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SPECIAL ISSUE NUMBER FOUR



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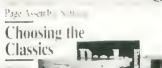
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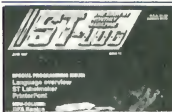
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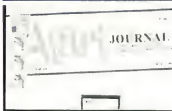
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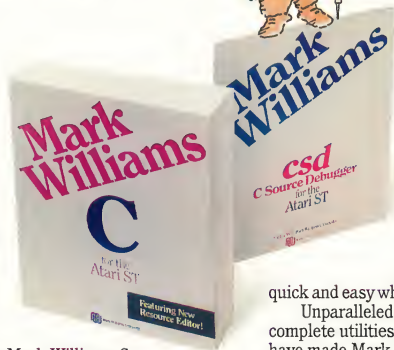
Reviewers have been raving about the IBM version of *csd* for years:

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

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- Source and object code for RAM disk cuts compile time in half
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THE ST QUARTERLY **START**[®] The #1 Guide to the Atari ST

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EDITORIAL

Since the first issue of START, we've heard one request from you over and over: Publish more issues! We added four Special Issues this last year, but still you wanted more. You've made us the leading ST magazine in the country and sent our subscription list through the roof. Thanks! And because of your fantastic support, we're able to announce that beginning with the next issue, START will be a monthly! Look for the October, 1988 issue of START on sale September 1st.

What does this mean for you? It means we'll have more editorial pages to cover the ever-expanding uses of the ST and Mega. It also means that we'll be able to bring you *four more disks* each year full of great programs. And it means that no matter what else happens in the ST magazine marketplace, START will be here to inform, educate and entertain you. But now let's get on to the issue you're holding—it's all about Games and Entertainment . . . and more.

Any programmer knows that it takes flat-out computing power to run sophisticated ST-caliber games; in "Go Play a Game," David Plotkin looks at Dungeon Master and other favorites of his and explains the whys and wherefores of the ST's game power.

If games are really your thing, check your START disk this issue: you'll find Naval Battle, the complete Battleship game; Slider, which makes any DEGAS picture into a "15" puzzle; and Discovery, an outstanding educational program that thinks it's a game (or vice versa).

Life's not all games, of course; you need music, too. Check out the reviews of Sonicflight's new MIDI patch editors and "M", an amazingly intelligent MIDI composer. But if you're not into MIDI yet, plug into Guitar Solo on your START disk and let your mouse run up and down the strings!

Of course, we also have special programs and our regular features and columns. Here's just a sample:

- On your START disk is The Byte Mechanic, a unique disk utility for the power ST user and the neophyte. Now you can examine and modify disk files of *any type* easily.
- In our Getting Started column, you can learn the basics of hard disk drives and how to choose one for your system.
- Is your floppy disk drive operating at the right speed? Out of Dave Small's toolbox comes SPEED to help you examine your drive's RPMs.
- Jim Pierson Perry explains how to transfer text files from Mac to ST to PC and back.
- Tom Hudson's ReSTART is a tiny 395-byte program that stays in memory and lets you do a cold boot any time *from your keyboard!* What a convenience, especially to you Mega owners with normal-length arms! And there's still more than I can describe here. Your START Editor sez, "Check it out!"



Andrew Reese
Editor
START, The ST Quarterly

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REVERSE VIDEO ON THE ST?

I enjoy my ST a lot, but the white background and black letters give me very bad eyestrain!

Is there any way to use reverse video on the ST for a black background with white letters?

Glenn Novak
Keasbey, NJ

Better than that, you can change your ST colors to black on white, white on black or (if you have a color monitor) anything in between. You will need the program CONTROLACC, the Control Panel, that came with your ST. Boot your ST with a disk containing this program in drive A. Next, go up to the desk menu and click on Control Panel. At the bottom of the Control Panel window are a series of squares. Each of these squares represents a different color register; the number of active squares will depend on your screen resolution. The top left square is the color of your background screen and the lower left square is the color of your text display.

Click on one of these squares to make it the active color. Now, notice the three bars labeled R, G and B. These show the amount of red, green and blue, respectively, that make up the active color. To adjust the value, use the mouse to drag the boxes with numbers in them up or down. The higher the value, the more the concentration of that color. Experiment with these values until you have a screen you are comfortable with. For a black background with white text, set the top left box to 000 and the lower left box to 777. You will need to change the two values in steps; if you set your screen so that these two values are identical you won't be able to see the Panel's controls!

If you click on Save Desktop under the Options menu, the next time you boot with that disk in the drive the colors will be preserved.

If you are using a GEM-based word processor such as 1st Word, you will need to adjust the colors from inside the pro-

gram, as most programs initialize with their own color palettes.

If you are using ST Writer, you can accomplish the same thing without the Control Panel by simply pressing T for Transform Colors at the main menu.

DON'T FORGET US MONOCHROME USERS!

Although I find START's price hard to beat, I have a complaint: why do you continue to publish programs that won't run in all screen resolutions? Those of us with monochrome monitors are also interested in programs such as "Wall Street" from your Special Issue #3. I realize that we are in the minority, but if

ALERT BOX

In the Business issue of START (Special #3), the prices for ISD's Masterplan spreadsheet program and the Calamus desktop publishing program were incorrect. Masterplan retails for \$89.95; Calamus is \$449.95. (A 1040 ST version of Calamus is available for \$199.95.) For further information on these products, contact ISD Marketing, 2651 John St., Unit 3, Markham, ONT, Canada L3R 2W5, (416) 479-1880.

Whoops! On page 31 on the Business issue, we inadvertently listed a "fictitious" advertisement for the company Zaphodyne Inc. Zaphodyne Inc. is a real company, and manufactures telecommunications software for the ST. For more information about their products, contact John Ruley at Zaphodyne Inc., P.O. Box 1111, Fairborn, OH 45324, (800) 527-4759.

you're catering to the 3/5 market majority, you risk disenchanting 1/5 of your potential audience! (And please don't tell me to buy another monitor!)

Tom Becker
Kenosha, WA

Whenever possible, START tries to accommodate all our readers by publishing programs that run on any monitor. For example, two of the programs on this issue's disk (Guitar Solo and Slider) were originally monitor-specific, but were modified to run in either color or monochrome. Our feature game of this issue, Naval Battle, will also run in high or low resolution.

You might also look into the OmniRes program from E. Arthur Brown Co., 3404 Pawnee Dr., Alexandria, MN 56308, (612) 762-8847. It's \$34.95, and will let you run color programs on a monochrome monitor and vice versa.

LET'S PLAY TWENTY QUESTIONS

I'd like to congratulate you on producing the finest magazine for the ST that I have seen to date. I am still relatively new to computing (less than a year) and the 1040 ST is my first computer. I purchased it with the idea that, with its inherent capabilities and memory, I would be content for at least a year or two. Since then I've learned that power does indeed breed a hunger for more power, and I have numerous questions about Atari and its computers.

1.) Why is the Mega so expensive here in the States? I have seen advertisements in current British ST magazines hawking the Mega 2 for \$1100 and the Mega 4 for \$1600 (this is converting pounds to dollars, and without monitors). What's more, these advertisements are mail order, something Atari vowed not to allow (at least not in this country).

2.) Since it seems that I won't be able to afford a Mega anytime soon, my thoughts turn to upgrades for my 1040.

What are the precise improvements that the new TOS will bring over the old TOS? Will it support player/missile graphics? And will the new TOS (I assume the same TOS as in the Mega) plug right into the old TOS sockets?

3.) In your Spring 1988 issue Charles Cherry mentioned that he had seen an 520 ST expanded to eight megabytes of RAM. I would be really grateful to learn exactly how this was done. I also read that the 520 ST power supply is not capable of running four megs without being overloaded. Fact or fallacy?

4.) Has anyone made an ST variant motherboard with one-meg chip sockets? It would greatly increase memory upgrades (especially if the chip prices fall).

5.) Can the ST's clock speed be increased to, say, 16 or 20 MHz? If so, what chips would be required? Would

any such clock speed upgrade create incompatibilities with the new TOS and blitter?

6.) Is it possible to upgrade the ST's 68000 processor by swapping it with a 68020 or 68030?

Well, that's it for the techie stuff. . . I just have one final question. Is there an ST program called Home Planetarium? I think it's a variation of a Commodore 64 program called Sky Travel.

Well, that's about it. Your magazine sets the standard for quality and professionalism in the ST world, and I look forward to enjoying many more issues.

P. Singh Khanna

North Charleston, SC

1.) The bulk of the cost of the Megs in this country at present is in the DRAM chips. Mega 4's have 32 one-meg chips that cost up to \$50 apiece on the spot market. The trade restrictions that caused this chip

shortage are an American problem and do not apply in the UK.

2.) The "new" TOS ROMs are not and will not be generally available, since they were little more than a "bug fix" and Atari is currently working on a more comprehensive upgrade. One of the main areas of upgrade is GEMDOS and it should be noticeable in Desktop operations; it should be available sometime in the fall.

3.) We were unable to contact the person with the eight megabyte 520 ST to find out how this was done. Atari recommends a one-meg modification on your 520 and a two-meg on your 1040 would be safe; two-megs on a 520 and four-megs on a 1040 would be the maximum safe upgrade. Past that you would need to somehow modify the power supply. Although the 68000 CPU can address up to 16 megs, the ST MMU (memory management unit) can only address four megs. ▶

PART 2

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This month we fly to Paris, city of lights. Few sights can compare with the Eiffel Tower at dawn.

Now off to our left you can see Notre Dame cathedral, situated on an island in the Seine. Other Paris highlights include the Arc de Triomphe, Sacre Coeur, Concorde Obelisk, and the Louvre.

Next month we'll finish our tour of Paris and continue on to Germany.



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DIALOG BOX

4.) Not to our knowledge.

5.) Yes! The new ST Accelerator from Strange Systems increases clock speed to 16mhz; see this issue's News, Notes and Quotes for more information.

6.) Not at this time.

And, finally, Atari is marketing a program called Atari Planetarium (\$39.95) for the ST. (We're not sure how similar this is to the Commodore program you mentioned.) This educational program is greatly improved from the original 8-bit version. For information, contact Atari Corp., 1196 Borregas Ave., Sunnyvale, Ca 94088, (408) 745-2000.

ICD SUPPORT

I find Personal Pascal and my 1040 ST work great, but since purchasing a Mega I've had problems using Personal Pascal Version II. The new editor cannot be compiled. It seems the authors used some taboo memory locations that are used by the Mega and not other STs. I traded my 1040 for the Mega, so this is a real disappointment.

Has this problem been fixed? And will ICD supply the fix? And what is the cost for us registered owners of Personal Pascal Version 2 purchased from OSS? OSS has known about the problem since last October.

Finally, does ICD plan to support registered owners of Personal Pascal by OSS? What is ICD's address and who is the best contact person for these types of problems?

Fred Saavedra
Daly City, CA

ICD does plan continued support for registered owners of Personal Pascal. Their address is 1220 Rock St., Rockford, IL 61101-1437. Technical support is available at (815) 968-2228. It's true that Personal Pascal vers. 2.0 and 2.1 don't work with the Mega ROMs; however, the problem is fixed in ver. 2.2. To get the upgrade, send them your original disks and \$10.00.

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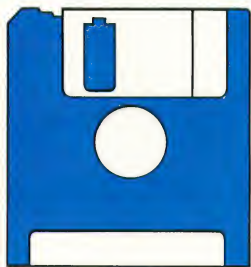
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Every issue, START features great programs on disk. If you bought this issue of START without the disk, you're missing out!

START is available with the disk for \$14.95, but for those of you who want to read START first, it's available without the disk for \$4.

If you want the full version of START, you can order the companion disk by calling the Disk Desk toll-free at (800) 234-7001. Our Customer Service specialists are on duty from 6:00 a.m. to 6:00 p.m. Pacific time. Or you can order your disk by mail using the order form inserted into this issue. Each disk is \$10.95 plus \$2.00 shipping and handling.

CALL (800) 234-7001!



CUSTOMER SUPPORT IS NOT DEAD

There has been much controversy relative to the lack of technical customer support by suppliers and distributors of computer hardware and software. This controversy is very evident by the article by Frank Kofsky ("How Not To Run A Computer Store") in the Fall 1987 START, and subsequent discussions relative thereto. Good, responsible customer support is not dead! At least not by the two companies that I dealt with recently.

Recently I purchased an Atari Mega 4 from Mid-Cities Comp/Soft Store in Belltower, CA. I bought the Mega because I ran out of memory in my one-meg (upgraded) 520 ST. I was advised that some of the programs that ran on the ST series could have problems with

the Megs. I found that one of these programs was produced by Abacus. This was a shock to me, since I am using this program for a very important database which includes one file of over 16,000 records. I panicked. I immediately called Mid-Cities to tell them that I might have to return the Mega and continue with the 520, an unsatisfactory solution. I would have to break my records into two or more files which would make searching (which is the most frequent feature that I use), as well as record updating very cumbersome.

The Mid-Cities staff immediately reviewed the program on their Mega and found I was correct. They then contacted the Abacus technical staff within the hour and stated the problem. Abacus was already aware of the problem and had made corrections to the program. Would you believe that Abacus

sent me an update that very same day? Less than 24 hours later after I reported the problem to Mid-Cities I had the update in my hands and installed on my system. The program runs beautifully!

My sincere thanks to them both for their priority attention to my problem. With support like that, guess who gets my business? Other computer product suppliers should take a "page from their book," then acceptable customer support will really be universal.

Florence D. Frisbee
Huntington Beach, CA

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Or leave us a message on CompuServe using the Antic Online Mailbox—just log on and type **GO ANTIC**.

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Scenery-Disk is so beautiful to fly, you'll want to make it the centerpiece of your Scenery-Disk collection! This is part three of a five-part guided tour from London to Red Square.

This month we say goodbye to Paris, France. Look closely and you can see the Arc de Triomphe to the right of the Eiffel Tower.

On to Germany! We land first at Frankfurt, one of the most modern German cities. Other areas we'll be visiting include Munich, Nurnberg and Stuttgart.

Next month we'll finish our tour of Germany, and prepare to go on to Moscow!

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NEWS, NOTES & QUOTES

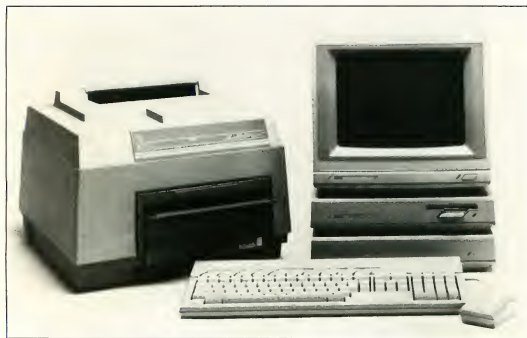
Atari's New Theme: Desktop Publishing For The Rest Of Us

Once again, business is war at Atari. The company announced their intent to go after the desktop publishing market with a Mega 4-based system priced in the \$5,000 range—a price thousands of dollars below the competition.

Atari made this announcement at the Corporate Electronic Publishing Show, (CEPS) in Chicago last April, a desktop publishing conference aimed at high-level publishing professionals. It was

computer users. Atari likes thinking of its system as the Honda of the desktop publishing world.

"Jack likes to think of himself as a Japanese," says Atari Director of Software Development Joe Ferrari. "The Japanese take an American concept and improve it. At the high end, we'll pursue the typeshops to get their endorsement and then have a platform for less demanding users," Ferrari stated. "Then we'll pursue newsprint. In the corporate



Atari's first appearance yet at a vertical-market show, and it raised more than a few eyebrows. In a booth on the prime floor space next to Apple and IBM, Atari promoted desktop publishing as a money-saving technology for ordinary

environment, they may want a Mac for the image and glamour, but small businesses and typeshops are bottom-line oriented. They won't allow emotions to interfere with hardware buying decisions."

Getting Serious About Moms And Pops

Atari Corp. is getting serious. They've hired a new president, Chuck Babbit; a new VP of Marketing, Anthony Gould; and a new public relations agency—Winston and Winston, of Fort Worth, Texas. They've printed up slick color brochures. But behind the new veneer, Atari's theme remains the same: "Power Without the Price."

"We're going after the Mom and Pops of America," Gould said at a press luncheon on the first day of the show. "This is a low-cost solution for the cottage industries of America. If you're going to compete with Apple it's very tough," he said. Instead, Atari announced their intent to pursue the market that Apple has all but left to languish: "The rest of us."

Twisting The Apple Theme

Atari's unofficial slogan for Gould's strategy is "Desktop Publishing for the Rest of Us"—an ironic twist on the old Apple Macintosh slogan, "Computers for the Rest of Us." Atari's desktop publishing system for the rest of us is a Mega 4, the SH205 20-megabyte hard drive, SLM804 Laser Printer and Softlogik Publishing Partner Professional software. The entire package is priced at \$5,492 retail. Atari says a comparable system would cost \$6,892 on an IBM AT clone running Aldus Pagemaker and \$9,092 on a Mac SE running Quark. Moreover, to make the Atari system even more attractive, Gould said Atari is planning to set up a financing plan en-

NEWS, NOTES & QUOTES

By Gigi Bisson
and the START Staff

abling small businesses to buy the Mega 4 publishing system through leases for \$80-\$100 per month.

The Competition's Reaction

But the response from Atari's competition was a resounding "So what?" The other participants at the show seemed to go out of their way to attack Atari—probably because they couldn't accept Atari's low prices as "realistic" for the business computing market. Apple Corp. has all but ignored the idea behind the desktop publishing revolution: make typesetting and graphic design affordable to the masses. Instead, they were showing products that included a \$35,000 four-color layout system without including the price of a Mac II computer. The offerings in the Apple booth were clearly aimed at the graphic design elite and that may have influenced the competition's attitude toward Atari.

One expert who did take the Atari introduction seriously was Jonathan Seybold, publisher of the industry's most influential publication, the Seybold Report. Seybold was favorably impressed with Atari's software demonstration and intent to bring down the price of desktop publishing. "It's an interesting move. I'll be watching them," he said.

And as Atari's Babbit joked with reporters, "Give us your poor, your hardworking and huddled masses. We have the fastest-growing computer in Germany if not all of Europe. We need to keep that fire blazing in the U.S."

Atari At Spring Comdex

The spring Computer Dealers Exposition (Comdex) was held in Atlanta in May and Atari was there, although they showed nothing new in the way of



Atari's CD-ROM.

hardware. Once again, Atari's display area was given over in large part to third-party developers with a theme of

ST/Mega solutions to business problems.

Atari confirmed their assault on the low-end desktop publishing market first announced at CEPS. Neil Harris, now Director of Product Management for the Computer Division of Atari U.S., explained that Atari would pursue those "niche markets" where it has already found success, such as the MIDI market. The mom-and-pop DTP market is the second of these on which Atari will focus its energies and money.

Conspicuous by their absence from the Atari booth were the ABAQ transputer and the 68030 Unix box. Instead, Atari filled its booth with ST and Mega monochrome systems, with a lone PC4 80286 PC-clone in the corner. The CD-ROM Player was shown (for the umpteenth time), but this time in its final production version. It should be in dealers' hands at the target price of \$599 by the time you read this.

A 16-Mhz Processor For The ST

Megabyte Computers of Webster, Texas announced their ST Accelerator board, a 68000-16 add-in board for the ST at Comdex. This is a hardware modification that requires the 68000 be removed from the motherboard. A new board, 68000-16 processor and faceplate switch must then be installed, but the results can be dramatic. Instead of crawling along at the usual 8-MHz clock speed, an Accelerator-equipped ST will charge along at 16 MHz! And it's designed to be switchable from inside an application merely by pushing a button on the computer's faceplate.

The Accelerator's installation complexity means that not just anyone can do it; it requires a trained pro. Also, the computer's warranty will be absolutely voided. But the benefits may be worth the trouble and the risk. Look for the ST Accelerator in stores this summer at a price of \$249. ▶

... And A Math Co-processor

For the ST power user who needs super-fast math calculations, such as spreadsheets, CAD, graphics, etc., Xetec, Inc of Salina, Kansas has developed the XCEL hardware floating point math processor cartridge. It plugs into the ST cartridge port for math speed increases of 3-20 times! Xetec, Inc. should have received FCC approval for XCEL by the time you read this, so look for XCEL on the market at \$199.

You won't see any immediate improvement in off-the-shelf software using XCEL, since the application software must be recompiled using Xetec's custom math libraries, but software developers are very interested in supporting XCEL.

... And A 19-Inch High-Res Monitor

Just what is going on here in the world of Atari? First a doubling of processor speed, then a math co-processor and now a video output board with a 19-inch high-res monochrome monitor! It's true—ISD showed it at Comdex. An off-the-shelf 19-inch high resolution Monitor was connected to a special video adapter card installed in the internal bus port of a Mega 4. And this was not just for demonstrations; ISD was showing off Calamus, their hot new DTP package, and DynaCAD, their next generation CAD package on the new monitor. The display was the equal

of any DTP/CAD display at the show. Calamus and DynaCAD should be out this summer with the video board following in the second half of the year. Oh, and it can handle high-resolution color, also.

... And An Atari 68030/Unix Computer

Although not shown at Comdex, Atari's new 68030-based UNIX machine is on the bench in the R&D Labs at Atan, Inc.'s headquarters in Sunnyvale, California. The production prototype PC boards and the six custom Atari-designed chips are undergoing debugging. Everyone at Atari who spoke of this high-speed (16 MHz+ clock speed), high-powered machine was very excited about it. Its development seems to be proceeding on schedule and, since it is designed around an existing operating system (UNIX), a broad software base precedes it into the marketplace. It will be priced far above the home market (it was never aimed there in the first place), but at the lower end of the work station market and its success there will have a significant effect on Atari's future health.

But No TOS ROMs Or Blitters

Have you been champing at the bit to buy the new TOS ROMs? Well, hold your horses, because Atari is not distributing the present version. But they

are doing a major re-design of the ROMs and it is proceeding at full speed.

According to Atari, the current Mega/ST ROMs were an interim re-design and bug fix and never intended to be the final version. They are shooting for a fall release of the new chips and they just may make it.

The Blitter chip is still in such short supply that Atari is scrambling for enough chips to fill the sockets in its Mega computers. Atari recently changed fabricators for the blitter chip, however, and they still hope to have enough blitters to go around "soon."

Nor Any Product Announcement Before Its Time

Atari has significantly changed their policy regarding public announcement of new products. Atari's past policy has been to announce products months (sometimes years) ahead of product shipments (if indeed shipping ever took place). This tended to make Atari—and Atari's spokesmen—look foolish.

A new policy is now in place, however, that no new product will be announced before its availability is firmly established. That's why there have been no announcements of any of the products rumored to be under development at Atari. If the policy holds, it should do wonders to rebuild Atari's credibility both within and without the Atari community.

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CIRCLE 042 ON READER SERVICE CARD

Compiled by Jon A. Bell
START Associate Editor

New Games From Atari

Atari has just released two new ST games: one completely original, one an ST version of an arcade classic. Crack'd is the new one—a strange entertainment in which you have to protect a treeful of eggs from being devoured by an entire menagerie of hungry animals. Use your slingshot to zap the attacking animals (owls, snakes, rats and bats) while running around and catching falling eggs. (And they say computer games aren't realistic enough.)

Crack'd.



Missile Command.

Missile Command is finally here—the ST version of the nerve-wracking game that was a hit in both coin-op and Atari 8-bit versions. Protect your cities from incoming warheads by using your anti-ballistic missiles. You can fire from two missile bases, using your right and left mouse buttons to switch between bases. (Did this game predict SDI?) Crack'd, \$29.95; Missile Command, \$29.95. Atari Corp., 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 94088, (408) 745-2000.

CIRCLE 170 ON READER SERVICE CARD

Switch Back

Switch Back, a new utility from Alpha Systems, is a combination hardware/software package that allows you to swap between your ST programs, back up programs or go back to a previous point in a program. You can save a game at almost any point (and return to that point at any time), load two or more programs into your ST and switch between them as often as you like. The Switch Back hardware plugs directly into the printer port on your ST (and it includes a pass-through connector for your printer). Requires one megabyte of memory. Switch Back, \$69.95. Alpha Systems, 1012 Skyland Drive, Macedonia, OH 44056, (216) 467-5665. ■

CIRCLE 174 ON READER SERVICE CARD

Stop That Static

If you have a problem with static electricity (which can give you glitchy computer performance or even destroy your disks), then EDP *Staticide* may be the solution. *Staticide* is a pump-action spray designed especially for static-sensitive computer and electronics user environments. It's non-flammable, non-staining and helps to prevent dust attraction. *Staticide*, \$4.95. ACL Incorporated, Elk Grove Village, IL, 60007, (312) 981-9212.

CIRCLE 171 ON READER SERVICE CARD

Plotter Software for Drafrix/1

Foresight Resources, makers of the Drafrix/1 CAD package for the ST has just announced a companion product—*DotPlotter*, a software package that allows high-quality Drafrix output on dot-matrix, ink jet and laser printers. The company promises that the output is comparable to that produced by expensive pen plotters. *DotPlotter* also comes with built-in drivers that support a wide variety of pen plotters for professional ST users. *DotPlotter*, \$45. Foresight Resources Corp., 10725 Ambassador Dr., Kansas City, MO 64153, (816) 891-8018.

CIRCLE 173 ON READER SERVICE CARD

Home Construction Estimation

There are two home construction estimation programs for the ST: **Ashment's House Estimator**, a commercially available program, and **Michael O'Massey's Construction Estimator**, which is available as shareware.

Ashment's House Estimator does 70 types of automatic estimates of home construction costs, and features full GEM operation. The program has drop-down menus, onscreen help, graphic status boards (up to 80 different supply/cost categories) and sequential or random estimating modes. Ashment's House Estimator, \$49.95. **Michael Ashment Building and Software**, 5809 Bennion Drive, Salt Lake City, UT, 84118, (801) 966-5187.

CIRCLE 167 ON READER SERVICE CARD

The Construction Estimator is designed to be used in conjunction with the Ashment program. Construction Estimator allows you to input your material sizes and costs per unit and then calculates the overall costs in a spreadsheet format. It also allows you to print out costing sheets for everything you may need for your new home—roofing materials, doors, windows, bathroom and kitchen figures, flooring and the like. The program is available from CompuServe and GENie; just go to the Business Library on CompuServe and download ESTIMATE.PRG. On GENie, you'll find it in Library Six under the name ESTIMATE.ARC (you'll have to decompress the file with ARCX.TTP). Its file number is 6119.

If you already have the program, you can get the documentation from Michael O'Massey for \$15; if you need both the program and manual, they're available for \$25. **Michael O'Massey**, 9910 U.S. North, Reno, NV 89506.

CIRCLE 168 ON READER SERVICE CARD

Customized Hard Disks

If you need a hard disk tailor-made for your ST system, then talk to Megabyte Computers of Webster, TX. They'll design a hard disk system to your specifications, including a battery-backed clock, three foot connector cable, 60 watt power supply, LED power indicator, formatting and parking utilities, daisy-chaining capability (extra DMA ports) and more. All of their hard

drives come with a one year parts and labor guarantee, and if you want a specific brand of hard disk mechanism for your system, Megabyte will be happy to accommodate you. 20-megs, \$549; 30-megs, \$669; 40-megs, \$849; 60-megs, \$949. If you want a 5¼-inch floppy added, add \$125; to add a 3½-inch floppy, add \$135. **Megabyte Computers**, 109 W. Bay Area Blvd., Webster, TX 77598, (713) 338-2231; (800) 255-5786.

CIRCLE 172 ON READER SERVICE CARD

Gold of the Realm

Gold Of The Realm is a new graphic adventure game from Magnetic Images, makers of ST fonts and clip art. Realm author David Lindsay, an award-winning computer artist, has spent a year designing and programming the



Gold Of The Realm.

game. Realm features over 300 highly-detailed screens, MIDI-compatible music, multiple difficulty levels and thousands of different game variations. Requires a color monitor and joystick. **Gold Of The Realm**, \$39.95. **Magnetic Images**, P.O. Box 17422, Phoenix, AZ 85011, (602) 265-7849.

CIRCLE 166 ON READER SERVICE CARD

Do you have a new ST product? If so, we'd like to hear about it. Please send your press releases and product photos to New Products, START, 544 Second St., San Francisco, CA 94107.





POWER GAMING

A Gallery of ST Summer Fun

by David Plotkin

Lock your doors, pull down the shades and douse the lights. You're going to do something with your ST that your family and friends might regard as embarrassing, or even socially unacceptable—you're going to play a game! Here, let START's Super Gamer David Plotkin tell you all about ST entertainment—why the ST is a great game machine, what makes for a good game and what his favorites are!

Here's a simple question—why did you buy your ST? You might respond, "Well, I needed a computer to do word processing and to keep track of my personal finances and store recipes and compose music and do graphics," (and at this point your voice trails off into inaudibility, as you say, somewhat sheepishly), "and, er um, I wanted to play some games on it, too. . ."

Don't apologize. Even though the name Atari has traditionally been associated with video games, there's no reason for you to feel guilty about using your ST to have fun. After weeknights of working with your "serious" software—

databases, spreadsheets, word processors, MIDI programs, graphics programs—why *not* relax with a game? Even "serious" computer users—from Macintosh yuppies to suited PCers—sometimes put aside their spreadsheets and boot up a flight simulator or an adventure game, and with good reason. After nine hours of battling your boss, wouldn't you want to take out your frustrations on the evil Dr. Vostokov, Scourge of the Free World? The ST is the machine to do it.

BUSINESS VERSUS FUN

The powerful features of the ST that make it useful for "serious" applications ▶

POWER...

also make it a dynamite game machine. Indeed, Sam Tramiel, president of Atari, has stated that a personal computer designed to play games has to be more powerful than a comparable business computer. Does a computer designed to run spreadsheets need sprites, three-voice sound, multiple colors and bit planes, and joystick and MIDI ports? No. But we've been blessed with these features, and there's no reason we shouldn't take advantage of them.

Here's what we've been blessed with: the ST's fast 68000 microprocessor can move many objects smoothly around the screen at once and process complex commands. The good resolution and bright colors make those objects realistic and sharply defined, and the great amount of internal RAM allows complex problem logic, multiple screens and huge adventure vocabularies. The sound chip and MIDI ports allow digitized sound effects, voices and music that can blast you right out of your chair.

And that's the purpose of this article. I'm going to take a look at the best reasons for you to put seat belts on your computer chair—my favorite computer games—Games that provide fast action, splashy graphics and intriguing strategy. Strap yourself in.

DIFFERENT KINDS OF GAMES

In the three years that the ST has been sold in the U.S., many different kinds of games have been released. They span the range from classic arcade shoot-outs to fantasy role-playing adventures that put you smack in the middle of some very nasty situations.

Arcade games (or "shoot-em-ups,") are the most recognizable kinds of computer entertainment, typically providing fast action in a science fiction setting. Many of today's successful arcade games sport digitized voices and sounds, smooth, colorful animation and literally hundreds of screens.

Interactive graphic adventures also become quite popular. These come in several flavors; in most, you assume

the role of a character with a specific goal—solving a mystery, saving the world or just staying alive! Your viewpoint is usually from the eyes of the character whose identity you have assumed. Some include a picture of your environment, but require that you type in your commands (GO NORTH) and read long explanations in a text window. Their graphics are largely static and as with a non-graphic text adventure you must tell the program what you want to do.

Mindscape has recently introduced a variation on graphic adventures in some of their newest releases. The screen images are an integral part of the game—you can click on most of the objects and drag them to an "inventory" window or double-click on an object to get a description. Further, the only instructions you can give the program you select from a limited set of verbs acting on the objects that you can see or are

games of this type and remained an ST best seller for over a year.

And finally, we have text adventures, among the first games for computers of any kind. Even though they use no graphics or sound, they're improved on the ST. Not only do you have room (RAM) for a larger vocabulary and a more sophisticated parser (the part of the program that interprets what you type in), but the ST's 80-column screen makes it easier to read through long descriptions.

WHAT MAKES A GOOD GAME?

Exactly what constitutes a good game—one that challenges you, keeps you playing for hours—is tough to quantify. (I could say, "I know what I like, and I do/don't like this," although that's not very helpful.)

Let's see. The aesthetics of a game are important—good graphics and sound—but they're secondary to a game being



Rings of Zilfin is extraordinarily playable and it's easy to identify with your on-screen alter-ego.

carrying. This completely eliminates typing and searching for just the "right" word.

The games in Sierra On-Line's Ultima series are also interesting—you view your hero from overhead and must move and fight against a detailed landscape. The story line is often multi-layered and difficult to solve. FTL's Sundog, one of the first games to be released for the ST, set the mark for

very "playable." And after playing hundreds of hours of computer games, I have a few ideas on what constitutes "playability."

Ideally, a game should let you win. As contemporary author Harlan Ellison noted in a video game review some years back, many computer games are "Sisyphean" — you simply play until you get killed. (For those of you who don't remember your Greek mythology,

Sisyphus was doomed eternally to roll a boulder up a hill, only to have it slip from his grasp and roll back down to the bottom.) Of course, there have been some very popular games that are Sisyphian (e.g., Missile Command and Centipede), in which the object is to see how many points you can accumulate and/or how many levels you can ascend to. The trick is, a game shouldn't be so difficult at the beginning that you can't improve your skills at shooting down missiles or zapping monsters.

If you're playing a game that kills you off quickly and doesn't give you the chance to improve either your arcade skills or your problem-solving ability, you'll either throw the game disk against the wall or format it and put your letters to Aunt Matilda on it.

If I had to identify a single thing that a game must have to be successful, it's the feeling that what you're doing is important and that you are actually present. The game has to have a semblance of reality within its fantasy context. You must identify with the game and be able to at least partly forget that all you're really doing is manipulating binary bits, improving your eye/hand coordination and your problem-solving ability.

FTL's *Dungeon Master* is an excellent example of how "real" a game can be. (Editor's note: *And if you don't believe Dave, check out Heidi Brumbaugh's review elsewhere in this issue.*) In *Dungeon Master*, you form a party of explorers and explore a dungeon with the final goal being to defeat an evil wizard. The graphics are extremely realistic, the digitized sound is eerie and it's not long before you've lost all sense of being at a computer—you are actually deep in the dungeon, fighting for the lives of your party.

And finally, an excellent example of a game with multiple levels that lets you win is the original Atari 8-bit *Star Raiders*. The game had fast action, multiple levels and multiple ranks awarded to you when you completed it. And, even though it took a lot of practice and

Accalade's Pinball Wizard is the best of the ST pinball games. You can build, play and customize your own pinball games.



hair-trigger reflexes, you could achieve the highest rank imaginable—Star Commander, Class One. When you finally achieved this rank, you felt as if you'd graduated from Starfleet Academy, with honors. The playability of 8-bit *Star Raiders* is something that all ST arcade games should aspire to.

MY FAVORITE GAMES

Over the years, I've seen many roundups of favorite computer games, although I've never made such a list until now. So here it is—my favorite ST games. These are the ones I've played over and over, and find myself coming back to on a regular basis. Bear in mind that this list is highly subjective—your opinions may vary (although I hope not too much).

Time Bandits

Michtron's *Time Bandits* still retains its attraction for me. In this arcade/strategy game, you guide a small man around a playing field filled with a variety of structures: a ghost house, a western town and even the *Starship Enterprise*. Upon entering each structure, you are assaulted by all manner of weird beasts, each one cleverly animated. To exit a structure, you must find keys for the exit locks. You may enter a structure several times, but the play gets harder each time. Beside the enticing variety of screens and superb graphics, I think the

attraction of *Time Bandits* is that as you get better, you get to see more screens. This arcade game is also unusual in that you can save your game.

Starglider

Firebird's classic *Starglider* is an extremely playable space flight and combat game. Your view is first-person out the cockpit, and you swoop down on enemy forces on the surface of a planet, blasting away with your lasers. Smooth animation in simulated vector graphics gives the very real impression that you are flying an attack spaceship.

Rings of Zilfin

SSI's *Rings of Zilfin* is another favorite. In this medieval fantasy you guide a small character through a variety of adventures, battling enemies, making money, gathering weapons and finally solving a mystery. Not only is this game extraordinarily playable (it seems to go out of its way not to kill you off), but you begin to identify with your on-screen alter-ego—if he or she dies, you feel rotten.

Deja Vu

Mindscape's *Deja Vu* is a fine interactive graphic adventure with a mystery theme. It features excellent graphics and digitized sound, as well as some very humorous passages. It is also easy to play, since you control it by clicking on ▶

POWER...

the command you want and the item you want to use. I found myself identifying very strongly with the character, a detective who is being framed for murder.

Pinball Wizard

I've always loved pinball (although I was never very good at the real thing). Accolade's Pinball Wizard not only lets you build and play your own pinball games, but customize them to your heart's delight, adding bumpers and

Oids

Your mission in FTL's Oids is to rescue helpless space creatures—through a combination of daredevil flying and some heavy-handed blasting. A mother ship drops your vessel off over a variety of heavily defended planets. You must blast their defenses, then land your craft (as in Lunar Lander) to rescue the captured inhabitants. This game also includes a well-done screen designer and user-designed screens are circulating on bulletin boards and between user groups around the country.

simulations are a "fence-straddling" category of computer entertainment. (For a list of current ST simulations, see the sidebar with this article.)

As with all best lists by reviewers, I'm sure you may find that I've omitted your favorite game or that I've included one or two games that you find awful. I did say at the beginning that this list is highly subjective. But I hope that I've pointed you to programs that will stretch your ST's capabilities. . .

Even more than a spreadsheet or database.

Dave Plotkin is a chemical engineer with Chevron U.S.A., and a frequent contributor to START and Antic.

PRODUCTS MENTIONED

Ultima I and Ultima II, \$39.95 each; Ultima III and Ultima IV, \$59.95 each. Broderbund Software, 17 Paul Drive, San Rafael CA 94903, (415) 492-3200.

CIRCLE 200 ON READER SERVICE CARD

Sundog, \$39.95; Dungeon Master, \$39.95; Oids, \$34.95. FTL Games, 6160 Lusk Blvd., Suite C-206, San Diego, CA 92121, (619) 453-5711.

CIRCLE 201 ON READER SERVICE CARD

Time Bandits, \$39.95. Michtron, 576 Telegraph, Pontiac, MI 48053, (313) 334-5700.

CIRCLE 202 ON READER SERVICE CARD

Starglider, \$29.95. Firebird, distributed by Rainbird Software, 3885 Bohannon Dr., Menlo Park, CA 94025, (415) 329-7600; (800) 345-2888.

CIRCLE 203 ON READER SERVICE CARD

Rings of Zilfin, \$39.95. Arctic Fox, \$39.95. Distributed by Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7991.

CIRCLE 204 ON READER SERVICE CARD

Deja Vu, \$49.95; Blockbuster, \$39.95. Mindscape, 344 Dundee Road., Northbrook, IL 60062, (312) 480-7667.

CIRCLE 205 ON READER SERVICE CARD

Pinball Wizard, \$34.95. Accolade, 550 Winchester Blvd., Suite 200, San Jose, CA 95128, (408) 985-1700; (800) 423-8366.

CIRCLE 206 ON READER SERVICE CARD



Blockbuster is easily the best commercial version of Breakout with 80 screens, stunning graphics and punchy sound.

colorful obstacles. The best of the ST pinball games.

Blockbuster

Quite a few versions of Breakout have appeared for the ST, including some very good ones in the public domain. You should be able to get them from CompuServe or your local Atari users group. (Editor's note: In addition, START has published its own version of Breakout—Brickyard—in the Fall 1987 issue.) But easily the best commercially-available Breakout game is Blockbuster from Mindscape. There are 80 screens included with the game, plus a utility to design your own screens, providing you an almost infinite number of game possibilities. Blockbuster's stunning graphics and punchy sound add to the fun.

Arctic Fox

And finally, Arctic Fox is one of the few games that Electronic Arts has ported to the ST and it's one of my favorites. In it, you pilot a supertank as you try to destroy enemy alien defenses at the South Pole. Unlike many games, you can win this one—just destroy the enemy fortress. (As with Star Raiders, it's not easy, but it is possible.) Your view is first-person, out the front port of your tank (similar to the coin-op classic Battlezone), and between the realistic arcade action and the strategy required to achieve your goal, Arctic Fox fulfills one of my most important gaming criteria—the feeling that you are there.

CONCLUSION

There are other programs that could fall under the games aegis—for instance,

ST Simulations

Summer Fun For Your Computer

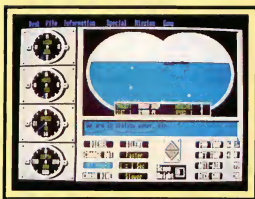
Compiled by Dave Plotkin

In my "For The Fun Of It" column in START Special Issue #3, I reviewed three ST simulations—Test Drive, F-15 Strike Eagle and Vegas Gambler. However, there are quite a few more ST simulations than what I presented there. There're simulations for everything you can think of—from flight to underwater combat; from driving to pinball.

So here are some more programs for late summer fun—software to let you experience thrills and danger all from the safety of your easy chair!

Submarine Simulations

Sub **Battle Simulator** allows you to command one of several submarines on war patrols, and supports varying levels of difficulty. Its controls are



Sub Battle Simulator by Epyx.

complex but not too difficult to master; the graphics satisfactory but not dazzling. \$39.95. Epyx, Inc., 600 Galveston Dr., P.O. Box 8020, Redwood City, CA 94063, (415) 366-0606.

CIRCLE 225 ON READER SERVICE CARD

GATO is a solid submarine simulator that's also easy to control. However, I found the graphics somewhat disappointing, since they are seemingly translated from the Macintosh version, with a resulting lack of color. \$39.95. Spectrum Holobyte, 1070 Marina Village Parkway, Alameda, CA 94501, (415) 522-3584.

CIRCLE 226 ON READER SERVICE CARD

Silent Service is my favorite submarine simulation. You can control it easily, and it has excellent graphics and playability. Silent Service also supports varying difficulty levels and complete war patrols. \$39.95.

Microprose, 180 Lakefront Drive, Hunt Valley, MD 21030, (301) 771-1151.

CIRCLE 227 ON READER SERVICE CARD

Hunt For Red October is based on Tom Clancy's best-selling novel. Your mission is to defect to the United States with the Typhoon-class ballistic missile sub Red October, all the while avoiding attack from both the Soviet and U.S. navies. Multiple screens allow you to monitor your weapons systems, your course, speed and the status of your pursuers. \$49.95. Datasoft, 19808 Nordhoff Place, Chatsworth, CA 91311, (818) 886-5922.

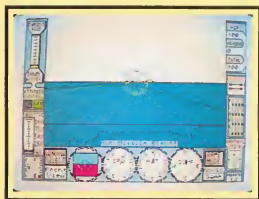
CIRCLE 228 ON READER SERVICE CARD

Flight Simulators

Flight Simulator is from Sublogic, the company that virtually invented microcomputer-based flight simulations. Flight Simulator is astounding in both its graphics and its realism, and is easily my favorite computer simulation. Sublogic's continued

support is shown with their publication of the "Scenic Disk" series, which provide other areas of the U.S. for you to fly over. These disks contain much more detail (buildings, hills, bridges, etc.) and scenery for you to look at as you fly. Flight Simulator, \$49.95; Scenic disks 7 and 11, \$24.95 each. Sublogic Corporation, 713 Edgebrook Drive, Champaign, IL 61820, (217) 359-8482; (800) 637-4983.

CIRCLE 229 ON READER SERVICE CARD



Harrier Strike Mission by Miles Computing.

Harrier Strike Mission lets you control a Harrier fighter plane, the British attack jet equipped with VTOL (Vertical Takeoff and Landing) capability. Your mission is to take off from your carrier and bomb an island fuel depot and airbase while avoiding enemy missiles and attacking aircraft. \$39.95. Miles Computing, Inc., Entertainment Software Division, 7741 Alabama Avenue, Suite #2, Canoga Park, CA 91304, (818) 341-1411.

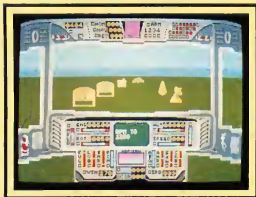
CIRCLE 231 ON READER SERVICE CARD

Harrier Combat Simulator (formerly High Roller) is another Harrier simulation with a slightly more complex mission—in order to bomb the enemy headquarters, you must first establish tactical bases along the way. Multiple skill levels, excellent graphics and an accurate recreation of jump-jet performance make this a challenge. The game was developed ▶

POWER...

with the help of British Aerospace, Great Britain's aeronautical agency. \$4995. Mirrorsoft, a division of Mindspace, Inc., 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667.

CIRCLE 232 ON READER SERVICE CARD



Super Huey by Cosmi.

Super Huey is a helicopter simulation with four different options—you can fly solo and acquaint yourself with the chopper, rescue stranded

military personnel, fly exploratory sorties and familiarize yourself with the terrain, or combat enemy helicopters with your missiles and machine guns. \$1995. Cosmi, 431 North Figueroa Street, Wilmington, CA 90744, (213) 835-9687.

CIRCLE 233 ON READER SERVICE CARD

Motorcycles

Superbike Challenge is a motorcycle simulation that lets you race your 1000cc motorcycle on a dozen of the world's most exciting Grand Prix courses. Your screen displays show speed, RPM and lap times; the game's realism even extends to steering—lean too far going around a corner and you can wipe out! The game also lets you race against a friend or the computer. \$1995. Broderbund Software, Inc., 17 Paul Drive, San Rafael, CA 94903, (415) 492-3500.

CIRCLE 234 ON READER SERVICE CARD

Pinball

The Pinball Factory is a colorful pinball "construction set," allowing you to create your own pinball game board. Place flippers and bumpers, alter the logo and even the game physics, such as number of balls, gravity, bounce factor and bumper strength. Allows up to four players. \$3995. MichTron, 576 Telegraph, Pontiac, MI 48053, (313) 334-5700.

CIRCLE 235 ON READER SERVICE CARD

Pinball Wizard is another "construction set." Customize your board with spinners, bumpers, drop targets, lights, kickers, one-way doors, flippers and many other features. You can even paint your own designs on screen. (Reviewed in the Spring, 1988 START.) \$34.95. Accolade Software, 550 Winchester Blvd., San Jose, CA 95128, (408) 446-5757.

CIRCLE 236 ON READER SERVICE CARD

Come to grips with GEM!

Pascal \$149
Fortran \$199



800 pages of documentation included

Prospero Pascal for GEM and Prospero Fortran for GEM - two new products for the Atari ST - with:

- Complete programming environment with editor and workbench
- High performance compiler (Pro Pascal or Pro Fortran)
- Linker, Run-time Libraries, Librarian, X-referencer, Symbolic Debugger
- Compiled Pascal or Fortran GEM bindings
- Complete language and GEM documentation
- Access to BIOS, XBIOS and Line A routines

The programming environment is designed to stay resident in your Atari while you are programming. It controls the editor, the compiler, the linker and utility programs, and allows you to run the program you have compiled or any other program.

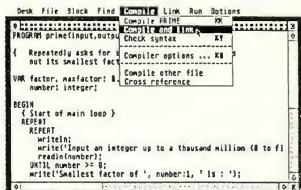
With the four-window editor you can load up to four different source files, and cut and copy between them - the editor understands WordStar command sequences. It has block copy and move as well as powerful search and replace functions.

The compiler is Prospero's well established Pro Pascal or Pro Fortran-77 compiler, both of which conform fully to ISO and ANSI standards.

The linker is fast and efficient; assembler language libraries may be introduced.

The debugger provides complete source line tracing and source variable display capability; break points can be set; the calling sequence may be shown, the last ten lines executed can be listed, as can any source lines from the main program or any libraries; you can execute SID or any other program; screen switching separates program text and GEM output.

CIRCLE 017 ON READER SERVICE CARD



Windowing and graphics support is provided by GEM; the documentation gives all the explanation needed to use these powerful functions.

The three volume Documentation pack includes:

- Installation and operating instructions
- Implementation details
- The programming language specification
- Detailed descriptions of all 109 VDI Bindings and all 101 AES Bindings, with example programs.

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Prospero Software

LANGUAGES FOR MICROCOMPUTER PROFESSIONALS

INTO THE DUNGEON WITH YOU!

The Dungeon Master Experience

By Heidi Brumbaugh
START Programs Editor

First, turn off your ST. Turn on a lamp. Open the package and take out the instruction booklet. Read the short history of the adventure on which you're about to embark. Now take a deep breath. Go around the house gathering supplies you'll need: scratch paper, grid paper, pencils, rulers, blank disks, blankets—and food and water for eight hours. Ready? Then put the disk in your drive, turn on your ST and be prepared to shed every preconception you ever had about computer games. This is *Dungeon Master*.

THE DESCENT INTO FANTASY

An iron door creaks open. The halls of the dungeon lie before you: ominous, dank, beckoning. Rest your hand comfortably over the mouse and use it to steer your path by clicking on the arrows. Your perspective is three-dimensional. You can turn right or left to examine the stone walls as you pass them. As you enter and start down the passageway you turn back for one last look of the outside world. The door has closed behind you.

You enter the Hall of Champions and see mirrors on the walls. These contain the imprisoned souls of 24 dungeon explorers from which you select four to form your party. You are a guiding spirit, a non-entity. You will control your party's actions and movements, yet be invisible to them. Using your champions as your eyes and hands, your destination is the lowest depths in the dungeon in search of the firestaff, which has fallen into the hands of the dark lord Chaos.

You examine each of the champions by clicking on his or her mirror and then clicking on the eye. Each champion's picture, skills, strengths and possessions convey more than just his or her chances against dungeon monsters; they also give a hint of personality that you will take into account when selecting your party.

As you move, your surroundings start to seem almost comfortable. You build your party and experiment with their pos-

sessions. You use the party leader's hand to pick items up, move them about and examine them. On the right side of the screen you see the controls for wielding weapons and casting spells. Cast aside your keyboard: you control your *Dungeon Master* characters completely with the mouse.

Your actions in *Dungeon Master* take place in real time. Monsters will move about, stalk you or wander off no matter whether your characters are fighting, resting or moving.



No matter how much your characters' skills increase, never forget that they are not indestructible. Here lies a pile of bones of a champion who may not have been quite ready for battle; I hope an Altar of Rebirth is nearby to restore her to life.

As you progress you find objects on the floor and in hidden nooks and crannies in the walls. You pick them up, examine them, and start filling your champions' backpacks with food, water, weapons, keys, torches, scrolls. Each object has different qualities, just as each champion has different skills. Often, how you use an object depends on the skill of the champion holding it; an experienced fighter, for example, can ▶

chop or melee an ax, while another character will only be able to swing it.

As you get used to the kinds of puzzles in the dungeon, you will get more experienced in finding your way about and mapping your path. Your characters also will gain experience and increase skills. Their strength and health will increase, as will their levels of the important magical element Mana.

The dungeon also changes. As you go deeper into the dungeon the monsters will become meaner, food and water will become harder to find, puzzles will become more difficult to solve and the hidden switches and levers in the walls will grow smaller.

Your chances to stop and rest will also decrease, and the space in your backpacks will be more and more valuable. You'll have to make judgments about what items to leave behind, most times without knowing the value of your weapons in fighting the unknown beasts that lie before you. And sometimes the most innocuous object can be indispensable in solving a riddle further on.



As you go deeper into the dungeon, the monsters become meaner—and harder to kill. By the time you reach level ten, you may find yourself reflecting that these blue guys from level two were really quite friendly types.

Reorganizing supplies sometimes helps; using up torches and eating food may give you room to carry other things. But you may find that while you have room in your packs to carry everything, your characters simply aren't strong enough. At those times you start compulsively working to build up your characters' strengths. You stop thinking of monsters as threats; you hunt them down instead for target practice.

Many of the creatures are magical, and casting spells at them is as effective as fighting with swords and daggers. You come across scrolls which often suggest new spells that will help you. Protection spells and potions will also aid you well, so practicing them is a good investment of time.

Suddenly you realize you are thinking, acting and ex-

perimenting within the logic of the game. You are no longer aware that the mouse on your desk is in between your hand and the hand on the screen.

I wasn't kidding about the eight-hour food supply.

BACK TO REALITY

It can take weeks to finish a single Dungeon Master game. When you're finished, you might want to start over and select new champions with different attributes, now that you know what's down there. But if you ever do get tired of trudging around the same old dungeon, never fear. By the time you read this, FTL will probably have released a mini-adventure that you can load in using the Dungeon Master disk. This is planned to have up to three additional levels with its own goal and puzzles to solve.

Additionally, FTL is working on a new adventure game. The Dungeon Master source code was specifically written to make it easily modifiable to other scenarios, so this game won't take nearly as long to be released. The new game setting most likely won't be another dungeon; possibilities include a mystery, science fiction or haunted house setting.

But in the meantime, if there's any consolation to having your life taken over by Dungeon Master, it's that you are not alone. Dungeon Master is a true video game phenomenon. In its first five months of distribution Dungeon Master sales far exceeded sales of FTL's Sundog in the same time period—and Sundog was the bestselling ST game for a year. CSS, a major ST software distributor, has listed Dungeon Master on its Top Twenty list since it came out. At presstime (except for one week), Dungeon Master had been number one in the European Gallup poll of ST software sales since it was released in March.

Almost every major online service has tips and hints from other players; you can often download maps and lists of spells. On CompuServe, the Dungeon Master thread is the single longest discussion on the entire service, so if you get really stuck you can always log on; you could, that is, if you hadn't formatted your Flash disk to save a game.

Playing Dungeon Master doesn't captivate you just while you're playing, it affects your outside life as well. Not that this is bad, you understand. I mean, not talking to my boyfriend for a week because he lost our master spell list was certainly not an overreaction. (We found it, thank heavens.)

Sure, tell your friends about Dungeon Master—just don't be too enthusiastic. That would make them want to come over to try it out. And you know what that means.

It might be weeks before you get another shot at conquering Lord Chaos. ■

PRODUCTS MENTIONED

Dungeon Master, \$39.95. FTL Games, P.O. Box 112489, San Diego, CA 92111. (619) 453-5711.

CIRCLE 190 ON READER SERVICE CARD

NAVAL BATTLE

START's Version of a Classic Game

Bring the thrill and adventure of combat on the high seas to your ST! In this special entertainment issue, START brings you a great rendition of an all-time classic game—Battleship. Hunt down the ships hidden in your opponent's waters; the first to find and destroy all five ships is the winner. Challenge the computer or a friend in one of three difficulty levels. Naval Battle runs in color *or* monochrome.

by John L. Hutchinson



Loose mice sink ships!
Check out NAVAL.ARC
on your START disk.



As a child, one of my all-time favorite games was "Salvo." You remember the game—you draw grids of 100 squares on sheets of paper, writing letters across the top and numbers down the side. Two players draw ships of varying sizes and then take turns "shooting" at their opponent with shouts of "A-3," "H-7" and the like. The first to find and "sink" the other's five ships was the winner. It was fun and had a simple concept. As I recall, however, drawing all those grids was almost as difficult as finding an opponent.

In the true spirit of "like father, like son," my two boys also enjoy the game. Of course, they have it a little easier with Parker Brothers' "Battleship!" playing board. With it, they no longer have to go through the pencil and paper drill. However, they are still faced with the problem of finding a willing opponent. It didn't take long to occur to me that our Atari computer could be the ideal solution to this problem. Naval Battle was born. ▶



NOW HEAR THIS, NOW HEAR THIS. . .

While based on the traditional game, Naval Battle does incorporate a few unique features. Don't be surprised when your computer verbally challenges you to a game. Naval Battle ST includes a computerized voice, courtesy of the public domain routine STSPEECH. While far from digitized sound quality, it does add an interesting aspect to the game. Because STSPEECH is in the public domain, feel free to use it in your own programs.

If you can't find a willing human opponent, the one-player mode pits you against the computer which uses "artificial logic" (not true "artificial intelligence") to hunt down and sink your ships. The computer will even position your ships for you if you wish. As another variation on the original theme, Naval Battle uses a scoring system that demands speed, logic, and, of course, a little luck. Naval Battle saves high scores to disk according to three different levels of difficulty.

To set up Naval Battle, first un-ARC the file NAVAL.ARC from your START Disk, following the instructions found elsewhere in this issue. For the game to work properly, make sure that all of Naval Battle ST's files are in the same directory or folder as GFABASRO.PRG, MichiTron's public domain run-only version of GFA BASIC. Naval Battle ST uses two low resolution color and two high resolution monochrome DEGAS Elite-compatible picture files for its background screens. To save disk space, you need only include the picture files for the monitor you will be using.

PLAYING NAVAL BATTLE

To play Naval Battle, double-click on GFABASRO.PRG. When the file selector box appears, click on NAVAL.BAS and

press Return. When the program starts, you can either play a game of Naval Battle, visit the Hall of Fame or quit back to the Desktop. Here and throughout the game, use the mouse to select your choices; no keyboard entries are required. If you select "Visit Hall of Fame," you will see the current high scores. (Keep the write-protect window on your disk closed, so that the program can update the High Scores file.)

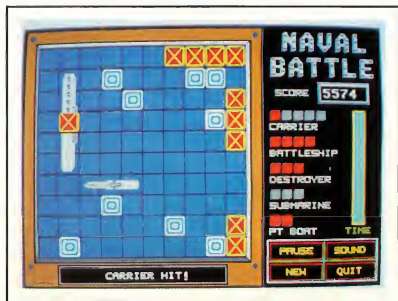
If you choose to "Play Naval Battle", you will need to select your desired game options. Using the mouse, click on the option buttons you want to activate. Your choices are: one or two players, sound on or off, timer on or off and automatic or manual ship positioning. You also have a choice of three difficulty levels: Ensign, Captain or Admiral. Ensign is the least difficult level; the computer opponent makes almost totally random, rather unintelligent shot decisions and the human player has considerable time to place shots. At the intermediate Captain level, the computer optimizes its shot patterns while giving the player less time to place shots. The Admiral level is the most difficult, requiring the player to make very rapid shot decisions and is best reserved for Naval Battle veterans. If you beat the computer consistently at this level, you should join the Navy—your country needs you!

If you turn the sound off, you may fight your battle in relative silence and at a slightly faster pace. Note that if you choose to disable the timer function, you must use the Captain difficulty level. Also, if you decide to play the two-player version, you must let the computer plot your ships. This is to prevent any inadvertent "cheating" by human players. . . not that you ever would, of course.

In Naval Battle, you have a total of five ships in your armada, ranging from two to five grid squares in length. These are a PT boat (two squares), submarine (three squares), destroyer (three squares), battleship (four squares) and aircraft carrier (five squares). If you use the automatic plotting feature in the one-player mode, the computer will quickly and randomly place your ships on the playing grid and then ask you if these positions are acceptable. Select OK to continue, or CANCEL to see another playing board.

If you use the manual plotting mode, you may position each individual ship either horizontally or vertically. Click on the vertical or horizontal arrow buttons for each ship in turn, and the mouse cursor will change to an arrow shape on the playing grid. Move the mouse to the desired location and press the button to plot each ship on the grid. The computer will scold you if you try to place

Figure 1: Naval Battle ST, START's version of the classic Battleship game.





two ships on the same grid square but is generous enough to let you try again.

Once you are satisfied with your ship placement, select OK to begin playing. The human player always goes first in one-player mode; in two-player mode player number one always begins. Place the mouse cursor on any of the 100 grid squares of your opponent's grid and press the mouse button. Animated graphics and sound effects (if enabled) will indicate either a "miss" or a "hit." If you are using the countdown timer don't let it run out before you make your shot or you will lose your turn.

Your opponent will then fire at your ships. As ships are hit, squares will light up in the ship hit indicators along the right hand side of the playfield. These indicators are for reference only; they show how many additional hits you need to sink a ship, but not the exact position of a hit. Play continues in this fashion until either you or your opponent succeed in sinking all five ships. When the game is over, you may quit back to the Desktop or play another round.

At any time during your turn, you may use the mouse to toggle the SOUND on or off, PAUSE the game, start a NEW game, or QUIT by clicking on the appropriate button in the lower right hand corner of the screen. Turning SOUND off will hush a talkative computer opponent, disable the animated graphics and increase the speed of play. In addition to the button, you may initiate a PAUSE by simply pressing any key on the keyboard. During a pause, the Hall of Fame high scores will cover the playfield, effectively preventing you from studying your opponent's grid at leisure. When you are ready to resume, press either mouse key or any key on the keyboard to continue.

SCORING

As an additional variation to the traditional game, human players and the

computer earn points as ships are hit and eventually sunk. While huge aircraft carriers and lumbering battleships may be more lucrative targets in real life, Naval Battle ST takes a slightly different yet altogether logical approach. Since the smaller ships are the most difficult to find, they are worth the most points.

Points are awarded for each hit achieved according to the table shown below:

Aircraft Carrier	100 points
Battleship	200 points
Destroyer	300 points
Submarine	400 points
PT Boat	500 points

You also earn a considerable bonus depending on the selected difficulty level, time used to place each shot and the number of shots made since beginning the game. Since the computer makes its shot decisions so quickly, time is not a factor in its scoring. Although it is practically impossible, a perfect score at the Admiral level would exceed 14,000 points! Regardless of score, the only way to win is to sink all of your opponent's ships first. If you do so and manage to top the current high score in that level, you may enter your name in the Naval Battle Hall of Fame. This information will be written to disk in a data file called NAVLBATL.DAT; to erase previous high scores, just delete this file from your disk.

PLAYING STRATEGY

One of the best playing strategies is to always go after your opponent's largest remaining (as yet unhit) ship. Select

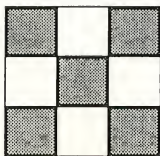


Figure 2: Use a checkerboard pattern to maximize your search efficiency.

grid squares where the ship could fit both horizontally and vertically. If no such squares exist, then select a square in which the ship could fit either way. You should also stagger your shots in a checkerboard pattern to maximize their effectiveness. (See Figure 2.)

Whenever possible, try to avoid placing two shots side-by-side. Since the smallest Naval Battle ship, the PT boat, is only two squares in length, skipping squares can logically eliminate spaces where your opponent's ships cannot possibly fit. Keep in mind that while it's not likely, the computer may place two or more ships next to each other to fool you.

So the next time you get the urge to play a rousing game of "Salvo!" why not give Naval Battle a try? You will find your ST is always willing to take up the challenge to determine the supreme commander of the seven seas. Have fun and "good hunting!"

PROGRAMMING NOTES

If you own the GFA BASIC interpreter, you are free to load the NAVAL.BAS source code for closer examination. The code is relatively straightforward so you can examine or modify it. Don't try to compile this program with the GFA BASIC Compiler; however, it won't work. The STSPEECH routine uses some memory locations that get shuffled in the compilation process. This results in two bombs when you attempt to execute the compiled program. With luck, the new compiler with the forthcoming GFA BASIC 3.0 will fix this problem. ■

Major John L. Hutchinson is putting his experience writing computer battle games to use; he is on a two year tour of duty at the Australian Army War Games Center in Sydney.

Transferring Text Files

By Jim Pierson-Perry

Welcome to our second column on running Macintosh and PC software on the ST. For you newcomers, this is a forum for looking at software that goes beyond what is currently available on the ST and for examining the best ways to integrate the ST with a Mac or PC environment. The programs we discuss run under Data Pacific's Magic Sac (ver. 5.7 or higher) or Avant Garde System's pc-ditto (ver. 3.0). Our topic this issue is transferring text files among the different computer systems.

FILES AND FORMATS

To start, why would you want to transfer text files? An obvious reason is to be able to start a report at work on a PC and to continue writing it at home on your ST. Another is to combine reports created on different computers into a single report or newsletter. You can use your ST to transfer files to and from the Mac or PC; thus, the ST makes an excellent intermediary for passing text files between a Mac and PC.

There are four disk formats involved. The ST format can only be read by the ST, but the ST can read MS-DOS format disks. There are two formats for Macintosh files: the original Macintosh format and Magic Sac. Mac format disks can only be read on the ST with Data Pacific's Translator One disk controller. Without it, you are limited to Magic Sac-format disks.

To format and copy disks in the three non-Mac formats, I recommend DC Formatter, a public domain utility by Double Click Software. It's available in color and monochrome versions and has an in-depth help resource that makes the program largely self-explanatory. I have used it for several months and it has performed flawlessly. You can find it on major online services, such as CompuServe and GENie.

THE FIRST STEP IS ASCII

Perhaps the easiest way to transfer a text file from one machine to another is to convert it to straight ASCII text, a more or less universal format between programs and systems. The drawback to using this method, however, is that you will lose any style and text formatting commands that you added when creating the file. Unless the word processing program you are using has a sister on the "target" system, however, you may be limited to ASCII text transfer.

Regardless of the starting computer, the first step in transferring a text file is to save it in ASCII format, often called "text only." Virtually all word processors allow you to save files this way, either with a "Save as ASCII" command or by printing the file to disk. Some programs will offer you the choice of whether or not to use line breaks. In typical word processor mode, text is wrapped around the end of each line as

you enter it. Saving a file with line breaks puts these "carriage returns" at the end of each display line by inserting a series of line feeds. If you intend to import the text file into another program, you do not want these extra characters. If you cannot avoid using linefeeds, there are several public domain programs that will "strip" them out of your file.

If you are a PC or pc-ditto user you can also use the DOS Copy command to type text directly from the keyboard into a file *without* a word processor. Enter the command COPY CON d:xxxxxx at the DOS prompt, where d:xxxxxx is the drive and text filename to be created, and press Return (or Enter on a PC). From that point on, everything you type will go into the text file. Press F6 and then press Return to exit and save the new file on an MS-DOS formatted disk.

MAC TO ST AND BACK

For transfers to and from the Macintosh, I prefer the Mover program, included with the Magic Sac. It can read and distinguish between Magic and Mac formats (when used with Translator One) while the other popular file translator, Transverter, can only recognize the Magic format. Going from ST to PC simply requires copying the file onto a boot MS-DOS disk, formatted using either DOS or DC Formatter. In this way you can move files from a Mac to a PC compatible disk using only your ST—and the entire transfer time is under five minutes!

For those of you with a Mac, you can use the Apple File Exchange Utility to convert Mac and MS-DOS file formats directly within the Mac environment. This would be especially useful if you download a PC text file via a modem.

Now that Microsoft Write is available

for the ST, you can transfer files between it and Microsoft Word version 3 on the Mac—as long as you stay within the capabilities of Write that are common to both programs. Word is a highly evolved descendent of Write and has capabilities beyond the ST version.

Write files on the ST are stored in Word version 1 format, a simpler format than that used by the Mac's Word version 3. This means you can transfer files directly from Write to Word and preserve its formatting, although the fonts will change due to the different font packages used by the programs.

Transferring files in the other direction, from Word version 3 to Write, is not quite as clean. Text styles (such as italics and underlining) and formatting (such as paragraph justification) exist in both programs and transfer correctly. However, carriage returns are not carried over; your text will run together and you must add them manually. Any characters or formatting in the Word file without counterparts in Write are fair game for translation errors. Examples of these are double underlining, borders and characters from the Word symbol font. Again, fonts will change due to the different font packages used by the programs.

For the actual transfer and conversion, I use Write under GEMDOS and Word version 3 under Magic Sac and Magic-formatted disks. Going from Write to Word, I use Transverter version 3.10 and the "Keep line feed characters" option. (My copy of Mover version 1.3 did not work properly in the ST to Magic mode.) When the file is opened by Word, it is recognized as a Word version 1 format and imported with appropriate internal conversion.

If you're transferring from Word to Write, first make sure the file is saved using Word version 1 formatting (avail-

able through the SAVE AS command in the FULL MENU mode of Word version 3). I used the Mover version 1.3 program to do the actual transfer and translated carriage returns in the Word file to carriage return plus line feed for use with Write. Trying to use the Transverter program for this conversion resulted in a loss of all formatting information and sporadic memory errors when Write tried to read the converted file.

PC and pc-ditto users can type text directly from the keyboard into a file.

TO AND FRO WITH WORDPERFECT

WordPerfect Versions 4.1 for the ST and IBM use an identical file format, so that text files created on one machine are directly transferable to the other. Macros are not yet transferable, but WordPerfect Corp. is working on a way to do this. IBM WordPerfect version 4.2 will read version 4.1 files transparently. But if you are transferring version 4.2 files to the ST for use in version 4.1, use the "Save as Version 4.1" option on the PC to make your files fully portable.

Unfortunately, the Mac version of WordPerfect uses a custom file format. Although it has an option to let you save files in version 4.2 format, the ST version can't read them. (The only way to get the files to the ST would be to save them as 4.2 files, load them into PC WordPerfect version 4.2, save them in 4.1 format and then transfer them to

the ST.) Transferring files from the ST to the Mac should work fine, but WordPerfect Corp. hadn't tested this as of press time, so they're not 100% sure it will work.

Once you become familiar with the ease of transferring files among systems, you can start to take advantage of Mac and PC programs that offer capabilities far above what is currently available on the ST. I can now write raw text on my ST, port it to a Mac for its special printing effects, styling and fonts, then combine it with graphics and print it on an Apple Laser Writer!

Who says different computers have to be incompatible? ■

Jim Pierson-Perry is a research chemist and semi-professional musician, living in Maryland. He is a frequent contributor to START, and recently won the 1988 "Contributor of the Year" award from Antic Magazine.

PRODUCTS MENTIONED

Magic Sac 5.91, \$149.95; **Translator One**, \$279.95. Data Pacific Inc., 609 West Speer Blvd., Denver, CO 80203, (303) 733-8158.

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

CIRCLE 157 ON READER SERVICE CARD

Microsoft Write, \$129.95. Atari Corporation, 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 94088, (408) 745-2000.

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WordPerfect 4.1 for the ST, \$395. WordPerfect Corporation, 288 West Center Street, Orem, UT 84057, (801) 225-5000.

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**BETWEEN A ROCK MONSTER AND A HARD PLACE**

When you're playing FTL's Dungeon Master, you'll learn pretty quickly that the key to survival is saving your game—frequently. But what if you panic and save the game in a situation you can't get out of—for instance, when you are surrounded on all sides by Rock Monsters and don't have the strength or magic to fight them off?

It may seem that you're doomed to start a new game completely from the beginning, but there is a way to get out of this nasty situation. Reboot the computer with your Game Save disk, not the Dungeon Master disk. Double-click on the drive A icon. Note that there are two files there: Dungeon Master automatically backs up the last saved game when it saves a new one! Delete the file DMGAME.DAT and click on DMGAME.BAK to highlight it. Click on Show Info... under the File menu, press the Escape key, and type DMGAME.DAT and press Return. Now you can boot Dungeon Master again and start from a position a little further back—and plan your strategy more carefully this time!

**GFA 3.0 SCOOP**

MichTron's GFA BASIC 3.0 is about to be released, and the first thing you will probably want to do when you get it is load in some of your existing programs. To transfer a program file:

- 1.) Run GFA ver 2.0 and load the program.
- 2.) Save it in as an ASCII .LST file (Save,A).
- 3.) Run 3.0 and Merge in the .LST file.

Your programs will be upwardly compatible; that is, if you use any of the new commands in 3.0 this technique will not work the other way around.

**ATARI POWER**

You've heard of Atari power without the price; now here's a tip about Atari laser printer power—literally. If you are connecting a hard disk to the SLMC804 controller, don't turn off the laser printer while you are using your ST. This will cut off access to the hard disk because the controller is connected to the hard drive via the DMA port.

**PROTECTING YOUR DISKS**

Many newspapers and magazines have run articles on computer "viruses." These are programs that can actually "infect" your disks and possibly destroy your data. The ultimate purpose of these programs varies; although most of them simply print a message on the screen after they have propagated themselves a certain number of times, it's possible for viruses to have more malign purposes. Additionally, viruses can wreak havoc with write-protected programs.

Recently, viruses have turned up on IBM PCs, Macintoshes and Amigas, but at this time there have been no confirmed viruses on the ST. Still, it doesn't hurt to take a few precautions. Viruses are usually transmitted on freely-distributed public domain disks. These are usually terminate and stay resident programs that write themselves to boot disks. One way to protect against contamination is to always use the same boot disk, and keep it write-protected at all times. If you have any doubts about your boot disk, boot with a disk you know to be safe, and then format a new floppy and perform a file copy (never a disk copy) of all the programs on your boot disk, then start booting with the new disk.

Hard disks are particularly vulnerable to viruses and "trojan horses," which are programs that seem innocent enough but will eventually start deleting your files. When you first get a new PD disk, try it without your hard drive turned on for awhile, and look out for anything suspicious.

**DESKTOP LIMITATIONS**

Ron Stein of San Jose, CA sends the following: "I have discovered that the DESKTOP.INF file (used to set up the GEM Desktop) is an ASCII file which can be edited by most word processors. By alternating the first #W line I can customize my Desktop. For instance, an easy method of finding my program files amidst several data files is to change the A:*.*@ field to A:*.PRG. Doing this will force the Desktop to only display files with a PRG extender. Could you please let us know what other neat features are available by customizing the DESKTOP.INF file?"

Thanks for the tip! Another thing you can do is change the name of the trashcan (you can change the name of the drive icons from the Desktop using Install Disk Drive). Edit DESKTOP.INF, and on the line beginning #T change TRASH to Rubbish, Garbage, Dust Bin or anything else. You can use a maximum of 10 letters in the name.

Well continue to publish tips and information about this important file. ■

Got an ST trick or tip to share? We're interested in tips for the rank beginner or expert programmer, for exploring the Desktop or for getting the most out of any popular ST program. Send it to the Clipboard, START Magazine, 544 Second St., San Francisco, CA 94107



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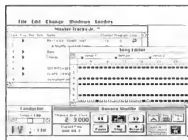
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CHESSBASE

A Centuries-old Pastime Comes of Age

By Christopher Chabris
 START Contributing Editor

ChessBase, created by Frederic Friedel and Matthias Wullenweber of West Germany and distributed in the United States by Sci-Sys of Torrance, California, is a revolutionary tool for chess enthusiasts of all levels.

Essentially, ChessBase is an interactive graphic database for storing and reviewing chess games. With it, you can examine complete chess games—those of world champions, famous players, your opponents, or yourself—and replay them interactively onscreen. Chess players can therefore use ChessBase to enjoy the games of others without clumsy books and chess pieces, and to improve their own play and results by studying games *en masse* in a systematic way.

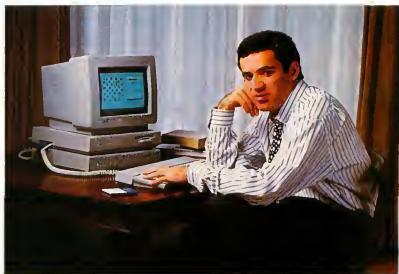
World chess champion Garry Kasparov of the Soviet Union was an early and enthusiastic supporter of ChessBase, and he used it to defeat a team of Swiss international masters 5½–½ in a simultaneous exhibition last year, and the top six American junior players 4–2 this February. By collecting the games of his potential opponents and entering them into ChessBase, he was able to familiarize himself with their playing styles and opening repertoires after only a few hours, instead of taking days poring over chess books. Kasparov has even commercially endorsed the program (an unusual action for a Soviet sportsman), saying in a recent advertisement that ChessBase is “the greatest development in chess study since the invention of the printing press!” Other users include American star Michael Rohde and Grand Masters Korchnoi and Miles, former Soviet and British champions.

FEATURES

ChessBase is fairly easy to use, since it's GEM-based, although it's important that you study the manual carefully before using the program. ChessBase itself is on disk, but uses a “dongle” plugged into the cartridge port for copy protection. Also included is a 570K RAMdisk program—it's necessary for floppy disk users, since ChessBase spends much of its time accessing its database files. If you have a 520 ST without a

memory upgrade, there's a 50K RAMdisk also included.

ChessBase stores chess games in databases, which consist of four files with the extensions .GMF (game file), .GMI (game index), .KEY (opening key), and .POS (opening positions); all four files must exist for a database to be used. To get new users started, a collection of about 1000 recent games from international tournaments is provided on the ChessBase master disk.



World chess champion Garry Kasparov is an enthusiastic supporter of ChessBase.

Studying with ChessBase is a four-step process. First, you select the database you want to use (you cannot switch databases without quitting the program and running it again). Second, you decide what you are interested in reviewing, such as all the games of one tournament, all the games in a particular opening variation, or all the games of a certain player. Third, you search the database for those games, using the “List & Select” entry in the Games menu to bring up a dialog box where you specify the players, year, and opening information. Finally, you load the games found by the search into memory and review them, using the arrow keys to go for- ▶

ward and backward through the moves of each game. As you study a game, you can save one position to a buffer, move the pieces around with the mouse and then retrieve the saved position to continue the game. The score of the game is displayed in international *figurine algebraic* notation, in which language-specific letters like K (king) and N (knight) are replaced by characters in the shapes of chess pieces (though you can customize these to whatever symbols you like).

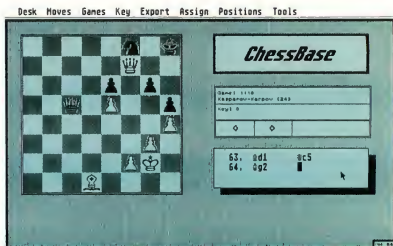
There are two ways to add games to a database. You can enter new ones by moving piece icons on your screen's chessboard, or you can merge them from existing databases, although this is somewhat cumbersome. You must open the database from which you want to take games, select the ones you want, save them to a special export database (extensions .EXF and .EXI), quit the program, open the database into which you want to put the games and use the Import option to insert them. This is not intolerable, since you can merge two complete databases by simply changing the extensions from .GMF and .GMI to .EXF and .EXI and do an import as usual.

ChessBase organizes databases according to an opening key—a tree of commonly arising positions considered as branchpoints. Any pair of key files (.KEY and .POS) can be combined with any pair of game files, and the resulting database can be reclassified automatically so that each game is attached to the position farthest down in the tree that occurs in the game. This might seem complicated, but it means you can request all the games in the Sicilian Defense, Dragon Variation and see them immediately. Besides the supplied popular key, which consists mainly of well-known opening names, classifications such as the Encyclopedia of Chess Openings system are available.

CHESSBASE UPDATE

At presstime, START received a beta copy of ChessBase II, due July 1st. The graphic handling has been improved; an intelligent input procedure lets you click on a piece or square and have ChessBase figure out a move of that piece or to that square. You can now enter annotated "lines" (variations) on the board; lines can be nested to any depth so that a stored game can be a complex tree rather than a linear string of moves. File access speed has been increased, and search parameters of the databases now allow wildcards. Many of Chris Chabris's complaints were addressed; you may now access any database without leaving the program. The program also now uses the standard GEM file selector so that complete subdirectories are displayed. ChessBase II requires a megabyte of memory and still sells for \$229.95; the upgrade price for ChessBase owners has not been set, although it should be between \$20 and \$50.

ChessBase's user interface also includes many thoughtful safeguards against data loss. For example, before you can use the Delete Many function, you must start an export file to contain the games that are removed from the database, so that in case you make a mistake you can recover the lost data. Also, when you quit the program, a list of files that were modified is provided, perhaps reminding you to copy them to more permanent media from the RAMdisk if you are using it.



ChessBase lets you graphically enter games, annotate them, save them to disk and print them out.

DRAWBACKS

On the downside, ChessBase is almost as easy to misuse as it is to use, and displays some of the "rough edges" often found on European software. Subdirectories are left out of displayed pathnames and the screen is often redrawn improperly or not at all after a dialog box disappears. A text-only screen with a seemingly out of place two-entry menu is used for selecting games and key variations, making for uncomfortable transitions between it and the main chessboard display. The chess piece icons themselves could also use a little touching up. ChessBase also works only in monochrome, and there are no indications that it will be available for color systems in the future.

Three minor limitations of ChessBase stand out as especially annoying. Although you can enter games with the mouse and onscreen chessboard, with the separate Leonardo chess computer connected to the serial port and by keyboard using computer algebraic notation, the two most popular forms of notation, short algebraic (Nd5) and descriptive (N-Q5) are not supported, making it virtually impossible to type games in directly from printed scores. Furthermore, since annotations to a move are limited to 255 characters and only a single game can be written out to an ASCII text file at a time, producing newsletters and tournament bulletins remains a chore: the program guards against illegal moves appearing in the score, but helps with little else.

But perhaps the main drawback of ChessBase is its inability to merge two or more keys into one. For example, I purchased the entire New In Chess (NIC) Yearbook series on disks in ChessBase format, but each disk's 600K database contained the games from a different set of openings, and each had its own key for those openings only. I wanted to create one giant NIC database on my hard disk, but I couldn't combine the separate opening keys into a single pair of .KEY and .POS files.

DOCUMENTATION AND SUPPORT

The 71-page ChessBase manual is written in an easy-to-read, humorous style with important notes and helpful hints separated from the text and boxed for easy recognition. Many screen shots and diagrams are provided, including illustrations of the file formats used by the databases. Although there are a table of contents and four helpful appendices, including a reasonable glossary, there is no index.

If you have a question about using ChessBase that the manual doesn't answer, you can contact Saitek for technical support. Also, the follow-on products available for ChessBase are superb. In addition to the NIC series published by Inter-Chess of the Netherlands, ChessBase's authors publish several specialized collections, such as classic tournaments and world championship matches, as well as a bimonthly disk magazine including tournament results, opening analysis by British grandmaster John Nunn, and a set of a thousand games. According to the manual, they would like to publish databases and keys of general interest created by users as well.

CONCLUSION

ChessBase may not be all that World Champion Kasparov says it is, but his is a powerful endorsement of a (dare I say?) revolutionary program. Although the program isn't perfect, Friedel and Wullenweber seem genuinely dedicated to supporting it and fixing its bugs. ChessBase makes chess easy to study today, and with improvement can become a model of the way computers will be used tomorrow.

Chris Chabris is a student at Harvard University whose specialties range from playing chess to exploring artificial intelligence.

PRODUCTS MENTIONED

- ChessBase, \$229.95; starter program (demonstrates ChessBase), \$49.75; additional opening classification systems, \$19; game disks \$19 each; one year subscription to ChessBase magazine (six disks), \$89; ChessBase with three additional databases and subscription, \$299. Distributed by Saitek, 2301 West 205th Street, Suite 108, Torrance, CA 90501, (213) 212-5412. For additional technical support, call (818) 799-7567.

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How Fast Is Your Floppy Drive?

By Dave Small with Dan Moore



Avoid speed traps with **SPEED.ARC** on your **START** disk!

This issue, we'll take a look at how fast your ST's floppy disk drives are spinning—and why it's important to you. Why should you care about how fast your drive spins? If you'll allow me a little diversion, I'll tell you.

IT SAYS SO, SOMEWHERE HERE. . .

Atari ST disk drives are *supposed* to turn at 300 RPM. In fact, they're supposed to be locked onto 300 RPM. 3½-inch disk drives feature a feedback mechanism that keeps the disk spinning to within 1 percent of their preset speed.

When I worked at Data Pacific I made a big mistake on the original release of the Translator One disk controller. This device lets Atari drives read and write Macintosh disks when used with the Magic Sac cartridge, and I originally relied on Atari drives running at 300 RPM. The Mac, you see, is very touchy about its data rate, which is directly related to disk speed.

Big error. About 50 percent of the first Translators wouldn't format their owners' disks. This turned out to be drive speed troubles. We issued a quick-and-dirty speed tester, and found the ST drives running at speeds from 285 to 315 RPM—as much as five percent off! Needless to say, I had to hustle

out a quick revision to the Translator that no longer trusted in 300 RPM.

SPEED BUMPS

SPEED.PRG, on this issue's START disk, is an updated (and lots nicer) version of my original "hacked" disk speed tester. Why use it? Well, if you don't test your drives, you'll be able to read and write disks all day on your ST. But those times you take a disk to a friend's

If your drive is way off RPM, take it to your dealer and get it fixed.

house. . . Well, if your drive ran at 290 and Ralph's drive is running at 310, you could have big problems. For instance, you might copy a file to your disk and end up destroying the disk, because the sectors would be too "short" for a 310 RPM drive.

Also, when you write disks for your "permanent archive," you want them just as close to perfect as possible, so any ST you try to read them on will have the best possible chance of reading them.

USING THE PROGRAM

To use the speed tester, boot in medium or high resolution. Un-ARC the file SPEED.ARC from your START disk, following the Disk Instructions elsewhere in this issue. Next, double-click on SPEED.PRG, then select the drive you'd like to check. (That drive will need a diskette in it; don't worry, we won't try to reformat it or anything, and you can write protect it, if you like.)

If your drive is between 295 and 305 RPM, you're probably okay. Note that I say "probably," not "definitely." You can get into trouble above 305 RPM very quickly because of the floppy disk controller's design.

You may want to let this test run awhile to check speed drifting, typically caused by the diskette heating up while spinning. (No kidding!)

Click on Quit to stop the test, or click on a drive letter name to test the other floppy. Click on Quit again to exit to the Desktop.

RESULTS OF THE TEST

Okay, what should you do if your drive is way off RPM? Take it to your dealer and get it fixed. Don't bother trying to fix it yourself. Why do I say this? Because as far as I know, these things aren't adjustable; I have yet to see an ST drive with a speed adjustment control in it.

Remember, ST floppy disk drives are designed to run at 300 RPM, and a circuit is in there specifically to do that. Put yourself in the engineer's shoes: Why *should* they need a speed adjustment control? (Of course, ST drives have a little problem with reality.)

So let the dealer fix it, okay? They'll probably just swap mechanisms, then give it back to you.

The disk speed tester is not a con- ▶

clusive test of the drive, of course; it's meant to measure one of several variables of a disk drive. There are also alignment and hysteresis tests a dealer can run. But the speed tester will help to keep you from writing disks you'll never be able to read again.

A side note: There are several "11-sector" formatters in the public domain. They put 440K per side of the disk. The problem with 11-sector formatters is that they won't work on drives that run faster than about 305 RPM—and there's a lot of faster-than-305-RPM drives out there. This is why we stuck with 10 sectors on the Twister format: it left plenty of tolerance on either end of the track. If an index pulse occurs during a sector read, you'll get an automatic CRC error on that sector, period; the WD 1772

(the ST's disk controller chip) has that bug in its design. Eleven sectors at 305 RPM means your 11th sector is right next to the index pulse; go any faster, and it will be *during* the index pulse.

Also, the programs that format 81, 82 or even 83 tracks are pretty questionable. While they may work on your drive, they may not on a friend's. In particular, Atari has started shipping disk drives with 8048 microprocessors in them; the 8048 chip is there to "buffer," or slow down, the step rate from three milliseconds per track (ST rate) to six milliseconds per track (drive rate). The 8048 is smart enough to know not to let the head past track 80. Thus, you could write disks on one drive out to track 83, put them into another drive, and never be able to reread that data.

Besides all this, the highest-numbered tracks are the worst area for data separation. Your floppy disk controller is fighting for its life in this area; most drives that have trouble have the most trouble on these innermost tracks.

Is the extra room worth all this hassle?

COMING ATTRACTIONS

Next issue, we'll present a very simple, very useful program that makes sure none of your disks have gone bad. **Dave Small is the creator of the Magic Sac Macintosh emulator and the Twister One disk controller, the author of three books and many computer magazine articles. Dan Moore is the author of PaperClip for the Atari 8-bit computers.**

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A Primer On Hard Drives, Part I

By Scot Tumlin

In this issue's "Getting Started" column we begin a discussion of hard disk drives—at present, the most economical way to get massive amounts of data into and out of your ST.

A hard disk drive, like a floppy disk drive, is simply a data storage device. The main purpose for a drive of any kind is to store your programs and data when your computer is turned off. A computer without some form of data storage is little more than an expensive doorstop!

SIMILARITIES AND DIFFERENCES

Last issue we discussed the different kinds of floppy drives; this issue, let's talk about the similarities and differences between floppies and hard drives. With both hard and floppy drives, a reading and writing device (called a "head") moves over a spinning disk, in much the same way that a phonograph needle moves over a record. Both the phonograph needle and the floppy disk heads make physical contact with their respective disks to read in information. The floppy disk drive also does something a phonograph can't, however: it writes (stores) information on the disk.

A hard drive, on the other hand, operates more like a laser disk player than a phonograph. In a laser disk player, a laser beam "scans" the digital information stored on the disk without making any other physical contact. On

a hard drive, the read/write heads do not—must not—make contact with the magnetic surface. The distance between each hard drive head and the disk surface is less than the thickness of a human hair. For this reason, hard drives are inherently more fragile than floppy disk drives; a single bump while the heads are over the magnetic surface and you may have a "head crash." If the



This is the original style of hard drive—the "shoe-box" design.

heads do crash into the surface, you can lose not only your data, but also the cost of rebuilding your hard drive!

Inside its protective cover, a floppy disk is made of very thin "floppy" plastic with a magnetic compound bonded to it, while a hard drive has a rigid or "hard" platter coated with a special magnetic compound. Data is stored much more densely on a hard drive than on a floppy disk, thus allowing

great amounts of storage in a small space. Drive manufacturers also stack platters on a single spindle within a hard drive to further multiply storage.

But the most obvious difference between hard and floppy drives, of course, is that you can take your information out of your floppy drive and walk off with it—just toss the floppy disk into your briefcase or shove it into your shirt pocket. Most hard drives' platters are not removable—you set up your hard drive next to your computer and it stays there. However, there are hard drives with their platters in removable cartridges and even a floppy disk drive that holds as much data as most older hard drives. Both of these units combine the flexibility of a floppy disk drive with the vast storage space of a hard drive. (And when erasable optical drives be-

come readily available, you can have it all ten times over—but that's another story.)

Another difference between hard and floppy disks is the number of read/write heads. A single-sided floppy disk drive has one read/write head, while a double-sided disk drive has two. A hard drive has two heads for each platter, one for each side. Between the high density data storage and the ▶

high platter speed, a hard drive can locate a file within milliseconds. On a standard floppy disk, it can take several seconds to load a large file (say, 200-300K). But on a hard drive, you can load or save an entire megabyte in a few seconds!

And finally, one of the main advantages that a hard drive has over a floppy drive, besides the vast storage space and quick file access, is its ability to be *partitioned*, or divided so that it looks to your ST like several smaller drives. We'll talk about partitioning next issue, when we discuss formatting your hard drive.

SELECTING A HARD DISK

Now that you know how a hard drive functions, let's talk about selecting one.

There are a number of factors you should consider before you purchase a hard drive. The most important factor is the amount of storage space you require. A few years back, a ten-megabyte hard drive handled most requirements, but as computers became more powerful, they—and their users—demanded more and more memory, both inside the computer for processing and outside in the form of disk storage. Today, most ST hard drives are at least 20 megabytes, and from there you go straight up. There are hard drives in various configurations—60-, 80- and 120-megabyte, for instance—and even 160-megabyte drives are not uncommon. If you need *lots* of storage, you can even buy a one-gigabyte hard drive. That's 1,000 megabytes of storage in a single unit!

The amount of storage space you require depends on what you want to store on your hard drive. If you want to store a typical collection of applications, games, text files and the like, a 20-megabyte hard drive is probably large enough for your needs. But if you want to store a huge database or very large

animation files, for example, then even 20 megabytes might not be enough. The best advice is to buy the largest hard drive you can afford. You'll be glad you did later.

ADDING MORE HARD DISKS

Once you've determined the size you need, you should consider other factors. First, is it expandable?

The STs and Megs have only one DMA (Direct Memory Access) port.



The ICD F-50A (50 megabytes).

That's the high-speed input/output "door" that your hard drive needs for its high speed operation. When Atari introduced the SLM804 Laser Printer, it was designed to use the DMA port also. Therefore, in order to use both the SLM804 and a hard drive, you have to connect them in a "daisy chain," which simply means linking them in series, one after the other. Atari's laser printer comes with the SLMC804 interface box that has an additional DMA port built in. You just connect your hard drive to this port and then you can use both the drive and printer. But don't turn off the printer while you're using your hard drive; unfortunately, it turns off the interface box as well.

You can also use the daisy chain method to add multiple hard drives to

your ST system. Some recent models of hard drives have an additional DMA port through which you can connect a second hard drive. If you purchase a hard drive with this feature, you'll never run out of storage space—just stack them up and go to town!

A second method of adding more storage space is to remove your hard drive's cover and install another hard drive mechanism inside the chassis. You can get inexpensive hard drive mechanisms through many computer mail order companies; the mechanisms themselves are relatively inexpensive when compared to the price of a complete ST drive system with case, power supply, hard drive controller card and ST-interface card. But be forewarned: this is a tricky hardware modification and should be done only by someone with the proper experience. There are some hardware kits on the market for this purpose, but opening up your hard drive before the end of your warranty period will void the warranty, so unless you or a close friend are good with electronics, don't do it. (Editor's note: *In the Winter 1987 issue of START, Dave Small published "Megabytes, Not Megabucks," a how-to article on adding an additional hard disk drive mechanism to your existing ST hard drive, for the adventurous among you.*)

OTHER CONSIDERATIONS

Storage space and expandability are very important considerations in your decision to buy a hard drive. However, there are other factors you should consider.

For instance, don't overlook the drive's overall size, or "footprint." How much space do you have on your computer desk or table?

The length of the connecting cable is also important to consider and you might have to do some shuffling of your

desk debris to get your drive to fit. Also, timing is critical with hard drives and since cable lengths play a significant role in the timing, don't plan on just buying an extension cable; it may work, but, then again, it may not. If you have to adjust your drive to an awkward position in order to keep its cooling vents clear or move your monitor to a neck-wrenching, eye-straining position, then you might have to redesign your work area. Still another consideration is the noise made by the hard drive's cooling fan.

All in all, the best method for selecting a hard drive is to go to your local computer dealer and examine the display units for yourself. Ask questions, look at the different hard drives, listen to them and ask for a demo. (Editor's note:

For further information, see the *Hard Drive Overview in the Fall, 1987 issue of START.*)

Next issue, we'll take a look at how to format, partition and install your new hard drive.

Scott Tumlin is in charge of Direct Mail Services and Software Technical Support for Antic Publishing.

ST HARD DRIVE MANUFACTURERS

Below are the top manufacturers of hard drives for the ST. Your local computer store should have them in stock or can order them for you. Or if you want, you can order drives directly from the companies listed here. (And tell them that START sent you.)

- **Astra Systems, Inc.**, 2500 South Fairview, Unit L, Santa Ana, CA 92704, (714) 549-2141.

CIRCLE 175 ON READER SERVICE CARD

- **Atari Corp.**, 1196 Borregas Ave., P.O. Box 3427, Sunnyvale, CA 94088-3427, (408) 745-2000.

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WORLD DISCOVERY

Recreation or Education? You Decide!

by David J. Bohlke



Discover the world
with **DISCOVER.ARC**
on your **START** disk!

Did you ever realize that you've come this far in life without knowing the capital of North Dakota, the location of Delaware or the nickname of Oklahoma? (Amazing.) Well, Discovery will cure you of your geographical ignorance. It doesn't just teach you more about the United States, it makes it so much fun to learn you really don't want to stop until you can recite all the state capitals backwards and forwards!

Discovery is an educational game that teaches U.S. geography with four learning modules to provide a challenge to users of all ages. The focus is centered on learning the shapes, locations, names, and capitals of the fifty states. For trivia enthusiasts, the quiz module provides an additional challenge. The program reads a file from disk that contains the pictorial and trivia information. The file on your START disk is of the United States, but we'll be expanding Discovery in the future to include other countries, as well as a Discovery Construction Set so you can create your own entertaining quizzes.

GETTING STARTED

To begin, copy DISCOVER.ARC and ARCX.TTP to a blank, formatted disk and un-ARC the Discovery files following the disk instructions elsewhere in this issue. Then double-click on DISCOVER.PRG from a low resolution Desktop. The next thing you need to do is load a data file from disk; select USA.DSC. It will take a few seconds to load the states' data.

On the top half of the menu screen are the four test modules. To select the module you want to use, left-click in the box to the left of the name, then execute your highlighted choice by clicking the right mouse button. Each module plays until you have correctly identified all fifty states.

The bottom half of the menu screen contains a scorecard to track your progress. It will record your percentage of correct responses and time in seconds for the last five times you have completed each module. Scores are also displayed during play.

From the menu screen you can also Load a new Discovery data file or Quit to the Desktop. To exit any of the four modules during play, click the right mouse button.

JIGSAW (OUTLINE)

Jigsaw simulates a jigsaw puzzle, using the fifty states as pieces. It should be easy for you to complete, since the outlines of each of the fifty states compose the puzzle. The program will randomly select a state to be placed in the puzzle, and your mouse cursor will become that actual shape. Move your mouse so that the state is in the correct position in the map and left-click to set it down.

Continue until you correctly place all fifty states. The bottom of the screen will indicate the number of pieces you have left to place, the percentage of correct placements and the elapsed time. This module is the learning mode, since during completion of the puzzle the name of the state and the name of the

capital are displayed. Through repetition, younger players who are able to read can begin to associate the states' names with their shape and location. Even pre-schoolers can become familiar with the computer and mouse and learn to identify shapes.

JIGSAW (FREEHAND)

Jigsaw Freehand functions in exactly the same manner as Jigsaw Outline, except that placement of the pieces is more difficult. Only an outline of the United States is given—not of each individual state. You will need to judge each state's location with respect to the country's borders and coastlines. Don't despair, though; it will become easier as you fill in the map.

FIND STATE/CAPITAL

In this module, the program displays a complete map of the U.S. and then prints the name of a state or a capital in the top center of the screen. You must identify the state or capital by moving the arrow cursor to the correct map location for the state and clicking the left mouse button. Continue until you correctly select all fifty states (or their corresponding capitals). When you can score 100% consistently on this module, you'll enjoy the timing routine even more. Several players can compete to see who can score the best time and still maintain a perfect score.

THE QUIZ MODULE

This last module provides additional discovery information on the fifty states. The execution of the Quiz module is the same as the Find module with one exception: instead of giving the name of the state or capital, the Quiz mode provides you with three clues to the state you must select. The type of clues will be chosen from the following indicators: Entered Union, Border, Economics, Resident, Nickname or Area Rank.

To respond, move the arrow cursor into the state described by the clues and left-click. If you know some of the an-

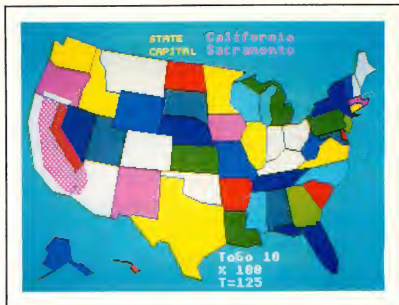
DISCOVERY . . .

swers from the clues, you should be able to associate new information from a given state with what you already know. As in the other three modules, any state you miss will come up again until you've given a correct response for all fifty.

WORLD DISCOVERY

Discovery is an educational program, but it's so entertaining you'll find yourself playing for hours, challenging yourself to learn more and more about the United States. But the program's usefulness is almost unlimited. Since the quiz data is loaded from disk, you can create custom data files to teach yourself, your children or your students about any part of the world. The file DSCFILE.TXT in DISCOVER.ARC explains the file format in detail; to read the file double-click on it from the Desktop and select Show or Print. If you wish to study the GFA BASIC source code, double-click on DISCOVER.LST.

Discovery, the geographical educational game. In the jigsaw module your mouse cursor turns into the shape of a state and you must position it correctly in the map of the U.S.



To load the program into GFA BASIC, run GFA BASIC, click on Merge and then select DISCOVER.LST.

START will continue to create Discovery data files and post these files on our electronic magazine Antic Online. (If you have a modem and Compuserve account, just log on and type GO ANTIC to check our current listings.)

We'll also put new data files on future START disks and bring you the Discovery Construction Set to enable you can create data files from your own pictures. ■
David J. Bohlke is a high school teacher of math and computer programming who's published more than sixty computer programs and articles in the last 10 years.

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4	1	40.00	40.00	40.00	40.00	40.00
5	1	50.00	50.00	50.00	50.00	50.00
6	1	60.00	60.00	60.00	60.00	60.00
7	1	70.00	70.00	70.00	70.00	70.00
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DISK INSTRUCTIONS

Each article in this issue with a disk icon on its first page (or next to its title on the Table of Contents) has a companion 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% 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 re-

fer 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 ARCEd 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, then type in the name of the ARC file you just copied over to your Un-ARC disk 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.)

3 As the program runs, it will display the names of the individual files as it extracts them.

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.

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 BREAKDWNXTX, for example) which shows 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).

DISK CONTENTS

GAMES AND ENTERTAINMENT—ON YOUR START DISK!

This issue's START disk will help you get serious about having fun! Our feature is **Naval Battle**, an ST Battleship game with synthesized speech, simulated explosions and three levels of play. File NAVAL.ARC; runs in low or high resolution.

Or try **Slider**—it's similar to the hand-held plastic "15" puzzles, but uses your full ST screen and can load any DEGAS or NEO format picture. File SLIDER.ARC; all resolutions.

Discovery is both a game and a geographical learning tool. Learn the names, locations, capitals and trivia information of all 50 states. File DISCOVER.ARC; low resolution only.

Guitar Solo is a digital guitar simulation that lets you play songs by clicking on guitar strings. File GUITAR.ARC; medium or high resolution.

For utilities, check out Tom Hudson's **ReSTART**—reboot your ST without taking your hands off the keyboard! (File RESTART.ARC.) Or look at Dave Small's disk drive speed tester (SPEED.ARC), or **The Byte Mechanic**, which will let you examine, edit, insert or delete any byte in any of your files. (MECHANIC.ARC; medium or high resolution.) ■

Quantum Paint 1.2

The Newest Entry in the Supercolor Paint Sweepstakes

by Marcus Badgley

It's just not enough to release a mere 16-color paint program anymore. Since the advent of Spectrum 512, GFA Artist and others, ST paint programs have progressed from being mere drawing and sketching tools to those for advanced artistic expression, both for still images and animation sequences. And no longer are we bound by the 16-color, low resolution limit of the ST. With advanced programming techniques, paint programs have transcended the original limits of the ST's hardware and have given us palettes rivaling the Commodore Amiga.

Eidersoft's Quantum Paint is the newest entry in the ST "supercolor" sweepstakes. Basically, Quantum Paint is a simple drawing program capable of displaying 4,096 colors simultaneously, in addition to cel-type animation capabilities (although the latter works only in low-res color). The program has numerous unusual features: some fascinating, others that are quite annoying. Let's take a look at both sides of the coin.

First Impressions

Quantum Paint (QP) works in low, medium and high resolutions. All of its drawing functions are available from two main menus: one with the primary drawing and animation tools, the other for disk functions and tool modification. The latter menu has several blank spots, which, I hope, will support additional features in future releases of the program.

QP's array of drawing tools are simple and basic: Freehand Draw, Erase, Rubber Line, Rays, Poly-line, Polygon, Flood Fill, Text, Airbrush, Zoom, Move, Copy, Stipple, Circles, Ovals, Frames and Boxes (with or without rounded corners). The program provides sixteen user-definable brushes, although these are available only in Freehand mode. You can grab Blocks of an image (which you can use as brushes), in either Lasso or box format, with solid or clear (X-Ray) backgrounds. QP also has an excellent airbrush, with a wider spray size and flow range than any other ST drawing program I've worked with.

QP's text features are adequate—the program comes with several different type sizes and styles (italics, bold), which you can type in four different directions. QP also allows you to load standard GDOS fonts.

Barely adequate are QP's workscreens—there are only two, and you can't transfer work between them. Another quibble I have is that QP's R-frames and R-boxes (rounded corners) features are misleading—the corners aren't rounded but beveled at 45 degrees. You can do a bevel easily by hand, but a true rounded corner is difficult, and is best left as a built-in feature in your drawing program.

QP will let you load and animate drawings done on other ST art programs, such as NEOchrome and DEGAS, although it's a one-way ticket: the program allows you to save your images only in QP format. Finally, QP has standard options allowing you to print out your images, on either dot-matrix or laser printers.

Different Color Modes

QP's main attractions lie in its four expanded-color modes: 128, 32, 512 and 4K. These modes refer to the number of colors capable of being displayed simultaneously. Mode 32 works only in medium resolution and, yes, you can display 32 colors simultaneously.

Both modes 32 and 128 are similar: they use a technique called "widebanding," whereby the screen is sectioned into vertically stacked bands which represent each palette. You can adjust the width and vertical position of each band, or palette, by hand. Mode 128 stands for 16 colors times 8 palettes; mode 32 stands for 4 colors times 8 palettes.

If you're working in modes 32 or 128, using all of your available colors results in distinct color bands which run the full 320 pixels across. Unless you really *want* this color banding, you must plan your drawing very carefully beforehand. This you can do by having different palettes share colors, although by sharing colors a potential palette of 32 or 128 ▶

Quantum . . .

colors can be substantially reduced.

QP's 512 mode is pretty straightforward; its only color limitation being that it can display a maximum of 40 colors on a single scan line. Mode 4K uses a special technique called "interlacing" in order to display a supposed 4,096 colors (more on this in a moment). Since both of these modes eat up so much of your ST's 68000 processor time, certain drawing features slow down substantially, while others (flood fill, move, copy and animation features) simply aren't available at all.

Using The Expanded Color

When you use the 4K mode, you actually have to create your drawing on a "draft" screen, which can display only 16 colors (in low res) simultaneously. Even if your final drawing will contain hundreds of colors, you must "assemble it" in groups of 16 colors from within draft mode. This limitation makes working in detail or with many colors of similar value difficult at best. In order to do detail work you must use either the

**QP's main
attractions lie in
its four expanded-color
modes.**

regular zoom or the color zoom: The latter reduces the current draft colors to a minimum number, allowing you to apply more colors clearly.

In order to see exactly what your image looks like you must update the screen continually; you do this by setting QP's update control or pressing the ALT key. After updating your image, you may or may not see the screen display or particular color bands flickering. This flickering is caused by "interlacing" colors together in order to create in-between colors. In the documentation, the developers refer to this flickering as "slightly objectionable" - I found it quite annoying.

Color Manipulation

Mixing color in modes 32 and 128 is fairly simple, yet it takes time to get a full working palette. You access the RGB sliders by double-clicking on a color, which you can then adjust, or choose a new color by picking one from a 512-color palette.

The QP's Spread function will calculate smooth transitions between two colors, and Copy will do just that - copying from a single color to whole palettes to new locations. In order to adjust multiple colors you must double-click on each color then exit the RGB box for each color; a tedious process.

An added benefit in QP is its color-cycling ability. In 128- and 32-color modes, QP's color-cycling has greater potential than most other ST drawing programs, as multiple palettes can cycle independently, and at different rates, directions, and speeds.

And finally, in modes 512 and 4K, the RGB sliders have been expanded, having a range from 0 to 14. Unfortunately, both modes lack any real color mixing capabilities; you just select a color from the sliders and draw. When working with such a large palette the difference between two very similar colors is quite small, and they're often hard to locate. It would help if QP displayed the RGB numbers of the colors in the palettes.

Animation Features

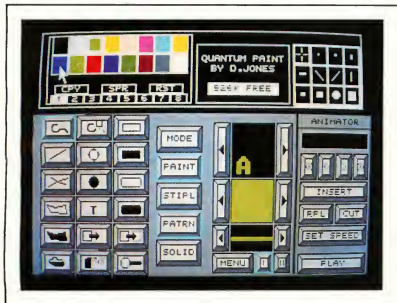
If you want to make your artwork come to life, QP's animation tools will come in handy. Although you can do animation only in modes 128 and 32, this is one of QP's best features. The animation functions let you create cel-type animation quite easily.

To create an animation, simply paint an image, click on Insert and it will be inserted into an animation sequence. Alter your drawing a bit, click on Insert and another frame is inserted. It's that simple. You can play sequences in an endless loop or just once, and at any speed. You can fast forward or rewind to any frame, enabling you to rework it, possibly to smooth out a transition or movement. QP also uses a technique called delta compression to save its animation sequences. Delta compression saves only the *differences* between each frame in a sequence, thereby allowing you to store much longer animation sequences on disk.

Frustrations

Although QP's programmers have succeeded in pulling off an interesting technical feat, their user implementation leaves much to be desired. While using this program I constantly felt bound by the technology and not freed to create. Other annoyances - for example, when you load the program, a dialog box appears asking for a password from the manual . . . and after crashing several times this entry fee seemed rather steep. In addition, I found myself very frustrated waiting for QP to update my drawing when I was working in the 4K mode, and the lack of tools was frustrating.

My main gripe about QP is that, while it has a supposed 4,096 colors available for your drawings, creating an image actually using many of these colors would be quite cumbersome and time-consuming. And unfortunately, QP has no "smart"



Quantum Paint's main workscreen. The program lets you create art with up to 4,096 colors, and allows you to animate low-resolution, 16-color images.

processor-intensive tools such as anti-aliasing, complex BLOCK functions, color mapping (as does GFA Artist) or gradient fill (as does Spectrum 512).

Conclusion

Being familiar with other ST drawing programs that offer expanded color capabilities and/or animation (GFA Artist,

Cyber Paint, Spectrum 512), I wonder why the developers of Quantum Paint have taken the route they did. Quantum Paint's authors don't seem to mind that the actual drawing is secondary to the technical accomplishments they've achieved. As an artist, I want powerful, easy-to-use tools to enable me to get images out of my head and onto my canvas (electronic or otherwise) with a minimum of difficulty.

To sum up, Quantum Paint is only for the experienced ST artist who craves color and cel-type animation who is also willing to put up with the program's difficult-to-use interface. Only with great planning and patience can you successfully exploit the program's unique features, and you have to ask yourself if it's worth it: taken with the aforementioned drawing programs, Quantum Paint suffers by comparison.

Marcus Badgley is the head of Gravity Design, a San Francisco art studio, and the author of "Art: From Cave Walls To Glowing Phosphor" in the Graphics and Music Special Issue of START.

Products Mentioned

Quantum Paint, \$44.95. Eidersoft, Inc., PO. Box 288, Burgetstown, PA 15021, (412) 947-3739; (800) 992-9198.
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Intelligent Music's M

The Interactive Composing System

by Jan Paul Moorhead

Intelligent Music's MIDI program M is so unusual, it's difficult to describe exactly what it is. In fact, it's easier to tell you what it isn't (or what it almost is!).

M is much more than the standard MIDI sequencer, although it does have many sequencer-like features. It's not a random music generator, although it does use randomization to manipulate musical sequences. Basically, M is a set of remarkable tools that can actually help compose music for you, working from notes that you've entered.

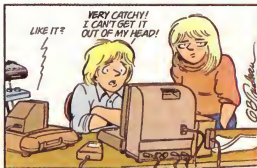
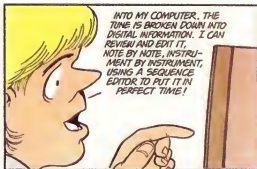
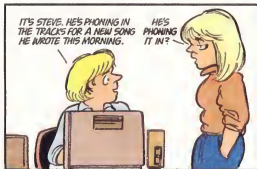
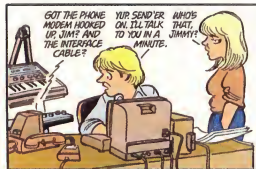
The Recording Modes

Intelligent Music has managed to put most of M's functions on one screen so you can access them in real time for "live" musical performance. Because of this, M may look a little daunting after you first boot it up, but if you take your time and read the manual carefully, M is actually easy to learn.

To use M you enter sequences of notes in any of five modes. "Pitch Distribution" mode lets you enter a monophonic sequence of pitches, entering single pitches one at a time at any tempo and any length. Rhythm and note lengths are not recorded, merely the sequence of pitches. Rhythm, note length, rhythmic feel, accent and many other parameters are dealt with in other parts of the program. It's the way M can manipulate these parameters that makes the program so unique.

"Step-Time Record" operates similarly, but you can enter chords as well as single pitches. "Real-Time Record" is just what it sounds like, but the musical material recorded this way cannot be edited. This might seem like a drawback at first, although you can work around it. In any of the above modes, additional notes are recorded onto the end of the sequence, making for easy looping. In "Drum Machine Record"

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the sequence loops and you can overdub patterns of various lengths. Finally, you can also import outside MIDI files and manipulate them with M. The editing in M is restricted to pitches and rests; note length, accent, etc. are controlled in other parts of the program.

Pitches And Patterns

Each sequence of pitches in M is referred to as a pattern, and you can have four patterns in a pattern group. (I would prefer to think of each pattern as a track. What M calls a pattern group, I think of as a pattern, as in most sequencers that function similarly to drum machines.) You can have up to six pattern groups. Four patterns (read: four tracks) and six pattern groups might seem pretty limiting, but M is no mere sequencer.

After you've entered pitches into a pattern, the fun begins. There are many different ways you can manipulate how the sequence of pitches is performed. For instance, you can adjust the pattern's meter relative to the global meter. (Patterns of seven beats against three on top of four? No problem!) For anyone interested in serious exploration of polyrhythms, M is your program.

More Features

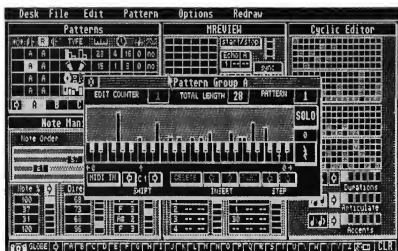
M's "Cyclic Editor" allows you to set a cycle length for three different parameters: accents, articulation (the length of the notes) and durations. Then, you may set a range of variation for each of these parameters in each pattern. Here the range of variation is determined for each musical event in the cycle. Looking closer at the accent pattern, for instance, you'll see that on a particular event within a cycle, you can set a range of accents for that event, which will vary randomly within that range. There are six boxes for each parameter (accent, articulation and duration); each represent a storage location for a cycle. There are also six corresponding boxes for each parameter of the program (referred to as control settings) and they can be accessed in real time.

You can control the overall width of the velocity range in the "MIDI Variables" section of the screen, which is where you can also set MIDI channels and patch changes for the pattern. This sounds pretty straightforward, but these parameters, like most of the other parameters stored in the control settings, can be varied in real time. What makes this especially unusual is that they can be "conducted" with the mouse on a grid. Any set of control settings that has its controller arrow highlighted can be conducted by moving the mouse on the conducting grid with the button depressed. Some of those variables are velocity, transpositions, MIDI channels, patch changes, tempo, degrees of random reordering of pitches, articulation, etc. By now you should be getting the idea that this is not your garden variety music program!

Controlled Chaos

In addition to pitch reordering, M has another fascinating feature: it can randomly vary the order of your *original sequence of pitches*. You can map a range of order randomization for each pattern, and even continuous reordering of the reordering! This portion of the screen labeled "Note Manipulation" also allows you to set the probability that any particular note will be played from a pattern; a sort of a random masking function. This is also where you map out sets of transpositions for each pattern.

The settings (reordering, transposition, note occurrence, velocity ranges, etc.) you define for a pattern group can be stored in a "Snapshot." These snapshots are independent of the patterns and can be called up to affect any pattern group you've stored.



M's main editing screen. Intelligent Music has managed to put most of M's functions on one screen so you can access them in real time for "live" musical performance.

Once you've set up your patterns, your manipulation variables and your snapshots, you can "conduct" the snapshots as well as which patterns are being played, individual variables and control settings. You can then store the performance as it is conducted in a "Movie," which in turn you can store in a standard MIDI file.

The Joy Of Standards

M's ability to work with standard MIDI files shows off its real power, although personally, many types of music that I do (funk, fusion or European-oriented through-composed music, for instance) I probably wouldn't create using M alone. However, the tools M provides are fascinating and I would like to have them in all my other sequencer programs.

Standardized MIDI files make all this possible. Not all the sequencers available for the ST have implemented this standard but many of the larger ST MIDI software companies have, and many of the smaller companies are planning on it in their next upgrades, too.

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MUSIC

Music's M . . .

Exploiting M's Features

I see many different musicians being enthralled with M: the extremely knowledgeable academic types, the experimenters, the musically motivated but not highly trained, and those who use a variety of techniques and environments for composition. I shouldn't leave out those who are just looking to have a good time. M is a lot of fun!

There are, however, some types of composition for which M is totally unsuited. Classical European music (Bach, Beethoven, Brahms, etc.), traditional jazz, bebop and folk music will find little use in M. But then, many people working in the above fields probably do very little composition in a MIDI environment anyway.

Certain forms of music could make extensive use of M's tools. Twelve-tone composers (following in Stravinsky's footsteps) and twentieth century academic composers go to great lengths to generate music that M could handle with ease. One suggestion I might make to the program's authors would be to include harmonic inversion and exact retrograde of pitch sequences for people infatuated with twelve-tone writing. Since this is only version 1.0 of M for the ST, I'm hoping that future versions will include these features.

Other areas that could use M's type of manipulations are New Age and impressionistic composition. M is very facile at coloristic treatment of harmonic material. Washes of continually varying pentatonic bell parts and lush ostinatos that would require formidable keyboard technique can be generated in seconds with M. Another tool that would be useful in this area would be diatonic and modal transposition in addition to chromatic transposition.

Conclusion

The area that M excels in, above all, is experimentation. This is clearly one of the objectives of Intelligent Music and in this they have succeeded admirably. Individuals without strong performance skills can still get impressive performances out of M, and even if you lack strong knowledge of music theory and composition, you should still be able to come up with some interesting music. Those with a firm grounding in twentieth century composition techniques will be able to take M to its limits.

M isn't for everyone, but it's definitely a lot of fun. If nothing else, it's the ultimate video game for MIDI musicians. ■

Jan Paul Moorhead is a composer who runs a music studio in Los Angeles, and is a frequent contributor to START.

Products Mentioned

M, \$200. Intelligent Music, P.O. Box 8748, Albany, NY 12208, (518) 434-4110

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Sonicflight!

Four New Patch Editors from MIDIMouse

by Jim Pierson-Perry

Patch editors are an integral part of any MIDI user's software arsenal. These programs give you quick and easy access to set or change any of the synthesizer settings (called a patch) that make up a particular sound. Several electronic instrument manufacturers have capitalized on the widespread use of personal computers for MIDI applications by developing low-cost synthesizer "black boxes" with no keyboards (called expanders) that can only be played and programmed through MIDI input—hence the demand for patch editors.

Fortunately, writing a patch editor program for the ST is fairly straightforward due to GEM's support of the built-in MIDI ports and the ST's lack of timing concerns (as opposed to sequencer programs). As a result, we have a flood of ST patch editor programs available, both commercial and public domain, with special emphasis on the Casio CZ series.

Sonicflight Takes Off

Sonicflight's patch editors, written by Richard Jordan, are among the newest entries in the ST MIDI arena. The programs are distributed by MIDIMouse Music, a company that started out by offering patches and samples for a number of different instruments. While continuing to be well-known for their sounds, MIDIMouse has brought out their own software line, which includes the Fast Tracks sequencer and Matrix 12/Xpander Librarian.

There are four patch editors currently in the Sonicflight series: CZ/CZ-1 Voice Master for the Casio CZ models (except CZ-2305), FB-01 Voice Master for the Yamaha FB-01 expander, D-50/550 Capture! for Roland D-50 (and rack mount

D-550 equivalent) and MT-32 Capture! for the MT-32 expander. All share a common "look and feel" of operation, design and MIDI implementation. The differences come in with the editing of patch parameters, which are obviously instrument-dependent. Additional editors planned for release in this series are for the Roland D-10/D-20 and possibly the Ensoniq SQ-80.

Common Ground

Luckily for ST MIDI users, all of the Sonicflight programs follow the standard GEM interface, so you can use desk accessories if you wish. The programs support both monochrome and color monitors for all ST and Mega models. Commands are executed either through a set of screen icons or the menu bar, although the latter has keyboard equivalents.

Screen icons let you control peripherals and the patch editing buffers. The peripheral icons are common to all the programs and represent disk access, printout, MIDI setup and patch data transfer between ST and synthesizer. Printouts can be of the patch names in a bank, individual patch parameters or parameters for all patches in a bank. You can also redirect the output among the printer, screen, disk and serial ports.

The MIDI setup lets you assign separate channels for input and output, toggle MIDI Through on or off and specify if the patch changes will be sent to the synthesizer during editing (called Listen mode). Used together, these features can customize the program to fit your MIDI system. You can even use the program without connecting it to a synthesizer—good for just entering patch data or customizing patch banks. ▶

Sonicflight . . .

Most operations are intuitive—just click on the disk icon and drag it to an unused patch bank window to load a bank of patches, for instance. When you drag the mouse, its image changes to a piece of paper. If you have trouble positioning it, just remember to treat the upper left edge as if it were the mouse arrow tip, and everything will work smoothly.

You perform librarian functions from the main screen, such as loading, saving and rearranging patches within a bank. (The number of patches within a bank depends on your synthesizer.) Customizing a bank is as simple as loading patches and dragging them from one position to another. You can also rename patches and banks.

The programs are copy protected using the “key disk” approach. The original program disk must be in drive A for the program to load, although the actual load could be done from a backup copy or hard disk. You can purchase backup copies of the master disk for \$15. The manuals are well-written and organized, but have no screen shots and are printed in painfully small type.

The KEYIT disk accessory is supplied with each of these programs as an easy way of testing how a particular patch sounds. KEYIT displays a small keyboard icon that you can play over a four-octave range. It can send MIDI codes for note on/off, note on velocity, and program changes but not controller codes (such as mod wheel). This is a convenient way to monitor patch sounds, particularly for expanders.

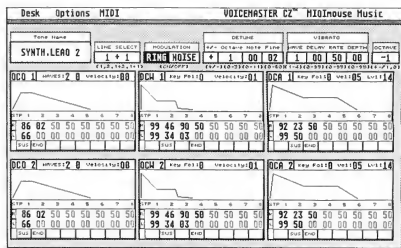
CZ/CZ-1 Voice Master

Now for the specifics! CZ/CZ-1 Voice Master is a fairly standard patch editor program, although it's one of the few that includes support for the CZ-1 synthesizer. Up to three banks of patches can be held in memory at one time. You can edit individual patches by dragging them into an edit buffer, which prevents accidental overwrite of the starting patch data. Thirteen patch banks come with the program; many are rehashes of Casio standards along with others that are much more interesting.

Editing options allow you to change parameter values, copying blocks (DCO1, DCA2, etc.) within the patch and using a randomization scheme to create new patches. Parameters with a fixed small range of options (such as LINE) are toggled between values by clicking on them with the mouse. To change those with wider ranges (such as envelopes), you must first click on the field then type in the new value, or use the +/- keypad keys to change the value by one step. This is a mixed blessing, since changing back and forth from mouse to keyboard is awkward. For just entering data it can be useful; to make changes, however, I would rather use the mouse buttons to increase or decrease the numbers. All six patch envelopes are shown on screen and are instantly updated when you change values. Graphical editing is not supported.

Block copying is useful but limited; I would like to see it extended to let you copy a block from any patch currently in memory. The randomization routine lets you specify which parameters are to be affected and the degree of change allowed, same for all that are selected. Two separate edit buffers are maintained that you can switch between for comparing the results of editing operations. The UNDO key will take back your most recent change.

While the program is good for normal use, it lacks features found in top-of-the-line programs such as graphical editing, patch scaling (change overall time or loudness) and extended copying options. The GEM implementation could also be improved; there's a lot of unnecessary screen redrawing which slows up the program.



CZ/CZ-1 Voice Master, version 1.01.

FB-01 Voice Master

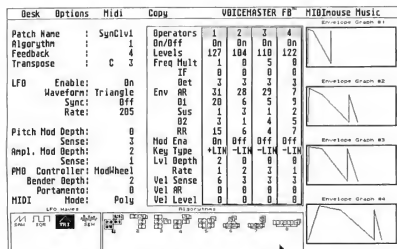
The Yamaha FB-01 expander was designed to be programmed by an external patch editor. It uses the same four-operator FM synthesis to make sounds used by the DX21/27 keyboard instruments but can play up to eight independent voices at once, each with its own performance controls (configuration). Patch and configuration parameters are treated as two separate types of MIDI data.

To deal with this, there are two librarian screens in the FB-01 Voice Master program—one for normal patch data and a second for configuration data, which you can move smoothly between by clicking on a screen icon. The patch screen holds two banks of 48 patches each while the configuration screen holds three banks of 16 each. Individual patches or configurations can be dragged from one bank to another or into edit buffers (one for each type of data). The program comes with seven banks of patches and one bank of configurations.

Editing of parameter values is similar to that of the Casio patch editor. Certain parameters are toggled from one value to another by clicking on them while others must be typed (or use the +/- keypad keys). Operator envelopes are displayed and updated as you make changes but the program doesn't support graphical editing. You can copy either entire opera-

tors or just their envelope values within a patch; performance data for an entire voice can be copied within a configuration.

A couple of suggestions: FB-101 Voice Master's GEM code could use some touch-up. The screen layout is too crowded (under medium resolution), and there is unnecessary screen



FB-01 Voice Master, version 1.01.

redrawing. If you click on an envelope parameter and then move on to an unrelated toggle field (e.g. algorithm), each time you toggle the value the original envelope is redrawn. It doesn't affect the data but is annoying.

For normal use Voice Master is fine. To push for the front runner position, however, it still needs graphical editing, a more facile interface for changing numeric values and extended envelope editing and copying abilities. Consideration should also be given to extending the program to work with the Yamaha keyboard synthesizers that are similar to the FB-01.

D-5/550 Capture!

D-50/550 Capture! is a major improvement over the above programs—it's top flight all the way. Most noticeable is the improved use of GEM; you can call patch banks and the edit buffer into windows by clicking on screen icons. These are GEM windows that can be moved and overlaid (but not sized) as desired. Patches for the D-50 synthesizer are complex creations, built up of several layers (patch, tone, partial). The program uses a system of subsidiary windows that makes it easy to navigate through the levels. The only step remaining would be to include GEM window sizing so that multiple edit windows could be displayed together.

In addition to finished patches, you can store both tone and reverb data in separate files, making for easy creation of splits and layers (reverb data is always sent with patch data). You can substitute your personal favorites for the default file that's opened when the program loads.

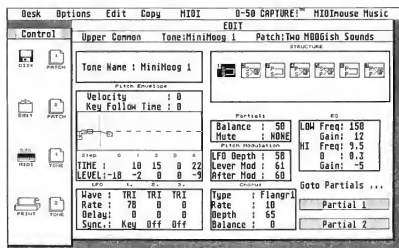
Another pleasant surprise in D-50/550 Capture! is its support for graphical editing of the various patch envelopes. You can edit a single envelope at a time, and the graph window is

large enough to comfortably see and move the points while maintaining good resolution. I would like to see this expanded so that all envelopes for a partial could be displayed and edited on a common graph.

The program lets you change numerical parameters with the mouse. Holding down the left mouse button causes its shape to change to a plus sign and the parameter value to increase rapidly; the right button works similarly for decreasing the value. Clicking briefly on the parameter lets you go ahead and just type in the desired value.

Finally, the program includes a desk accessory called D50 Sender, which will send patch files to your D-50/550. This can be handy to test patches while using a sequencer program to play the actual music in which they would be used.

With D-50/550 Capture!, my previous concerns about other Sonicflight patch editors were put to rest. This is a full-featured program that can handle all your D-50 needs. MIDI Mouse Music just completed an upgrade that corrected some minor problems with the use of KEYIT and added the ability to save parameter masks for the randomization patch generator. Two banks of sounds and one of tones are included with the program.



D-50/550 Capture!, version 1.0.

MT-32 Capture!

This program tames the Roland MT-32, a multi-voice expander with separate performance controls for each voice. The MT-32 also features a separate voice channel for rhythm sounds (e.g. drums), and uses the same linear arithmetic (LA) synthesis as the D-50, with the combinations of partials and tones.

All the enhanced features that went into D-50/550 Capture! are included in this MT version: multiple windows, graphical envelope editing and parameter value editing with the mouse. You can manipulate three banks each of patch and performance data (called timbre and system setups) from the main screen. Three timbre banks and one system setup bank come with the program. ▶

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Sonicflight...

You change timbre or system setup parameters from within their respective editing windows. These each take up almost the entire screen, but only one can be displayed at a time; a single partial can be edited at a time, out of the four that can go into a timbre. Each of the three envelopes for a

Desk Options MIDI MT-32 CAPTURE! MIDImouse Music

Col TIMBRE EDIT PARTIALS UNDO REDO PARTIALS

Timbre : Emersonian Env Mode : Normal [1] [2] [3] [4] [5] [6] [7] [8]

Part 162 : 1 Part 384 : 6

Coarse : C3 LFO Settings

Rate : 78

Key F#1 : 4 Depth : 5

Bend Sh: 0n Mod : 88

Depth : 8 Vel(T1) : 8 KF(TIME) : 8

Patch No. : 50

Hand/rgan Loop

WaveForm : SQR

Pulse # : 38

Velocity : 2

Frq. : 84

Res. : 3

KF(Frq) : 8

Bias Pat : <A

Level : 8

Level : 52

Veloc. : 53

Bias Ptl : >C5

Level 1 : -1

Bias Pr2 : <64

Level 2 : 8

TIME : 29 32 29 92 100

LEVEL : 99 75 60 80

TIME : 21 72 83 98 39

LEVEL : 100 87 57 56

MT-32 Capture!, version 1.01.

partial can be displayed and edited in a pop-up graph window. As for the D-50 program, it would be desirable to be able to display multiple windows simultaneously. You can also edit MIDI key assignments for the rhythm channel to correspond to any of the preset rhythm sounds or user defined timbres.

A desk accessory is included that can send timbre or system banks to an MT-32 from within any standard GEM-based program. A patch conversion program is also bundled that translates D-50 patch banks from D-50/550 Capture! format into their MT-32 equivalents. Due to basic instrument differences, the translation will not be perfect but it provides a good starting point.

Overall, this program is another winner. The MT-32 is not an easy instrument to program but MT-32 Capture! succeeds in providing a logical and facile environment for dealing with it. The manual has also been recently expanded to include a tutorial section which should make it easier for new users to get started.

Jim Pierson-Perry is a research chemist and semi-professional musician, living in Maryland. He is a frequent contributor to START, and recently won the 1988 "Contributor of the Year" award from Antic Magazine.

Products Mentioned

CZ/CZ-1 Voice Master (v. 1.01), FB-01 Voice Master (v. 1.01), D-50/550 Capture! (v. 1.0), MT-32 Capture! (v. 1.01), each \$99.95. Sonicflight Software, distributed by MIDImouse Music, Box 877, Welches, OR 97067, (503) 622-4034.

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CIRCLE 039 ON READER SERVICE CARD

GUITAR SOLO

START's Digital Guitar Simulator

by David Balmer, Jr.

It's summer and it's time to have a little fun. With Guitar Solo you can be the musician you always knew you were—and you don't need to invest in any musical instruments to do it. Compose tunes, record the bits and play them back for your friends. It may not be a Fender Rhodes, but it's hot, it's digital and it's on your START disk now!



Strum your blues away with GUITAR.ARC on your START disk.

Guitar Solo is a mouse-driven, graphics-oriented simulation of a digital guitar. In one sense this is strange, because a digital guitar tries to imitate an electric guitar, which in turn tries to modify an acoustic guitar, which in turn tries to imitate a lute, etc. Most of these developments, however, were improvements. The digital guitar was meant to extend the sound capabilities of a guitar by adding MIDI, preset tones and rhythms. The only major drawback to present systems is that after all those improvements, you can't play more than one note at a time. Also, they don't play at all like an electric guitar.

Guitar Solo attempts to improve a bit on the standard "digital" by adding real

guitar playability, although it still shares the digital handicap of only playing one note at a time.

To play Guitar Solo, un-ARC the file GUITAR.ARC following the instructions found elsewhere in this issue. To run Guitar Solo, the files NOTEFREQ.DAT and either GUITAR.PI2 or GUITAR.PI3 (depending on whether you're using a color or mono monitor) must be in the same directory as GUITAR.PRG. Double-click on GUITAR.PRG while in either medium or high resolution.

PLAYIN' AROUND

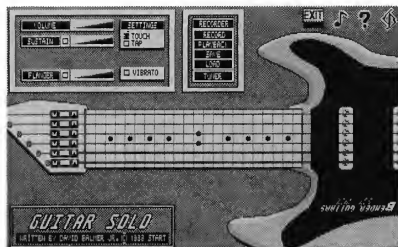
After Guitar Solo has loaded its data, you'll see the graphics shown in the accompanying illustration. On screen is a stubby electric guitar, with "hit boxes" on the top left, the logo at the bottom left and icons at the top right. To play the guitar, use your mouse to find one of the strings in the guitar "neck" (in the

middle). Clicking the left mouse button will play the note that you're on; clicking the right button will play an "open" string (the lowest note on that string).

To familiarize yourself with these features, just hold down some buttons and move your mouse around to get an idea of how you can produce music. (Remember that lower notes are toward the left and higher notes are toward the right.) The top string is the highest pitch and the bottom is the lowest. The perspective of the guitar is from that of the player (imagine playing it and flipping it up to a top view.) To tune the guitar, click on the up or down arrows on the left side of the guitar neck until you see the note you want.

After you become acquainted with the strings, look at the icons. First is an exit icon, which will return you to the Desktop. Next is an icon that resembles a musical note. Clicking here will display corresponding "notes" to the spaces on the strings (CDEFGAB, etc.). A second click on this icon will turn off the notes display.

The next icon is the question mark. Clicking here will place you in help mode. In this mode you can click on certain objects/menus for a brief description. For a little fun, click on the guitar name and the Guitar Solo logo. Click on the question mark icon a



Guitar Solo's main playing screen. From here you can play our ST "digital."

sample song file, click on Load and select DEMO.SNG. When the file selector vanishes, click on Play. The tuner button at the bottom of the Recorder menu will automatically set the guitar to the default tuning.

TOTALLY DIGITAL

Guitar Solo is easy to use and fun to play. If you are interested in seeing how the program works, examine the ASCII files GUITAR.LST and BREAKDWN.TXT. To load Guitar Solo into your GFA BASIC interpreter, run GFA, click on Merge and then select GUITAR.LST.

Guitar Solo may not turn you into Ry Cooder or Mark Knopfler, but I'll bet you'll have a lot of fun with it! ■

David Balmer, Jr.'s first experience with computers was when he was six, and he's been programming ever since. He graduated from high school in 1987, but has been working professionally since 1984.

second time to exit the help mode.

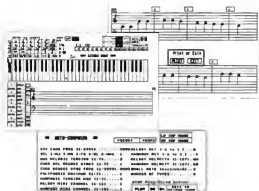
Clicking on the last icon will give you Guitar Solo's author name and copyright information.

The top left corner of the screen contains controls for volume, sustain (which fades notes) and the flanger (which makes an echo when combined with sustain)—just click on the triangular areas in the boxes to adjust the settings. Also, you can turn the sustain and flanger on or off by clicking on the

small boxes in the middle. Play with these settings and see how they affect the sound of the guitar.

Immediately to the right is the Settings menu. Each of these menu items is a toggle: you can turn these on and off by clicking on them. Experiment with these a little before moving on.

To the right of the Settings menu is the Recorder menu. You can record and playback songs like a tape recorder and even save them to disk. To load the



Keys!

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CIRCLE 010 ON READER SERVICE CARD

SLIDER



It's Not Just For Numbers Anymore

by Paul Pratt and Steve Everman

The game Slider has been popular for years, and has appeared under various names and incarnations. The classic version of the hand-held plastic puzzle involved sliding numbered squares around to get them in order and provided hours of frustration (er, entertainment) to a pre-Rubik's Cube generation. Now START brings you a full-screen Slider to play on your ST. Best of all, you can load any DEGAS or NEO picture into memory and scramble and unscramble it to your heart's content.

Slider runs in any resolution in color and monochrome!



Mix and match your favorite picture!
SLIDER.ARC is on your START disk.

Back in the 50's, a half dollar was a good bit of money. For me it was a whole week's allowance, and enough to buy a slider puzzle. This was a simple plastic grid puzzle with black and white numbers filling every square but one. The other squares could be pushed in and out of the empty square, allowing you to move the numbers around. The object was to put the numbers in order.

Now you can test your skill with a slider game, and you don't even have to blow your allowance at the corner store. Simply un-ARC the file SLIDER.ARC from your START disk, following the instructions found elsewhere in this issue. Then click on SLIDER.PRG to run Slider in any resolution. If you want to study the GFA BASIC listing, list it to the screen or printer by double-clicking on SLIDER.LST from the Desktop. To load it into GFA, run GFA and click on Merge, then select SLIDER.LST.

This is basically the same puzzle I played with as a kid. The upper left box

is the empty square. You can click on any of the surrounding squares to move it into the empty square. The empty square and the box will switch places. The object of the puzzle is to slide the pieces around until the picture is in order. When you've got it right, Slider will announce your success with a loud flurry of sound.

THE SLIDER MENU

To see Slider's menu bar, just move your mouse up to the top of the screen. Moving it down again will hide the bar.

The LOAD option loads a NEO or uncompressed DEGAS-format file and replaces the original opening credits screen with it. This is really the best part of Slider, since it allows you to load your favorite digitized picture of Madonna or Tom Selleck into the puzzle and solve it to see their smiling faces.

The MIX option sets up the puzzle for you to solve. There are three levels of difficulty for you to choose from: Easy, Medium and Hard. Starting with an easy puzzle will give

you the feel of the game, but you'll rapidly move onto the higher levels.

NUM# is the numbering option: It toggles the picture squares between numbered and unnumbered. Numbering the squares can be particularly useful when the background squares look alike. Personally, I find running Slider without numbers more rewarding as it makes for quicker, more instinctive solutions to the puzzle.

Clicking and holding down the mouse button on the VIEW option will show the completed picture on the screen. This is useful to give you an feel for how close you are to finishing the puzzle.

QUIT will put you back to the GEM Desktop, but my guess is you won't use it much, because Slider is an addictively fun game!

Paul Pratt and Steve Everman live in Hayward, California, and have published many Atari 8-bit and ST games in Antic magazine.

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Fear Of Splining

By Andrew Reese
START Editor



Don't be afraid—you'll find **SPLINE.ARC** on your **START** disk!

Welcome back! This is our second column designed to help you with the fine points of using the Cyber Studio family of graphics programs. In this issue, we'll discuss splines, those sometimes troublesome but always powerful invisible lines through Cyberspace.

WHAT'S A SPLINE?

Splines are pathways, nothing more. Tom Hudson included splining in Cyber Control to make camera and object movement easier; no longer do you have to move each object painstakingly to its next recording position from within CAD-3D. With splines, you just specify a few control points and Cyber Control (CC) interpolates the points along a path between them, allowing you to move an object or camera smoothly through space. I say "between them" with a grain of salt; there are three different types of splines in CC and only two of them, Linear and Spline, pass through the control points. The third, the B-Spline, smooths out the path between the first and last control point and may not pass through any intervening control points at all.

Cyber Control still has one small problem with splines, however. It was written to allow you to enter the coord-

inates of each control point numerically, such as *defpt 1,200,-3499,1829*. Specifying up to twenty control points for each of five splines in this manner is an exercise in patience, visualization and typing accuracy, to say the least. A visual solution was necessary and computer artist Darrel Anderson and I came to the same solution almost simultaneously (as usual, however, his genius

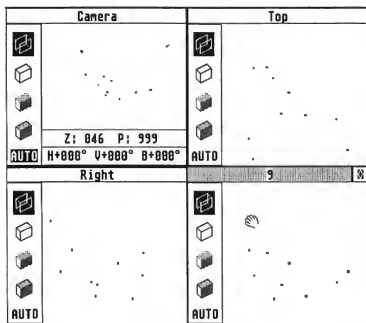


Figure 1: CAD-3D's windows, showing the spline key points for the paper plane animation.

took him far beyond this program's limits).

ENTER THE SPLINER

The Spliner is on your START disk under the name **SPLINE.ARC**. In that ARChive file, you'll find the Cyber Control file **SPLINE.CTL**, a collection of

spline keypoints in the file **SPLINE.3D2** and a "paper" airplane in the file **AIR-PLANE.3D2**. You'll find the instructions on how to un-ARC (or extract) these files from **SPLINE.ARC** elsewhere in this issue. Go do that now and print out a copy of **SPLINE.CTL** so that you can follow along.

The Spliner loads in a collection of small cubes, each located at one of our desired spline control points, then finds the center of each cube and uses its coordinates to define a spline. (See Figure 1.) Then it loads in the paper airplane and moves it smoothly along the spline, aligning its nose toward the next spline point, as shown in Figure 2. I tried to write this program to illustrate a few special features of CC that can make its usage much easier and more flexible. Let's see what those are.

To begin with, I used the *bearing* command. This is a command not found in CC 1.0, but made available in version 1.1 in response to several requests, mine included. The bearing command takes the coordinates of any two points and returns the horizontal and vertical angle between them. This is

a godsend, particularly if you ever tried to align objects along splines in CC 1.0 using a looped tangent command (I won't go into it any further now; it's not worth the space, but write me if you really want to know how it's done). If you have version 1.0 and want to make use of this command, all it costs to exchange your 1.0 disk for version 1.1 is \$5 for shipping and handling to The Catalog at the address below.

The code in Spliner is heavily commented and easy to use. Just put all of the relevant files on an otherwise blank disk, put it in your A drive, start up CAD-3D with CC 1.1 installed and click on "Run" in CC. The rest is automatic. The presets in Spliner will produce sixty frames of recorded animation or allow you to view or preview every fourth frame, but you can change these to suit your needs.

To change the path of the plane, all you have to do is load SPLINE.3D2 into CAD-3D and drag any of the little cubes wherever you'd like. Only one caution: since CAD-3D usually moves objects by reference to their centers, don't get too close to the edges of the CAD-3D universe. Even if the control point is wholly inside the universe, if part of the plane would be placed outside, your animation will fail with a "CAD Command Failure" alert box.

NEEDLESS COMPLEXITIES?

Although it may seem needlessly complex in a short program such as this, I put as many preparatory routines in subroutines as I could. This makes it easy to locate a particular portion of the code for study or modification and easy to expand the program for other uses. These subroutines are *presets*, where variables are set, *setcam*, where the camera variables are set, *modes*, where the parameters for the View, Preview and

Record modes are set and *generate*, where the actual spline generation takes place.

In another apparently needless complication, I used a single one-dimensional array, *KP()*, to store the *x*, *y* and *z* values of each of the spline control points.

can remove them or merely disable them by 'commenting them out' by putting a semi-colon in front of the offending command. Note, however, that any commands *after* the semi-colon will be ignored, even if separated by another colon.

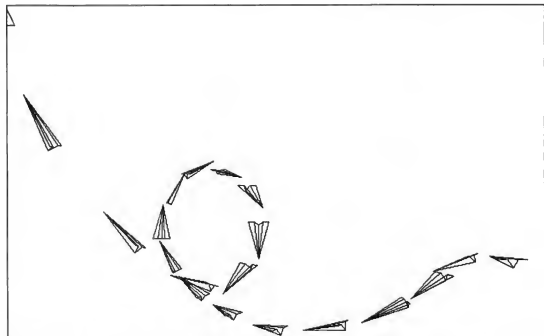


Figure 2: The Spliner in action, in preview mode. The plane's progression along the spline is shown in increments of three frames.

This helps if you're running into the limit on variable names or if you may have some other use for those values.

Still another complication: Since the bearing command requires that you always begin with the object to be rotated facing the front of the CAD-3D universe, Spliner loads the master object and clones it each time it's used, then kills it. This is not only necessary for the bearing command, it also is a good example of the use of the clone command to preserve unchanged an original reference object without resort to repeated disk access.

Finally, Spliner illustrates the use of alert boxes, input boxes, printouts for debugging and the bell—my personal favorite—to call attention to events. You

STAY TUNED!

In the next installment of Cyber Corner, we'll discuss control of lights and cameras. If you have any questions about Cyber stuff that you haven't been able to find an answer for, write me at 544 Second Street, San Francisco, CA 94107 and I'll find out the answer for you. Or if you have any hot tips you'd like to share with other animation junkies, send them along. ■

PRODUCTS MENTIONED

Cyber Studio (containing CAD-3D Version 2.02), \$89.95; and Cyber Control Version 1.1, \$59.95. The Catalog, 544 Second Street, San Francisco, CA 94107, (800) 234-7001.

THE BYTE MECHANIC

Tune Up Those Misfiring Files

by William A. Schneider

Ever wonder what a file really looks like as it's stored on disk? Ever try to view or print a file, only to find that every line prints on top of the previous line or prints with no spaces between words? Ever need to change a file from single- to double-spacing or from double to triple? Then this program is for you! Byte Mechanic is designed to make it easy to study the contents and layout of any type of file and make byte-by-byte changes if you want.

LET'S GET STARTED

To get started, un-ARC file MECHANIC.ARC from your START disk, following the disk instructions located elsewhere in this issue. Byte Mechanic runs in medium or high resolution. Start out by running MECHANIC.PRG and then selecting SAMPLE.DOC by double-clicking on its filename. (This is an example of a file created with 1st Word from Atari.)

Byte Mechanic can read any type of file, but its maximum file size is determined by the amount of free memory in your machine; if you don't have enough memory for the selected file, an alert box gives you a choice of selecting a new file or splitting the file up. If you select Split, you can load a segment of the file by providing the start and end byte positions of the file. Then when you save the segment, you can save it to an existing filename. One of your choices then is to append the file segment in memory to the end of the selected file. By repeating this procedure, you can restore any size file on disk.

The contents of SAMPLE.DOC should be on your screen with the menu bar at the bottom. Press the Help key for a brief description of all the options, cursor movement keys and some important notes. Note: some commands described on the help screens are not covered in this article.

DISPLAY MODES

Byte Mechanic uses the Atari character set to show all ASCII codes from 1 to 255. This display is called Text mode. Press the A key for <A>scii/Codes, and only characters that you can print on a typewriter are visible. Spaces replace ASCII characters with values below 32 and above 126. Pressing A again displays the full character set. If it's still hard to read the file, select <V>iew by pressing V. In this mode, printable characters are displayed with word-wrap. All non-printable characters are replaced with a space.

If you are in the View mode, return to the Text mode with <H>ex/Text. If all of the special characters are not shown, use the <A>scii/Codes option to display them. If you have a color system, try the <C>olor option—all of the characters with ASCII codes under 32 are displayed in red and those with codes over 126 are displayed in blue.

There is one other display mode

Sometimes you have to lift the hood on your files to fix something or just to take a look around inside. Text editors and word processors work fine for ASCII files, but not all files are ASCII and not all editors can show you the whole story. That's when you need to call on a professional—The Byte Mechanic—to get the job done.

available. Press H to toggle to the Hex mode; the hex codes for each character are displayed on the left side of the screen with the corresponding ASCII character on the right. The <A>sci/ Codes and <C>olr options work on this display also.

FINDING YOUR WAY AROUND THE FILE

Moving through a file is easy. In Hex or Text modes, a number in the lower left corner of the menu area always indicates the position of the byte under the cursor from the beginning of the file. In View mode, there is no cursor; the number shown in the lower left corner of the menu is the byte number for the character displayed in the top left corner of the screen. (You use the arrow keys to move around the file in View mode. Press Help to see the other movement command keys.)

Now read the SAMPLE1.DOC file. This file describes how 1st Word uses special characters in its files. The file is written so that you can see the special characters as they are explained. You will probably want to read the text in the View mode and examine the codes in the Hex mode with color on.

Let's look at another example. Choose the <Q>uit option, click on New File and then select SAMPLE2.STW. This is an example of an ST Writer file. Try the <V>iew option. The file is still not easy to read. Let's use Byte Mechanic to modify the file for easier viewing. But before we modify the file, you need to know some of the other commands we will be using.

FINDING A STRING

Finding specific characters or strings of characters in a file is easy. The <F>ind option asks you for a string to find. You can enter the string in ASCII characters or 2-byte hexadecimal values to a maximum of 16 values. The program will search from your current cursor position forward to the end of the file and

stop on the first occurrence of the string without regard to case. Pressing any key during a search operation will stop it or, after it is finished, you can <R>repeat the search, find the 'Mth' occurrence of the string (<M>ultiple find), replace the found string with a designated replacement string (<Y>), <C>hange the replacement string or return to the main menu (<N>). Use the <R>repeat option to search again for the same string.

The <T>rade option replaces all occurrences of an ASCII or hexadecimal string with another string. Both the find and replace strings are case sensitive. You are asked for the search range; by pressing the Return key twice, the entire file is selected.

Any time you are asked for an input, either numeric or alphanumeric, you can use the standard editing keys: Escape, arrows, Backspace, Delete and Insert. A thin cursor means you're in insert mode, while a thick cursor is for overwrite mode. Use the keypad to enter hex strings: (is A,) is B, / is C, * is D, - is E and + is F.



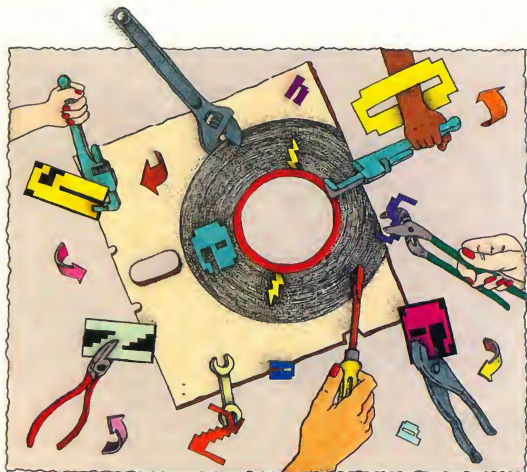
Learn all about your files—byte by byte—with **MECHANIC.ARC** on your **START** disk.

EDITING A FILE

To edit, place the cursor over the first byte you want to change. Type E, then select <O>verwrite, <I>nsert or <D>elete. In Overwrite mode, you type over the characters; in Insert mode, you can insert up to 16 characters without erasing any. Delete lets you mark characters for deletion or asks for a range of bytes to delete. Before any permanent changes are made, you are given a final opportunity to abort any changes with the Escape key.

MACROS

You can create a macro of up to either 30 (or 60) keystrokes and assign it to the F1-F10 keys for later playback using the <K>ey option. For example, you may want to set up a macro to convert from one word processing format to another.



Anne Doering

MECHANIC...

other. To define a macro, press the function key you wish to define, enter the keystrokes and then press the same function key again to save it. If you decide not to save it, press Undo to cancel. To delete a character while defining it, press Control-D. To edit a previously defined macro, refer to the online help. A macro can be assigned to the function keys at any time, but to replay a macro you must first enable the type-ahead buffer by selecting uffer and click on On. You can also save and load macro files to disk.

Additionally, you can use STARTKey from the Winter 1987 issue of START to save a series of keystrokes. As with the internal F1-F10 macros, the buffer must be enabled. Some Byte Mechanic operations, once started, can be stopped in the middle by pressing any key. Even if you are in the middle of a STARTKey or Byte Mechanic macro playback, this will still work. The macro will be temporarily halted and then resumed when the operation is complete.

THE ST WRITER EXAMPLE

Now, let's get back to the ST Writer example. First, be sure that you are at the top of the file by pressing the Clr Home key. Now change to the Hex mode. Notice that the byte 00 seems to represent the end of a line. This is clearer if you use the <C>olr option. To change all of the 00 characters to a carriage return and a line feed, press T and type:
H 00 <Return> H 0D0A <Return>
<Return> <Return> Y

Now change to the <V>iew mode. It's still not perfect, but at least we can read the file now. Notice that ST Writer also has a file header. To remove the header, go to Hex mode, then type:
<Home> E D <Down arrow>
<Down arrow> <Down arrow>
<Return>

A FEW MORE PROGRAM USES

With Byte Mechanic, you can make many changes in a file to control its format onscreen or on the printer. Here are

Create a macro to convert a file from 1st Word to ST Writer format.

some examples of problems and their solutions:

- Every line prints on top of the previous line: Use <T>rade to change every carriage return (hex 0D) to carriage return and linefeed (hex 0D0A).
- There are no spaces between words, such as in a 1st Word or Word Writer file. Look at the file and use <T>rade to change the special character between words to a space (hex 20).
- Add page breaks to a file: First add 6 pairs of hex 0D0A (CR/LF) to the beginning of the file for a 1 inch top margin. With the cursor after the 6th 0D0A pair, use the <F>ind option followed by <M>ultiple find 53 to find the 54th occurrence of 0D0A, then insert 12 pairs of 0D0A for a 1 inch top and bottom margin at the page break. Or enter a form feed (hex 0C) plus 6 pairs of 0D0A. Repeat the pattern to paginate the entire document.
- Add a left margin of 12 spaces: Use <T>rade to replace every 0D0A with 0D0A and 12 spaces.
- Change from double- to triple-space: Use <T>rade to replace every 0D0A0D0A with 0D0A0D0A0D0A or 0D0D0D0A.
- Analyze a database file: You can study the way the database's fields and records are delimited and then use that information to convert the DB to another format.
- Rename a .PRG file and its accompanying .RSC file: Load the .PRG file into Byte Mechanic, then <F>ind

the filename for the RSC file and change all occurrences of the name to the new name. Important: make sure the new name is the same length of the original name and don't use spaces to pad the name. Save the modified .PRG file under a new name and then change the .RSC filename itself from the desktop.

- Fix a program you've just un-ARC'd that won't run. Look through the file to find any filenames. If they are preceded with the pathname of a subdirectory, you can then configure your directories in the same manner. Note: Never change the length of a .PRG file; always use overwrite mode while you are editing. If you accidentally delete or add a byte of code, the program will most likely crash, so always work from a backup copy.

PRINTING

The <L>fist option will send the screen to the printer in either Text or Hex modes. The output is 80 characters wide and two screens can be printed on one page with automatic page advance. Only characters with ASCII codes between 32 and 126 will print; all other codes will be spaces.

Press <L>st to choose among three printers and to see or change the current settings for the left margin and printer setup strings. Click on OPTIONS to select a printer initialization string to send to your printer. Byte Mechanic includes two strings for Epson-compatible printers: string 1 resets the printer and then sets it to 12 characters per inch and string 2 resets the printer, sets it to 12 cpi and enables double-strike mode. Use the SPECIAL choice to enter your own string of control character codes. Remember, the string should begin with the code sequence to reset your printer or your printout may begin with leftovers from your last print job.

If you wish to change the control strings and descriptions permanently, you can use Byte Mechanic to modify the MECHANIC.PRG file itself. <Q>uit

your current file and select MECHANIC.PRQ. *Be sure that you are working on a backup copy!* Use the <F>ind option to locate the string 'printer string'. You will see the following:

```
Printer String 1=027064027077000000
000000000000000000000000000000End
```

The string of characters between "=" and "End" is the printer initialization string for "Str 1". Every 3 digits represent the decimal Ascii code for a particular character or control code. Use <E>dit and <O>verwrite in ASCII mode to change this string. Fill the bytes between the last code and the "End" with 0's. The default codes in Str 1 represent the following on an Epson printer:

```
027 064 = escape @   Printer reset
027 077 = escape M   12 char/inch
000 000 . . .        Filler
```

Then you will see the following string:

```
Desc Str1=Epson:
Reset 12CPI-49spaces-End
The space between "=" and "End" can be any characters you wish. Overwrite these characters to describe what the Str 1 codes do to the printer. You can change the codes and description for Str 2 in a similar manner. If you make changes that you want to be permanent, save the modified file to disk for later use; you will need to <Q>uit the program and rerun it for the codes to be active.
```

GEM ACCESS

Select the Ge<M> option to use desk accessories. All of the accessories I have tried seem to work OK. Use this option with caution; if your accessory requires too much additional memory, you could

crash the computer. Be sure to close any open windows before returning to Byte Mechanic.

SAVING A FILE

You can save your modified file under the original name or a new name by selecting <S>ave.

QUITTING

The <Q>uit option warns you that the file in memory will be abandoned. If you click on New File you can select and load a new file to examine without exiting Byte Mechanic. To exit the program, click on Exit.

William Schneider is a chemical engineer and plant manager for a Fortune 500 company. He learned Fortran IV at the University of Illinois, and has since used many languages on a variety of computers.

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Resourceful GFA BASIC Part Two

By John L. Hutchinson

Last issue (START, Summer 1988) we examined how resource files are structured. Now let's get some practice using a resource construction set utility to actually create a working dialog box. All resource editors use the same basic user interface, because they are used to create the same type of file. I used the Kuma K-Resource utility to create the simple dialog box shown in Figure 1, but due to their similarities, users of other RCS utilities should have little trouble following the process. I've also included the finished resource file on your START disk for those who want to examine the finished product.

From either a medium or high resolution Desktop, execute K-Resource by double-clicking on the file named NRSC.PRG. Once the resource editor Desktop appears, click on File under the New menu. A small box will appear with two icons labeled Resource and Folder. Drag the Resource icon onto the Desktop and release the left mouse button. A small dialog box will appear asking you to provide a name for your new resource file. For this example, enter the name DEMO and press Return.

GETTING TO THE ROOT OF THE MATTER

Now that you've created the empty resource file, you need to add a tree which will represent the form of your dialog box. (Editor's note: for a detailed



You'll find the sample resource file in the file DIALOG.ARC on your START disk.

explanation of resource file structure, read last issue's GFA BASIC column in the Summer 1988 issue of START). Double-click on the resource icon to open its window, then move the mouse pointer back to the New drop-down menu and select Tree. A box will open consisting of several tree icons; these are menu, form, alert, string and image.

Some object types have multiple attributes which can change their appearance.

Since we want to create a dialog box, use the mouse to select the tree icon labeled Form and drag it into the DEMO resource window. A small dialog box will now open, asking you to give the tree a name. For our example, enter the name "BOX0." Since this is the first tree in the DEMO resource file, it is tree number 0 in your GFA BASIC program.

Once you have named your tree

icon, click on the button labeled EDIT. Now another window, entitled BOX0, should appear with an outlined box automatically placed in the window. This box object represents the initial outer form of the dialog box you will create. Since it is the first object in the BOX0 tree, it becomes object number 0 and is known as the root object. You can move and resize the box shape to suit your preferences. For now, simply size the box to approximate the shape of the dialog box shown in Figure 1, as you can always make final adjustments later. You can also resize and move the BOX0 window with the standard corner window gadgets to make viewing it easier.

OBJECT TYPES

Now we'll add the next object, the "Dialog Box Demo" text. To keep things simple for our GFA BASIC program, we want to add additional objects to our tree from top to bottom, left to right, ending with the exit ("OK") button. Click on Objects under the New menu and a toolbox will appear with icons representing all the different generic objects which may be used in a dialog box. I say generic here because some of these objects have multiple attributes which change their appearance.

For now, grab the text object icon and drag it into its approximate position in your dialog box's outline. Note that K-Resource will not allow you to add objects outside the boundaries of the root object itself. Once you have the text icon roughly positioned, double-click on it to open the K-Resource Text Edit Box shown in Figure 2. (Alternately, you can edit an object by clicking on it once and then clicking on Edit.) The Text Edit Box shows the optional attributes and states which may be applied to your box objects. For now, simply enter "Dialog Box Demo" on the text input

line, and select BOXTEXT and C (for center) justification. When you are finished editing press Return.

As your dialog box reappears, note that the text icon has been replaced with the boxed-in text, "Dialog Box Demo." Size and center your new "Dialog Box Demo" text object to approximate the appearance of its counterpart

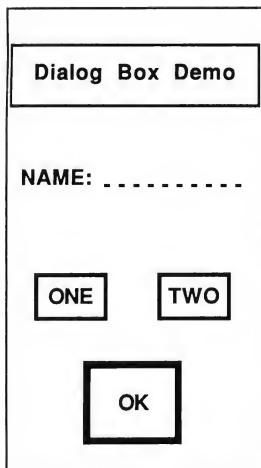


Figure 1: An example dialog box. As you become comfortable with the resource editor your programs will look more and more professional.

in the example shown in Figure 1. This boxed-in text now becomes object number 1 in the BOX0 tree.

Now let's add an editable text object to our dialog box. Select the New pull down menu and click on Object again. This time, drag the Edit:_____ icon into position just below the "Dialog Box Demo" boxed-text object. Double-click

on the edit icon to bring up the K-Resource Text Edit Box again. From the options, select EditBox and FTEXT. In the text field, use the backspace or Escape key to clear the field and then enter ten underscore characters. Move to the template field and enter "NAME: ". Then, while holding down the Alternate key, enter 10 lowercase 'a's ("aaaaaaaaaa").

Due to a minor bug in AES, you must have at least as many characters in the text field as you have in the template field. These "a's" indicate that you'll be permitted to type in only upper and lowercase letters or spaces in this field. This is appropriate since we will be wanting a name to be entered here, but other applications may require the user to enter other characters. Fortunately, there are several other templates available by holding down the ALT key while entering the validation characters shown below:

- X: All characters allowed.
- 9: Only digits 0-9 allowed.
- A: Only uppercase letters A-Z or spaces allowed.
- a: Only upper and lowercase letters or spaces allowed.
- N: Only digits 0-9 and uppercase letters A-Z or spaces allowed.
- n: Only digits 0-9 and upper and lowercase letters A-Z or spaces allowed.
- F: All valid TOS filename characters and "?*:" allowed.
- P: All valid TOS filename characters and "\,." allowed.
- p: All valid TOS filename characters and "\,?*:" allowed.

Click on OK to return to your draft dialog box and fine-tune the position of the editable text object as needed. This editable text has now become object number 2 in the BOX0 tree.

BUTTON, BUTTON, WHO'S GOT THE BUTTON?

Now you'll add a radio button, object number 3, by choosing and dragging a button object into place. Radio buttons are used to limit input; if the user selects one of them, all other radio buttons in the same group become deselected. After positioning it in your dialog box, double-click on it to bring up the K-Resource Button Edit Box. It is

*The first object
in the tree becomes
object number 0
and is known as
the root object.*

similar to the Text Edit Box, but with fewer options. On the text line, type in "ONE" and select the parameters of "Selectable" and "Radio Butn." Return to your dialog box by selecting OK (or by pressing Return), then size and shape the button as needed.

In a similar fashion, you might add a second radio button to the right of the first one. Or, you may want to try the special copy function of K-Resource. While pointing to the ONE radio button, hold down the Shift key or right mouse button and drag a copy of button ONE to the position for the second button. Now open the Button Edit Box by double-clicking on the copied radio button and change the ONE text to TWO. Click on OK and you have completed the second radio button, object number 4.

Finally, add object number 5 in our BOX0 dialog box tree by dragging an- ▶

other button object into position near the bottom of the box. In the K-Resource Button Edit Box, label it "OK" on the text line, and give it the Selectable, Default and Exit parameters. (A dialog box must always have at least one exit button.) Upon exiting the Edit Box, you can fine-tune the position of the objects in your dialog box as desired.

TESTING THE DIALOG BOX

Once your dialog box looks like our example in Figure 1, you are ready to test it. Close the BOX0 window, then highlight the BOX0 icon by clicking on it once. Choose the Test option and your dialog box should appear, centered on your screen, exactly the way it will look

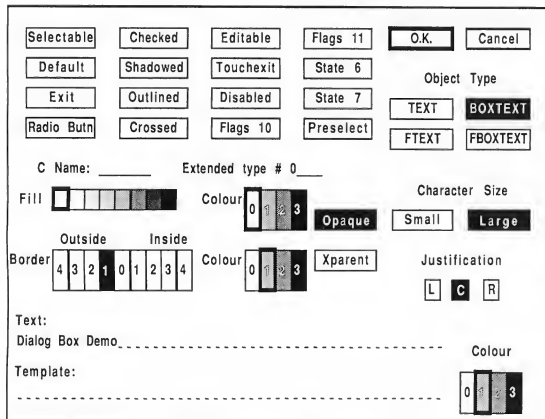


Figure 2: This K-Resource text edit box is similar to those found on other RCS utilities.

Make sure you don't change their top to bottom, left to right order, so you can easily identify the objects' index numbers later on in your GFA BASIC program.

While K-Resource does provide the ability to re-sort objects, a little prior planning in the construction of custom dialog boxes will save you time in the long run. I also recommend you keep a written log of your trees and their objects, as well as their index numbers.

in your GFA BASIC application. Clear the editable field by pressing the Escape key, then enter some text from the keyboard. Note that because of the "aaaaaaaaa" template, you are restricted to a maximum of ten upper and lower-case letters or spaces. Also experiment by trying out the two radio buttons. When finished, click on your OK exit button or simply press Return.

When you select an exit object in K-Resource's test mode, a small alert box

pops up which tells you the exit object's number (in this case it should be 5). You then have the opportunity to exit the test mode or continue. Go ahead and select Exit to close your dialog box. At this point you may re-edit your box to make any corrections, change colors, add fill patterns, etc.

When you are satisfied that your dialog box looks and performs as intended, close the DEMO resource file window and perform as intended, close the DEMO resource file window and open a disk drive window by double-clicking on a disk drive icon. Drag the DEMO resource file icon to the disk drive window and it will be saved to that disk as DEMO.RSC.

If you wish to load a completed version of the sample dialog box into your Resource editor to study, it is on your START disk under the name DIA-LOG.ARC. Un-ARC this file, following the instructions found elsewhere in this issue. Then run K-Resource and load the file by double-clicking on the disk with the demo file and then dragging DEMO.RSC onto the Desktop.

Voila! You have just created your first resource file! It wasn't really that hard, was it?

Major John L. Hutchinson is an Operations Research/Systems Analyst for the Army, an Atari user since 1975 and co-founder of the Fort Leavenworth Atari Group.

PRODUCTS MENTIONED

K-Resource, \$39.95. Kuma Computers Ltd., Pangbourne, Berkshire, England 07357-4335

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CIRCLE 202 ON READER SERVICE CARD

Kesmai Air Warrior

By Andrew Reese with Gregg Pearlman
START Editor and Antic Assistant Editor

Flight simulators are nothing new on microcomputers. Probably the third game invented (after Colossal Cave and Pong) was a flight simulator. As computers became more powerful, the simulations improved to the point where now there are several excellent simulators on the ST.

But with the exception of Flight Simulator II, all ST flight simulators share one shortcoming: you fly alone. Your buddies can't fly with—or against—you. Even Flight Simulator II only allows friendly flying; the World War I game is unavailable during two-player mode. And Flight Simulator II has one other limitation: only two players can share the skies at once and then only connected locally through the MIDI ports.

ONLINE AND OFF

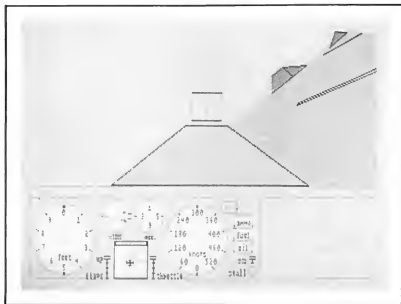
Kesmai Air Warrior is the first and only online multi-player graphic air combat simulator in existence. Like other Kesmai multi-player games, it is available only on GEnie. Air Warrior (AW) uses a unique system of local graphics and digitized sound with the modem and mainframe used to keep track of what you and everyone else is doing. Graphics info is not sent down the line; thus the screen update rate is "refreshingly" fast.

Getting started in AW requires an investment in connect time. The software for the ST is available to download, but the two files required take more than half

an hour to download at 1200 baud. Then you go offline to unARC them and finally go back online through the terminal package in the AW software. If you think you're ready to tackle the hotshots found lurking around AW country, you're wrong. There's an offline training mode that lets you get the feel of various aircraft and get comfortable with the mouse- and keyboard-based controls; use it. And don't go online until you can take off, fly and land in

countries are forced to purchase World War II planes for their air forces. When you enter AW, you choose a country to fly for, a theater of operations to fight in, an airfield to fly from and an airplane to fly (plus about a dozen other variables and toggles). The planes are some of the finest fighters and bombers from WWII. You can choose a Mustang, Zero, Corsair, Spit IX, FW190 and on and on. If you want to pilot or crew a bomber, you can do that, too, although naturally almost everyone wants to be a hot fighter jock.

One of the nicest aspects of AW is that each aircraft has a performance envelope patterned after its prototype Spitfires and Zeros, for example, are super-maneuverable and the big bombers, well, just lumber along. You can also customize your cockpit display and add your own digitized sounds. Unfortunately, the sound slows you the 68000 to the extent that serious dog-fighting is better done in



Kesmai's Air Warrior allows you to fly vintage World War II fighters and bombers against multiple opponents. Here, a Corsair readies for takeoff.

the expert mode. If you try to go online in the beginner mode, you'll die early and often. I know—I did.

ALL TOGETHER NOW

The scenario in AW is based on the concept that three impoverished enemy

silence. At least there's a sound toggle. And the graphics? Well, they're not too hot. But when you think of what is going on with up to 41 planes in a theater at one time, the graphics are not that bad. Besides, I never had time to gawk at them anyway.

INTO THE SKIES

My first sortie in AW was a disaster I must admit that I hadn't read the manual completely, just skimmed it like everyone else does. So I went up the first time in a Corsair in beginner mode, fighting for the flag of good old Country C. Unfortunately, beginner mode does not allow inverted flight, loops, rolls, Immelmans, Split-S's, spins or any of the other common tactics necessary to survive in a dogfight. So I was easy prey for any of those dastardly Country A and B blokes who happened by.

Then I discovered Expert mode and

Probably the third game invented (after Colossal Cave and Pong) was a flight simulator.

things changed for the better I became, if not the scourge of Theater 1, at least not a patsy for every Ace looking to better his

rank. The controls are more comfortable now and I can do a wingover, snap roll, axial roll and lots of other fun aerobatics. And as soon as the deadline for this column is past, I'm going to go back up in the skies and make the world of Kesmai safe for GEnie-bill-fearing Americans. I read the bill, but what price freedom? ■

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by Andrew Reese and Jon A. Bell
START Editor and Associate Editor

What would summer be without fun and games? Grab your mouse or joystick and join us as we continue our look at hot games for hot weather—a realistic police adventure, a fanciful multiplayer maze game and a hard-hitting helicopter simulator!

POLICE QUEST

By Andrew Reese

When Sierra On-Line first developed their "3-D Animated Adventure Game" system in 1984, they opened up a wide range of games—from fantasy to "sleaze." And now they've released *Police Quest*, a cop game. In it, you use the mouse or cursor keys to move a cartoon-like alter ego around the screen and interact with other characters and

objects. Sierra's adventures still retain the elements of adventure games, however, and *Police Quest* requires some keyboard entry. The end result is a comprehensive game system that maximizes your flexibility.

In *Police Quest*, your alter ego is Patrolman Sonny Bonds. You begin as a street cop with typical traffic patrol duties: investigating traffic collisions, stopping luscious speeders and giving field sobriety tests to obnoxious drunks.

If you perform these duties well enough, you're promoted (?) to undercover narcotics work. Then the real "fun" begins as you try to infiltrate a drug gang and bring its scummy head—the Death Angel—to justice.

A COP'S LIFE

It's not an easy game, but it captures the feel and frustrations of the policeman's world surprisingly well. There are times when I wanted to violate the realistic limits on the use of a deadly weapon; several times I was literally stomped to death by a gang of bikers in a bar, but wasn't allowed to blow them away with my .357. The Penal Code sections are straight out of California lawbooks and even the cop humor is authentically risqué, which means that this game is probably best left to adult gamers.

Playing *Police Quest* can be occasionally frustrating. The driving portion ▶

SPOTLIGHT . . .

of the game called for more exacting control than I was always able to muster. (It has been eliminated from an upcoming sequel; thank you.) Moving Sonny around on the street is much easier, and the interaction with other characters is a delight. Definitely on the plus side, you can save multiple game positions to disk with a descriptive label for each. To speed up the many disk accesses, you can also install Police Quest on a hard disk. Without it, play deteriorates somewhat into a waiting game, particularly as you drive from sector to sector. My last complaint is that Police Quest continues the TV-based fiction that the "Miranda" rights must be given to each suspect on arrest; this is just not so.

All in all, I liked Police Quest. Leisure Suit Larry was easier to control, but Police Quest makes up for it with its grit and realism. I haven't finished it yet, but it's one that I will come back to often—and get the Death Angel.

while you weave and dodge and shoot back.

MIDI Maze is a ground-breaking game on a number of counts. First, it allows multiple players (each with his or her own perspective), and second, it's the first computer game ever that you can play through MIDI cables. Through the ST's built-in MIDI ports, you can link two, three, four or more STs (up to 15) together, allowing you to play MIDI Maze against all your ST-owning friends. You can also play MIDI Maze alone, against your ST.

BUSTING FACE

After you boot MIDI Maze, you can specify either single- or multiple-player mode and the number and types of "Smileys" — dumb, smart and very sneaky. You can then load a maze from disk (there are dozens), modify existing mazes or create your own, using a word processor or text editor that saves in

around and run or reverse and fire while heading backwards. Pop 10 Smileys and you've won the game.

MIDI Maze is great fun, but it could

**MIDI Maze has been
the rage of Atari
fests and computer
shows for over
a year.**



Police Quest, Sierra On-line's gritty police adventure. In it you play Sonny Bonds, undercover narcotics agent.

MIDI MAZE

By Jon A. Bell

MIDI Maze, Hybrid Arts' multi-player maze game, has been the rage of Atari fests, faires and computer shows for over a year. It's a first-person perspective game in which your opponents are *happy faces*! They float down labyrinthine corridors, trying to shoot you,

ASCII format. You can also set other options, such as how many lives you have and the MIDI-Cam feature, in which you can use a separate ST as an invisible camera, moving through the maze and checking out the action.

When you play the game, a window on the left side of the screen shows your view as you move through the maze, using the joystick. You can pop around corners and shoot at Smileys, turn

still be improved. The manual is very short (only 19 pages), and the instructions on how to create your own maze are sketchy. I'd also like a few more sound effects (and possibly music), rather than the simple "blips" as you shoot or get hit, and (forgive me), I'd like to see the Happy Faces explode or disintegrate after three hits, rather than simply disappearing.

LOTS OF FUN AT PARTIES

My first encounter with MIDI Maze (in an early beta version) was at the Winter 1987 Consumer Electronics Show. Over a dozen STs were hooked together at the Atari display, and a floating MIDI Maze game ran continuously throughout the days of the show. In the months to come, Hybrid Arts showed more polished versions at Atari fests around the country, and a "core" of professional "MIDI Mazers" emerged from the woodwork.

Atari's own Neil Harris, Director of Product Marketing, is a fearsome player who's honed his skills against the best Smiley-bashers around. At one Atari fest, after Neil had beaten me one too many times, I enlisted Tom Hudson

(CAD-3D author and computer game player *par excellence*) as my second, and we waded into battle.

We ganged up on Neil and stomped his Smiley into oblivion.

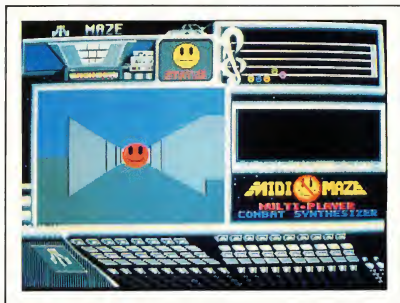
GUNSHIP

By Andrew Reese

If you've played F-16 Strike Eagle or Silent Service by Microprose, then you know what a well-designed simulation can be like. Now comes Gunship, an authentic and detailed simulation of present-day helicopter warfare. It's Microprose's best simulation yet!

When you open the Gunship box, you'll find two disks, an 84-page manual, an ST-specific foldout and a keyboard overlay. *Everything* in the box is necessary to do well in Gunship. The superbly prepared manual gives all the necessary information about the game system, your AH-64A Apache and its

MIDI Maze, Hybrid Arts' multi-player maze game. In MIDI Maze, your opponents are floating Happy Faces!



as Southeast Asia, Central America, the Persian Gulf or Western Europe against top Warsaw Pact opponents.

Training is not too difficult. All you have to do is destroy your primary and secondary targets while getting the hang of flying a chopper with truly authentic response. Choppers aren't like fixed-

at your ST as in a real Apache. The bottom line is not to skip the training!

The graphics are superb in all particulars and the screen updating, always the measure of a flight simulator, is quite rapid. Microprose has also added to the feeling of realism by including intelligence briefings, promotions, medals (including the Purple Heart—I know!), Sick Call, R & R and graphic "rewards" for good performance. In fact, the only thing that this game lacks is some means to add extra hours to your day so that you can spend more time playing it.

I just can't say too much about this package. Anyone who loves flight simulators, war games or just appreciates a superb piece of software should buy this latest triumph from Microprose. ■



Gunship, Microprose's super helicopter simulation. In it you fly the heavily-armed AH-64A Apache attack chopper.

weapons, helicopter tactics and strategy, enemy weapons you will encounter and particulars of the missions. You'll find yourself referring to this manual again and again, even if perchance you already know how to fly a helicopter.

Your first mission is flight and weapons training in the U.S. If you are successful in this, you will be promoted and given the opportunity to choose an overseas mission in such vacation spots

wing aircraft—there's a complex interaction among the cyclic, collective and anti-torque rotor controls which requires some pretty fancy joystick and keyboard interaction to master. And with *four* different weapons and *four* counter-measures systems to choose from, plus Target Acquisition and Display, system damage reporting, radio communications and Inertial Navigation System, you'll find yourself just as busy

PRODUCTS MENTIONED

Police Quest, \$4995. Sierra On-line, P.O. Box 485, Coarsegold, CA 93614, (209) 683-4468.

CIRCLE 180 ON READER SERVICE CARD

MIDI Maze, \$3995. Hybrid Arts, 111920 W. Olympic Blvd., Los Angeles, CA 90064, (213) 826-3777.

CIRCLE 181 ON READER SERVICE CARD

Gunship, \$4995. Microprose Software, 180 Lakefront Drive, Hunt Valley, Maryland, 21030, (301) 771-1151.

CIRCLE 182 ON READER SERVICE CARD

RESTART

An ST Software Reset (Served Cold)

by Tom Hudson
START Contributing Editor

As great as the ST is compared to the IBM PC, Big Blue's boxes still have some features the ST lacks. Fortunately, we've been busy getting rid of those discrepancies. We asked Tom Hudson to write a utility to give ST owners a convenience that IBM owners have enjoyed for years: the ability to reset your computer with a few keystrokes.

Mega owners rejoice!



***Get a cold start with ReSTART!
File RESTART.ARC
on your START disk.***

Resetting your ST or Mega seems like a simple task—just reach around behind the computer and press the reset button, right? Wrong. This is a warm start, which means that all resident programs are thrown away (except for specially-written utilities such as some “reset-proof” RAMdisks). A warm start leaves all sorts of garbage in memory—some of which you might not want to keep around. To really get a clean slate, you

have to do a cold start, which sets your computer to the way it was when you first turned it on.

You'd think that turning off the power would take care of the problem—after all, if you turn off the power and then turn it back on, you'll get a cold start, right? Well, maybe. When you turn your computer off, memory starts to decay, and may take several seconds to totally blank out. If you turn your computer off and then on again too quickly, the memory may not decay completely, and the system thinks it's doing a warm start!

With the introduction of the Megs came a new problem. The Megs have a detachable keyboard that can be several feet away from the computer and it has

the reset button and power switch several feet further away! If you're like me, your desk is cluttered with manuals and magazines, monitors and modems—not to mention the manuals and magazines I usually have on my lap. Reaching around these piles and fumbling blindly behind the Mega CPU can seem like an almost Herculean task. By the time you've found the switch you're looking for, you've got manuals on the floor, junk knocked over on your desk, and a strained back for your trouble.

ENTER RESTART

Never fear, ST owners. ReSTART is here to save you from system reset-itis. With a simple keystroke combination, the system will cold start—as if you had powered off the system, waited several seconds, and powered it back on again! The reset button retains normal operation—pressing it will give you a simple warm start, keeping those reset-proof RAMdisks safe.

The program is on your START Disk in the archive file RESTART.ARC. Un-ARC this file, following the instructions found elsewhere in this issue. To use ReSTART, simply place RESTART.PRG the AUTO folder of your boot disk and reboot the system by turning the power

off and on or by pressing the system reset button. (This may be the last time you touch the accursed thing.)

When the system starts up, you will see ReSTART's installation message appear on your screen. Once your GEM Desktop appears, you're ready to roll. Press and hold the Control and Alternate keys on the left side of the keyboard. With these keys held down, press the Delete key. (We've borrowed this key combination from the IBM PC world, where PC owners use it to reset their systems.) Your ST system should instantly reset to its power-up state. Amazing. If, for some reason, you want to do a warm start, press the reset button as you normally would.

WHAT RESTART WILL (AND WON'T) DO

You can use ReSTART with virtually every program that runs on the ST, al-

though some programs which disable the normal ST operating system will render ReSTART inactive. I have personally tested ReSTART with dozens of commercial software packages and terminate-and-stay-resident utilities (such as the START File Selector) and it has worked flawlessly with them all. You should have very little trouble in most situations.

Because it is a software utility which depends on the proper operation of the ST's operating system, ReSTART is vulnerable to serious system crashes. If one of your programs bombs and you can't hear a keyclick from your monitor when you press keys, ReSTART has probably been killed, and you'll have to resort to (ugh!) pressing the system reset button manually or repowering up.

In order to work properly, ReSTART changes a special flag inside the ST which causes the system to return the status of the Control, Shift and Alternate keys when a key is pressed. Some pro-

grams may be sensitive to this special condition and may react differently than normal, but most are unaffected.

If you're interested in seeing how the program works, read the file BREAKDOWN.TXT in the RESTART.ARC file. The MADMAC assembly language source code is also on your START disk. The technique ReSTART uses of splicing special code into the ST's trap handlers is useful for many applications. You can easily intercept calls to the system routines and substitute your own code. The ReSTART code shows how to make certain keystrokes do things you want to do.

Like help you say "goodbye" to the reset-button blues.

Tom Hudson is a Contributing Editor with START, and the author of DEGAS, DEGAS Elite, CAD-3D, Cyber Sculpt, Cyber VCR and The Antialiaser. His most recent program for START was Creation!, START's fractal landscape generator in the Summer, 1988 issue.

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OBLITERATOR

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