mutants, beings that resulted from humans crossbreeding with plants. The Mutants are very violent.

Actually, the Beschnoones and their neighbors live in the Atari ST of graphic designer Marcus Badgley. But they can be brought to life in bright, flashing computer color with the click of a mouse. The ST's glowing neon colors brought out the cartoonist in Badgley. The Beschnoones and their fellow inhabitants, the Famn Bo and Booder Ho, spring out of the computer terminal,

giving more of a slide show than computer graphic effect.

"I scanned my cartoon world into the computer because the colors are so bright. It's like working with neon," says Badgley. "I'm scanning a 144-frame animation sequence into the computer now."

The ST is an integral part of the design process for Badgley, as it is for many other artists. Badgley has used an ST since 1985 for everything from designing corporate logos to tending to his San Francisco company Gravity



Design's business. "I like to do a little of everything," says Badgley. "I'd like to start animating the Beschnoone world."

Artists like Badgley use the ST as another design tool, to supplement rather than replace paintbrushes and

sketch pads. Along with giving the citizens of Universillion a place to live, the ST enables Badgley to view different color schemes and backgrounds for company logos, a mainstay for his graphic design. Badgley switches back and forth between the Atari and the drawing board in creating these designs.

The initial design is still easier for him to sketch by hand. But after scanning the design into the computer, Badgley can alter the design or change the color without having to redraw and recolor the entire graphic. As in writing, the computer lets graphic designers take risks, such as experimenting with bright colors in a new logo for San Francisco-based Just Desserts, as Badgley is doing. He can also experiment with the structure of business cards and logos. "It's easy to move the logo around when I'm designing company stationery," he says.

Using the ST's graphic capabilities, Badgley also created a tutorial on how to draw for the not-so-artistically inclined. The program starts with a series

◀ In his more serious moments, Marcus Badgley operates Gravity Design, a San Francisco graphic design studio. Badgley designed the box art for the Fall 1988 Antic Software line, including this proposed new box for Cyber Paint.

This logo was executed by Marcus Badgley (at right) on an ST using Spectrum 512/Unispec for Badgley's own San Francisco graphic design company.



of concentric circles. Gradually one circle becomes the head, another becomes the nose, then eyes.

For Badgley, some of the most useful applications of the ST have been for more mundane business tasks. Among ▶

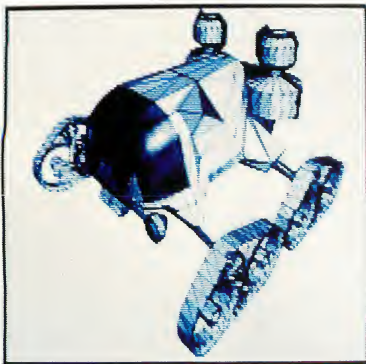


the programs he uses for his business are Data Manager for mailings; Word Writer ST for word processing; VIP Professional, a spreadsheet; and Time-works Publisher ST to help with newsletters. By putting his bookkeeping and mailing lists on his database, he is freed up for more creative work. "I actually use my computer as much or more to help out with the other aspects of running the business," says Badgley.

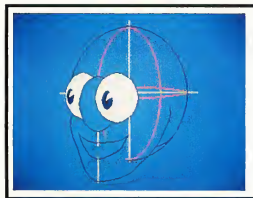
Darrel Anderson

Carrying on in the science fiction genre, artist Darrel Anderson finds the Atari ST useful for illustrations such as those that grace the covers of the Venus Prime Series of science fiction books. Anderson sketched a series of technical drawings to illustrate the high-tech spacecrafts found in the book. (Anderson's work is at the back of the book. He didn't design the voluptuous heroine emerging from a spaceship on the cover.)

He's also done illustration for children's books. For a collection of glow-in-the-dark children's books called Night Lights, Anderson used a 3D modeling program to set up illustrations for a book based on Ray Bradbury's story "Fever Dreams."



Darrel Anderson has long been known for his spectacular ST art. This sketch is one he did for "Hide and Seek," the third book in the "Venus Prime" series of science fiction books.



Start with a circle, end up with who knows what. This is one step from Marcus Badgley's upcoming START article on ST cartooning.



Marcus Badgley mixes his ST graphic design work with off-hour whimsy. This is the title screen from his epic cartoon-in-the-making, "Universillion."

"I built a very simple model to obtain interesting camera angles," said Anderson. "I would then print images of it, simple line drawings. The story itself is pretty scary. I was surprised they included it in a children's book."

Anderson has been incorporating Atari into his art for two and a half years. This began when a client in New York sent him an Atari 800 to do some on-screen art for interactive role playing games. He feels one of the main advantages of the ST is the Cyber Studio series of CAD software. "For this level of machine, it's the best CAD package available," he says. "Particularly with the easy interface. You don't want the machine to get in the way."

Jon Fordyce

Sculptor Jon Fordyce uses the ST to help him do mock-ups of sculptures before he starts building them. This is especially useful since he works with such unforgiving materials as steel pipes and steel sheets. Fordyce first started using the ST after receiving an artistic commission to create a monumental sculpture at Case Western Reserve University in Ohio. In addition to using the computer as a tool, Fordyce also incorporated it into the theme and artistic process for the commission. He believes that the computer is the most significant gift of the twentieth century, bringing with it both increased knowledge and understanding and the ability to destroy us through military applications.

"I decided that the concept of the piece should be the computer with a capital C," he says. "I wanted to create it out of heavy gauge stainless steel so it would last for thousands of years as a symbol of our idea."

Fordyce likes to experiment with the sequence of his designs. Sometimes he'll do a 3D mock-up of a sculpture first, then build it; sometimes he modifies it on his computer halfway through. Since Fordyce works with heavy metals, the computer image is a little more malleable than the real image. For a four-part series titled the "grid series," Fordyce actually incorporated the Atari into the sequence of his sculptures. The grid series' theme centers on, as Fordyce saw it, the limitation of the computer versus

**"There's never
enough time to do
everything I have
ideas for."**



Jon Fordyce uses the ST as a design tool for his sculpture. This work, *Mandala in Transformation I*, is one of a series Fordyce produced using Antic Software's CAD-3D to explore three-dimensional design concepts.

the spontaneity of metal (which is the opposite of what would seem to be true).

"This brings up a dilemma," says Fordyce. "How do you bring the geometric limitation of computer graphics to the spontaneity and organic qualities inherent in forging red-hot metals?"

Working with steel also necessitates working outdoors, so being able to do the lion's share of the designing in the warmth of his home is an advantage during cold Ohio winters. He used CAD software to design the sculptures. The first sculpture in the four-part series was the *Mandala in Transformation*, which was designed on the computer first, then worked on outside.

"As I was doing the sculpture, I was consciously open to altering the design for some spontaneity," he says. "I began to develop a visual concept of the piece and reversed the process."

The second in the series, *Mandala in Transformation II*, was altered halfway through on the computer. For the third, *Caregiver*, Fordyce forged the sculpture entirely by hand, then went back and designed it on the Atari. Finally, the



Mandala in Transformation I as seen on the ST's screen.

fourth, *Grasp For Life*, was done completely by hand.

"I came full circle," he said. "I started with total CAD, then worked my way back."

Fordyce is very involved with the whole process of the artist and the computer, and is putting together a video that will introduce a panel of artists to discuss the topic of sculpture and computers.

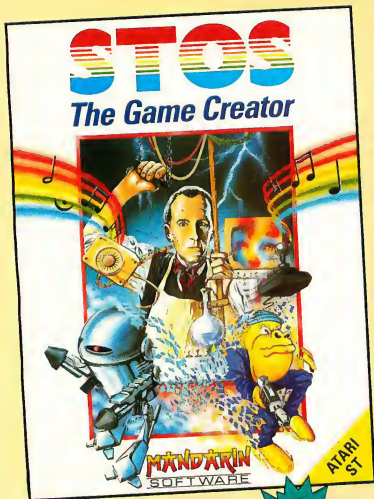
"I have several of the world's most famous sculptors from all over the United States and Canada," he says.

Like Anderson and Badgley, Fordyce counts among the Atari ST's assets its affordability and the flexibility and

ease-of-use of the Cyber series. "It is the easiest to use, and blending 3D graphics with color is easy on the ST," he says. "It brings meaningful 3D graphics to anyone who wants to use it. The possibilities are almost limitless."

One limitless opportunity involves animating a stainless steel sculpture. Something about that 3D imaging just brings out the cartoonist in these artists. Fordyce says, "There's never enough time to do everything I have ideas for." ■

Heather Leitch is a San Francisco-based business, high-tech and feature writer. This is her first publication in START.



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Art and Animation... Made Powerful

Unispec, Art and Film Director and Cyber Paint 2.0

by Marcus Badgley

Finally, Atari users are getting what they deserve: better, more powerful software. Being an artist who bought an ST when it first came out, I have waited a long time for programs like these!

This review looks at three great new programs for the ST/Mega series computers. Unispec, Art and Film Director and Cyber Paint 2.0 all reflect how far we've come since NEOchrome and DEGAS marked the ST's artistic vanguard. These newcomers include basic drawing tools, block functions and antialiasing as standard. What's important here are the special effects and animation capabilities. Each package is well thought out, complete and functional. Though there are similarities, each program approaches drawing and animation in its own unique way.

Unispec—512 Colors and More

Unispec, our first program up to bat, is an enhanced version of Spectrum 512. In fact, you *must* have Spectrum 512 to "create" Unispec. It was designed as a desk accessory to be used alone or in harmony with other programs. Its function as a desk accessory is to provide 512 color enhancement and manipulation to 16 color images, as well as converting 512

Unispec is an upgrade of Spectrum 512 with several unique features. Its 512-color palette allows an artist to imitate life (or movies). Note how the foreground character is brought out from the background in this test picture from "Universillion."



color art to 16 colors to be "exported" back to the host program. In fact, this feature works so well that I thought it wasn't even working—it's that good!

Unispec works with many programs that make full or partial use of GEM. Because Unispec is so large and powerful, several tutorials are included in the manual on creating the working parameters between Unispec and other programs. Among the programs compatible with Unispec are: DEGAS Elite, CAD-3D, Cyber Paint, NEOchrome, ST BASIC, GFA BASIC, 1ST Word and WordWriter ST (as I write this review I am accessing Unispec constantly to check certain fea-

tures). With most GEM programs, access to Unispec is through one of five buttons, listed in the DESK file, which let you enter Unispec directly or transfer information into it. Blocks, color palettes or full screens can be imported to Unispec.

Besides being the Spectrum 512 that I've come to know and love, Unispec adds many new functions. It includes animation and makes detailed improvements over its predecessor. In terms of functions, Unispec has increased its computer-assisted effects. The addition of "dithering," which by mixing two or more colors and interlacing them creates the illusion of more colors, is great! This ▶

optional effect, used with Blur and the Block functions, can be quite beautiful. It's also a partial cure for the "super jaggies" normally created when enlarging a block.

Speaking of blocks, Unispec's block functions offer ADD, SUBTRACT and AVERAGE in addition to Replace. All four options can be pasted in either transparent or opaque modes, creating a total of eight modes. These new modes act exactly as their name describes. ADD will add all the pixels' RGB values of the block with those of the destination pixels, creating a darker area. SUBTRACT subtracts the RGB values and AVERAGE averages the pixels. These new block modes can produce astounding results. Different effects can be created, such as the illusion of transparency—like being outside and seeing someone *through* a window while the trees and sky are reflected in the window, or a ghost floating through a wall. Each of these modes has adjustable strengths which determine how much pixels are altered.

Blocks can also be rotated in 90-degree increments. You can now paste blocks with antialiasing, so the crisp edges surrounding a pasted block can be softened or blended into the background. This feature is so complex, however, that I got lost in the tutorial and decided to pass. If I need that feature later, I'll brave the manual again.

New "No Zag" functions can control how a No Zag line is drawn or redrawn precisely! In addition to Replace (an original Spectrum mode), colors can be added or subtracted when intersecting other colors. A new line cache stores information about each No Zag line, enabling lines to be redrawn later. The line cache can store up to 500 points. Though there is a Line Pointer which activates specific lines, I found this function confusing—a sort of hit-or-miss situation.

A new readout display occupies the spaces to the left and right of the magnification window. Shown here are mouse coordinates, RGB values, antialias

mode and breadth, airbrush flow rate and line cache pointer, to name but a few. Actually, there's so much information here that I had to keep referring to the manual for clarification.

Other improvements: Fill to New now works in No Zag mode. Colors can be changed to black. Also included is a user-definable snap feature which allows for any rectangular shape or square grid. The time needed for antialias analysis is down from six seconds to one second.

A new magnification mode displays the current brush. In the original Spectrum 512 it's impossible to tell what is eliminated by a large brush. You can now merge color palettes in the Custom palette. These small features in addition to the new features make Unispec a real improvement over Spectrum 512.

**Unispec is for
artists committed to
their craft who
want to take that
commitment to
another level.**

Unispec's animation capabilities are short but sweet: we're talking straightforward 512-color flip-book-style animation. After an image is created, it is saved and then altered a bit. This new image is then saved as a "delta," meaning that the difference between two frames is saved, resulting in much smaller files. These deltas represent the frames. Unispec has a separate program used to create sequences of deltas. The process of creating any detailed animation with Unispec is a time-consuming process at best. However, if you're looking for full-color animation this is the program for you.

Since Unispec is a desk accessory it doesn't need the basic drawing tools commonly found on other paint programs. By offering immediate 512-color enhancement and comprehensive tools to use those colors, Unispec more than makes up for what it lacks. It's animation capabilities may be tedious and minimal, but it's important to remember that no other program offers 512-color animation for the ST and Mega—which are designed to display only 16.

Overall, I enjoy using Unispec. The colorful results are worth the effort and frustration of dealing with such a complex interface. I feel that the designers at Trio could have used GEM more and redesigned Unispec's interface to be easier to use.

Because Unispec is not marketed as a "legitimate" upgrade of Spectrum 512, you need to refer to two manuals, which makes the program harder to learn. I must point out that it will take dedication and hard work to really master many of Unispec's new and old functions so that you know what the result will be. Unispec is for the serious ST artist who has made a commitment to his or her craft and wants to take that commitment to another level.

Art and Film Director: Two Programs in One

Count 'em! One! Two! This dual package is geared to produce static or animated artwork. Because the creation of images is the first step to animation, we'll look at the "Art" aspect first. This drawing/paint program is equipped with all the expected tools, plus several fun special effect features.

The work area is clean, with a small, movable toolbox and a message readout at the top of the screen. The toolbox includes such utensils as pencil, brush, fill, text, a NEOchrome-like zoom box and color palette. Left-clicking on a tool activates it, while right-clicking can bring up detailed controls for customizing a specific tool.



There are eight zoom levels, 32 brushes, filled or hollow squares, rectangles, circles, ovals, mirror and user-defined snap. You can use rectangular, oval or freehand blocks. Besides just moving and pasting, a block can be resized, stretched, distorted, rotated, bulged, bent or altered to a specific perspective—and then used as a brush!

The array of tools also includes smear

scrape, melt, shade, xcolor (which exchanges colored elements of one drawing to another), outline, round off (antialias) and window. This last feature creates a boundary for tools and effects to work within. On the quirky side are two tools, one which creates circular sprites which bounce around the screen indefinitely; the other grabs portions of an image and animates them in a revolving manner

Art and Film Director from Epyx is an animation studio in a box. There are two separate programs with cel animation and tweening capabilities, unique paint functions and even sound dubbing.

The setup comprises one main screen, another directly behind that—and another 14 in memory. If's set up this way because many of the special effects tools transfer information between the main screen and the one "behind" it. The Scratch function can be used to scratch through one drawing to reveal parts of the one underneath—quite unique! Other functions will bring elements of one color from the bottom screen to the top; and, of course, all 16 screens can be swapped. For mixing color there's a modified RGB slider that allows for color changes, swaps and changes in position, as well as an invert function that changes all the present colors to their exact opposite. This creates color possibilities that you wouldn't normally consider. Drawings can also be viewed in monochrome, which is great for studying composition and movement. Art director also supports color cycling, utilizing up to eight palettes. Art Director can send images to the printer, with numerous options to choose from, in-

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cluding the ability to rescale an image.

I was pleasantly surprised by this drawing program. The layout is well thought out with attention to ease of use. Art Director had all the tools I needed and its unique features made new options available. There's not a lot to critique here, though I'd like to see greater accuracy when altering blocks, more color tools and better, faster antialiasing.

Without intermission, we arrive at Film Director, a wonderful, straightforward animation program. The layout and concept are carried over from Art Director, making the intuitive operation easier. The creators of Art Director and Film Director have approached animation in an entirely different way from the Unispec creators. Employing the same process used in traditional cel animation, Film Director builds an animation from the ground up. In cel animation, each character, object, foreground and background is created separately on its own cel. To create each frame one or more cels are stacked together and photographed. The result after a series of frames is an animation.

In Film Director, the whole process begins by creating Patterns, which are images clipped from artwork made in Art Director. A pattern can be anything from a small body part to a block of color. The Patterns, as well as Polygons, can be used as cels in a frame, or used together as a Group—really several Patterns and Polygons used as one cel.

The next step is creating Actors, or mini-sequences of action made with multiple cels. An example of an Actor could be a person running or a flag rippling. Film Director speeds up the process of animating by using "tweening." For instance you can move a character across the screen easily by designating a starting and ending point and the number of frames needed. The computer creates the in-between frames needed to move the character. Tweening can be applied to Patterns, polygons, groups, actors and even backgrounds.

Lets say we want to animate a person walking across the screen. First create the person in Art Director piece by piece, along with any backgrounds or foregrounds. (By "piece by piece" I mean not only each section of the body that would move, but the different positions.) Then import the images to Film Director. The parts, or Patterns, will be assembled into a series of whole figures (Groups) in different stages of walking. Then each of those stages will be linked together to form the Actor, which in turn is laid over a background, and *voila*: we've got our animation.

The only word that expresses Cyber Paint's Pixel F/X is

“Wow!”

Cels can be layered in many ways to appear in front of or behind others and no cel can be placed behind a background. A limited text feature lets you add words to your animations as well.

What makes Film Director so great to use is its simplicity. Most of the work is involved in creating the artwork in Art Director; assembly in Film Director is the easy part. Film Director comes with several demo animations, one of which is used in the tutorials. The step-by-step tutorial is very clear; halfway through it, it suddenly dawned on me how simple it all is. The step-by-step process is very easy and understandable.

Film Director can use up to eight color palettes, creating the illusion of more colors. You can also add music to an animation and the program supplies an array of prerecorded "emphasis" sounds which can be installed at specific points. Film Director also supports video recording units for taping animations, as well as

the ability to print any frame.

Neither Art Director nor Film Director can be used with any desk accessories active, and though the manual said I could load both programs into my hard disk, I never succeeded. Since the designers of this dynamic duo want you to use their program, support of DEGAS/NEOchrome is minimal. A separate program for two-way conversion is included, yet this feels like an afterthought.

But what a great package! These two programs come up with the goods. In one sense Film Director would be better if it had more advanced features that might animate CAD-3D objects or appear to move images back and forth in space, as opposed to across the screen. However, our next program more than fills the gaps left by Unispec and Art Director/Film Director.

Cyber Paint: The Next Generation

Cyber Paint 2.0! Jim Kent has certainly been hard at work creating personal bests for us artists and animators. In his latest version of Cyber Paint he brings to Atari ST animation what Unispec brings to ST color.

Here we have an excellent program that's powerful, flexible and innovative. At its simplest level, Cyber Paint 2.0 is a great paint program; at its most complex level... I don't know. The animation possibilities are endless. Being akin to Unispec in offering so many features, there's a lot to know about Cyber Paint 2.0. However, unlike Unispec, the interface is very well-constructed and everything has both screen and keyboard commands.

The program now comes on two disks and includes a new player program. New features include Pixel F/X and Color F/X. With Color F/X, different palettes can be used for each frame, opening up many possibilities. Colors can be tweened, to fade in and out automatically, or blended together, acting as transitions from scene to scene. Entire moods and lighting at-



Cyber Paint 2.0 lets you do 2D or 2-1/2D animation on your ST. Version 2.0 added a wealth of features to its predecessor, including a separate palette for each frame. This makes fades, color transforms and other effects easy.

mosphere can be dramatized or altered by altering the color scheme. And, of course, no paint program would be complete without color cycling.

More professional-looking special effects can be found in the Pixel F/X menu, which includes such features as Defocus (Blur), Shatter, Antialias, Crystalize, Outline, Tile and Unrez (which decreases the screen resolution by two). Many of these options can be Tweened over several frames. Ripple and Buzz will animate portions of an image like a wave. The tile option will multiply an image to occupy a whole screen—when animated, row upon row of movement occurs. The only word that expresses Pixel F/X is "Wow!"

A traveling mask has been added along sequences of frames to become transparent animated "holes." It can be used to create animated drop shadows and other effects including the illusion of transparency.

Like Unispec, the upgraded Cyber Paint 2.0 makes detailed improvements over its predecessor. A clipped image can be pasted below another image, the coordinates of which are now displayed in the Zoom window. The Frame mode now has Separate Many, which replaces colors in many frames, as opposed to just one.

In the APM (Antic Pixel Mover) F/X, images can be manipulated to move off the screen! For Load/Save enhancements we have a splice option for .SEQ files

only, which appends one animation to another. For greater control of time-related functions there are now three different Frame Modes. These affect either the present frame, specified segments or all frames.

Overall, there are so many other tools and options here that the ability to create and control animated action is truly amazing. Cyber Paint 2.0 is like Industrial Light and Magic in a box!

Now that I have finished reviewing these products, I can't wait to do some animating of my own. My only problem now is deciding which program to use. ■

Artist Marcus Badgley is the owner and director of Gravity Design, a graphic design studio in San Francisco.

PRODUCTS MENTIONED

Cyber Paint 2.0, \$79.95 (Upgrade from **Cyber Paint 1.0**, \$25) and **Spec-trum 512**, \$69.95. Antic Software, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.

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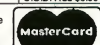
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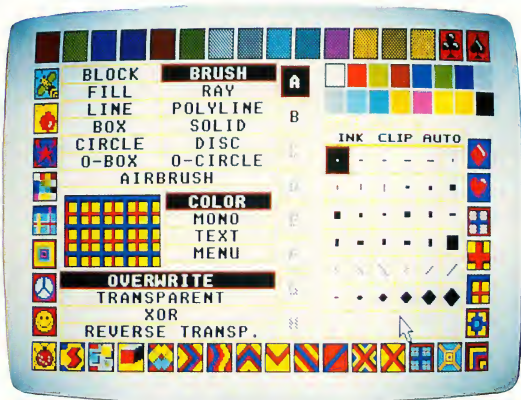
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SEURAT



You may think that you don't need another paint program. Well, take a look at SEURAT! It's an amazing painting, drawing, and all-around pixel-bashing program written in (are you ready?) GFA BASIC 2.0. Even if you have a library full of graphics programs, you need SEURAT. It runs in all resolutions on any ST/Mega with one megabyte of memory or more!

by Sterling K. Webb

Look out, DEGAS Elite! Move over Cyber Paint! Now there's SEURAT—file SEURAT.ARC on your START disk.

In the beginning, there were DEGAS and NEOchrome 0.6. Then, DEGAS begat DEGAS Elite and NEOchrome 0.6 begat NEOchrome 1.0. And the graphics programs for the ST have kept on coming for three years. And now there's SEURAT, inspired by Georges Pierre Seurat (1859-1891), the French pointillist artist and "Father of the Pixel."

If you've worked with other ST graphics programs, like DEGAS Elite or NEOchrome, you'll find SEURAT's user interface very intuitive. If you haven't, you'll have fun exploring SEURAT's myriad functions. There are even a couple things you haven't seen before.

Getting Started

Because of SEURAT's size and the need for a full manual, it took a bit of doing to fit all of the files on the START disk. Before you read on, please read the sidebar accompanying this article for specific instructions on how to handle the various files. And if you're unfamiliar with un-ARCing programs, be sure to read the general Disk Instructions elsewhere in this issue.

After loading SEURAT, the title screen appears followed by the main menu from which you select the paint functions.

Diving In

Like other graphics programs, SEURAT contains the usual "primitives" — basic shapes and lines. On the left side of the

main menu there is a series of function buttons. Looking down the stack of buttons on the left of the main menu, you can see that SEURAT has graphic primitives, like line, polyline (which also produces polygons), circle and disk (which can be ellipses), boxes and solids (square and round-cornered), ray drawing, plus the O-Box and O-Circle functions. There is also an area fill and a multi-function airbrush, that stipples as well as sprays.

The most basic function of a drawing program is free-hand drawing. Looking at the main menu, you'll notice that the BRUSH button is highlighted, and that the one-pixel brush box on the right side of the screen is outlined. That means you're almost ready to start drawing.

First, click on the INK button; this specifies that you want to draw with a solid color rather than a fill pattern. Now, select a color by clicking on one of the palette display boxes just above the INK button. Try a few other colors. Notice that the cursor changes color to remind you of your color selection.

You'll be using right mouse clicks to flip from the main menu to a paint screen and back again. (You can also use the Escape key.) So, let's flip over to an empty paint screen.

On the paint screen, you won't see the arrow cursor anymore, nor the brush you selected. What you will see is a big "register mark," four arms that point to a common center. Press the left mouse button and move the mouse; the brush cursor disappears and the brush paints. Release the left mouse button

and the register mark cursor returns.

This "register mark" cursor is large enough to let you position even single pixels with accuracy, and, because it's XOR'd to the screen, it remains visible regardless of the color of the screen beneath it.

Before we flip back to the main menu, press the Help key. The palette display pops up on the paint screen and the arrow cursor reappears, letting you select another color. Click the right mouse button to remove the palette display from the screen and you can then resume drawing.

Assuming that you're satisfied with what you've drawn so far, press the Insert key to "fix" your work to the screen. Now, as an experiment, make one more stroke with the brush, then press the Undo key. SEURAT's Undo function will remove *all* work done on a screen since the last fix was done with the Insert key. Any time you want to keep your work as you progress through a drawing, simply press the Insert key.

Now, let's flip back to the main menu and look at some of those other functions.

SEURAT's Functions

Besides the one-pixel brush we've just doodled with, SEURAT has 35 other brushes. All 36 work in both solid (ink) colors and in fill patterns. You can also have up to six simultaneous user-defined multi-colored brushes, that can be composed of any or all available colors in the palette. (These can be saved and loaded to/from disk by double-clicking on any brush box.) ►



SEURAT lets you make a flag rippling in the breeze more easily than Betsy Ross. The block manipulation functions in SEURAT are extensive.

Around the boundary of the Menu Screen, you'll see that SEURAT provides 92 fill patterns (46 each in color and monochrome). The selected fill pattern is shown on the left side of the screen just below the functions buttons. Double-click on the COLOR or MONO buttons and the fill editor will appear letting you modify existing fills in a variety of ways or create your own. Fills can also be stored to and loaded from disk through the fill editor.

SEURAT provides up to eight paint screens (the exact number depends on the available memory) and each screen has its own color palette. Paint screens (or just their palettes) can be copied between screens, and a palette editor allows you to alter your palette, swap colors, and load or save palettes.

SEURAT lets you carry out all graphic operations in the four write modes available on the ST: overwrite, transparent, XOR, or reverse transparent. Block operations can also be performed in reverse transparent, not transparent, and in any of the 16 logical combination modes of GEM, making a total of 21 block copying modes. You can also make a mask from a block and modify and copy it, also in 21 modes.

The text function allows for resizeable type in a variety of text styles in all four write modes and gives you access to the full ST 256-character ASCII set.

You can set and unset GEM's clipping function, creating (invisible) windows which put a boundary on your graphic operations. Updating and undoing the screen is totally in your control, although you can put it on automatic if you want.

Besides merely copying blocks, you can also manipulate them. They can be resized, rotated, skewed, arced to a cylindrical shape, distorted to any contour you draw, or distorted trapezoidally, even folded over or wrapped to hyperbolic sheets, if that's what you want. Blocks can also be stored to and loaded from disk.

SEURAT performs geometrical transformations on entire screens: flipping or inverting them, rotating portions of them, with four-way mirror operations and four scrolling shifts.

SEURAT can remap the color assignment of pixels over an entire screen or only over a portion of a screen, for any number of colors at once.

SEURAT has a specialized Zoomscreen that functions at 4X to 10X (20X in monochrome). The Zoomscreen has a wide variety of specialized features, including the capability to zoom a screen area in two modes: with pixels merged (solid) or separated (mosaic), as well as gridded (like electronic graph-paper) or non-gridded. On the Zoomscreen, you can draw with both right and left mouse buttons in different

colors. (Very handy in monochrome!)

SEURAT loads images in the original DEGAS (!.PI?) or NEOCHROME (.NEO) formats and saves them in DEGAS format. You can get a file directory, change drives, delete files, or format disks from within the program. SEURAT allows access to desk accessories and even maintains a logbook of which filenames were loaded into which paint screens or were lost copied to other screens, in case you get lost like I do.

Button by Button: What SEURAT Can Do

The command structure of a large and complex program like SEURAT can be a little overwhelming at first, but take heart! The SEURAT.DOC file on your START disk contains a complete user's manual that explains in detail each function of the program and how to use them all.

For quick reference, the following is a button-by-button list of SEURAT's many features.

Main Menu, Primary Controls

- Click the right mouse button or press Escape to toggle back and forth between the main menu and the paint screen
- Click on OVERWRITE, TRANSPARENT, XOR or REVERSE TRANS. buttons to select the write mode
- Click on function buttons to select paint or text function.
- Click on brush box to select brush shape and brush paint function.
- Click on INK to switch between solid color and fill
- (INK On = solid drawing color; INK Off = draw using fill pattern)
- Single-click on CLIP to limit paint functions to clipped area. (CLIP On = Draw only in clip area (except block functions); CLIP Off = draw anywhere—no clipping)
- Double-click on CLIP to set clip area.
- Click on AUTO to "fix" paint screens automatically. (AUTO On = auto-

matic screen fixing when flipping back to main menu)

- Click on paint screen boxes (A through H) to switch paint screens.
- Click on fill patterns in border to select fill.
- Click on COLOR to select color fill patterns (on color monitor).
- Click on MONO to select mono fill patterns.
- Single-click on palette display to select drawing color.
- Double-click on palette display to call palette editor.
- Press Ctr/Home to flip to Zoomscreen.
- Move sliders and arrows to shift view window.(high and medium resolution only)
- Click on MENU to call pop-up menu (See below).
- Double-click on MENU to access desk accessories.

Other Main Menu Commands

- Double-click on BLOCK to use a block as a brush.(select brush first, then double-click on block)
- Double-click on TEXT to call text dialog.
- Double-click on user-defined brush to call brush editor.
- Double-click on current paint screen selector box to copy screen.
- Double-click on current paint screen selector box with Alternate key held down to import palette.
- Double-click on highest paint screen selector box with control key held down to deactivate screen and free memory.
- Double-click on left color palette box to swap colors and reverse the paint screen colors (MONO only).
- Double-click on left color palette box with Alternate key held down to swap colors without reversing the paint screen colors (MONO only).

Pop-Up Menu

- Erase erases the currently selected paint screen.
- Zoom flips to Zoomscreen (same as the Ctr/Home key).
- File calls the file dialog box.(Load image, Save image, Delete file, Set drive, Format disk)
- Block Menu calls the block manipulation menu.
- Transforms calls the transforms screen.
- Color Map calls the color map dialog box.
- Quit exits SEURAT(Always quit SEURAT by way of the Quit option!)
- Escape changes frame color while mouse is on menu.

Paint Screen Commands

Note: The following applies to all paint functions unless otherwise noted.

- Cursor shape: up arrow shows drawing color, down arrow to define ▶

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Zoomscreen area, register mark if using a brush, box for text.

- Press Help key to bring up palette display to select color; click right mouse button to resume.
- Press 1 (overwrite), 2 (transparent), 3 (xor), or 4 (reverse trans.) to set write mode.
- Press C or c to show clipping area; click right mouse button to resume.
- Press Insert to update ("fix") paint screen.
- Press Undo to undo screen back to last update.
- Press F1 (paint screen A), F2 (paint screen B), etc. to switch paint screens.
- Press Clr/Home to zoom.
- Click right mouse button or press Escape key to flip to main menu and back again.

Block Functions

Note: The mouse cursor will be the block if one has been selected or a full-screen crosshair when selecting a block. If you have defined a block, be sure to use the right mouse button rather than the Escape key to flip back to the main menu.

- Press Escape to select new block; define a block by dragging a box around it.
- Click left mouse button to place a block.
- Click left mouse button with Control key held down to place a block mask only.
- Press Undo to remove placed blocks in reverse order in which they were placed.
- Press Backspace to clear block undo stack.
- Press 1, 2, 3, or 4 to select write mode (overwrite, transparent, xor, or reverse transparent).
- In Mode 4, click left mouse button with Alternate key held down to select not transparent mode.
- Press A, B, C, D through P to select GEM Modes G-15 for next block

Setting Up Your SEURAT Program Disk

SEURAT consists of seven archive files on your START disk. To set up a working program disk, you will need to follow these special instructions. If you are a new ST owner, read the sections in your Atari user's manual on how to format disks and copy files before continuing. Be sure to back up (make a working copy of) your START disk before doing anything else. There may be a file on your START disk called README.DOC; if so, double-click on it and click on Show for last-minute information on SEURAT.

If you have a single-sided drive, you will need three blank, formatted disks for SEURAT. One is for the program, one is for data and the other is for the documentation; label them appropriately. If you have a double-sided drive, format a double-sided disk for all of SEURAT's files. If you have a hard drive, you may want to create a special folder for SEURAT.

Copy SEURDOCS.ARC and ARCX.TTP onto the documentation disk. Double-click on ARCX.TTP and type the filename SEURDOCS.ARC in the box that comes up on screen. Your drive's LED light will come on and messages on screen will tell you which files are being un-ARC'd. When the Desktop screen returns, the directory window should show the SEURAT documentation file (SEURAT.DOC), the program TYPE.PRG and its GFA BASIC ASCII listing, TYPE.LST. If these files are not on the disk, try un-ARCing SEURDOCS.ARC again; you may have misspelled the filename.

To view the documentation, double-click on TYPE.PRG and select SEURAT.DOC when the file selector box comes up on screen. This program lets you view the file. To scroll through the file, use the up

and down arrow keys to move a page at a time or the right and left arrow keys to move a line at a time. To move to the beginning of the file, press Clr/Home; to move to the end, press the Insert key. Press Undo to return to the Desktop. To print out the SEURAT documentation, double-click on SEURAT.DOC from the Desktop and then click on Print. The documentation is quite long, so be sure you have plenty of paper in your printer.

Onward

Now you're ready to create your SEURAT program disk. Copy SEURAT.ARC and ARCX.TTP onto your program disk and un-ARC SEURAT.ARC as you did the documentation. When un-ARC'd, you should have SEURAT.BAS, SEURAT.INF, SEURAT.DAT and a utility program called CVERTFIL.BAS. Now delete SEURAT.ARC from your program disk; it is no longer necessary and you will need extra room on this disk. Do not delete anything from either your original START disk or your backup disk. Copy GFABASRO.ARC onto the program disk an un-ARC it.

On your SEURAT data disk create five folders, or subdirectories, for SEURAT's numerous data files. Make sure that your SEURAT data disk's window is open on the Desktop; if there is more than one window on the Desktop, click on it to make it the active window. Now select New Folder from the Desktop's File drop-down menu. Type in BRUSHES and press Return. The new folder icon will be in the directory window. Repeat the procedure to create folders called BLOCKS, COLRFILL, MONOFILL and PALETTES.

Double-click on the BRUSHES *continues on page 36*

placement only.

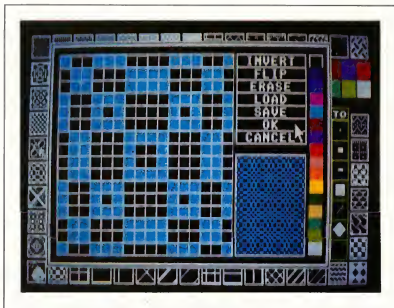
- Press Help key to toggle "floater" overwrite/transparent display (MONO only).

Text Functions

Note: write mode must be selected on menu screen, not with the keyboard. Flip back to main menu with the right mouse button, not the Escape key.

- Input text with keyboard.
- When in text mode over a paint screen, press the cursor up arrow key to call the text dialog.
- When in text mode over a paint screen, press the cursor down arrow key to call full ASCII character set.
- Press Escape to clear a line of text.
- Press Backspace to delete character to left of cursor
- Click left mouse button to place text and then clear text from cursor.
- Click left mouse button with Alternate key held down to place text

You can load, save and edit blocks, brushes, fills and palettes in SEURAT. This is the fill editor with one of the 92 included fills shown.



without clearing it.

- Press Undo to undo paint screen back to last update.
- Press Insert to "fix" screen.

Fill

- Click left button to fill area.
- Click right mouse button or press the Escape key to flip to main menu.

Ray

- Click left mouse button to set center.
- Subsequent left mouse button clicks or drag will draw rays.
- Click the right mouse button to cancel current center, click the left mouse button to set a new center.
- Click right mouse button twice to return to main menu (or press Escape key). ▶



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Line

- Click left mouse button to set starting point.
- Click again to set ending point and draw line.
- Click right mouse button to cancel starting point.
- Click right mouse button twice to return to main menu (or press Escape key).

Polyline

- Click left mouse button to set starting point.
- Click again to set additional points.
- Click right mouse button to connect last set point to starting point.
- Click left mouse button with Alternate key held down to set starting point and draw filled figure.
- Click right mouse button twice to return to main menu (or press Escape key).

Box and Solid

Note: A box is an outline figure and a solid is a filled figure.

- Click left mouse button to set starting point.
- Drag box to desired size or click right mouse button to cancel.
- Click left mouse button again to print box or solid figure.
- Click left mouse button while holding down Alternate key to set starting point and draw round-cornered figure.
- Click right mouse button twice to return to main menu (or press Escape key).

Ellipse, Circle and Disk

Note: A circle is an outline figure and a disk is a filled figure.

- Click left mouse button to set starting point.
- Drag circle/box to desired size or click right mouse button to cancel.
- Click left mouse button again to print ellipse, circle or disk.
- Click right mouse button to ter-

Setting Up Your SEURAT Program Disk, continued

folder. This will bring up the empty BRUSHES directory window. Copy into this directory ARCX.TTP and BRUSHES.ARC. Finally, un-ARC BRUSHES.ARC as usual. This will cause the files in BRUSHES.ARC to un-ARC directly into the folder. When you are finished, delete BRUSHES.ARC and ARCX.TTP from the BRUSHES folder and click on the close box in the upper-left hand corner of the window. This will bring you back to the root directory of the SEURAT data disk.

Double-click on the COLRFILL folder icon and copy ARCX.TTP and COLRFILL.ARC into it. As before, un-ARC COLRFILL.ARC, delete ARCX.TTP and COLRFILL.ARC and return to the root directory by clicking on the close window. Repeat this procedure for MONOFILL.ARC and PALETTES.ARC. There is no archive file for BLOCKS, but you can use this folder to store your own blocks.

Ready to Go

Now you're finally ready to run SEURAT! Put the program disk in the drive and double-click on GFABASRO.PRG and select SEURAT.BAS. In a few seconds you'll see SEURAT's main menu screen. Now you can start creating your artistic masterpieces. Be sure to refer to the button-by-button quick reference list in the SEURAT article and the SEURAT.DOC documentation file so you won't miss out on any of this program's myriad features. If you want to load or save fill patterns, brushes or palettes, put the data disk in drive B (or take out the program disk and put the data disk in drive A after SEURAT has loaded). If you have any DEGAS fill patterns you want to use in SEURAT, you can convert them

using the conversion program on the disk. Double-click on GFABASRO.PRG and select CVERTFIL.BAS, then follow the instructions on the screen.

One final note: SEURAT requires a great deal of memory. You must have at least one megabyte of memory to run it. If you still receive an "Out of Memory" error, disable your desk accessories and any RAMdisks you may have installed, reboot the computer and try again. Have fun with SEURAT, and be sure to share with us your comments and suggestions regarding this program.

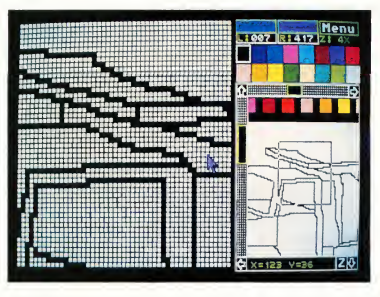
Source Code Extravaganza!

The compiled version of SEURAT was too large to fit on the START disk, even in an archive file, so we're publishing the tokenized GFA BASIC listing and the GFA BASIC run-only program instead. (If you own the GFA BASIC compiler, we do recommend that you compile SEURAT as this will improve the program's speed.) This way we can bring you not only a great ST graphics program *but its complete source code as well!* If you have MichTron's GFA BASIC 2.0 interpreter, you can load SEURAT.BAS to see just how it works and, best of all, you can customize it to your heart's content. Since START published GFA BASIC 2.0 in January, if you don't have the interpreter you can order it from us now. The back issue magazine with disk is \$14.95; the disk only (with a quick reference command list on disk) is \$10.95. You can also order the GFA BASIC 2.0 manual from us for \$9.95 plus \$3.50 shipping and handling. Call (800) 234-7001 to order. ■

minate.

- Click left mouse button while holding down Alternate key to set starting point and repeat figures with same center and shape but different size.
- Click left mouse button while holding down Control key to set starting point and repeat figures with same size and shape but different centers.
- Click right mouse button to terminate. Right mouseclick terminates, signals a repeat operation.
- Press Escape to return to main menu.

The zoom function is variable from 4X to 20X magnification with a raft of well-designed features, like using the left mouse button to paint with one color and the right for a second.



O-Box and O-Circle

Note: These figures erase the screen area within them as they are drawn.

- Press and hold the left mouse button down and drag to make the figure; release button to fix size.
- Click right mouse button twice to return to main menu (or press Escape key).

Airbrush

- Press and hold left mouse button down to paint with the airbrush.
- Press and hold Control key and left mouse button, then drag mouse to size the airbrush
- Press and hold Alternate key and left mouse button to produce random exchange of pixels within brush area (stipple).

- Click right mouse button twice to return to main menu (or press Escape key).

Zoomscreen Commands

Note: The cursor arrow shows the drawing color or takes the shape of a crosshair when the cursor is off the zoom display. ►

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- Draw with either left or right mouse buttons.
- Click the left mouse button on the palette display to set left mouse button color.
- Click the right mouse button on the palette display to set right mouse color.
- Hold the Alternate key down while drawing with the left mouse button to change left mouse color pixels to right mouse color.
- Hold the Alternate key down while drawing with the right mouse button to change right mouse color pixels to left mouse color.
- Press Undo to restore work area.
- Press Insert to update restore to current work area.
- Press Clr/Home to return to main menu.
- Press Escape to flip to the set-work screen to set new work area.
- Press F1 to toggle grid on and off.
- Press F2 when the cursor is a register mark to read absolute coordinates; click the right mouse button to resume.
- Press F3 to toggle 20 X 20 Mode On and Off. (20 x 20 Mode allows only 20 x 20-pixel work area modular to screen origin.)
- Press F4 to flood work area with left mouse color. (Also, by double-clicking on any color in palette display.)
- Press F5 to call the palette editor.
- Press F6 to call the dialog box to set mouse parameters for flicker and double click.
- Press F7 to view paint screen; press right mouse button or Escape key to return to Zoomscreen. (Also, you can click the right mouse button in the view window to view the paint screen.)
- Press F9 to call the file function dialog box.
- Press the Shift and F1 keys to set grid color with the left mouse button; click the right mouse button to resume.
- Press the Shift and F4 keys to call the screen transforms routines.
- Press the Shift and F5 keys to erase the entire paint screen.
- Press the Shift and F8 keys to switch to another paint screen.
- Press the Shift and F9 keys to call the color map routines.
- Press the F or f key (in low resolution only) to show free memory.
- Press the Z or z key (in low resolution only) to show zoom magnification ratio.
- Click on MENU button to call Zoom-screen pop-up menu.

**Note that the cursor
changes color to
remind you of your
color selection.**

Zoomscreen View Window Commands

- Drag on the view window sliders to shift to new work area to be zoomed.
- Click on the corner arrows to shift new work area one pixel at a time.
- Press the cursor up arrow key to enlarge new work area to be zoomed.
- Press the cursor down arrow key to shrink new work area to be zoomed.
- Click on Z-Box to perform mosaic zoom.
- Click on Z-Box with Alternate key pressed to perform solid zoom. (Note: You must click on *highlighted* Z-Box to perform a zoom.)

Set Work Screen Commands

- Click the left mouse button key to select minimum work area.
- Drag the mouse with the left mouse button held down to resize work

area selected.

- Click or drag with right mouse button to position work area selector. (Both operations must be performed the first time on the set work screen; subsequently only the right mouse button operations are necessary, unless you are resizing the work area.)
- Press Escape to return to the Zoom-screen.

Color or Mono Fill Editor and Brush Editor

- Click left mouse button in palette display to select color.
- Use the left mouse button to draw in the selected color.
- Use the right mouse button to erase (draw in color 0).
- Press the cursor arrow keys to shift the fill pattern one pixel.
- Click on FLIP to flip pattern left-for-right.
- Click on INVERT to turn pattern upside-down.
- Click on LOAD or SAVE to load or save patterns to currently selected disk drive.
- Double-click on a color to change all pixels of the selected color to that color.

Palette Editor

Note: the cursor will have the shape of an artist's palette.

- Click on a color box to select color.
- Click on the RGB or CMY buttons to select the Red-Green-Blue or Cyan-Magenta-Yellow color systems.
- Click on the color intensity numbers to set colors.
- Click on VIEW to show paint screen; right-click to return.
- Click on LOAD and SAVE to load and save palettes from and to the Disk.
- Click on RESTORE to restore the current palette to the one that existed when you entered the palette editor.
- Double-click on a non-selected color to exchange it with the selected color.

- Click right mouse button twice to return to main menu (or press Escape key).

File Function Dialog

(Note: the cursor will have the shape of a floppy disk)

- Load Image File: An image must be assigned to a paint screen in assignment dialog after selection of the file
- Any Image File named PICTURE.PIF is automatically loaded when SEURAT loads.
- Save Image File saves currently selected paint screen in DEGAS format (.PIF).
- Delete Any File deletes any file you choose on the selected drive.
- Set Drive selects the drive.
- Format Disk formats a disk in Drive A only.

Block Menu

The options for the manipulation of blocks are: a) Rotate Block, b) Resize

Block, c) Vertical Freeform Distort, d) Vertical Arc Distort, e) Vertical Skew Distort, f) Vertical Trapezoidal Distort, g) Horizontal Freeform Distort, h) Horizontal Arc Distort, i) Horizontal Skew Distort, j) Horizontal Trapezoidal Distort, k) All-Way Distort, l) Save Block, and m) Load Block.

- Click the left mouse button to set the parameters (see below).
- Click with the right mouse button to commence an operation.
- After an operation, left-click to repeat the operation.
- Click the right mouse button to confirm operation and pull the block.
- Press the Undo key to abort and exit the routine.
- To rotate a block, click on the ROTATION selector box arrows.
- To resize a block: grab lower-right-hand corner of block with left mouse button, drag it to a new position, and release the left button.

- Press and hold the Alternate key while resizing a block to keep the same proportions as original.
- Press and hold the Control key while resizing a block to keep the same scale as the last resize.
- To perform a freeform manipulation, drag the mouse while holding the left mouse button down. Be careful not to drag the orientation line into the block.
- To map a block to an arc, drag the mouse until the curve between the points is the desired shape and then click the left mouse button.
- To skew a block, move the mouse until the orientation line is as you desire, then click the left mouse button.
- To perform a trapezoidal distort, grab and drag the corners of the orientation box with the left mouse button. Press the Alternate key and the right mouse button to fill in holes.
- To perform a distort, grab and drag ▶

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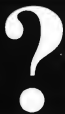
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Seurat

the four corners of the orientation box. Press the Alternate key and the right mouse button to fill in holes.

- Click on LOAD or SAVE to load a block from or save a block to disk.

Screen Transforms

- Click the right mouse button to toggle on and off the menu bar.
- When highlighted, chain is on; each transform is performed on the result of previous operation. When chain is off, each operation is performed on original screen. You can abort a series of chained operations by toggling chain off and on again.

You'll find SEURAT's user interface very intuitive.

- Click on FLIP to reverse the screen from left to right.
- Click on INVERT to turn the screen upside-down.
- To rotate a screen or portion 90 degrees clockwise (or counter-clockwise), use the full-screen cross-hair cursor to locate the top-left corner, then drag the mouse, holding the left mouse button down, to select an area. Holding the Alternate key down when selecting from the menu will prevent correction for aspect ratio.
- Use the single-line cursor to select the reflection point for all mirror operations
- Press the Escape key to perform mirror operations around the mid-point of the screen.
- Use the cursor arrow keys to shift the screen in all scrolling operations. You may set the scroll step from one to eight pixels.
- You may leave the screen transforms

routines by selecting EXIT and then choosing whether to return with the transformed screen ("New Image") or abort all changes ("Old Image").

Color Map

- Click on SOURCE ROW color, then on DESTINATION ROW color to re-map for any or all colors.
- The RESET Button cancels and redraws the color map dialog box.
- The WHOLE SCREEN button re-maps the entire paint screen.
- You may select an area to re-map by clicking and holding the left mouse button while dragging a box around the desired area.
- SELECT AREA may be repeated with same settings.

Low Memory Warning

Note: A musical noise will alert you when the free memory is below 64 kbytes. To recover memory, clear the block undo stack and/or deactivate the highest paint screen.

Though I wrote SEURAT on a one-drive 1040ST (never again!), running it on a Mega 4 shows that it needs about 1.2 to 1.4 megabytes of elbow-room with eight screens operational.

The End!

Whew! That should be sufficient to get you started experimenting with SEURAT's many features. Consult SEURAT.DOC for a full explanation of how each feature functions. ■

Sterling Webb lives and works in Bunker Hill, Illinois, a town he describes as so small that "the Rotary Club's sign says 'Welcome to Bunker Hill' on both sides!" This is his first program for START.

Games, Games And More Games

by Andre Willey

At this writing, Christmas 1988 is looming large on the horizon. Naturally for this time of year, new entertainment software is the order of the day on the European computer scene.

One company that seems to be generating a lot of interest at the moment is UBIsoft of France. Established in March 1986, UBIsoft has experienced rapid growth and expects to make \$10 million in 1989 alone. Their first game, *Zombi*, received both critical and popular acclaim, and also introduced the world to the then novel icon-driven adventure game.

UBIsoft recently unveiled seven new titles for the ST at an extravaganza held at their Brittany headquarters, a converted 19th century chateau. Company manager Michael Guilemont explained that the chateau provides an ideal location for product development, and programmers are welcome to stay for as long as they wish—often working through the night then spending their days relaxing, canoeing and waterskiing at the 700-acre estate.

British and American versions of the games are being developed. Epyx has secured the U.S. distribution rights for all of the UBIsoft titles.

As for the Games Themselves . . .

Among UBIsoft's latest releases is *Iron Lord*, a three-tiered adventure game that combines arcade action, strategy and maze solving. Also in release is a game called *Puffy's Saga* which is a Pac-Man takeoff with plenty of action and detailed graphics to keep the most ardent game player happy. *Skateball* is something of an oddity—a cross between football and ice hockey. *Vampire* is based on the Dracula legend and brings the Count's on-going battle with Van Helsing up to date.

Soon to be released is another graphic adventure called *Final Command*. It's set in a future time where a mysterious alien force has destroyed a space station. You have the unenviable task of finding out just what is going on. Following this will be *B.A.T.* (*Bureau des Affaires Temporelles*), a mouse-driven graphic adventure located in a futuristic detective setting. And finally, *Fer et Flamme* is the working title of UBIsoft's latest pending project which should be available in the U.S. in spring 1989.

More Games

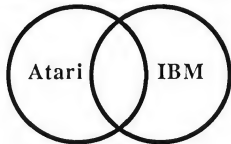
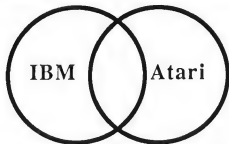
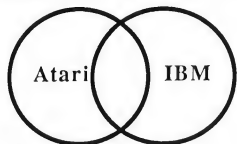
UBIsoft isn't alone in the new entertainment-software arena. Psygn-

sis, for instance, has just released *BAAL*. As with many of their previous titles (like *Bratacus* and *Barbarian*), there is a strong strategy and mapping element hidden under a thin arcade veneer. The 250 screens, ultra-smooth scrolling and great graphics and sound effects will no doubt please the "if it moves, zap it" brigade. The Psygnosis press release promises that *BAAL* will include at least 100 types of monsters and 400 traps.

BAAL's plot revolves around an elite group of "Time Warriors" who are searching for the component parts of a dreaded War Machine that *BAAL* has hidden throughout the first two levels of the game. Your task is hindered by the usual hoards of demonic beasts, and should you be lucky enough to acquire all of the parts of the weapon you'll then be allowed onto the third level to do battle with *BAAL* himself. It is here that the fate of the earth will be decided.

Gremlin Graphics, part of the massive US Gold group of companies, has announced two new games for the ST. First is *Motor Massacre*, for which the scenario sounds more like a film trailer than a computer game:

"The holocaust has come, plunging civilization into the depths of the ▶



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John Wolfskill, PC Resource, October 1988

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Donna Wesolowski, ST Informer, August 1987

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Mike Gibbons, Current Notes, September 1987

pc-ditto is a software-only utility which taps the power of our Atari ST to imitate an IBM PC XT. No extra hardware is required (an optional 5.25-inch drive may be required for 5.25-inch disks). Programs such as Lotus 1-2-3, Framework, Symphony, dBase II, II, III+, Sidekick, Turbo Pascal, and hundreds more, will work "out-of-the-box".

We also recommend the 5.25-inch IB Drive by IB Computers (503-297-8425), and Drive Master, the floppy drive switchbox, by Practical Solutions, (602-884-9612).

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murkiest hell on earth imaginable. Out of this devastation emerges a breed of survivors merciless in their greed for simple possessions. . .

Butcher Hill, Gremlin Graphics' other release, sounds like a quiet romp through the forest compared to Motor Massacre. In it you must negotiate past mines, flak from enemy aircraft, soldiers and a whole host of other obstacles. Both games should be available in the U.S. by the time you read this.

French software house Coktel Vision has obtained the rights to publish computer game versions of Walt Disney's *The Jungle Book* and *Peter Pan*, among others. They are also planning a game based on the Emanuelle series.

Novagen Software, home of such classics as *Encounter*, *Mercenary* and *Backlash*, have just announced their new game *Hellbent*. According to the press release, the game "previewed at the PC show, where it generated lots of interest" and was due for a pre-Christmas release in Britain.

Novagen's games are rarely disappointing—and *Hellbent* is likely to be no exception. Written by newcomer Donovan Prince, along with talented computer artist Mo Warden, the game is a superfast-scrolling, arcade-style creation and will be Novagen's third 16-bit release. The fourth, developed by their main author Paul Woakes, will be entitled *Damocles*. A release date was not available at this writing.

Euro-Shoptalk

MicroProse, the U.S. software publisher best known for its flight simulations, has just acquired West German software house Axxiom. This follows their recent acquisition of Hi-Tech, a company known for its low-priced PC software. Axxiom's ST software line consists mainly of fast arcade-type games, which have sold well in their native Germany.

GST has just released version 3.0 of its popular 1ST Word Plus word-



In the latest release from Psychosis, the terrible BAAL has hidden the components of the War Machine and it's up to you and your band of Time Warriors to find them and save the world. Your task is hindered by the usual hordes of demons and beasts.

processing package. It's still not the most powerful word processor on the market, but the new version does address most of the criticisms made against the previous version. 1ST Word Plus is still priced at about \$148; upgrade disk and manual are available for

Among UBIsoft's latest releases is Skateball, a cross between football and ice hockey.

about \$55.

New features include keyboard alternatives for most of the menu options, improved speed during spell check and block manipulation and the ability to print the current document directly, rather than having to save it to the disk first. Support is also provided for half-line and proportional spacing on compatible printers.

Kempston, based in Milton-Keynes (England) and mainly known for its line of joysticks, has just announced a brand new, hand-held image scanner. The DAATAfax which comes complete with GEM-based software and interface, allows an image to be scanned, saved to disk in a number of formats and printed out on standard Epson-compatible printers.

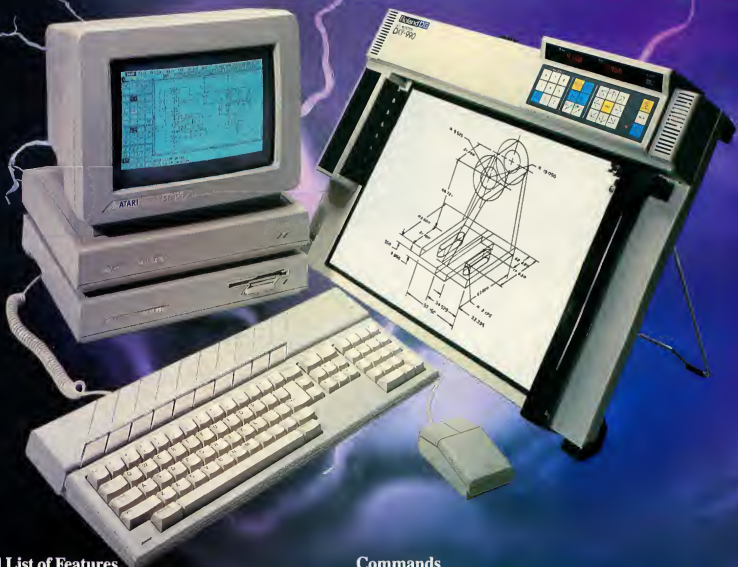
Images produced by the approximately \$500 unit can be incorporated into many painting and desktop publishing programs, or included in Kempston's own DAATAfax computer-based personal organizer software. The total scan width is a tiny 105 millimeters (about six inches) with a resolution of 200 dots per inch and a scanning rate of two centimeters per second.

Next Month

Next month I'll bring you a full report on the Christmas 1988 Atari User Show in London. There should be plenty to tell you about as the event is rapidly becoming the leading Atari-specific show in Europe—typically attracting some 20,000 visitors over its three-day run. ■

Andre Willey is the Technical Editor for Atari User, the United Kingdom's leading publication devoted to Atari computers.

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Mac and PC On The ST

Using MS-DOS

by David Plotkin
START Contributing Editor

For Atari ST owners used to mice, windows and menus, MS-DOS is anything but user-friendly. Once you've booted pc-ditto, put an MS-DOS disk into the drive and pressed Return, you're on your own. When DOS is finished loading, there is nothing on the screen but the default input prompt: the drive letter and the greater than (">") symbol. Oh, you may have customized the DOS prompt (as discussed in this column in the November 1988 issue of START), but the question still remains: what do you do now?

CLI Jitters

I first encountered this problem back in the 8-bit days. The first time I tried a CPM computer (MS-DOS is modeled after CPM to some extent), I got that sinking feeling so common to first-time MS-DOS users: "I'll never get the hang of this." (Even the DOS that came with my Atari 810 disk drive was friendlier than MS-DOS, for the commands were listed onscreen.)

MS-DOS is a command line interface, or CLI. That means that you must type the desired command at the prompt. Thus, you must know not only the name of the command (such as COPY, MODE, etc.) but also the precise syntax—the variables and characters which *must* follow the command name

DOS shells such as Spinnaker Software's DOS Manager make it easier to deal with MS-DOS.



exactly to get it to execute correctly. For example, to copy all the files on disk A that end in ".BAT" to disk B, you would type: COPY A:*.BAT B: at the prompt. If there's even one syntax error in a lengthy command, MS-DOS refuses to perform (or, if you're unlucky, it does exactly what you don't want it to do).

Many MS-DOS commands are *external*, meaning that they must be loaded from disk before they can be executed, so you need to keep your DOS disk handy. However, since the commands are just programs on the disk, it's easy to write your own "extensions" to DOS. In fact, you can execute most machine language programs at the DOS

prompt simply by entering a filename at the prompt.

Shell Game

It's easier to use a "DOS shell" than the "A>" prompt. In effect, a DOS shell is a menu structure that simplifies entry of a command, then executes it for you. DOS shell prices range from free (public domain) to quite expensive, but one of the nicest I've seen is Spinnaker's Easy Working DOS Manager (DM), a very reasonable buy at \$9.95.

DM presents a menu (aha!) along the top edge of the screen. Just as with GEM on the ST, various menu titles are available and you move between them ▶

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Mac and PC on the ST

with the left and right cursor keys. To make a menu drop down, just press the down cursor key. The up and down cursor keys can then be used to highlight a choice. You press Return to select it or Escape to remove the menu from the screen. Pressing F1 brings up a help screen for the current selection. You don't need to memorize this, though; a line of text near the menu bar reminds you which keys to press.

All the standard DOS commands are available from the menu, such as viewing, printing, copying and finding a file; copying, formatting or checking an entire diskette; backing up and restoring a hard drive; and renaming, removing and creating directories. One nice thing about DM is that if you've selected an option that requires additional information, all you need to do is type it in and DM takes care of the syntax. For example, the COPY command requests the source directory of the file(s) to copy and the destination disk and directory. Finally, DM presents you with a directory of all the files in the source directory. You can then highlight each file to copy by moving the cursor to it with the arrow keys and pressing the spacebar to mark it; all marked files will be copied. This ability to operate on several files at once can be a big time-saver.

If you need direct access to MS-DOS, there is an option in DM that lets you enter a command in CLI form. This is handy, especially since DM doesn't support some of the more esoteric DOS commands.

Almost As Easy As... GEM!

DM also includes an Applications menu that lets you run your favorite applications with near-mouse ease. You can customize the names of the items on the Applications menu and add or delete menu items. For example, DM comes configured with three items: Word Processor, Spreadsheet and File Manager. However, you can add other items or change Word Processor to the

name of your favorite word processor. You can also specify (via dialog boxes) which program to run (and which directory to run it from) when you click on an item in the Applications menu.

Miscellaneous Observations

- DM comes with an onscreen tutorial. You must copy some of the DOS command files to your DM disk, since it calls the DOS commands from disk. By watching the name of the command called and the syntax as it appears on the screen, you can also learn about MS-DOS.

- If you install DM on your hard drive, you won't be able to format a disk and put the system files on it (making it bootable) unless DOS was booted from the floppy drive. This is no big deal—just boot DM from a floppy if you need to format system disks. Also, the manual is on disk and must be printed by the user—a bit of an inconvenience, but the price you pay for high-value, low-cost software.

It's Worth It

All in all, DOS shells make the occasional venture into MS-DOS almost palatable for the uninitiated GEM user. Spinnaker's little \$9.95 wonder is worth every penny—and more. ■

Contributing Editor David Plotkin is a chemical engineer at Chevron USA and has published several articles in Antic and START.

PRODUCTS MENTIONED

pc-ditto, \$89.95. Avant Garde Systems, 381 San Pablo Drive, Jacksonville, FL 32225, (904) 221-2904.

Easy Working DOS Manager, \$9.95. Spinnaker Software, One Kendall Square, Cambridge, MA 02139, (617) 494-1200.

Strike Up The Band

Digigram's Big Band

by Mihai Manoliu

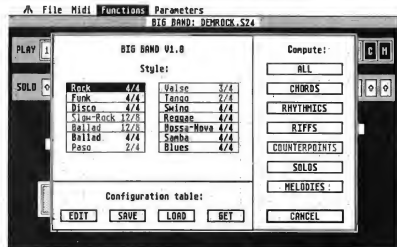
The concept is great: a program that takes a chord progression or melody and creates an arrangement in any one of a variety of musical styles. Big Band is a valiant attempt at such a program, but which ultimately falls short of the mark. It can still be a lot of fun, however.

Big Band is from the French company Digigram and is distributed in the United States by Imagine Music Group. It uses a hardware cartridge key (dongle) for copy protection. This is fine if you don't use the cartridge slot for different programs; otherwise, you may become irritated at having to insert the thing every time you use the program. Both color and monochrome monitors are supported, and most 520ST owners should have plenty of memory left over for their compositions.

A Wealth of Options

Big Band calculates complete band arrangements from a single chord or melody track created with an external sequencer, provided that it supports the MIDI standard file format, Level 0. Big Band can also generate progressions and melodies on its own.

Each type of calculation—CHORDS, MELODIES or SOLO—has its own set of options. CHORDS calculates up to three



In Big Band, you choose the style and components of your arrangement, although not every feature is available in every style. If you like Big Band's arrangement—or parts of it—you can save individual tracks and have Big Band make a new arrangement.

versions with an accompaniment pattern for each; you can choose between Major/Minor modality or let the software decide. MELODIES generates up to 10 versions with a range specified by you or the program (only Rock and Ballad melodies are available). SOLO also generates up to 10 versions with specification of range, starting bar and number of measures; similar choices apply to counterpoints, riffs and rhythmic.

You can choose an arrangement from one of 14 different musical styles: Rock, Ballad (4/4, 12/8), Blues, Swing, Reggae, Bossa-Nova, Samba, Slow-Rock, Funk, Disco, Waltz, Tango and the Paso. Depending on which style you choose, Big Band can produce chords, melodies,

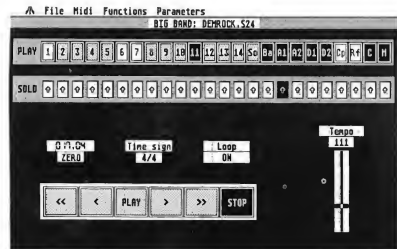
rhythmic (accompaniment, drums and bass), solos, riffs (melodic phrases) and counterpoint. Not all music generation options are available for each style. Rock and Ballad styles support most options, but other styles allow you only a few options (typically chords, rhythmic and riffs).

Each musical style has its own configuration of channels, controller and volume assigned to each instrument: bass, melody, solo, accompaniment 1 and 2, riff, counterpoint, chords and drums 1 and 2. You can define the drum kit (D1) and percussion set (D2) to work with your specific setup. Reproduction parameters allow you to set velocity, program number, pitch bend and controller ▶

values for each track. You have real-time control over tempo, program number, MIDI channels, and track velocity. A loop function is used for continuous play.

Press the Button, Mr. Dorsey

Once you give Big Band the starting music material (or start it from scratch), all you have to do is select either CHORDS or ALL (an arrangement including drums, bass, riffs, and accompaniment) and Big Band creates the arrangement. When Big Band has finished, you must then decide which parts of the arrangement to keep and copy them to the specific tracks reserved for those parts you want to preserve. If you forget to copy them and try another variation, they will be written over in the next calculation cycle without any warning.



After you have copied any useful parts from an arrangement, you can then generate another set of calculations—such as solos, alternate melodies, chords in a different style, or more rhythmic using another style. Big Band has 24 tracks; of these, 13 are used for new calculations and the others are for storing the parts you elect to keep.

Some limited track-editing options are provided. You can change, delete and insert chords; copy, transpose and chain blocks of bars, or chain tracks together. Individual tracks cannot be edited in the program but can be exported to a se-

quencer program that has such editing capabilities.

Sour Notes

Unfortunately, Big Band has a number of shortcomings. The biggest problem is a bug in the chord edit mode. Playing your keyboard in this mode (for example, to hear an alternate chord) crashes the ST, and your composition along with it.

The manual is often confusing, but at least gives some insight into the rather clumsy program interface. It seems that almost everything takes extra steps that could have been avoided by using a more flexible and advanced programming approach. For example, you have to copy tracks or blocks one at a time instead of as a group. The track copy command doesn't copy the MIDI channel, so you of-

Big Band from Digi-gram is an interesting program that creates an entire orchestral arrangement from a scrap of melody of a few chords. Its controls appear quite simple, but there is a great deal of power (and complexity) hidden here.

ten end up having to change the channels as well. It is rather frustrating to work at the level of detail that Big Band forces on the user. These problems are compounded by the cost of the program (\$299). That's as much as a good, professional-level sequencer costs, but Big Band is not nearly as useful or well-designed.

There are other annoyances, but if you are willing to navigate your way around them you can have a lot of fun with Big Band. With minimal effort you can generate a complete orchestration of a melodic or harmonic idea, then jam with

the program or explore a mix of different styles and progressions.

Not For the Novice

You will need a lot of equipment to get the most out of Big Band: one or more MIDI keyboards (preferably multi-timbral), a drum machine and a sequencer program that supports MIDI Files. The instruments should be of good quality or you may wind up sounding like a simple play-along organ. This is a serious obstacle to mass market appeal of the program. Novice musicians are unlikely to have the equipment and knowledge necessary to use the program easily. On the other hand, serious musicians would most likely want a lot more from the program. Since many of the musical stylistic interpretations are quite simple and the rhythms invariant (except drum fills), this is probably not the approach to arranging your next big hit.

Given the high price of Big Band and its many limitations, I cannot recommend buying it at this time. I think it would be more likely to succeed if a few more editing and recording features were added and the price reduced into the hundred-dollar range. According to the Imagine Music Group, this may happen in the future as more advanced levels of Big Band become available. This program has great potential, especially for the budding musician. I hope we will not have to wait long for it to become affordable. ■

Mihai Manoliu is a music producer/teacher and computer programmer living in the Los Angeles area.

PRODUCTS MENTIONED

Big Band Orchestral Composer, \$299. Imagine Music Group, 751 South Kellogg Avenue, Santa Barbara, CA 93117, (800) 662-6463.

Choosing a Graphics Program

by Lajos V. Kreinheld

What do you do if you're new to the ST computing world and want to try your hand at becoming an electronic Michaelangelo? What drawing program should you buy? Maybe you already know how to paint pretty pictures on your screen—but now you want to see them move. What animation program can turn you from Norman Rockwell to Walt Disney? And what if you want to render a 3D fighter plane, with realistic highlighting and shadows?

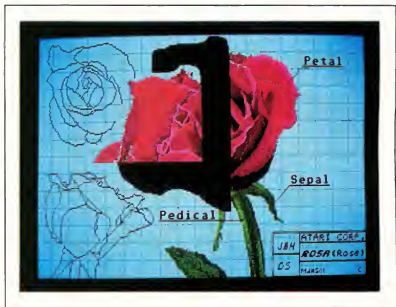
Good questions. Here are some answers.

Color or Monochrome?

Before you choose your ST graphics program(s), you need to determine what you want to accomplish *on the system you have*. If you want to doodle or create fine art, you'll probably want a color monitor (as most U.S. ST owners have). You then have a choice of painting in medium resolution (320-by-400 pixels) in four colors, or low res (320-by-200 pixels) in 16 colors. (Note: there are a handful of programs that break this color barrier, which I'll discuss later.)

However, if you want to draw snazzy graphics for, say, desktop publishing, you'll probably need a monochrome

Figure 1: NEOchrome's Jock Knife function lets you cut out portions of your picture and place them in front of or behind other images on your screen.



monitor. Most ST DTP programs work only in monochrome high resolution (640-by-400 pixels—higher than an off-the-shelf Macintosh Plus or Mac SE). If you have *both* color and monochrome monitors, then you're all set and you can always convert low-res pictures to high-res for your newsletter or brochure.

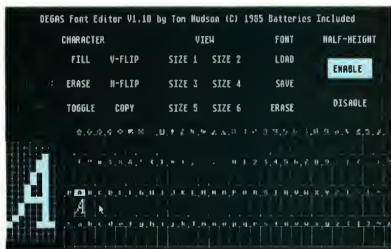
Drawing and Painting Programs

The terms "drawing" and "painting" program are used pretty much interchangeably in the personal computer industry, but for the purposes of this article, let's refine and define these terms.

A drawing program is one used primarily for line drawing—plans for, say, houses or engineering components, or line art for desktop publishing. Drawing programs typically are "line-oriented," and have great facilities for creating and scaling lines and geometric shapes. They may also have specialized line features such as rounded or angled box corners, or unusual fill patterns, such as shake panels (for ranch house roofs).

A good example of a drawing program is Easy-Draw, from Migraph. It features all of the features listed above, plus ▶

Figure 2:
With DEGAS Elite's
font designer, you
can create your
own custom
typefaces.



several others designed to strengthen its position as a "page layout" program—sort of a junior desktop publisher. Easy-Draw also includes powerful text features with The Supercharger, a "souped-up" extension of Easy-Draw. (Editor's Note: MiGraph has recently extended Easy-Draw's capabilities still further with Easy Tools and Touch-Up; watch for reviews of these packages in an upcoming issue.)

Paint programs are more suited to fine art, and are almost exclusively color. Paint programs usually let you create color art with a wide variety of user-definable tools, such as brushes, stipple and airbrush, colored fill patterns and the like.

The ST has several excellent paint programs. Tying for the position of ST "graphics grandfather" are Atari's NEOchrome and Electronic Arts' DEGAS Elite (formerly DEGAS, and formerly published by now-defunct Batteries Included). In their original forms, both programs were released within a few months after the ST went on sale in 1985. Both these programs and others, such as Paintworks, Paintpro and the OCP Art Studio feature a vast array of tools for creating fine art. (Editor's Note: If your copy of this issue of START came with a disk, then you already own what we feel is one of the best 16-color paint programs around: SEURAT.)

One unique feature of NEOchrome is its "Jack Knife" function—you can cut out an irregularly-shaped portion of an

image and reposition it either behind or in front of other images on your screen, as shown in Figure 1.

DEGAS Elite's greatest strengths lie in its powerful Block functions. You can grab a portion of your image, stretch it, compress it and repaste it anywhere on your screen. DEGAS Elite also comes with a font designer (see Figure 2), letting you design your own custom typefaces—or even alphabets in other languages, such as Hebrew or Greek.

"Supercolor" Paint Programs

Although the ST normally has only 16 colors available in its low-res mode, several paint programs have broken this barrier by fancy manipulation of the ST's video hardware. These programs let you paint pictures with the ST's complete palette of 512 colors, resulting in images of much greater apparent resolution.

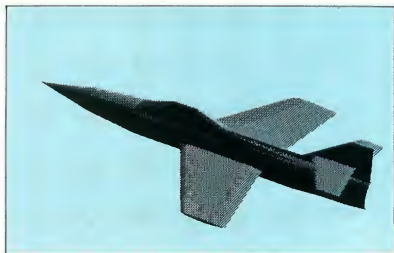
The best of these programs is Spectrum 512, which has paint features equivalent to the ST's standard 16-color paint programs. Its powerful block functions and block buffer (limited only by your available RAM) make it the supercolor program of choice, although it does have some drawbacks—its keyboard-intensive user interface is difficult to master and it has no text features. (Editor's Note: See Marcus Badgley's review of *Unispec*, a Spectrum 512 upgrade, in this issue.)

Two other supercolor paint programs for the ST are GFA Artist (reviewed in the Spring 1988 issue of START) and Quantum Paint 1.2 (reviewed in Special Issue #4). In addition to its paint features, GFA Artist has the added attraction of simple animation capabilities. However, both these programs let you use the added colors only on groups of scan lines, unlike Spectrum 512, which lets you draw freely anywhere on the screen with any color available.

CAD Programs

Computer-aided Design (or CAD) programs can fall into both drawing and painting categories. CAD programs can be two-dimensional (for engineering drawings, architectural blueprints) or three-dimensional (for realistically lit and shaded computer-created objects). Ideally, you should be able to load a 2D CAD program's output into a desktop publishing program and the output of a

Figure 3:
Cyber Sculpt lets
you build extremely
complex CAD-3D
objects with com-
pound curves.



3D CAD program into a painting and/or animation program.

Thanks to its crystal-clear monochrome display, the ST is well-suited for the exacting demands of 2D CAD. For tips on which program to select for your needs, check the overview of the latest CAD programs elsewhere in this issue.

For three-dimensional CAD, there's no better program than Tom Hudson's CAD-3D 2.0 (part of the Cyber Studio). CAD-3D lets you construct complex, realistically lit and shaded objects through its powerful Extrude and Spin functions, then animate them with Cyber Control (a BASIC-like programming language). To create objects with complex curves, such as a ship's hull, you would use Cyber Sculpt, shown in Figure 3.

Animation Programs

Animation programs let you create your own computerized movies. Typically, an animation program includes paint features (some rudimentary; others quite sophisticated) enabling you to draw color images. You can then use the program's animation features to cut and paste portions of your images in different positions across a range of frames, and play them back and forth at variable speeds.

Some animation programs create



Figure 4: A sprite editor, such as the ST Sprite Factory, can help you create small, animated graphics to incorporate into your game programs.

only 2D images (like a flat cartoon). A very powerful and complete package for 2D animation with sound is Epyx's Art & Film Director. Other programs, such as Aegis Development's Animator ST, are 2½D, performing 3D movements on flat images. Aegis Animator ST also does *metamorphic tweening*: you can create a rectangle, push and pull its corners and sides into a new shape, then watch as the program makes the old object "mutate" into its new state.

Cyber Paint has both 2D and 2½D features, and also serves as a "post production" studio for Cyber Studio CAD-3D animations. You can load zooming CAD-3D spaceships into Cyber Paint,

then just draw in engine exhaust or laser beams frame by frame. Cyber Paint also is a very powerful painting program in its own right.

Sprite Editors

If you're a computer games designer, you may need a *sprite editor*. A sprite editor lets you create small animated graphics, such as walking alien creatures, which you may later incorporate into your programs. Usually, you draw your character's individual movements pixel-by-pixel on a grid (see Figure 4) and then animate them. It's a painstaking process, akin to simplistic cartoon animation, since you have to draw your character in a variety of gradually changing positions in order to achieve smooth animation.

Miscellaneous Graphics Programs

For additional graphics manipulation, there are several fascinating add-on programs that you can use in conjunction with the graphics programs mentioned above. One is Tom Hudson's Anti-aliaser, a desk accessory for DEGAS Elite and CAD-3D. The Anti-aliaser can help you remove the "jaggies" from your artwork, although you have to be careful with what colors you're using in your low-res palette. The Anti-aliaser can also be called from Cyber Control and used ▶



Figure 5: START's Pixel-Pro program lets you take DEGAS or NEOchrome low-res pictures and perform unusual pixel manipulations on them.

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Getting Started

to automatically clean up the rough edges on your CAD-3D animations.

Another interesting program is Pixel-Pro, published in the Summer 1987 issue of START. Pixel-Pro takes DEGAS or NEOchrome low-res pictures and performs unusual pixel manipulations on them, as shown in Figure 5. When you load individual frames of a Cyber Paint animated sequence into Pixel-Pro, alter them, then load them back into Cyber Paint, you can create quite striking effects. (Editor's note: In a future installment of "The Cyber Corner," we'll show you how to use Pixel-Pro with Cyber Paint.)

Conclusion

Atari has always been known for its flashy graphics, since the long-ago release of the Atari 800 computer and "Star Raiders." And Atari has other ground-breaking graphics boxes on the horizon—the long-anticipated ST Plus with higher resolution and more colors, and the transporter-based Atari Work Station, which boasts up to 1280-by-

960 pixel resolution and millions of colors.

As a graphics-hungry computer user, I hope these next-generation machines are blessed with the same high-quality software that the ST has had since its release. ■

Lajos V. Kreinheld, ostensibly Professor of Astronomy at the College of Minerals and Mine Engineering, Joplin, Missouri, is actually the favorite pseudonym of former START Associate Editor Jon A. Bell. Bell is now the Managing Editor of Oracle Magazine.

PRODUCTS MENTIONED

The Advanced OCP Art Studio, \$44.95. Rainbird Software, distributed by Firebird Licensees, Inc., P.O. Box 49, Ramsey, N.J., 07446, (201) 444-5700.

Aegis Animator ST, \$79.95. Aegis Development, 2115 Pica Blvd., Santa Monica, CA 90405, (213) 392-9972.

Art & Film Director, \$79.95. Epyx, P.O. Box 8020, 600 Galveston Drive, Redwood City, CA 94063, (415) 366-0606.

Cyber Paint, \$79.95, **Cyber Sculpt**, \$89.95, **Cyber Studio**, \$89.95, **Spectrum 512**, \$69.95. Antic Software, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.

DEGAS Elite, \$59.95. Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171.

GFA Artist, \$79.95. Michtran, Inc., 576 S. Telegraph, Pantiac, MI, 48053, (313) 334-5700.

NEOchrome, \$29.95. Atari Corp., P.O. Box 61657, 1196 Barreagas Ave., Sunnyvale, CA 94088, (408) 745-2000.

Paint Pro, \$49.95. Abacus Software, P.O. Box 7219, Grand Rapids, MI 49510, (616) 241-5510.

Paintworks, \$69.95. Activision, Inc., a division of Mediagenic, P.O. Box 7287, Mountain View, CA 94039.

Quantum Paint 1.2, \$44.95. Eidersaft, Inc., P.O. Box 288, Burgettstown, PA 15021, (412) 947-3739, (800) 992-9198.

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Ango Animator	43.95	Digital III	174.95	GFA Artist	49.95	LogSoft Jr.	57.95	PD Circle 3.0	64.95	Ultrastar Pro	179.95
Assemblers	31.95	Dr. Alan S.O.	14.95	GFA Artist 2.0	49.95	Mail-Cache	49.95	Personal Draw Art 1	19.95	Ultrastar RT	49.95
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Auto Animator	63.95	Drumbeat XI	24.95	GFA Book 9.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XII	24.95	GFA Book 10.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
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Auto Animator	63.95	Drumbeat XVIII	24.95	GFA Book 16.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XIX	24.95	GFA Book 17.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XX	24.95	GFA Book 18.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXI	24.95	GFA Book 19.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXII	24.95	GFA Book 20.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXIII	24.95	GFA Book 21.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXIV	24.95	GFA Book 22.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXV	24.95	GFA Book 23.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXVI	24.95	GFA Book 24.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXVII	24.95	GFA Book 25.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXVIII	24.95	GFA Book 26.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXIX	24.95	GFA Book 27.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXX	24.95	GFA Book 28.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXI	24.95	GFA Book 29.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXII	24.95	GFA Book 30.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXIII	24.95	GFA Book 31.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXIV	24.95	GFA Book 32.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXV	24.95	GFA Book 33.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXVI	24.95	GFA Book 34.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXVII	24.95	GFA Book 35.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXVIII	24.95	GFA Book 36.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XXXIX	24.95	GFA Book 37.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XL	24.95	GFA Book 38.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLI	24.95	GFA Book 39.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLII	24.95	GFA Book 40.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLIII	24.95	GFA Book 41.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
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Auto Animator	63.95	Drumbeat XLVI	24.95	GFA Book 44.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLVII	24.95	GFA Book 45.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLVIII	24.95	GFA Book 46.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat XLIX	24.95	GFA Book 47.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat L	24.95	GFA Book 48.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LI	24.95	GFA Book 49.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LII	24.95	GFA Book 50.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LIII	24.95	GFA Book 51.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LIV	24.95	GFA Book 52.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LV	24.95	GFA Book 53.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LVI	24.95	GFA Book 54.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LVII	24.95	GFA Book 55.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LVIII	24.95	GFA Book 56.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LIX	24.95	GFA Book 57.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LX	24.95	GFA Book 58.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXI	24.95	GFA Book 59.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXII	24.95	GFA Book 60.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXIII	24.95	GFA Book 61.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXIV	24.95	GFA Book 62.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXV	24.95	GFA Book 63.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXVI	24.95	GFA Book 64.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXVII	24.95	GFA Book 65.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXVIII	24.95	GFA Book 66.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXIX	24.95	GFA Book 67.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXX	24.95	GFA Book 68.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXI	24.95	GFA Book 69.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXII	24.95	GFA Book 70.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXIII	24.95	GFA Book 71.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXIV	24.95	GFA Book 72.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXV	24.95	GFA Book 73.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXVI	24.95	GFA Book 74.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXVII	24.95	GFA Book 75.0	34.95	Master Plan	58.95	RT Sound Drivings	64.95	Ultrastar RT	49.95
Auto Animator	63.95	Drumbeat LXXVIII	24.95	GFA Book 76.0	34.95	Master Plan	58.95	RT			

CAD Goes Pro

The Electronic T-Square Revisited

by Dave Edwards

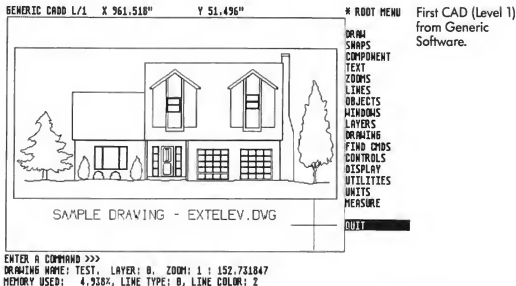
A year ago, I presented an overview of what were then the state-of-the-art CAD (Computer-Aided Design) programs for the ST. Things are different today.

CADD (Computer-Aided Design and Drafting) is a means of computerizing the manual process of drafting. A word processor lets you manipulate words on a page and a CADD program lets you do much the same thing with lines, circles and other objects. The programs reviewed, from least complex to most, are First CAD (Level 1) from Generic Software, GFA Draft Plus from Michtron, MasterCAD from Michtron and Dyna-CADD from ISD Marketing.

First CAD

Generic has released a new version of First CAD for the Atari—which contains many of the features found in the IBM version (and in many ways is a direct port). It's a very complete package and has more than its share of commands for a program in this price range.

First CAD (Level 1) completely abandons GEM. Even the file selection options are the same as the IBM version. The commands are found in a series of menus that run along the right side of the screen. As you move the cursor with the mouse you are also moving a selector bar



up and down this menu. You can choose commands by clicking the right mouse button or enter them with a two key sequence. Often, once you've chosen a command another menu appears with more choices. Screen locations are chosen via the left mouse button.

I have a real fondness for Generic CAD, but the Atari version's total lack of the GEM interface seems like a cheap way to do a direct port to the Atari, especially considering Generic's new Level 1 for the Mac, which uses the standard Mac interface. I guess they assumed that Mac users would reject any IBM port and that Atari users should just be happy that they are being supported at all. That may sound harsh, but seeing the beautiful job

they did on the Mac makes me a little sick when I think about the ST version.

But still, Level 1 is the best Atari CAD program in its price range—period. I can only hope that we will see Levels 2 and 3 brought to the Atari.

GFA Draft Plus

The next program is a well-done, enhanced version of GFA Draft. Its new features make it much more "professional," but I still have my doubts about using this program for critical work.

As with the original Draft, GFA Draft Plus runs completely under GEM. Kudos for that! However, since CAD products usually have so many commands that there's not enough room for pull-down ▶

PRODUCT NAME	GENERAL INFORMATION																						
	Version Number	2D/3D	Number of Layers	Absolute coordinates	Relative coordinates	Polar coordinates	Snaps to grid	Snaps to object	Point	Lock to vertical/horizontal	Perpendicular	Parallel	Tangent	At angle	Specified length	Rectangle	Z point	J point	By Radius	By Diameter	J point	By Circumference	Arc
DynaCADD	1.38	Both	256	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
GFA Draft Plus	1.00	2	10	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MasterCAD	1.00	Both	1				•								•						•		
GenericCAD Level 1	1.1	2	256	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

menus, Draft Plus combines all of the commands into one set of menus. The earlier version had two sets and required you to go back and forth between them. This was a nuisance, because I could never remember which set had the command I needed. I'm glad they've done away with the hassle.

The program's set of commands is good, but not great. It was nice to see options for placing points by relative, absolute and polar modes. The biggest problem with the program is that, like most European programs, Draft Plus lets you input data in feet or inches, but not in feet and inches. In order to sell to the American market, it must have this feature—70 percent of all CAD users are in the architectural and mechanical fields and they will not want to use a program

that forces them to change the way they're always done things.

The GEM interface makes it easy to get around in the program, but moving around the drawing can be a little strange. Not only does Draft Plus use standard "window" commands but you can also use the GEM slider bars which are hard to use and often produce unexpected results. I recommend using the standard view commands.

Another point is in the area of output. I feel that in order to be called "professional," the program should let you use multiple pens on plotters, with each element having its own pen number assigned to it. GFA Draft Plus does not.

The manual that comes with the program is poor at best. There are very few illustrations and no examples of using the

individual commands. This is unforgivable for a graphically oriented program. Draft Plus also lacks too many important features to be used professionally and considering its price, GEM or not, I think I would look elsewhere.

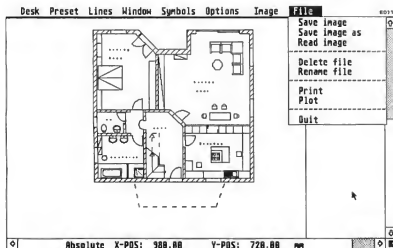
MasterCAD

MasterCAD is a 3D design program with a unique approach to creating objects. The program is rather hard to use because its technique is so different. It does have many 2D features and you can do some drawing of that type, but that's not its primary purpose.

MasterCAD lets you choose a view to look into its "universe." You then can define two imaginary planes that mark the top and bottom of your object. Now, when you draw a 2D object, the edges will be extruded to these planes. It takes some getting used to, but you can create some pretty impressive shapes in a short time. The program also has commands for doing "spins" or "sweeps" of 2D outlines to create 3D shapes.

Once you've created your 3D shapes, you can shade the image and have the "hidden lines" removed. Your file can also be plotted or printed. The manual does a good job of explaining the 3D concepts and the tutorial section is easy to follow.

But one basic question remains: What



GFA Draft Plus from Michtron.

														OBJECT MANIPULATIONS											
														Selection Options				Copy		Change					
2 point semi-circle	4 point	Splines/Bezier	Polygon	Ellipse	Elliptical Arc	Text rotation	Text align	Justification	Text text	Symbols (Components)	X/Y scaling	Rotation	On function keys	Individual	By Window	By Object Properties	Object Chaining	Object trim	Object Divide	Mirror	Gradient	Mirror	Radius	Object Endpoint Location	Object Properties
•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•			•	•	•							•	•	•											•
			•										•	•						•	•				
	•	•	•	•		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

is this program good for? Besides its function as a 3D design tool, I could find very few reasons to use this program. MasterCAD does not integrate with any other 2D program, thus once you've created a design, you have no way to generate a set of working drawings to build it. There is also no way to use the files in other programs such as CAD-3D (from Antic Software), or use the designs as part of an animation. If these interfaces existed, this would be a great package for 3D design, but as a stand-alone program you have to wonder what purpose it could serve.

DynaCADD

Now we get to the part that you've been waiting for: DynaCADD from ISD is a very impressive CADD program on the Atari—or any other microcomputer, for that matter. It contains one of the most impressive user interfaces available and has many of the commands you usually only see in \$3,000 IBM CADD programs. Watch out for this one!

At \$695 it is one of the most expensive programs available for the Atari, but in my opinion, for a program of this nature, it is worth every penny. The man-hours of work have to be offset and the program's features certainly justify the price.

As I mentioned in the preview (published in the December 1988 issue of

START), DynaCADD uses a cartridge-based hardware key that I wish ISD would lose. If I never had to plug anything else into the port, I wouldn't mind so much, but every now and then I just have to whip out the old 3D glasses, RAMdisk carts, desk accessory carts, etc. If ISD feels that it must have copy protection, they really should use some other device for it.

The program is very large and should be run on at least a 1040ST with a hard disk (and having two megs of memory wouldn't hurt either). Once you've completed the easy installation process, you'll see the opening screen, at which time you'll be asked to select your drawing sheet size and scale. All of the most popular European and American sizes are included.

Again, the user interface is one of the most impressive around. The whole thing is icon-based, which is pretty impressive for a CADD program considering the number of commands required. The program uses a menu icon system, meaning that activating one set of icons will activate a second set below it. With many programs it is difficult to remember what an icon does, but DynaCADD features an icon prompt line so that whenever you move the cursor over an icon, a text line will appear in the upper right-hand corner of the screen explaining what the

icon does. Once you're familiar with the program these prompts can be turned off to speed things up. There's also a built-in onscreen calculator that comes up whenever a numeric input is required.

It's very easy to start drawing with DynaCADD because it's so easy to find the commands you need. In reviewing a program, I first like to try to run it without ever opening the manual and with DynaCADD it was very easy to do. The program also runs under GEM and uses pull-down menus—not for command selection, but for file manipulation and the many different switch settings. I believe that pull-down menus are too slow for a CADD program so I'm glad to see them limited to these functions.

DynaCADD has more commands than many programs costing four times as much. Some that I found most impressive were for splines and Bezier curves; there's a complete set of commands to add and delete these curves' control points, so editing existing curves couldn't be easier. Another advanced feature is the ability to select an object for more manipulation by property (pen number, layer, style) and also by object chaining. I'd never seen such a feature before—it lets you choose a series of connected objects. Such manipulations are very important when dealing with complicated drawings and can be a great time-saver.

PRODUCT NAME	Dimensioning										View Control						OUTPUT					
	Object Scale	Object Slant	File	Dimensioning	Arrowtypes	Isometric Select	Roll	Dynamic	Chain	Baseline	Isolines	Zoom Out	Zoom In	Zoom All	Zoom Window	Window Pan	Center Window	Pan Bar	Dynamic Scale	Set plot extents	Multiple Plots	Dot Matrix Printer
DynaCADD	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
GFA Draft Plus	•	•	•																			•
MasterCAD				•							•	•	•	•	•	•	•	•	•			
GenericCAD Level 1	•	•	•	•		•	•				•	•	•	•	•	•	•	•	•	•	•	•

The program also has a macro language that lets you record keystrokes so that they can be played back later. The program has so many commands that I could spend hours talking about them, but the only way you can really get a grasp of its complete power is to use it.

For most of the program's options, such as dimensioning and printing, a set of pop-up menus is used. It's easy to make your choices for items such as dimensioning arrowheads or text units this way. Also, once these parameters are set they can be stored in a file and used in any subsequent drawing. It's really nice not to have to reset these all the time.

Briefly, on the downside: the program is written for a Canadian and European market and, like GFA Draft, it doesn't allow input in feet and inches. Also, the

manual is not the best in the world, but I am told that it's being rewritten.

You can go straight into 3D from the main menu. DynaCADD has some very standard, easy-to-use 3D commands. The viewing method is also unique in that it lets you choose a 3D view and save it that way. This can really come in handy when you're trying to find just the right angle. Currently, shading and hidden line removal are not offered, but you can project a 3D image onto a 2D file and do the clean-up there.

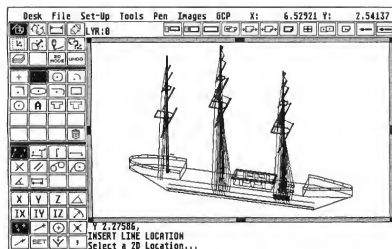
A huge plus for this program is the ability to read and write DXF files. (The DXF format is used by nearly every IBM CAD system.) This is a must for CADD packages, enabling files to be exchanged between systems. Often an architect will work with a consultant engineering firm

and it's great to be able to send and receive work that's already in CAD form.

I experimented quite a bit with the DXF translator and found that it worked very well. I took files from AutoCAD and loaded them into DynaCADD with no problem. Also, I was able to load DynaCADD files into VersaCAD and Drafix CAD Ultra on my PC clone. DynaCADD is also supporting the new large-screen Moniterm monitor, and the interface also lets you use a math co-processor.

One of the major drawbacks to Atari CADD is the ST itself. CADD needs as much processing power as possible and with a only an 8-mHz processor and no math co-processor commonly available, Atari CADD pales in comparison to what is available on the IBM PC. If Atari CADD is to be a viable platform, this kind of update is a must. ISD is also offering a separate math co-processor and a special version of the program that uses it.

I could go on and on about features, but I'm just as excited about the enhancements proposed for version 2.0. First, DynaCADD will be ported to the Macintosh and IBM PC. Now before everyone begins booing, this is a necessary decision for the programmers. ISD has a great product and should receive a wider audience. Having the added support of other user bases will only help Atari users by giving the company more capital and



DynaCADD from ISD Marketing.

		FILE OPERATIONS				UTILITIES		3-D		MISCELLANEOUS											
Print Orientation	Screen Dumping	Layer Printing	Save as other name	Save As Initially	Save Draw as Drawing	Save as ASCII	Read Write DXF files (1)	Font Editor	Hidden Line removal	Shading	Spring 3D types	View Clipping	Z axis projection	Object Sweeps	Project to 2D	Advanced object rotation (2)	Save screens to Digits	Help Screens	Pop-up Calculator	Menus	Programming Language
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•		•					•														•
	•																				
	•	•	•	•	•			•	•	•	•	•	•	•	•	•	•	•	•	•	•

Note on the Chart

Charts of this nature can be difficult because two products may have the same feature, but that feature has an entirely different name in each product. The problem isn't so much knowing whether a program has a feature as knowing that it doesn't.

An open circle (O) denotes a proposed feature.

- (1) DXF files are industry standard drawing exchange files supported by most IBM PC CAD programs.
 (2) The majority of MasterCAD features fall in this category. Most are much too difficult to explain in a chart of this type.

more input for other enhancements.

The programmers of DynaCADD were very interested in what I had to say about the product and appear to be willing to make changes. Version 2.0 will have 3D shading and hidden line removal, but that's not the best part. ISD will soon release a developer's kit that will allow for third party development of custom applications. This is the lifeblood of CADD packages. I am told that DynaCADD will feature a program language that can be compiled (Yeah!) and will let you create your own icons and icon menus.

Not only that, the program will let developers access the DynaCADD native code. In other words, they will have the same power of development as DynaCADD's own programmers. This is a first among micro CADD products and holds some very exciting possibilities. It was also brought to my attention that whenever a new math function was needed, all the developers would have to do is request it from ISD and it would be added in the next release.

DynaCADD is one of the few CADD products I would call great and I know we will be seeing much more of it in the future. Should you wait for version 2.0? If you need DynaCADD's power now, buy it—now ISD has been more than liberal in its upgrade policies and there's no reason to believe this won't continue.

Drafix

I wanted to mention the latest upgrade from Foresight Resources. The Dot Plotter program is now bundled with Drafix. There's also a translation program that lets you exchange Atari Drafix files with users of Drafix on the IBM PC. Drafix is still the best mid-range CADD product available for the Atari and I hope that these improvements will continue.

IBM CADD Using pc-ditto

I'm often asked if such-and-such IBM PC product will run on the Atari using pc-ditto. The answer is "no" or "crawlingly." Most programs such as AutoCAD or VersaCAD now require a math co-processor, which pc-ditto does not emulate. I did, however, get the newest version of Drafix for the IBM PC (CAD Ultra) to run with pc-ditto, but it's excruciatingly slow; even bringing up a new command menu can

take 10 seconds. Other than that, although the program does work in every way, I think it's close to unusable.

Recommendations

I really like First CAD and Drafix on the low end and DynaCADD on the high end. I am very interested in Atari releasing a faster computer which would give users an alternative to IBM PC CADD, but even so we still have some great choices.

Dave Edwards runs a CAD consulting service and has written several CAD-related articles. When he is not writing about CAD, you will find him doing VersaCAD training. He is also a MIDI consultant, professional drummer and managing editor of "The MIDI Insider, The MIDI Power User's Newsource."

PRODUCTS MENTIONED

DynaCADD, \$695. ISD Marketing 2651 John Street, Unit 3, Markham Industrial Park, Markham, Ontario, Canada L3R 6G4, (416) 479-1880.

First CAD (Level 1), \$49.95. Generic Software Inc., 11911 North Creek Parkway South, Bothell, WA 98011, (206) 487-2934.

Drafix 1, \$195. Foresight Resources Corp., 10725 Ambassador Drive, Kansas City, MO 64153, (816) 891-1040.

GFA Draft Plus, \$159.95; **MasterCAD**, \$199.95. Michtron, 576 S. Telegraph, Pontiac, MI 48053, (313) 334-5700.

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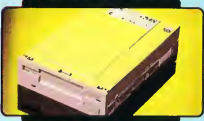
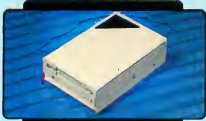


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Clipboard

Compiled by Heidi Brumbaugh

Behind Closed Doors

The Wombats II universe, from START's December 1988 issue, is huge, but you might not ever discover that if you don't get past the many doors in the game. Most of these are locked, but you may be able to pick them. Try examining the locks to see if anything you are carrying is about the right shape.

The Multi-Res DESKTOP.INF

A reader wrote wondering if there was a way he could set a low resolution color palette and save it in DESKTOP.INF, even though he saved his Desktop in medium resolution. That way, when he switched resolutions, he wouldn't have to use the system colors.

Fortunately, DESKTOP.INF saves all the current settings, whether or not they show up in that resolution. Set your computer to low resolution and set the palette the way you want it using the Control Panel. Save the Desktop and switch to medium resolution. Set up your icons and windows the way you want them to appear at boot time and save the Desktop again. Now when you switch to low resolution *your* colors, not the system's, will be retained.

Setting up a Desktop so that it works well in two (or all three) resolutions can be a problem. You may have already noticed that if your medium resolution windows open on the far right side of the screen, they will be inaccessible when you switch to low res.

Icons, on the other hand, will always move so that they are visible on the current screen. I like to set my hard drive icons on the far right hand side of a

high resolution screen and then save the Desktop so that when I switch resolutions the icons will still be on the right hand side.

A Desktop saved in high resolution will boot in low resolution on a color monitor. To change this you can edit the DESKTOP.INF file directly. The last number in the line that begins #E determines the starting resolution; 1 for low and 2 for medium.

After all this work, be sure to save a backup copy of your DESKTOP.INF file; unless you have a Mega it's easy to accidentally overwrite it.

Working Together

In the best of all possible worlds you could set up your ST with several Terminate and Stay Resident programs (TSRs) in your AUTO folder and the six maximum desk accessories and lead a happy, productive existence. Unfortunately, where computers are concerned programs will not always coexist peacefully. If you come across a bug or weird crash in one of your applications, be it a commercial program, a public domain gem or the neat little hack you just wrote (which was working fine before), always suspect your TSRs and desk accessories of being at the root of the problem. Disable them by changing program extensions to PR_ and accessory extensions to AC_. Reboot and see if the problem crops up again. If the bug's still there, you haven't hurt anything by trying; if the problem's fixed, reactivate the programs on your boot disk one by one to see which one seemed to be causing the problem.

Troubleshooting this type of problem doesn't take long and, though TSRs certainly won't always be the culprit, you can save hours of tearing your hair out by checking them first. START's Editor recently had a lot of fun tracking this incompatibility down: Turbo ST from SolTrek will cause Timework's Desktop Publisher ST to eject blank pages rather than print files.

If you do isolate an incompatibility, be sure to notify both the manufacturer of the program that's having trouble and of the TSR or desk accessory so they can work to correct the problem.

WordPerfect Macroization

One of the best features of WordPerfect for the ST is its macro power. You can define almost any key with the Alternate key as a macro and if you exhaust these possibilities, you can define a letter combination or word as a macro. For example, you can create a macro to add a function to WordPerfect to convert a letter from lowercase to uppercase:

1. Press Control-F10 to turn on the Macro Definition function.
 2. If you want to call the macro with the Alternate-A key combination, for example, press this combination now.
 3. Press the Alternate and F4 keys to turn on the Block Function.
 4. Press the right arrow key to define a one-character Block.
 5. Press the Shift and F3 keys to bring up the case conversion menu and then press 2 and then Return to convert the Block to Uppercase.
- continues on page 67*

Disk Instructions

How to Get Our Programs Up and Running

Each article in this issue with a disk icon next to its title on the Table of Contents or "On Disk" on its first page has an accompanying file on your START disk. These files are *archive* files—they've been *compressed* with the Archive Utilities Set, or ARC, a public domain program available for many personal computers. We use the ARC utility to squeeze the many files that may go with a particular article into *one* compressed file, which may be only 40% of the total size of the original files.

In addition to the archive files, you'll find the program ARCX.TTP, which stands for ARChive eXtract, on your START disk. You'll use this program to *decompress*, or *extract*, the disk files we've shrunk down with ARC.

Getting Started

To use the files and programs on your START disk, please follow these simple instructions. You'll need two blank, formatted single- or double-sided disks to properly extract the files.

Your START disk is not copy-protected and you should make a copy of it *immediately* to the first blank disk. Make sure the write-protect window is *open* on the START disk at all times to insure that you don't accidentally erase the disk.

Note: If you are unsure how to format a disk, copy a disk or copy individual files, please refer to your original Atari ST or Mega manual and study these procedures carefully before going on.

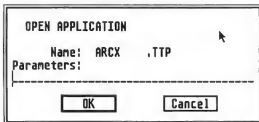
After you've copied your original START disk, store it in a safe place and label the copy disk "START Backup."

Now, put your START Backup disk in Drive A of your computer and double-click on the Drive A icon to see the disk's contents.

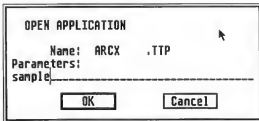
Un-ARCing the Files

To use START's compressed disk files, please follow these steps:

1. Copy the ARCD file you wish to use and the program ARCX.TTP from your START Backup disk onto your second blank formatted disk. When you're finished, label it *Un-ARC* disk.
2. Now you'll extract the compressed files from the ARC file you just copied. Insert your Un-ARC disk into Drive A and press the Escape key on your ST to see the disk directory. Double-click on ARCX.TTP. The following dialog box will appear:



3. Type in the name of the ARC file you just copied over to your Un-ARC disk as shown in the example below and press Return. You do *not* have to type in the extender .ARC.



(Note: If ARCX.TTP can't find a file, it may be because you have misspelled

the name of the ARC file. You must type the filename *exactly* as it appears in the directory.)

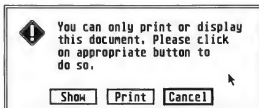
4. As the program runs, it will display the names of the individual files as it extracts them, similar to the example below.

```
Archive: SAMPLE.ARC
Extracting file: EXAMPLE.PRG
Extracting file: FILE.TXT
Extracting file: SAMPLE.PIC
Extracting file: README
█
```

When ARC has successfully extracted all the files, it will return to the Desktop and you will see the original files within the directory window, along with the archive file and the ARCX.TTP program. You may now use any of the START files as you wish; just follow the instructions in the appropriate article in this issue.

To use any other archive files on your START disk, simply repeat the above procedures.

In addition to the runnable programs, some ARC files may also contain source code listings or an ASCII text file (called BREAKDWN.TXT, for example) which describes the program's structure. You can examine this file from the ST Desktop by double-clicking on its icon and then clicking on Show (to see it on the monitor) or Print (to print it out) as shown in the example below.



ST GRAPHICS

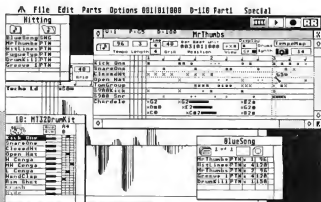
For the first time ever, START brings you a full-featured, high-powered paint program. SEURAT, by Sterling K. Webb, is a versatile, powerful paint program for all three resolutions and a megabyte or more of memory. 92 built-in fills, block manipulation, screen transforms, color mapping, masking—they're all in SEURAT, and more. Files SEURAT.ARC, SEURDOCS.ARC, BRUSHES.ARC, COLRFILL.ARC, MONOFILL.ARC and PALETTES.ARC. Be sure to read the special instructions in the sidebar accompanying SEURAT on how to un-ARC the program files.

We also have something special for START's younger readers. With ST Coloring Book, by Richard Farrell, keeping inside the lines was never easier. You and your children will spend many enjoyable hours coloring in the five line drawings we've provided on your START disk. You can use ST Coloring Book to draw your own. Files COLRBOOK.ARC and SCREENS.ARC (see the ST Coloring Book article for special instructions on un-ARcing these two files); runs in low resolution.

If you're tired of seeing other people show off their great ST graphics programs and you're ready to start writing your own, check out the Assembled Saucers demo by Walt Wakefield. Study this program's well-commented assembly language source code to get started. File SAUCERS.ARC; runs in medium or low resolution.

START takes a break from our Programming in BASIC column this issue to bring you **Programming in Prolog**. Joseph Schuller's sample knowledge base is in the file PROLOG.ARC; this file (MASH) is uncommented so you can use it with either Xpro or GProlog (from the Spring 1988 issue of START). ■

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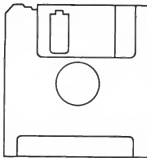
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Clipboard

6. Press the Undo key to "undefine" the Block.
7. Press the Control and F10 keys to end the Macro Definition.

To create an upper-to-lower case convertor assigned to, say, Alternate-R, follow the above steps with two exceptions: In Step 2, press Alternate-R instead of Alternate-A, and in Step 5, press 1 instead of 2.

Desperate Measures

Single-file copy operations have been significantly improved on the Megs, but on older STs if you have a single-drive system, copying files can be a real headache. The problem is you can make a mistake swapping disks and not realize it. If a program or file isn't working properly, try doing a disk copy instead by dragging the drive A icon onto the drive B icon and letting go. (Keep in mind that this will *delete* everything on the target disk.) A disk copy will probably take longer, but it requires fewer disk swaps—and has much less margin for error. If you're having trouble un-ARcing the files on your START disk, for example, try copying the disk and then deleting everything *except* ARCX.TTP and the file you want to un-ARC. Also, when you're performing single-file copies *always* write-protect the source disk.

DC/Format Trouble-shooting

This tip is from a recent jarring experience: I went to put an MS-DOS boot sector on a friend's disk using DC/Format and, curses, the disk directory came up garbled! After suffering a mild anxiety attack at the thought of ruining the disk, I realized I'd set DC/Format to single-sided but the disk was double-sided. A quick test confirmed that selecting double-sided and rewriting an IBM boot sector set the disk straight. *Got an ST trick or tip to share? Send it to the Clipboard, 544 Second St., San Francisco CA, 94107. ■*

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ASSEMBLED SAUCERS

by Walt Wakefield

Unidentified Flying Objects on Your ST. File SAUCERS.ARC on your START disk. Color monitor required.

Four flying saucers, each a different color, maneuver above the surface of an unnamed planet. The spaceships change directions abruptly as they pass over, around and between a foreground hill and spire. A scene from a new video game? No, it's Assembled Saucers, and if you've ever wanted to program great ST graphics, this assembly language demo will get you started.

I wrote Assembled Saucers as an experiment in assembly language programming. The experiment produced, in about the same disk space as a standard NEOchrome or DEGAS file, a "motion picture" complete with background music.

To run Assembled Saucers, copy the files SAUCERS.ARC and ARCXTTP onto a blank, formatted disk. Un-ARC SAUCERS.ARC following the Disk Instructions elsewhere in this issue. At the Desktop, double-click on SAUCERS.PRG to start the demo (the file SAUCERS.DAT must be in the same directory). Press the Escape key to exit the demo. Assembled Saucers will run in low or medium resolution. The converted Alcyon AS68 source code is in the file SAUCERS.S.

Action the Hard Way

The ST's four low-resolution color planes provide an easy way to move im-

ages around. You can draw an object, erase it and redraw it anywhere on the screen without disturbing other images in other planes. There's a drawback, though. Devoting a plane exclusively to a moving object cuts the number of available colors in half. Giving each of four spaceships its own plane would leave no colors for the landscape.

I had plans for all 16 colors, so Assembled Saucers accomplishes movement the hard way. Before placing a saucer, the program saves a saucer-sized patch of background by copying it from screen memory to a buffer. When the spacecraft is to be moved, the saved patch is restored to the screen, wiping out the saucer. Then background is saved in a new location and the craft is placed there.

A key feature of the program is that the saucers move in three dimensions. In addition to horizontal and vertical movements, their front-to-rear positions

relative to one another and to the hill and spire change from time to time. On each pass through the program's main loop, there is one chance in 16 that a given saucer will attempt to trade positions with an object just in front of or just behind it. If the two images overlap, the swap is not permitted.

NEOchrome Artwork

The saucers, spire, foreground hill and distant hills were created as elements of a NEOchrome picture (Figure 1), then saved as separate data segments in the file SAUCERS.DAT.

The demo program transfers the distant hills (lower portion of Figure 1) directly from disk to screen memory and stores the other images (Figure 2) in a buffer. It then sprinkles stars at random across the sky, places the moon in a random position in the upper left, adds the hill and spire to the on-screen landscape and starts the music. After a

Atari ST assembly language gives you fast and powerful access to the ST's graphics and sound abilities, but unraveling its mysteries can be frustrating. In keeping with this issue's theme of graphic arts, START brings you a colorful and musical graphics demo—complete with assembly source code—to show you one way to tap into that power and develop your own programming potential.

preliminary background-save at each saucer's initial location, the action begins.

The main-loop sequence goes like this:

1. Select a new destination (random screen coordinates) and horizontal speed (one or two pixels per move) for any saucer that has reached its previous goal;
2. Restore saved backgrounds, beginning with the nearest saucer;
3. Perhaps change the front-to-rear positions of two or more objects;
4. Move the saucers, beginning with the most distant. The new background is saved as part of the move routine; in addition, if the saucer is behind the hill or spire, a section of the appropriate landscape is redrawn on top of it.

The program uses two blocks of screen memory. All changes are made on the hidden screen. Then the program swaps screens and updates the newly hidden one by copying the revised picture to it. (I deliberately limited myself to two screens. Adding a third screen containing the picture without saucers would eliminate the need to save and restore background patches. This "clean" picture would be transferred to the hidden screen prior to each redrawing of the saucers. This shortens the program only slightly, however, and makes little difference in execution speed.)

Do-It-Yourself Music

The background music is the result of another experiment, this one in "do-it-yourself" sound control. A vertical blank interrupt routine keeps time and reads specially formatted music data. Whenever a change in pitch or volume is called for, the routine revises a master sound table and passes its address to the ST's sound chip.

With this system, three notes can be ►

Figure 1: This NEOchrome picture includes all of the elements for the Assembled Saucers main screen. The background hills in the lower portion of the picture are transferred directly to screen memory.

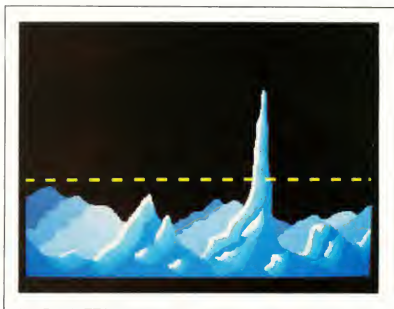
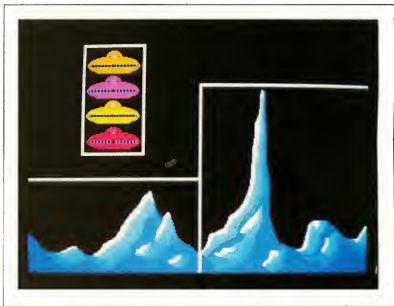


Figure 2: These graphic elements are loaded into a buffer and handled separately from the background, so that the program can then move the saucers behind or in front of the foreground hill and spire.



StarRay, a new game from Spinaker Software, lets you flying in the jagged hills of an alien landscape while defending your installations. This game presents a stunning example of the kinds of programs you can write using the graphics techniques found in Assembled Saucers.



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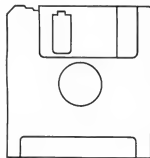
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Assembled Saucers

started simultaneously, with one alternately rising and falling in volume while another turns on and off intermittently and the third comes on strong, then fades away like a bell sound. On an electronic organ, these three effects are called *vibrato*, *pizzicato* and *sustain*.

Every 1/60 of a second, the vertical blank routine adjusts the volumes of individual voices according to defined patterns. At any point in the music data, a voice can be reprogrammed to follow a different pattern or to maintain a steady volume.

Assembled Saucers includes 40 bars of music data.

An infinite variety of patterns is possible. Assembled Saucers includes five: *vibrato*, *pizzicato*, and short, medium and long *sustain*.

The program includes 40 bars of music data. The music repeats every 64 seconds as the flying saucers perform their unpredictable maneuvers.

Wrap-Up

I hope my little experiment was helpful. Assembly language isn't easy to learn, but its speed and efficiency are the key to faster and more powerful programs. It is also the best way to take full advantage of the ST graphics and sound capabilities. And before long you'll be producing your own game masterpiece. ■

Walt Wakefield is freelance writer and software developer in Portland, Oregon. A former newspaperman and public relations counselor, he is the author of Home Casino Poker Etc., an ST game published by Dubl Dubl Funware.

Panning for Gold

The PAN BBS for Professional Musicians

by Jim Pierson-Perry
START Contributing Editor

Do you have questions about MIDI or new musical equipment? How about trading synthesizer patches, samples or gear? Or are you a musician in need of accurate, timely information about the music industry or job opportunities? If so, the PAN BBS may be just what you need.

PAN, the Performing Arts Network, is an international electronic community of musicians and music industry professionals. It is a powerful BBS system, similar to GENIE or DELPHI but specializing in the music niche. All aspects of the music industry are covered, from booking tours to instrument technology.

Going Online with PAN

Like other major boards, you can access PAN all day, every day. You can dial direct or use a network such as Tymnet or Telenet (or Datapak in Canada). You can log on at 1200 to 9600 baud and you should use standard telecommunication settings: 8 bit, 1 stop bit, no parity and full duplex.

Standard rates for PAN are \$12 per hour during the evening and \$24 per hour during the day (7 a.m. to 6 p.m. Eastern, Monday through Friday). There is no surcharge for 2400 baud, but

there's a \$10 monthly fee for maintaining your electronic mailbox. All charges must be paid via a major credit card (Visa, MasterCard or American Express). Some special services carry surcharges, such as fax use, airplane schedules/reservations (OAG—the Online Airlines Guide), Associated Press newswires, etc. Finally, there's a one-time sign-up fee of \$150. (More about this later.)

The first time you enter PAN, you'll be taken on a guided tour of the BBS. This explains many of its operations and gets your user account organized. Answers to questions about PAN services, current rates or hints on using the BBS may be found by selecting "Using PAN" from the main menu.

Inside PAN

When you log in to PAN, the initial menu lists the major activity areas, which can be divided into general service and special interest areas. Service options include: PAN mail, travel services, checking the member directory, hints on using PAN, help and a personal workspace for storing and creating files.

PAN mail handles your personal communications to other users, as opposed to general questions/answers on

the forum bulletin boards. You can address letters to a single member or maintain mailing lists to speed multiple mailings. Other options include sending telex messages, receiving mail and news reports via fax and message translations into different languages.

All users can enter information about themselves, their companies, career goals, equipment used, etc. into the member directory. Searching the directory lets you find who is using which equipment, people with particular talents or interests and other information. A similar but separate directory is maintained just for synth/MIDI network users.

Travel and news services are similar to those on other major boards. Profiles are available describing particular cities and countries. You can use the OAG option to view airline flight schedules and make trip reservations. From the news bureau, you can submit press releases and check the Associated Press newswire, weather forecasts, music industry charts and statistics.

Three major special interest networks are maintained: business, audio and synth/MIDI. The business network is primarily for nontechnical members ▶

of the music industry: record companies, managers and promoters. The audio network handles matters related to professional audio needs and includes a section on home recording. The synth/MIDI network has all the goodies for music hardware, software, using MIDI and related topics.

Synths and MIDI

The synth/MIDI network provides several features and services of interest to musicians and developers, including a database of programs and information files, the forum bulletin board, online shopping, feedback to magazines and manufacturers (equipment and software) and even classified want ads.

The database contains sections for synthesizer patches, sampler data files, sequencer information and music files and MIDI development as well as programs (organized by computer brand) for the ST, Mac and IBM. Some ST programs include demo versions of new MIDI software and patch file format converters. The synthesizer patch files represent most major instruments and are growing constantly. With the recent porting of Soft Synth and Sound Designer, ST users can download sample data files to get all sorts of sonic goodies.

The forum is your source of the most up-to-date information on MIDI and music technology. Candid reports on new equipment and software, coverage of trade shows, hints and tips for all levels of users and more are available here. As forum users include all the major manufacturers and software developers, you can get information here before other boards pick it up. This includes representatives from the IMA (International MIDI Association) and MMA (MIDI Manufacturers Association), our MIDI watchdog organizations.

For more specific problems, praise or questions, you can use the online support features. Currently, 12 hotlines provide a direct pipeline to software de-

velopers, 15 are for equipment manufacturers and three are for trade publications. Others link to the IMA, MMA and PAN.

PAN even lends a hand when you want to buy or sell equipment or are advertising your services. The electronic classified ad section is a place where you can list items for sale, items wanted or services offered (or needed) at no charge—a great way to trade up your equipment. At a more professional level, Synthony Music offers an online shopping service and catalog with equipment descriptions.

Is It For Me?

With all it has going for it, what is missing from PAN? Well, there are no games, picture files, hints for adventure players, online encyclopedias, font files for word processors or Music Studio song files. PAN is set up to accommodate musicians and the professional music industry, not the general computer user.

Comparisons are inevitable between PAN and other MIDI-related boards such as MIDI-Net. While PAN is the more expensive option, it is also richer in resources. Ignoring the business aspects, available only through PAN, the comparison comes down to database files, hotlines and the bulletin board messages.

For the casual user, stay with full-service boards. If you're a dedicated hobbyist or musician, however, and want to be in the forefront of the MIDI revolution, then PAN is the way to go. In my opinion, PAN provides the most accurate and timely information, drawing upon a wider representation of manufacturers, developers and support organizations. Currently, ST users won't find too many application programs on PAN, but will find a large number of usable patch and sample data files. Hopefully the ST userbase will improve. Plans are for Atari to enter PAN and possibly have its own users group, or at least a hotline.

Special Offer

Remember the \$150 one-time signup fee? Well, START and PAN have gotten together to welcome new ST users with musical interests. During the month of February, any ST user who joins PAN will have the signup fee waived. Just enter START when asked for your password. This is an excellent way to find out for yourself what PAN has to offer the ST musician.

Here's how to reach the PAN BBS: for direct access, dial (617) 576-0862. When you connect, enter 1 or 2 and press Return. At the "USERNAME:" prompt, enter your name or handle; at the "PASSWORD:" prompt, enter START.

Going via Telnet, dial your local number. When you connect, press Return three times. At the "*" prompt, enter C PAN, then follow the username and password instructions above.

On Tymnet, dial your local number. When a series of random characters appears on your screen, type "A". At the "PLEASE LOG IN" prompt, type PAN and press Return; then follow the username and password instructions above. Enjoy yourself. Contribute to the ST database if you can and drop me a note on PAN mail (PIERSONPERRY) to let me know what you think of PAN! ■

Contributing Editor Jim Pierson-Perry is a research chemist and semiprofessional musician. He lives in Elkton, Maryland.

PRODUCTS MENTIONED

PAN (The Performing Arts Network), P.O. Box 162, Skipjack, PA 19474, (215) 584-0300.

Telenet, 12490 Sunrise Valley Drive, Reston, VA 22096, (800) 336-0437.

Tymnet, McDonnell Douglas Network Systems Company, National Customer Service, 2070 Chain Bridge Road, Vienna, VA 22180, (800) 336-0149.

Stepping Up to Prolog

by Joseph Schuller

Follow along with this exciting introduction to Artificial Intelligence. File MASH.ARC on your START disk.

Welcome to the first installment of a continuing feature on the Prolog language. Prolog is the basis for some of the most exciting developments in Artificial Intelligence today. My goal is to demystify these developments and make it possible for every ST owner to experiment with them.

There are two commercial implementations of Prolog now available for the ST: XPRO from Rational Visions and MProlog from Logicware, Inc. Both were reviewed by Christopher Chabris in the Spring 1988 issue of START.

I'll be using XPRO because it gives programmers the right combination of power and price. It's a complete implementation of the accepted standard for Prolog (the so-called "Edinburgh syntax"), and it has some useful extensions beyond this standard, as we'll eventually see.

XPRO does have drawbacks, two in fact. First, it's a plain vanilla application—you don't work with it through GEM, although you can construct GEM applications with it. Second, the documentation is extremely short; it's virtually a requirement that

you work with an outside reference. This series of articles will hopefully help fulfill that requirement.

(Editor's note: In the Spring 1988 issue, START published *GProlog* by Gene Weiss, a bare-bones implementation of Prolog. *GProlog* will let you experiment with Prolog and work with the examples in this article; refer to the *GProlog* documentation on slight variations on syntax and variable treatment. If you're missing the Spring 1988 issue you can order it with disk for \$14.95 by writing to START Back Issues, 544 Second St., San Francisco, CA 94107. If you have a CompuServe account, you can download *GProlog* with documentation from Antic Online's February Software Shelf. Log onto CompuServe and type GO ANTIC.)

Working with Prolog

Prolog stands for Programming in Logic. It is usually used for non-numerical programming and is most appropriate for expressing relationships between objects. Prolog is primarily a declarative language rather than a procedural one. This means that when you use Prolog to solve a problem, you tell Prolog *what* to do, rather than *how* to do it.

You interact with Prolog in much the same way that you work with a data-

base. You type a query and Prolog looks at a set of facts and rules and returns an answer. The major part of Prolog programming is using a text editor to create the set of facts and rules in a text file. Then you tell Prolog to consult this file so that it can search the facts and rules in order to respond to queries. The consult operation copies the contents of the text file into a structure called the Prolog database (some sources, including the XPRO documentation, call this a knowledge base).

Let's examine some of the kinds of facts that you can put in a Prolog database and what you can do with them. Suppose we want to represent this information about a small group of military personnel:

Sherman Potter is a Colonel.
Hawkeye Pierce is a Captain.
Charles Winchester is a Major.
B. J. Hunnicutt is a Captain.
Max Klinger is a Corporal.

Here's a way to write these statements in Prolog:

```
is_a(sherman_potter,colonel).  
is_a(hawkeye_pierce,captain).  
is_a(charles_winchester,major).  
is_a(b_j_hunnicutt,captain).  
is_a(max_klinger,corporal). ▶
```

There are several things to immediately take note of. First, there are no uppercase letters in the Prolog statements; a word that begins with an uppercase letter is a variable. Second, Prolog does not ordinarily understand separated words, so the underscore is used to join the words together. Third, there can be no spaces between "is_a" and the opening parenthesis. Finally, each Prolog statement must end with a period.

In each statement, "is_a" is called the *functor*, and the expressions inside the parentheses are called the *arguments*. It doesn't matter what order you use for the arguments, as long as you're consistent throughout. Together, the functor and arguments form a *clause*. Clauses like these are called *facts*. The number of arguments associated with a functor is said to be the *arity* of that functor; each of these functors, then, has an arity of 2.

I put these five facts into an ASCII file called MASH; the completed file is on your START disk if you don't want to type this information in. Copy MASH.ARC and ARCX.TTP onto a blank, formatted disk and un-ARC the MASH.ARC, following the disk instructions elsewhere in this issue. If you're using GProlog, you'll have to type your queries into the file and save it with a .PRO extender, since GProlog does not have a command line.

If you're using XPro, you'll see a prompt that looks like this:

```
?- Tell Prolog to consult the file:
?- consult(mash).
```

Note the period at the end of the statement. Press Return and Prolog will put the facts in MASH into the Prolog database. Now you can form queries.

At this point, you can ask if Sherman Potter is a colonel:

```
?- is_a(sherman_potter,colonel).
```

Prolog will search its database for

this fact, and when it finds it, it will write "Yes" on the screen. You can ask what rank Charles Winchester happens to be:

```
?- is_a(charles_winchester,X).
```

Notice the uppercase letter as the second argument in the query. The second argument (which holds the military rank) will be a variable; Prolog will search its database and come up with a value for the variable. In this case "major" will be returned as the value of the variable X, so Prolog's response is:

```
X = major
```

Prolog is the basis for some of the most exciting developments in AI.

When Prolog finds a value for a variable, it has *instantiated* the variable. The value is then known as an instantiation of the variable.

Ask who holds the rank of captain and the whole transaction would look like this on the screen:

```
?- is_a(X,captain).
X = hawkeye_pierce
```

Again, Prolog found this instantiation of X by searching its database until it found a fact whose functor is "is_a" and whose second argument is "captain"; it took the first argument of that fact as the instantiation of X. If you want to know who else is a captain, type a semicolon after Prolog's response. This signals Prolog to search for another fact which satisfies the query. Prolog will answer:

```
X = b_j_hunnicutt
```

If you type another semicolon, Prolog will answer "No," as there are no more facts in the database that fit the conditions of the query. Prolog will always answer "No" to a query if there are no facts in its database that fit:

```
?- is_a(radar_o_reilly,corporal).
```

Prolog gives us this answer because there isn't any information about this person in the database.

Going Beyond the Given Information

So far you've seen that Prolog lets you put facts into a database and then query the database to find out about those facts. While this might be mildly entertaining, it's not very helpful. To begin to see why Prolog is useful, let's answer the question "Does Hawkeye Pierce outrank Max Klinger?" First we need to give Prolog some information about ranks, so we'll put these facts into MASH:

```
higher_than(colonel,major).
higher_than(colonel,captain).
higher_than(colonel,corporal).
higher_than(major,captain).
higher_than(major,corporal).
higher_than(captain,corporal).
```

Next Prolog needs a rule to follow to use this information:

```
outranks(X,Y) :- is_a(X,Z),
                 is_a(Y,W),
                 higher_than(Z,W).
```

This rule reads "to prove that person X outranks person Y, prove that the rank of person X is 'Z', prove that the rank of person Y is 'W', and then prove that Z is higher than W." In this case, "proving" something simply means that Prolog has to go through its database and find a relevant fact. The commas at the end of each clause are always read as "and." Another way to read this rule is to interpret ":-" as "is implied by." The "is implied by" symbol separates the rule into two parts. The part preceding ":-" is called the *head* or *conclusion*,

and the part following "...:" is the *tail* or *condition*. Incidentally, Prolog's symbol for "or" is the semicolon, which is perfectly consistent with the way we've been using it.

In our outranks rule, when you plug in `hawkkey_pierce` for `X` and `max_klinger` for `Y`, Prolog:

1. Searches its database for "is_a(hawkkey_pierce,Z)" and instantiates `Z` to "captain."

2. Searches for "is_a(max_klinger,W)" and instantiates `W` to "corporal."

3. Searches for "higher_than(captain,corporal)" and finds that this fact is in the database.

4. Answers "Yes" because all the clauses in the tail have been proven. Another way to say this is that they all *succeeded*. Had any of the clauses not been proven (i.e., had any of the clauses *failed*), Prolog would have answered "No".

The important point here is that we

didn't have to have a fact in the database which explicitly stated

```
outranks(hawkkey_pierce,max_klinger).
```

Instead, we gave the database some facts and a rule and turned Prolog loose.

Here are two other ways to use the outranks rule:

```
?- outranks(charles_winchester,X).
?- outranks(A,B).
```

Type the first query in and type a semicolon after each response. The second query means "who outranks whom?" Prolog will respond with a pair of instantiations, and if you type a semicolon it will give you another pair. Prolog will eventually show every possible pair of names such that the first outranks the second.

Things to Come

In this article, we've introduced some essential Prolog terminology, as well as

the style of interacting with and using this language. But we've barely touched on Prolog's power. In future installments, we'll see what logic programming really is all about, and how it can be used for natural language processing, rapid prototyping and expert system development. We'll also look at object-oriented programming in Prolog and use XPRO to develop GEM applications. ■

Joseph Schmuller is a Cognitive Scientist with the Expert Systems group at CDM Federal Programs Corporation.

PRODUCTS MENTIONED

XPRO, \$39.95. Rational Visions, 7111 W. Indian School Road, Suite 131, Phoenix, AZ 85033, (602) 846-0371.

MProlog, \$199. Logicware, Inc., 5915 Airport Road, Suite 200, Mississauga, Ontario, Canada L4V 1T1, (416) 672-0300.

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News, Views and a Mini-Review

by Jim Pierson-Perry
START Contributing Editor

Another month, a whole new bushel of MIDI goodies, many from newcomers to the ST market. It's always good to welcome fresh talent; by the way, my current count puts the number of ST MIDI programs over the 200 mark! We'll also take a look at the Astra MIDI Box and how patch editor programs are branching out from synthesizers and now include effects devices.

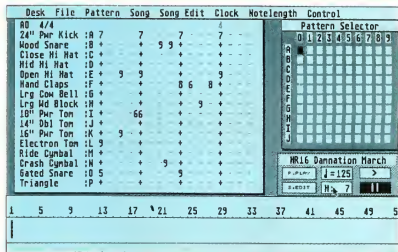
New Players

Leading off is MusicSoft, with a collection of patch editor programs for the Alpha Juno, MT-32, D-10, ESQ-1, K1 and K4 operator DX synthesizers. MusicSoft also has the MIDI Drummer program, the first drum machine sequencer program for the ST.

A patch editor for the Yamaha TX8LZ and DX11 marks the first release from Musicode. In addition to editing, the program contains an integrated sequencer to test patches in actual play. Sequences can be saved as standard MIDI files (Level 0).

Alfred Publishing has released two sets of music education programs for the ST: Practical Theory (three disks) and Music Achievement (six disks). Sandy Feldstein is the author of both packages, which are targeted at a high school/college entry-level audience, ei-

Typical pattern edit screen from the MIDI Drummer program by MusicSoft. The setup shown was customized for an Alesis HR-16 drum machine. The different numbers in the pattern grid correspond to preset velocity values to add dynamics.



ther for self-study or in a classroom setting. They come with an attractive, comprehensive set of textbooks and workbooks.

Finally, Johnsware has introduced the MIDI Boss, a MIDI system master control program. This can send program change commands, sysx data and other custom commands to any MIDI devices in your system with a single keystroke.

From Old Friends

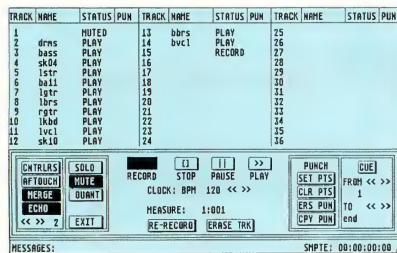
Steinberg/Jones has released another patch editor in their Synthworks series. This one is for the Kawai K1 and compatibles. Sonus now offers several patch editors: ESQ-1/SQ-80 Design, D50 Design and MT-32 Design.

Savant Audio has released Edit-DSS, the first dedicated sample editor for the Korg DSS-1. Features include auditioning edits through the Atari monitor speaker, librarian functions and a patch generator.

SynthView M1 from Synergy Resources, is the first librarian for the new Korg M1 "do-everything" digital music workstation. An upgrade is planned for the near future to add editing capabilities along with the initial graphical librarian features.

That Synching Feeling

Those looking for a reliable way to tie their tape decks and MIDI sequencers together may want to check out the PPS-100 from J.L. Cooper. This is a rack- ▶



Shot of the play screen for Dr. T's Keyboard Controlled Sequencer v1.6 running with the Phantom installed. Note the SMPTE time display in the lower right corner.

more popular effects devices. Dr. T distributes one for the Lexicon PCM-70 as part of the popular Caged Artist series. Their latest creation, due out around NAMM time, will handle four different multieffects devices: the Lexicon LXP-1, Digitech DSP-128, Alesis Quadraverb and Yamaha SPX90. Johnswave offers fully GEM-compatible programs to control the DSP-128, Korg SDD-2000 digital delay and the Cooper MSB+ MIDI switchbay. The DSP-128 (a popular beast) is also covered by the DSP Enhancer from DataSound, which even provides a random patch generation function for effects.

mount hardware device for SMPTE to MIDI synchronization and also functions as a SMPTE event generator. It reads and writes all SMPTE formats, converts SMPTE to MIDI via Song Position Pointer messages and can optionally generate MIDI Time Code data.

The newest releases of Dr. T's KCS 1.6 and Level II sequencers have improved support for The Phantom, his SMPTE synchronization interface. Earlier versions could take over a minute to chase and lock to tape when using the sequencer at high clock resolutions (e.g. 240 ppqn [pulses per quarter note]). The original version was fine for working at resolutions of up to 96 ppqn. The Phantom also provides a software controlled second MIDI Out port. MIDI channels can be assigned to either the ST or Phantom Out ports (or both). With the release of The Phantom, Dr. T's previous synch box, The Model 5, has been discontinued.

On The Horizon

Here's some advance information to whet your appetite. All of these programs are expected to be released in early 1989 in time for the Winter NAMM meeting. TurboSynth, the new blockbuster sample creation/editing program from Digidesign, is being ported from the Mac to the ST.

Hybrid Arts is releasing Edit Track, basically SMPTE Track without the SMPTE features. This will give EA a professional-level sequencer for those

not needing a dedicated tape synch device. All of their MIDI Track series programs are being upgraded to work with MIDI standard files, even those in Mac Binary format.

Finally, look for Mark of the Unicorn and Opcode to enter the ST market. These companies are currently at the top of the Mac MIDI market and should provide excellent new products for the ST.

Affecting Effects

With MIDI firmly entrenched as the standard for controlling synthesizers and similar musical instruments, the next wave is to extend MIDI control into effects devices, those ubiquitous boxes that provide reverb, chorus, delay, distortion and all the other special effects to color and add character to the basic synthesizer sounds. Already, many such MIDI-equipped devices are available for hobbyist and professional applications.

The basic MIDI implementation is to use program change commands to flip from one preset to another. At more advanced levels, real-time MIDI control may be used to change the nature and intensity of the sound effect. Examples include varying the reverb decay rate or echo delay time. Typically, these devices are big on power and short on front-panel programming controls and are ideal candidates for a patch editor-type computer program.

Several companies have begun releasing patch editor programs for the

Astra MIDI Box

The Astra MIDI Box is a solution to two problems facing the ST MIDI user: a need for multiple MIDI Out ports and the infamous Out/Thru port combination. The ST has a single MIDI Out port, which is fine for driving a single synthesizer, but if you want to use any more equipment, you must daisy-chain the components or use a Thru box. The daisy chain option works only if your equipment has sufficient MIDI Thru connections, which is not always the case (e.g. Casio CZ-101 and most drum machines). A Thru box takes the original MIDI Out data and sends it to several connection ports (typically four or eight per box). Each device hooked to one of these ports sees its own copy of the original MIDI Out data.

More serious is that the ST MIDI Out port is hard-wired so that it also carries MIDI Thru data, thus violating the MIDI hardware protocol. As long as you use proper MIDI cables you'll have no problem; otherwise you stand an excellent chance of driving your synthesizers wacko.

Connecting the Astra MIDI Box to your ST provides one MIDI In, two MIDI Thru and three MIDI Out ports. The Thru and Out signals are decoupled from the ST output. The MIDI Box goes a step beyond a Thru box, however,

by providing both multiple Out and Thru ports. If your system is large enough, you can hang a Thru box off each MIDI Box Out port and connect up to 24 synths or devices at once.

The MIDI Box is compatible with all ST MIDI software. Note that each Out port provides an identical signal. You cannot assign MIDI channels to flow to particular ports as with the proprietary

software-controlled multiple Outs provided by The Phantom or Midiplexer interfaces. The MIDI Box comes in a sturdy ST-gray plastic box (about 6-by-5-by-3 inches). It is a passive device that just routes MIDI signals, and does not require a power supply. If you use more than a single MIDI instrument, the Astra MIDI Box may be just what you need to help put your system together. ■

PRODUCTS MENTIONED

Practical Theory Series, \$125; **Music Achievement Series**, \$199.95. Alfred Publishing Company, Inc., 16380 Roscoe Blvd., Van Nuys, CA 91410, (818) 891-5999

MIDI Box, \$69.95. Astra Systems, Inc., 2500 South Fairview, Unit L, Santa Ana, CA 92704. (714) 549-2141.

DSP-128 Enhancer, \$99.95. DataSound, 5056 Les Chateaux, Dallas, TX 75235, (214) 521-6723.

TurboSynth, no price set. Digidesign, 1360 Willow Run, Suite 101, Menlo Park, CA 94025, (415) 327-8811.

KCS ver. 1.6, \$249; **KCS Level II**, \$325; **PCM-70 Editor**, \$149; **The Phantom**, \$249. Dr. T's Music Software, 2200 Boylston Street, Suite 306, Chestnut Hill, MA 02167, (617) 244-6954.

Edit Track Midiplexer, \$299. Hybrid Arts, Inc., 11920 West Olympic Blvd., Los Angeles, CA 90064, (213) 826-3777.

PPS-100, \$595. J.L. Cooper, 1931 Pontius Avenue, West Los Angeles, CA 90025, (213) 473-8771.

DSPatcher, \$74.95; **MIDI Boss**, \$74.95; **MSBehave**, \$74.95; **SDDemon**, \$74.95. Johnsware, 5802 42nd Avenue, Hyattsville, MD 20781, (301) 927-1947.

Mark Of The Unicorn, 222 Third Street, Cambridge, MA 02142, (617) 576-2760.

TX81Z/DX11 Voice Designer/Librarian, \$99. Musicode, 5575 Baltimore Drive, Suite 105-127, La Mesa, CA 92042, (619) 469-7194.

Alpha Juno Editor/Librarian, \$99.95; **D-10/110/20 Editor/Librarian**, \$99.95; **D-50 Editor/Librarian**, \$99.95; **DX 4 Op Editor/Librarian**, \$99.95; **ESQ-1/5Q-80 Editor/Librarian**, \$99.95; **K1 Editor/Librarian**, \$99.95; **MIDI Drummer**, \$99.95; **MT-32 Editor/Librarian**, \$99.95. MusicSoft, 1560 Meadowbrook, Altadena, CA 91001. (818) 794-4098

Opcode, 1024 Hamilton Court, Menlo Park, CA 94025. (415) 321-8977.

Edit-DSS, \$250. Savant Audio, 2140 Bellmore Avenue, Bellmore, NY 11710, (516) 826-6336.

D-50 Design, \$149.95; **ESQ-1/5Q-80 Design**, \$149.95; **MT-32 Design**, \$129.95. Sonus Corporation, 21430 Strathern Street, Suite H, Canoga Park, CA 91304, (818) 702-0992.

Synthworks K1, \$199. Steinberg/Jones, 17700 Raymer Street, Suite 1001, Narthridge, CA 91325, (818) 993-4091.

SynthView M1, \$79.95. Synergy Resources, 754 North Bolton Avenue, Indianapolis, IN 46219, (317) 356-6946.

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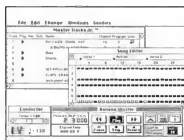
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GFA BASIC Books

GFA BASIC Programmer's Reference Guide, Concepts in Programming, Programming with GFA BASIC 3.0

reviewed by David Plotkin,
START Contributing Editor

GFA BASIC is a powerful programming language, but its manuals have not always been everything they should have been. MichiTron has followed GFA BASIC with the publication of several additional volumes. Below, however, I've reviewed books, which are a marked improvement upon the manuals. (Editor's note: *David Plotkin reviewed GFA BASIC 3.0 in the January 1989 issue of START.*)

GFA BASIC Programmer's Reference Guide, Volume I

by George W. Miller

484 pages (plus appendices), \$29.95 softcover

The GFA BASIC Programmer's Reference Guide, Volume I is a large book that provides a wealth of information about GFA BASIC, easily the most widespread "users" language for the ST. While this book doesn't contain much new information, it's well organized, very well written and sheds some light on otherwise poorly covered topics.

The first chapter covers the GFA editor in detail. It duplicates the information in the manual in large part here but is easier to follow and arranged better. This chapter also contains hints and tips about using the editor that are not in the manual.

The second chapter lasts for about 250 pages, documenting every GFA BASIC command. Again, it's largely a restatement of what's in the manual, but it's written better. Unlike the manual, the commands are arranged alphabetically, making it easier to locate the information on a particular command. The programming examples all work except for a few well-documented cases, and related keywords are listed so that you can refer to them for more information.

Chapters 3, 4 and 5 take you through all the steps needed to construct eye-catching demos and even games.

Graphics, animation and sound are explored in detail, as are saving screens to disk, page flipping, GET and PUT animation, the sound and WAVE commands and sprites. Many sample programs are included, such as a kaleidoscope program and a complete shape editor, and each section of code is explained clearly. In fact, most of the book consists of commented programs. (I believe that the best way to learn how to program is by reading other people's (commented) programs.)

Chapter 6 contains a complete telecommunications program. Not only is the code commented so that you can learn how to handle ports, baud rates, etc., but the program itself is very useful

and worth more than the price of the book if you're a telecommunicator. You can customize the program completely, using the autodial directory, function key configuration and macro scripts! You can even run another program from *within* the telecommunications program using GFA's EXEC command.

The final sections of the book are the appendices that document calling BIOS, XBIOS and GEMDOS functions from within GFA. Each function has a paragraph telling what it does and a sample of how to call it. Since this is somewhat complicated, the examples are a big help.

I like the *Programmer's Reference Guide*. It's so well-written that even the minor typographical errors (which will be cleaned up in the second printing) don't detract from its overall quality. George Miller, MichiTron's director of product support, obviously labored long and hard over it.

As a reference guide, it works well. It is important to note that intermediate to advanced programmers won't find a lot of new information here, and there really aren't any "how the heck did 'e do that" type of programming surprises in the book. What there is is a well-organized and useful reference work that will make using GFA BASIC easier to anyone and ▶

impart a lot of new information to beginners.

**Concepts in Programming:
An Intermediate programmer's
tutorial for GFA BASIC 2.0 and
GFA BASIC 3.0**

by Gottfried P. Engels
270 pages, \$24.95 softcover

Concepts in Programming is a book which purports to cover GFA BASIC on an intermediate level. It contains quite a bit of useful information, however; much of the book is devoted to program listings and explanations of 3D graphics and a text editor.

The opening section of the book attempts to discuss the advantages of using structured programming methods. It succeeds fairly well, especially since the commands in GFA BASIC lend themselves toward structured programming. Such concepts as Procedures, Functions, DO WHILE, CASE etc. let you build your program in small, uncomplicated, testable sections. One problem is that the book shows several *bad* examples for solving a particular programming problem without demonstrating any *good* solutions! Overall, though, the diagramming techniques and example programs using GFA structured programming commands are good and illustrate the required points.

The first section also shows more efficient ways of handling memory moves and disk accesses. It also benchmarks various loop commands and details the structures of arrays. This really has nothing to do with structured programming, but it is interesting. Much of this section shows ways to get around the limitations of GFA BASIC 2.0 (no var passing to procedures, lack of a SORT command and no ELSEIF)—which are all fixed in GFA BASIC 3.0!

Section 2 introduces a 3D graphics program. It attempts (briefly) to discuss some of the mathematics, which are *not* trivial, but doesn't quite pull it off. Some short example programs follow, as well as

a statement of the equations, commands and concepts used, followed by the details of the program itself. This program can show a wire-frame shape (with some hidden line removal) and lets you manipulate the shape (turning, moving, stretching) and even build a new shape. If you're interested in 3D programming, you'll find this section quite interesting. The methods used are discussed, but be warned that this program is quite complex. It covers *everything*, including loading and saving data, and even discusses some limited tricks to speed up operation.

Section 3, the text editor, is over 100 pages long and presents a tool for editing text that includes scrolling with mouse and keyboard, inserting and deleting lines, and block operations. Once again, a limited number of tricks are presented for manipulating text quickly. Methods demonstrated include use of BMOVE, the VT-52 emulation commands, responding to menus and keypresses, and the advanced use of pointers to "move" text around the screen without actually moving it around in memory—which can be done very quickly. Much of what is covered here is interesting, but this section has two problems. First, quite a bit of the program is *not* discussed (due to space limitations), and even with what is discussed, the section is simply too long and the example program is too complex. By the time you've studied the entire listing in detail, through, you have forgotten much of what went on earlier in the program.

Concepts in Programming seems to be unsure about what audience to address. The first section can be of help to someone who is not too experienced, but the last two sections are likely to overwhelm anyone who is not an experienced programmer. Further, these two sections are of very narrow interest.

The book may be of some use to someone who would like to know some useful tricks. The value of the book is definitely the learning experience and not

the programs included (the 3D graphics program is not a full-functioning utility and there are much better text editors). Much of the book is filled with complex listings that are hard to follow, and aren't very conducive to teaching programming concepts very well. There are many things that can help you program better and this book covers some of them, but in a format that makes it difficult to learn the material.

Programming with GFA BASIC 3.0

by Gottfried P. Engels and Markus C. Gögrens
366 pages, \$24.95 softcover
Program disk: \$15.95

Programming with GFA BASIC 3.0 fills in the gaps in the user manual in a mostly clear, concise way, and should be on the bookshelf of anyone even remotely interested in using the advanced features of GFA BASIC 3.0. (Editor's note: *David Plotkin reviewed GFA BASIC 3.0 in the January 1989 issue of START.*) In addition to its well-written text, *Programming with GFA BASIC 3.0* has many example programs which are well-commented and very useful in understanding some of the programming techniques of this powerful language.

The first major section of the book deals with structured programming. One major improvement of 3.0 over 2.0 is the increased variety of loop, decision and Procedure/Function commands. Several illustrative examples show how the new loop and decision commands help you program more efficiently. This section also shows how the ability to pass variables to a Procedure, as well as to multi-line Functions, increases programming power. The sample program demonstrates these principles aptly with a mathematical function evaluator that you could use to create your own spreadsheet program.

Handling of variable types and sorting arrays is the subject of the next section. Not only does GFA BASIC 3.0 include two different types of sorts, but there's a variety of options in using the sort com-

mands. *Programming with GFA BASIC 3.0* explains these options and demonstrates how to use the sort commands to set up a database. Pointer commands are directly supported by 3.0, and these are also explained in this section. Pointer operators are very important to GEM, and having them available makes it easier to deal with Menus, windows, dialog boxes, etc.

Working with numbers in a bitwise manner is the subject of the next section. Although this section is not of much use to the average programmer, the information contained here allows for significant increases in execution speed.

The next subject is Line A calls, which not only give you more flexibility but are often much faster than the equivalent commands built into GFA BASIC 3.0. Examples of clipping, line drawing, pattern filling and point setting and testing are all demonstrated. Some explanations are convoluted, but experimentation should help clear things up. A large demo program shows how to implement two different kinds of splines (curves drawn between specified points).

Section 6 is about debugging your programs. Although the manual itself does a good job of explaining the debugging commands, this section is valuable because it includes a sample subroutine which can be accessed after every command. The subroutine simply returns to the main program unless a key has been pressed, at which time it gives a series of reports of variable values and other information. After the section on debugging there is a short section on using assembly language in your programs.

Section 8 is easily the most valuable part of the book and is worth the price all by itself. It is here that all the AES functions concerning dialog boxes are explained in great detail, with three example programs. GFA BASIC 3.0 supports AES functions in a much more straightforward fashion than earlier versions.

Further, the GFA BASIC 3.0 package includes a resource construction set, which makes it very easy to build dialog

boxes. Not only does this part of Programming with GFA BASIC give hints on using the resource construction set, but it also provides complete examples on using all the different types of objects which can appear in a dialog box, including text, buttons, editable text, icons and sliders. The explanations are superb.

A useful utility included in this section is a program to create icons (for including in a dialog box) from DEGAS

**Anyone even
remotely interested
in using the
advanced features of
GFA BASIC 3.0 should
have Programming
with GFA BASIC 3.0**

format graphics. These icons are then saved to disk as a resource and can be merged into a resource you're building with the resource construction set. This is the simplest way to include graphics in your dialog boxes.

You can also use a resource construction set to create pull-down menus. Of course, you can create menus within GFA itself (and it will be easier if you use the Menu-builder program published in the December 1988 issue of START), but if you *do* create menus with an RCS, they need to be managed differently by the application. The last part of this section shows how to do just that. It also shows how to have the menus appear in the middle of the screen or even pop up from the bottom of the screen. Unfortunately, these sample programs tend to lock up the computer.

A "resource analyzer" completes the

section. This program can load a resource, let you work with it and save a GFA BASIC list file to disk that will load the resource and set necessary values. This program doesn't work very well, however. The screen layout is poor and buttons in the resource don't show up in the analyzed file.

The next section gives excellent examples of how to work with windows, including setting them up and responding to mouse-clicks. This section is especially valuable, since it's much easier to work with windows in GFA BASIC 3.0 (due to the built-in AES functions) than in earlier versions.

The last section of the book shows how to use GDOS with GFA BASIC and includes a 3D function plotter that can output to your printer. Extensive appendices give detailed information on new or changed commands. Most errors in this book show up in the appendices, however.

Programming with GFA BASIC 3.0 is an extremely useful book. It clearly explains many of the aspects of this newest version of GFA BASIC that make it far easier to work with than earlier versions. It answers many of the questions raised by the (currently) poor manual and should be required reading for GFA programmers. It is well-written, carefully edited and highly recommended. ■

Contributing Editor David Plotkin is a chemical engineer for Chevron U.S.A. and a long-time contributor to START.

PRODUCTS MENTIONED

MichTron, 576 South Telegraph, Pontiac, MI 48053, (313) 334-5700.

ST COLORING

Let the ST unleash your child's imagination in a rainbow of colors. ST Coloring Book is a delightful draw-and-paint program that will entertain and educate your children as they add colors to existing pictures or create and color their own. It also makes for a fun and easy way to teach them some of the ways you can use a computer. A color monitor is required.

A coloring book that doesn't need crayons? See for yourself in the files COLRBOOK.ARC and SCREENS.ARC on your START disk!

Coloring books go a long way in aiding the intellectual development of your child. Whole new worlds are revealed as your son or daughter learns to distinguish various colors and shades, develop hand/eye coordination by learning to keep the colors within the lines and maybe even realize their own artistic talents. Besides, coloring books are fun!

ST Coloring Book is a draw-and-paint program that increases in complexity as your child is able to take on greater challenges. For the preschooler, the ST Coloring Book program contains a series of line drawings that can be colored easily with the smooth mouse interface. Primary school-age children will quickly discover the program's many functions, such as its ability to add lines to an existing drawing or to adjust the colors. ST Coloring Book runs in low resolution only and accepts NEOchrome or DEGAS picture files in compressed or uncompressed format. It was written in GFA BASIC.

ST Coloring Book comes with five black and white screens for you to color in.

by Richard Farrell

BOOK

These screens are in a separate archive file, SCREENS.ARC, on your START disk. If you have a double-sided disk drive, format a double-sided disk and copy COLRBOOK.ARC, SCREENS.ARC and ARCX.TTP onto it. Un-ARC COLRBOOK.ARC and SCREENS.ARC, following the Disk Instructions elsewhere in this issue. If you have a single-sided drive, you must follow these special instructions: Format a new disk and label it "ST Coloring Book". Copy COLRBOOK.ARC and ARCX.TTP onto this disk and un-ARC COLRBOOK.ARC. Now delete (drag to the trash can) COLRBOOK.ARC to free up some space on your Coloring Book disk. (Do not delete this file from your START disk or START backup disk.) Now copy SCREENS.ARC onto the Coloring Book disk, you may delete SCREENS.ARC; however, you will probably want to format a data disk for your new, colored pictures.

You can run ST Coloring Book without the P11 screens; however, MENU.SCR and TITLE.SCR must be in the same directory as COLRBOOK.PRG.

Running ST Coloring Book

Set your monitor to low resolution and double-click on COLRBOOK.PRG. If SCREEN1.P11 is not in the same directory, you will start at the Menu screen. Otherwise SCREEN1.P11, "Dump

Truck," will automatically load. At the top of the screen is your palette of colors. Move your cursor to any color and click. A white line will appear underneath the color you choose. Now move the cursor to where you want the color to be and click again—the truck looks better already. You can change

from color to color using the mouse or by pressing the plus (+) or minus (-) keys.

At the top right-hand corner of the screen is a button icon. Move your cursor there and click to return to the Menu screen. At the Menu screen click on DRAW. When you return to the ▶



E. S.

truck, you can put buildings and cars behind it or draw people in the cab.

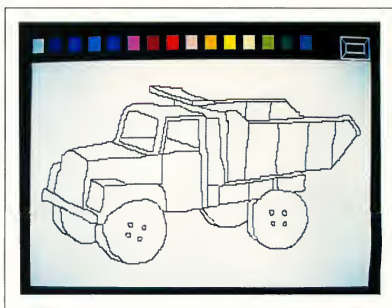
If you want to draw something from scratch, click on CLEAR at the Menu screen, then click on DRAW. This will take you to a blank screen where you're free to draw any image you can dream up. When you're satisfied with your artwork, return to the Menu screen and click on PAINT PICTURE. Now you can color your drawing. Also at the Menu screen, click on QUIT to return to the GEM Desktop.

The Menu screen gives you access to 10 functions that let you draw and color to your heart's content. In the accompanying sidebar, I've compiled a button-by-button description of each of the functions for fast and easy reference.

The Color Palette

From a base of three colors—red, green

and blue—ST Coloring Book lets you adjust the palette at the top of the paint screen. Colors can be modified using the number keys. To see how this works, click on any color, then do the following to see how you affect that



color: Reds: Press 7 to lighten; 9 to darken. Greens: Press 4 to lighten, 6 to darken. Blues: Press 1 to lighten, 3 to darken. To remind yourself which keys

color:

Reds: Press 7 to lighten; 9 to darken.
Greens: Press 4 to lighten, 6 to darken.
Blues: Press 1 to lighten, 3 to darken.
To remind yourself which keys

ST Coloring Book, Button by Button

The following list is a quick and easy reference to the many features found in ST Coloring Book's Main Menu screen. Press the Help key for a list of keyboard equivalents to these functions.

DRAW

Click on DRAW at the Menu screen to sketch your own picture. At the blank work screen, hold the left mouse button down and draw whatever you like with the pencil cursor. When you finish your drawing, click on the button icon at the top right-hand corner of the screen. If you're ready to color your drawing, click on PAINT PICTURE at the Menu screen.

LINE

If your drawing calls for straight lines, click on LINE at the Menu screen. You'll be returned to the work screen where your sketch is. To make a line, click at a spot on the image where you

want the line to begin. Now, move the cursor to where you want the line to end. Notice how the lines stretch with the cursor. Click again. You'll then see a nice straight line. To make another line, simply repeat this process. Note: if the line's starting point is not exactly where you want it, just click the right mouse button. The cursor will be freed up and no more lines will be drawn until you click the left button at the desired spot.

UNDO

If you make a mistake while you're drawing or painting a picture, return to the Menu screen and click on UNDO. The last thing you did will disappear and you're free to redo it. You can also access this function by pressing the Undo key. Press or click UNDO a second time to replace the last operation.

ERASE

The UNDO function only erases the last thing you did. If you want to redraw or repaint larger areas click on ERASE at the Menu Screen. At the work-screen hold the left mouse button down and with the flashing box begin erasing. Anything under this box will be erased when you left click the mouse. The size of the eraser can be changed when you press any number from one to nine while the ERASE screen is displayed. If you erase too much, just press the Undo key and start over.

PAINT PICTURE

Choose a color by clicking on any of the color boxes at the top of the screen. The current color being used is underlined in white. To fill an area with color, place the tip of the brush cursor at the desired spot and click. Note that lines that have been drawn

lighten or darken which color, press the Help key. A list of keyboard commands will be displayed. Press the Escape key to return to the workscreen.

To the right of the palette you'll see the letters R, G and B. Each letter has a corresponding number. The current setting of each color is displayed here. The numbers will change as you adjust the various colors. To toggle between an adjusted palette and the original one, press the letter C.

Changing the Automatic Picture Load

You can stop the ST Coloring Book from loading pictures in two ways. One way is to simply rename SCREEN1.P11 to SCREENX.P11. Another way is to delete the SCREENS pictures entirely (be sure that you delete this from your backup copy disk and not the original).

You can also create your own draw-



ings and have them load automatically to ST Coloring Book. The picture must be in either NEOchrome or DEGAS format. Name the files in succession as SCREEN1, SCREEN2, etc., then save the files with either a .NEO or .P11 extender, depending on the paint program used.

Wrap-Up


ST Coloring Book is an easy way to teach your child the fundamentals of color and coordination. It's also a way to introduce them to the complexities of a computer. And—who knows?—maybe there's a Picasso lurking within your son or daughter just waiting for the opportunity to show off. ■

Richard Farrell is a long-time Atari enthusiast who lives in Bloomington, Indiana. This is his first program published in START.

cannot be filled, so if you accidentally click on a line, the bell will sound.


 <-- PAGE stands for "previous page" and  PAGE --> stands for "next page." Click on either of these to automatically load the next SCREEN picture or to return to the previous picture.


Note that <-- PAGE and PAGE --> only load a picture file, they do not save your image in a buffer. If you're happy with the colors you've given the picture you're working on, then click on SAVE before you go on to another picture. Otherwise you'll lose all your work.

 When you click on LOAD at the Menu screen, a file selector box will appear. Any picture you load must be in either NEOchrome or DEGAS .PCI or .P11

format.

To save a picture, click on SAVE at the Menu screen. A file selector box will appear. Give the file an appropriate name and save the picture with either a .NEO or .P11 extender. If you forget to add an extender, the program automatically saves your picture as DEGAS .P11 file.

 If you aren't happy at all with the picture you drew, at the Menu screen click on CLEAR. An alert box will ask if you're sure you want to do that. Click on yes to clear the work screen, click on no to return to the Menu screen. If you click yes, your workscreen will be clear and you can sketch out a new picture. Press the Undo key to restore the image.

 At the Menu screen, click on QUIT to return to the GEM Desktop.

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Software Rental

Does software rental encourage piracy? That's the position the Software Publishers Association took with Congress last fall. This article was originally published in the September 5, 1988 issue of Computer Systems News, a computer trade paper; we're reprinting it for you because of the long-term effects the software rental battle could have on the ST community.

by Stacey Peterson

The software industry, which prides itself on keeping government out of its business, is knocking on lawmakers' doors asking for protection against what they call a looming threat from software rental.

"The development of a large-scale rental business would jeopardize the future of companies such as WordPerfect," said WordPerfect Corp.'s president Alan Ashton at recent U.S. Senate hearings held in Provo, Utah.

Ashton and several other software company representatives rallied round the Computer Software Rental Amendments Act of 1988, which would ban software rental without authorization from the copyright holder. The Senate Judiciary Subcommittee on Patents, Copyrights and Trademarks is considering S2727 as an amendment to the U.S. Copyright Act.

The argument against software rental operations is that they "are nothing more than invitations to rent the product, make a copy and then return the disk for someone else to do the same," according to testimony of Heidi Roizen, president of software developer T/Maker Co. and the Software Publishers Association.

And while the same can be said about video rentals and even books borrowed from libraries, the software folks insist their case is different. They liken it to the sound-recording industry, which successfully lobbied for its own ban on rentals in 1984, using the argument that technology had reached a

stage that allowed people to make perfect copies in their homes.

The situation for software, however, is even more serious, Ashton argued. Compact disks cost only \$16.95 and take about an hour to copy, but software packages have prices of several hundred dollars or more and can be copied in seconds.

"The incentive to rent software for the purpose of avoiding purchase of a copy is much greater than in the case of records," Ashton insisted.

The prices software companies charge, he added, reflect the "costs of creation." A strong rental market would sap funds the industry needs to reinvest in improving products and in research and development.

In addition to time and cost factors, Ashton-Tate Corp. deputy general counsel Thomas Chan maintained that there is no good reason for rental. "No one really rents software to perform some data processing and then to return the original software without making a copy. To do so would be like creating a bunch of files, locking them up and throwing the key away."

Chan, who spoke for ADAPSO at the hearing, stressed that some software rental operations are, in fact, "reincarnated" software pirates. They used to sell illegal copies of software programs but have had to find other entrepreneurial outlets as the government makes pirating more difficult.

"Unless I'm a really stupid pirate, why would I make copies when I can

rent," Chan recently said in an interview.

In his testimony, Chan cited a Canadian company, Crazy Irving, as "one of the most notorious pirates" that was prosecuted for software theft and fraud earlier this year. Within 24 hours, Chan said, Crazy Irving reopened its door, "this time renting software and openly challenging the software industry and government to action."

Right now, software companies depend on their end user license agreements, which prohibit rental, to protect them from these operations. But no one has tested the enforceability of these agreements, Chan said.

There is some doubt that "you can do by a contract what the Copyright Act does not specifically let you do," he added. If the contract itself does not hold up in court, the companies are left having to prove that a rental company has contributed to infringement.

The software companies, while insisting that rental is obviously "contributory infringement," find that changing the copyright law is the easier way out.

But then again, at this point it's only a one-sided argument, since no rental companies were called to testify at the Senate hearings. ■

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Stacey Peterson is the Senior Editor of Computer Systems News.

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Planes, Thrones and Slapshots

There's only one word to describe this issue's games: eclectic. For instance, Superstar Ice Hockey takes you to a fun-filled night at the fights—uh, we mean ice hockey. Then Sinbad and the Throne of the Falcon puts you in the shoes of one of the greatest adventurers of all time. And, finally, SkyChase has you battle it out with the fastest and most powerful attack jets ever developed.

SUPERSTAR ICE HOCKEY

reviewed by Rick Teverbaugh

Superstar Ice Hockey goes far beyond what any other computer hockey game has ever attempted. But perhaps in trying to cover too much ground, the creators forgot to add the speed and passion that make this sport one so exciting to watch—and so taxing to play.

Gamers assume a triple role. First, as the general manager, you wheel and deal to obtain the best players possible. Then you're the coach, deciding who plays on a line, when the line changes occur and what strategies will be used on the ice. Finally you get to put on the gloves and pads, pick up a stick and go get 'em. That's where the troubles begin.



With impressive graphics, Superstar Ice Hockey goes far beyond what any other computer hockey game has ever attempted.

G-Rated Gameplay

Ice hockey is a game of speed, finesse, power and brutality. All of these elements show up in Superstar Ice Hockey—except brutality. Once the game moves to the ice, you're left with a G-rated version of a sport that is mostly R-rated (for "rough"), or at least PG-13. When one player checks another or trips him, all you get is a player sitting on his posterior and spinning on the ice.

Not only is that less than satisfying, but the spinning lasts too long. Time is

simulated so it won't take 20 minutes to play a 20-minute period. This compression of time makes the spinning players even worse. One player spun in one place for nearly 30 seconds.

Game control is certainly more exciting when you leave the goal-keeping to the computer and go to control a skater. This gives you more to do during a game, but there's another reason. Since the game is from a side-press-box point of view, it's difficult to get a good perspective for moving the goalie to protect the goal. Most of the time the computer ▶

does a better job, at least on the first shot. If there's a rebound, you'd better be on the spot with a defenseman because the goalie will almost never stop a good second shot.

The Preseason and Gameplay

Despite the on-ice problems, Superstar Ice Hockey has enough long-range playing options to keep you interested. For instance, not only will the program keep track of an entire season's worth of games leading into the playoffs, it will also track as many as nine seasons.

Preseason improvements are made to the team in three ways. You can take the team to training camp, trade players with other teams or recruit players from the minor leagues. When the season gets underway, the game setup screen is where you make choices for the upcoming period and the player you will control with your joystick. In two-player games, two joysticks are used.

Once the game begins you can select from one of three offensive and defensive lines—pre-arranged sets of three offensive players or two defensive skaters. Then you can set the strategies. On offense your choices are Attack, Normal or Setup. Defense also has three choices. Forecheck is an aggressive, attacking style that often becomes necessary when your team is behind. Other choices are Normal and Protect, which is good for maintaining hold of a lead.

It Takes Time

It will take a while to catch on to the method for shooting, passing or faking shots. It will also take some time to learn that skating too hard and too fast will almost always result in skating past your intended target. Putting on the brakes isn't easy here.

Expect to take some lumps in your first few games. If the score gets too high, even the referee may find your ineptness humorous. But he'll still hit you with penalties for unnecessary roughness, offsidings or icing.

Superstar Ice Hockey is a good game; it's just not everything an exciting sport like this deserves.

SINBAD AND THE THRONE OF THE FALCON

reviewed by David Plotkin

The aging Caliph has been mysteriously turned into a falcon before he can name his successor from among three candidates—Good Prince Haroun, Prince Jamoul (The Butcher) and the Black Prince. The Caliph's daughter, Princess Sylphani, summons famed adventurer Sinbad the Sailor to help. As Sinbad, your goal is to discover the secret of turning the Caliph back into human form. To do this you must lead the Caliph's armies past the Black Prince's forces.

Sinbad and the Throne of the Falcon is another Cinemaware com-

tant to keep track of the time—the Caliph will remain a falcon forever if you take too long.) and a crystal that you use to command the Caliph's armies. You can explore the surrounding area on foot with a party of men or sail to other ports with your ship.

If you travel on foot you'll meet characters you can converse with. Chief among these are the gypsy, the shaman and a seductress (now *that's* an interesting encounter!). When these characters speak to you, you're given a number of responses to choose from. The correct response may win you gifts or valuable information. However, angering the other party can have serious consequences.

Moving on land is simply a matter of clicking on one of the road signs to get to your destination. Remember that time passes while you're traveling. Pirates may attack your ship from time



Sinbad and the Throne of the Falcon was another Cinemaware game designed to be reminiscent of the old movies.

puter game designed to be reminiscent of old movies. Like their earlier offerings, sometimes it works and sometimes it doesn't.

Gameplay

You begin at the Caliph's palace. You have a ship, a loyal crew, a map of the surroundings, an hourglass (It's impor-

to time, killing members of your crew. Be sure to leave a good-sized defending party on board when you go exploring. You will also want to "recruit" new crew members in the larger cities.

Periodically, you must use the crystal to review the situation around the Caliph's palace. Inevitably, you will find armies of the Black Prince's converging

on the palace and you must order the Caliph's men to attack. The battlefield is divided into hexagonal shapes, with each army occupying one hexagon. When opposing armies occupy the same square, they fight. You must move reinforcements to areas where the fight is going badly, as well as move weakened armies back to supply depots. It's possible to completely defeat the armies of the Black Prince and not need to worry about this part of the game anymore!

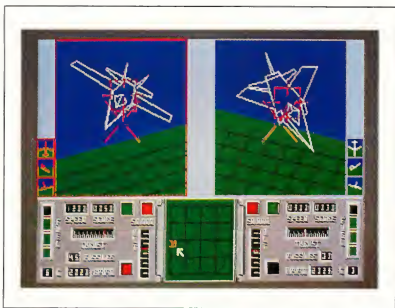
Sea travel means that you must locate your ship and set sail for the destination you selected from your logbook. Once you reach that destination, you can choose a landing party and go ashore, at which point you move once again into the "land exploration" portion of the game.

Arcade Sequences

As with earlier Cinemaware games, Sinbad and the Throne of the Falcon has a number of arcade sequences. Sinbad may need to guide his ship through rocky shoals (picking up shipwreck survivors to add to his crew). Hitting a rock ends the game, though, so it's best not to take too many chances. You may also have to battle it out using your sword. Opponents can include the Black Prince, Prince Jamoul (The Butcher), a skeleton and a statue that comes to life.

If there aren't enough members in the landing party to defend them, Good Prince Haroun or Princess Sylphani may be carried off. Sinbad may also find himself in an underground cavern, from which you must help him run, jump and climb in a sort of rudimentary Donkey Kong game. There is also a sequence where you try to shoot down a Pteranoxos, a sort of pterodactyl with feathers. The arcade sequence animation tends to be jerky and joystick response is not always what it should be, especially in the sword fights.

The graphics are quite good, in keep-



SkyChase puts you in the cockpits of some of the hottest U.S. and Russian military attack jets.

ing with other Cinemaware products. Full-screen renditions of scenes lend a movie-like air to the game. The encounter with the seductress is especially provocative (if rated PG). If you are playing on a 520ST, frequent disk access and disk switching is required (the

ble is that there is no Save Game feature. Sinbad is a big game, with lots of territory to cover and many ways to die. Yet you must start over from the beginning every single time.

Try Before You Buy

If you liked earlier Cinemaware offerings, you'll like Sinbad and the Throne of the Falcon, particularly with its stunning graphics arcade sequences. But in my opinion, it lacks depth and fails to involve the player. I suggest that you try the game before you buy it.

SKYCHASE

reviewed by Scot Tutlin

As Sinbad, you must find out how to change the Caliph back to a human.

game comes on three disks). But if you have one megabyte or more of internal RAM, all three disks can be loaded into memory and the game proceeds much faster. A hard disk is not supported. Sound is non-existent except for a few squeaks and tinkles.

Only the joystick is used, although the mouse pointer would be much easier and more efficient. Confusingly, the documentation is written for the Amiga, although there is a card of changes for the ST version. But what's really incredi-

SkyChase, from Broderbund, is a jet simulator that combines tactical maneuvers with fast combat action. It's a game that puts you in the cockpits of some of the hottest U.S. and Russian military attack jets. Your mission is to seek out and destroy enemy aircraft—before they destroy you.

Simulation Parameters: Choosing Your Weapons

Once the game starts, you're presented with a series of menus, each of which contains options that alter the simulation's parameters. The first menu selects the number of players. You can play ▶

against the computer or a friend. There is no keyboard option, so joysticks are required.

Each player can then select the type of jet he or she wants to fly. The following jets are available: the Navy F-18 and F-14, the Air Force F-15 and F-16, the Russian MiG 27 and MiG 31—and as a special bonus, a top-secret Paper Plane. At this time, players also select the amount of fuel and gun ammunition and number of missiles for their jets.

Bullet-hit threshold determines the size of the area within which you can score a hit with your guns. The missile-lock threshold determines the spatial interval within which your missiles will acquire a target. The G-force effect determines the amount of G-forces the player can withstand before blackout. A grid-select option determines the size of the grid. The smaller the grid, the fewer lines there are to update (and thus game speed increases). When you play against the computer, the game automatically sets your opponent's difficulty level.

Once the parameters are set the play screen is displayed. This screen shows two windows, yours and your opponent's. Flight instrumentation is displayed below each player's window. Digital counters display speed, score, missile and gun rounds remaining and current altitude. Colored bars display fuel and thrust levels. A radar is displayed at the bottom center of the screen.

Air-to-Air Combat

The dogfight begins with both jets executing a flyby. Each jet starts from one end of the grid and passes the other jet. The players' controls are disengaged until the jets pass a certain distance. At this point the controls are engaged and combat begins!

As in other flight simulators, pushing the joystick forward causes your jet to dive. Pulling back on the stick causes your jet to climb. Left and right move-

ments cause the jet to bank and turn or roll.

The goal in SkyChase is to shoot down your opponent's jet. Maneuvering behind the enemy aircraft is best way to achieve this goal. From this location you can fire at him, but he can't fire at you.

A crosshair marker is displayed at the center of your cockpit window. For a gun-kill, maneuver your jet until your crosshairs are centered on your opponent. Press the trigger for a quick burst

**If you have a need
for speed, SkyChase
is one of the best jet
combat simulators
available.**

of machine-gun fire. Gravity and momentum do affect the direction of your rounds. At times you will have to "lead" your gunfire to score a kill. A missile-kill is slightly different. When you're in range, a target-designator box will appear over your opponent's jet. A line will connect between the designator box and your crosshair. Once the missile has a lock, you'll hear a high-pitched whine and see a green light appear on your screen. Double-press the trigger to launch the missile. A small dot will race toward your opponent's jet and on his screen a red light will flash, indicating a missile has locked onto his jet. Once a player's jet is destroyed, the flyby sequence starts over.

Combat Performance

SkyChase is simple and to the point. There are no fancy 3D environments to update, just a grid. During combat, there

is no time to look at pretty scenery. Accessing the weapons is very easy: one trigger press for guns, two for missiles. The rich selection of parameters gives total control to the players, thus allowing advanced players to go head-to-head against beginners in a fair scenario.

SkyChase does have a few bad points. First, if an opponent's missile acquires a lock, it's goodbye amigos! A quick move may work, but most of the time it doesn't. Military jets have defenses against enemy missiles. SkyChase should, too.

All things considered, SkyChase is one of the best jet combat simulators available. It's the best for quick screen updating and smooth 3D animation. If you have the need for speed, buy a copy of SkyChase. It'll blow your socks off! ■

Rick Teverbaugh is a sportswriter and veteran game reviewer for several computer magazines. David Plotkin is a chemical engineer for Chevron U.S.A. and a Contributing Editor for START. Scot Tumlin is Direct Mail Sales and Support Supervisor for Antic Software.

PRODUCTS MENTIONED

Superstar Ice Hockey, \$49.95. Mindscape Inc., 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667.

Sinbad and the Throne of the Falcon, \$49.95. Cinemaware Corp., 4165 Thousand Oaks Boulevard, Westlake Village, CA 91362, (805) 495-6515.

SkyChase, \$39.95. Broderbund (Maxis), 17 Paul Drive, San Rafael, CA 94903, (415) 492-3500.

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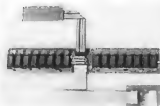
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