

ATARI

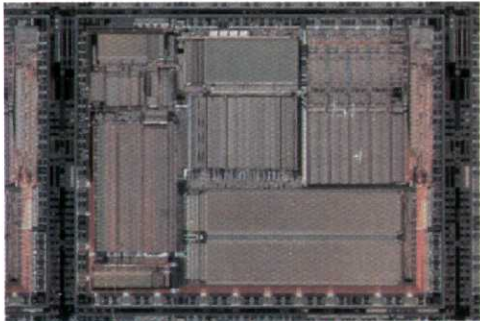
EXPLORER

THE OFFICIAL ATARI JOURNAL

March / April 1988
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Prof. [Name]

Spring 1988

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Continued on p. 2

Plagiarism

Plagiarism means attempting to pass off something written by another person as one's own work. As such, of course, it is a form of cheating that must be treated accordingly.

Plagiarism offends me, among other reasons, because there is an implicit assumption on the part of the student who engages in it that he will be able to beat me. Such a particular battle of wits. I care to believe I not care that, and therefore, I am willing to expend what ever effort is required to demonstrate that it is patently false.

My policy, therefore, has always been to automatically reward students who plagiarize with a course grade of F, with no further discussion of the matter whatsoever.

I trust that the point I am seeking to make is by now clear: no matter how desperate your situation may seem, plagiarism in any class that I happen to teach is guaranteed to make it worse.

The best way to protect yourself against the charge of plagiarism is to make sure that you always: (1) express yourself entirely by quoting your own words except when you are (2) cite a source each time you make use of material from it, whether by paraphrase or direct quotation.

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A Hands-On Tutorial And Evaluation

Win A Trip To The Louvre! See Page 22

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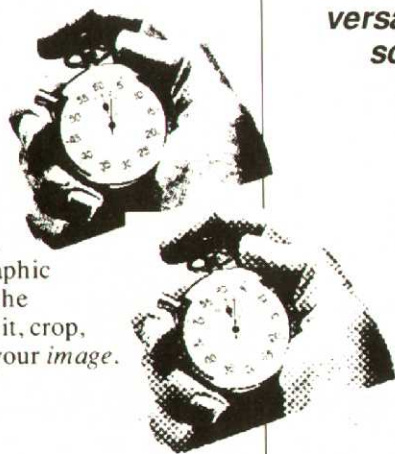
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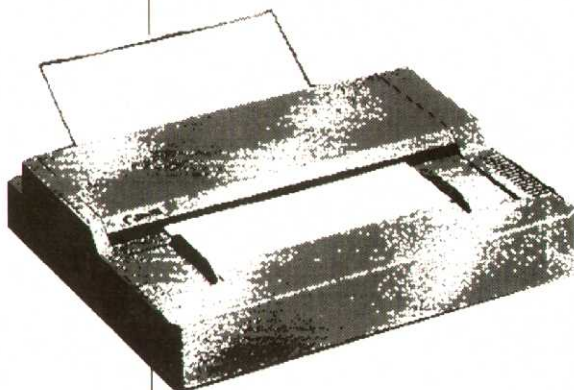
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THE OFFICIAL ATARI JOURNAL

MARCH/APRIL 1988

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POSTMASTER:

Send address corrections to Atari Explorer, CN961, Netcong, NJ 07857-0691.

Kudos

Dear Editor:

Your Jan/Feb issue offered the most timely, consuming, and uniquely valuable articles I have read in several years.

"Avoiding Computer Widowhood" addressed one of the greatest enemies of the computer in our society. As the parent of a professional computer programmer and a "CE" myself, I could see more truth accompanied by solid advice in a few short pages than ever spotlighted in any of the dozens of computer/scientific magazines to which I have subscribed in the past dozen years.

"Homefront: How to break the single-use computing habit" has to be the best eye-opener for computer users that has hit the scene lately. We can be so pleased with the ability of a tool to do a job that we are content to ignore the new horizons, which are essentially already paid for and on hand. The sidebar to the widowhood article, "Computers Are Fun," blended well with "Homefront."

Finally, the extensive discourse on piracy should have an impact and be heeded by Atarians who are enjoying their "power without the price." If the Atari community wants to see the ST be successful, they will patronize their very talented support programmers or *lose* them . . . you said it so very well.

Chester C. Edwards
902 Nolan Way
Chula Vista, CA 92011

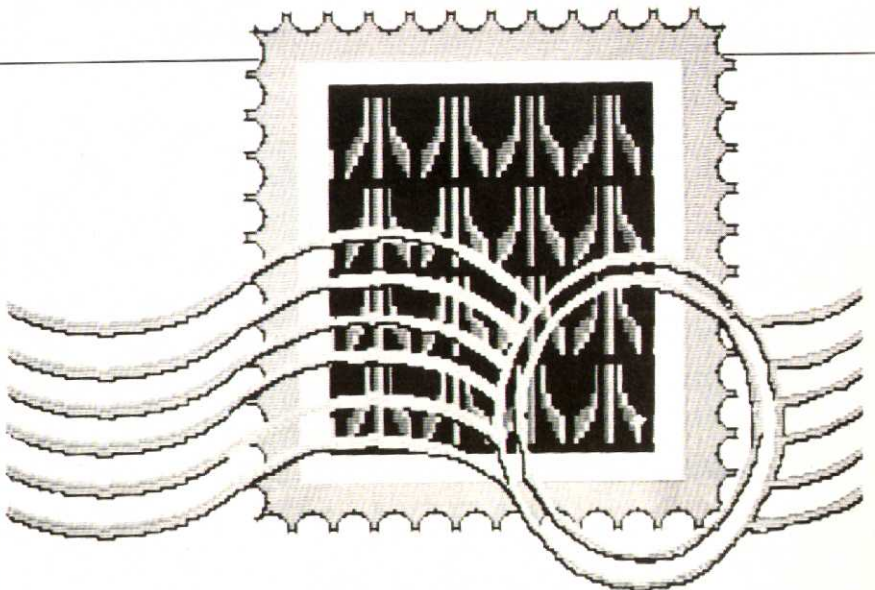
User Groups And Piracy

Dear Editor:

Your excellent article on the threat posed by software piracy reminded me of a frustration I have experienced repeatedly since purchasing my ST a year ago.

It would seem that the Atari user groups would be the natural leaders in fighting this threat to their hardware. I have even spoken to Atari personnel of a coalition between the company and the user groups to deal with piracy. But I have not seen any real interest among the user groups.

I know there are many members of the user groups who are very concerned with piracy, but I fear the majority of members either don't believe there is a problem or don't care. The purpose of a user group is to help its members in using and understanding their computers. It seems natural that ensuring the continuing support of Atari computers



Letters To The Editor

by software publishers should be a high priority.

I challenge the Atari user community to encourage the company to assist in a cooperative effort to deal with the piracy issue. Such an effort will go a long way towards showing the software publishers that Atari computers are worthy of support.

R. L. Lewis
P.O. Box 1933
Tacoma, WA 98401

Proof Of Piracy?

Dear Editor:

I found your Jan/Feb cover story on piracy very disturbing. Piracy is wrong. Period. If you're scanning this letter for the hidden rationalization, you won't find it.

What disturbs me, as one of the many copyright-respecting Atari users, is the contention that there is more piracy among our number than among users of other computers. Where is the evidence to support this assertion?

Henry S. Rose
306 Robin Hood Dr.
Yardley, PA 19067

It is impossible to measure the amount of piracy in any market. Therefore we did not attempt to prove that piracy is worse in the Atari market. The point is that many software companies perceive it to be worse, and these perceptions, founded in fact or fantasy, often form the basis for their participation (or lack thereof) in the industry.

—OWL

Another Explanation

Dear Editor:

Your subscription department has received my advance renewal order. A fine mag you have here, and I look forward to each issue.

May I offer my nickel's worth?

The Atari community has a much bigger problem than piracy, although it may be contributing to the piracy problem. I have met with unusual apathy on the part of Atari dealers since the day I bought my ST. I'm as hooked on this machine as anyone can be, but I'm a rank novice, and I have had to literally accost salespeople at two separate dealerships and plead with them to let me spend my money in their stores.

I have had problems with programs that don't run correctly and been completely ignored when seeking help. For example, I encountered several problems with *Publishing Partner*, about which I wrote to SoftLogic. I got my original letter back with a non-fix to two problems handwritten above my queries and question marks penned in above the others. The program still doesn't space correctly, and I still don't know why.

To be fair, Rick Turley replied quickly and most graciously when I contacted Star Micronics for help. Practical Solutions provided overnight service on my order. And I did eventually get a reply from Steve Miles at Atari about a problem I had with my *1st Word* printer driver. These folks deserve kudos, and anyone treated as I have been would be hard-pressed to cheat them out of their due by pirating their products.

In contrast, on three occasions in as many weeks, I have been able to wander through the computer departments of

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THE OFFICIAL ATARI JOURNAL

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Continued on page 4

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Letters To The Editor

two different Federated stores for 45 minutes each with even being noticed or asked for a sale. I tried to buy a modem, but there was no one to sell it to me.

In the Jan/Feb issue, Jack Tramiel is quoted as saying, "People want what their next-door neighbor has." Unfortunately, my neighbors have Apples. Could it be because their dealers are aggressive? Supportive? Aware of the competition?

I sure hope that Atari gets the dealer situation under control, because I have a lot invested in my system and plan to keep it growing. This baby gets used, and I want it to stay that way!

Johnny Harris
4057 E. Karen Dr.
Phoenix, AZ 85032

Building a strong network of knowledgeable authorized dealers is a high priority at Atari Corp.—especially now that the high-powered Megs are available. And now that the Federated stores are owned by Atari, you should see a marked improvement in knowledge of Atari products among their salespeople. If you don't, perhaps a letter to the manager of the store would be in order.

Amiga Emulator Programmed The Old Fashioned Way

Dear Editor:

I was pleased to see a mention of my Amiga Emulator program for the Atari ST in the Nov/Dec 1987 "Teletalk." However, I was a bit startled to read that it was written in GFA Basic, since I wrote the program entirely in assembly language. And the writer seems to have been unaware that you can "run" the emulated Amiga Basic program, with amusing results, by pressing Return from the Amiga Basic screen.

Evidently, the person who uploaded the program to Delphi did not include the annotated source code and descriptive README file that accompanied my original upload to CompuServe. Anyone can obtain the complete set of files by downloading the file AMIGA.ARC from the Atari16 section of CompuServe. For readers who do not belong to CIS, I would be happy to provide copies of these files to anyone who sends a blank, formatted ST disk and SASE to me at the address below.

Don't get me wrong, I have nothing against GFA Basic. When I first used the original German-language version 18 months ago, I knew it would be a

winner. But Amiga Emulator was written the old fashioned way—with assembler and lots of patience.

Philip I. Nelson
28420 NE Cherry Valley Rd.
Duvall, WA 98019

Beginner's Plight

Dear Editor:

Hi. I need help. I am new to Atari and need a few questions answered. I have a 130XE.

My problem is one of ignorance, in that I know nothing about what hardware and software are available. To remedy the situation, I bought your Nov/Dec 1987 issue and all I got was confused. My confusion stems from your articles on the ST and "8-bit" computers. Are these 8-bit computers the same as my XE? Can I upgrade my XE to run ST programs? Is there any way to buy back issues of your journal? Where can I find books about the XE?

Dean Marzofka
1570 E. St. Germain, Apt. 219
St. Cloud, MN 56301

We are sorry to hear that you were confused by our magazine. To avoid patronizing our readers, we assume a basic understanding of Atari systems. Unfortunately, this can leave novices feeling perplexed.

The fundamental difference between Atari's 8-bit line and the ST line is that the ST is built around a 68000 chip, a 16/32-bit central processing unit (CPU), whereas the 400/800/XL/XE series machines contain an 8-bit CPU called the 6502.

In this context, a bit can be thought of as a measure of relative computing power, referring to the amount of data the CPU can handle at any given time. So, to answer your question, the 130XE is an 8-bit computer that cannot be upgraded to run ST programs. The Atari 8-bit computers have been around for a long time, however, so there is a large body of software available for them, although you may not find all of it on your dealer's shelves. Two good places to start looking for older 8-bit software are mail order ads in magazines like Explorer and your local user group, where you may find Atarians who have upgraded to the ST and want to sell some of their 8-bit software.

To find books about the XE, a good place to start is (no surprise here) your local bookstore. Large chains such as Walden Books, B. Dalton, and Paperback Booksmith typically carry a good

selection of computer books. Also, check the Dealer Directory in this issue for the name of an Atari dealer near you.

Issues of Atari Explorer as far back as Sept/Oct 1986 are available for \$3.00 (US) plus \$0.69 postage for each issue ordered.

Don't Call Us . . .

Dear Editor:

I recently acquired a copy of your publication and could not resist responding when I read your notice, "Before You Write or Call," in the masthead section. You must be joking. Atari does not even bother to answer, let alone show concern for the consumers who purchase their equipment. I have written to them a number of times, both as a consumer and in an official capacity as a consultant for a chain of stores. Result: no response.

I am concerned that *Atari Explorer* calls itself The Official Atari Journal, but will not allow Atari owners to write for assistance. And since Atari Corp. will not even answer letters, where do Atari owners look for assistance?

I appreciate the opportunity to write this letter, and I hope you will print it, because if the owners of Atari computers will write to me, I will try to fan the flames under the building housing the Atari higher echelon so they will respond to their fans!

Gary King
Consultant
P.O. Box 1169
Iowa City, IA 52244

We would like nothing better than to have enough people on our staff to solve the problems of Atarians everywhere. Unfortunately, we have an extremely small staff, all of whom work full time at implementing "publishing without the price."

The simple fact of the matter is that we have more than enough to do just keeping the magazine coming to you on a regular basis.

As for the unresponsiveness of Atari Corp., we cannot comment on what has gone on in the past, but if you will have a look at Inside Atari in this issue, you will see that Atari's Customer Relations manager, Diana Goralczyk, has gone on record, saying that the Customer Relations department answers every letter it receives, so why not give Diana's hard-working group another try?

System HB+ by Astra

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LET'S TALK TURKEY...IT'S AT YOUR DEALER NOW !

***ASTRA SYSTEMS, INC.**

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In late November, six leading software companies formed the Business Software Association, a group organized specifically to fight the copying and sale of U.S. computer programs by offshore pirates. The association maintains that the domestic software industry is losing millions of dollars of revenue to copying by pirates in countries such as Taiwan, Hong Kong, Singapore, Korea, Mexico, Venezuela, Chile, Spain, Italy, and Canada.

The association is incorporated in Washington, DC, in order to be close to government agencies and trade associations, including Adapso.

The six charter members are Ashton-Tate, Autodesk, Lotus, Microsoft, WordPerfect, and Apple Computer. Aldus Corp. joined the association in December, and Adobe, Broderbund, MicroPro, and Software Publishing have been attending meetings. Apple's position in the group is tentative, as it may relinquish its seat to Claris Corp., its software spinoff.

The group has deliberately limited itself to a small number of members so it can act quickly. The association has said it will work to ensure "the protection of its members' proprietary rights under U.S. and foreign law" and act on behalf of its members in legal actions against software pirates. It will also inform members of legislative and legal developments in the U.S. and abroad.

Bulletin Boards Turn Commercial

After nearly ten years of informal development, computer bulletin board systems are coming into their own as grass-roots direct-marketing devices, offering goods and services direct to their users.

While most BBSs have restricted their marketing to computer software, some have branched out into hardware and add-ons, and a few are developing special-interest and neighborhood audiences to which they are directing general consumer advertising.

For example, in Chicago, Wayne Strnad, publisher of *Rainbow News*, a 10,000-circulation, free monthly shopping newspaper, created a BBS edition of the paper. The BBS edition contains the same articles as the paper (mostly reprinted press releases); paid ads from local antique dealers, restaurants, services, and colleges; and personal classifieds.

Strnad said his BBS averages 500 calls per week with the average connection time just over 90 minutes. The BBS has about 300 messages on it at any one time.

George Mataysek, another BBS op-

erator in Chicago and sysop of Syslink, a loose network of BBS operators, promotes his BBS as a direct-marketing tool mainly for computer products and services. However, he recently opened a Katalog Boutique section on his BBS for general retailers and also operates a special interest section for pilots and aviation buffs. This latter service carries ads from *Midwest Aero Exchange*, a local aviation shopper.

Mataysek charges advertisers a \$20 annual fee which allows them to place

*BSA and the pirates,
the BBS as marketing tool,
a re-release of
Dollars and Sense,
and more . . .*

News and Views

By DAVID H. AHL

as many ads as they want subject to the constraints of the system.

Another special interest system in Fort Myers, FL, has dubbed itself Divers-Net and caters to both professional and amateur scuba divers, while a BBS in Sault Ste. Marie, ON, focuses on religion and religious goods.

Random Bits

Reset, a Canadian Atari magazine made its debut with the Summer 1987 issue. The magazine is produced on an Atari ST with *Publishing Partner*, and the first issue features an excellent 11-page section with a review of *Publishing Partner* and tips for its use. The issue also contains a nice 6-page tutorial on drawing space graphics with *Degas*

Elite, along with a host of other articles, reviews, and columns. For a copy, send \$4.00 (U.S.) or \$5.00 (Canadian) to *Reset*, P.O. Box 15866 Station F, Ottawa, ON, Canada K2C 3S7.

In the December 1987 issue of *Byte*, Jim Kent reviewed the **Atari Mega 4**. Although the layout of the keyboard is identical to the 1040ST, he found it had a less spongy, cleaner action. The benchmark performance of the Mega 4 on disk access, math calculations, system utilities, and spreadsheet load and calculate is virtually identical to the 1040ST. However, due primarily to the presence of the blitter chip, the Mega 4 really shines in graphics operations, especially in rectangle fills and moves, and text moves. The blitter is controlled with 16 read/write registers and can manipulate bit maps as large as 512K x 64K pixels anywhere within its 8Mb address space.

Jim mentioned that although "there are significant differences between the Mega and the earlier 520ST and 1040ST, I was pleasantly surprised to find that most of my software and peripherals for the 520ST worked with the Mega 4 as well."

He concluded by saying, "If you want the speed and programming ease of an 8-MHz 68000 and the benefits of crisp, fast graphics without being completely isolated from the PC mainstream, the Mega 4 is a viable option."

Dollars & Sense is being re-released for the ST by Monogram Software after a recall of the initial version due to printing problems. Purchasers of the earlier releases are eligible for a free disk exchange directly through Monogram (not the dealer). The new version requires 1Mb of RAM and will run on upgraded 520STs and, of course, 1040STs.

The next major U.S. exposition at which you can see Atari computers will be **Spring Comdex** at the Georgia World Congress Center in Atlanta, May 9-12, 1988. While not as big as Fall Comdex, the show is expected to attract about 700 companies from 15 countries exhibiting a wide variety of computers, peripherals, software, add-ons, accessories, and services. Spring Comdex will also feature presentations by some 150 executives about marketing, technology, and business trends. This is a trade show, so you must present a business card or letterhead identifying you as a person with a "professional" interest in the industry to be admitted. For registration or exhibitor information, contact The Interface Group, 300 First Ave., Needham, MA 02194, (617) 449-6600. ■

The reviews are in . . .

"A Best Buy' I'm impressed"

David H. Ahl, Atari Explorer, Nov-Dec 1987

"If you've got an Atari, you probably need this program."

Jerry Pournell, Byte Magazine, October 1987

"pc-ditto is a winner."

Charlie Young, ST World, July 1987

"This is the product we have been looking for."

Donna Wesolowski, ST Informer, August 1987

"This truly incredible software emulator really works."

Mike Gibbons, Current Notes, September 1987

NOW! RUN THESE IBM PROGRAMS ON YOUR ATARI ST.

Lotus 1-2-3	Flight Simulator	Framework	Symphony
Enable	Ability	DESQview	Q&A
Sidekick	Superkey	Norton Utilites	dBase II,III,III+
Crosstalk IV	Carbon Copy	Chart-Master	Print Shop
EasyCAD	DAC Easy Accounting	BPI Accounting	Turbo Pascal
GW Basic	Managing Your Money	Silvia Porter's	pfs:Professional File

And Hundreds More!

pc-ditto is a software-only utility which expands the power of your Atari ST to imitate an IBM PC XT. No extra hardware is required (an optional 5.25-inch drive may be required for 5.25-inch disks). All your IBM disks will work "out-of-the-box".

pc-ditto features include:

- o both the 520ST and the 1040ST supported
- o up to 703K usable memory (1040ST)
- o not copy-protected -- installable on hard disk
- o imitates IBM monochrome and IBM color graphics adapters
- o access to hard disk, if hard disk used
- o optionally boots DOS from hard disk
- o parallel and serial ports fully supported
- o supports 3.5-inch 720K format and 360K single-sided formats
- o supports optional 5.25-inch 40-track drives

System requirements:

- o IBM PC-DOS or Compaq MS-DOS version 3.2 or above recommended
- o optional 5.25-inch drive is required to use 5.25-inch disks
- o 3.5-inch 720K DOS disks require a double-sided drive (Atari SF314 or equivalent)

See pc-ditto today at an Atari dealer near you,
or write for free information!

\$89.95

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(904) 221-2904

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Yes! Please send information on pc-ditto.
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In this installment of Inside Atari, we examine the role of Atari's Customer Relations Department and offer some useful tips to help ensure that your inquiries are handled efficiently.

Atari Headquarters

On a recent visit to Silicon Valley, we spent some time with Diana Goralczyk, manager of customer relations. She began by summarizing the mandate of her department, "Customer Relations services and supports end-users of computers, game systems, accessories, and software sold by Atari Corporation."

To this end, her staff handles 5,000-10,000 pieces of mail and about 5,000 phone calls per week. They process orders, answer letters of complaint and congratulation, arrange for equipment to be replaced, and offer technical support.

Customer Relations is not responsible for the coin-operated arcade games manufactured by Atari Games Inc. of Milipitas, CA. And international customers should contact their regional subsidiary or distributor (listed on the warranty card) when in need of assistance.

"One of our biggest problems," says Diana, "is that when people think of Atari, they envision a huge corporation with thousands of workers. Actually, there are only about 150 full-time employees in the entire United States division."

Customer Relations is located on the ground floor of the Borregas Avenue headquarters and occupies the better part of a large room unobstructed by office partitions. Customer Relations representatives, mostly women, sit at desks wearing "hands-free" headsets that give them the freedom to do two things at once.

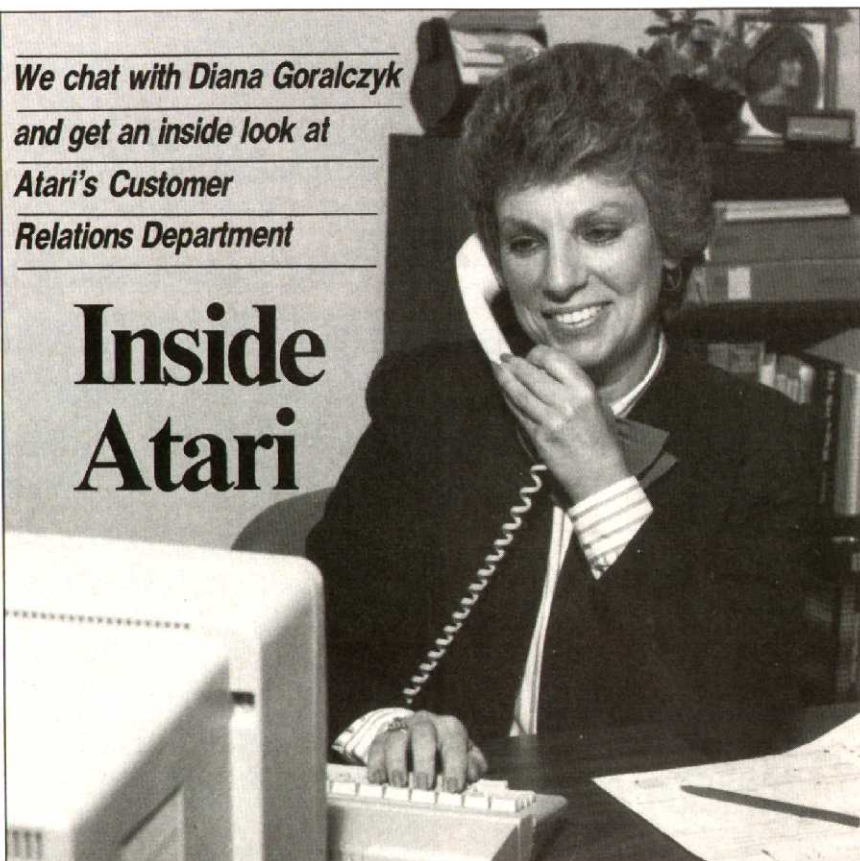
Atari is a company that practices what it preaches. Anyone who thinks that Atari computers aren't well-suited to traditional business tasks should visit Customer Relations (or any other department at headquarters for that matter). There is a 1040ST hard disk drive system on each desk, and representatives use *dbMan* to process orders and *1st Word* to answer correspondence.

Written Correspondence

When you have an inquiry that does not require an immediate answer, do yourself a favor and write a letter instead of calling. It's cheaper, and chances are that the response you receive will be more thorough.

*We chat with Diana Goralczyk
and get an inside look at
Atari's Customer
Relations Department*

Inside Atari



By OWEN LINZMAYER

The Customer Relations Department prides itself on answering every letter it receives. The staff often writes personal replies, but the sheer volume of mail the department receives demands that they rely on form letters to answer the most common questions. "During the holidays, the mailman delivers so many sacks of mail that he looks like Santa Claus bringing toys to an orphanage," says Diana.

***Don't waste your
time berating the person
who has answered your call
and wants to help you.***

Diana asks you to please be patient and not offended if you receive a form letter. In most cases it is the quickest and most cost-effective way of responding to your inquiry.

When you send mail, clearly mark the envelope "Atari Customer Relations." This will ensure that it gets to the right department as soon as possible. While it may seem foolish to have to mention this, Diana assured us that many people forget to include a return address on their letters as well as on the outside of the envelope. When that happens and the envelope gets lost, Customer Relations has no way of knowing where to send its reply. Also, include your phone number, so the Customer Relations staff can call you if they need further information to answer your question.

Telephone Inquiries

The Customer Relations telephone lines are open ten hours every day, Monday through Friday, from 7:00 a.m. to 5:00 p.m. Pacific time. "Try to time your call to avoid the peak hours of the day when both coasts are awake," sug-

Atari Explorer

Although Atari Explorer Publications Corp., which publishes this magazine, is a wholly owned subsidiary of Atari (U.S.) Corp., we maintain separate offices and a separate customer service center. Failure to send your inquiry to the correct location can delay the response considerably.

If you have a problem with your subscription to *Atari Explorer* or require a change of address, please call or write the following:

Atari Explorer Customer Service
CN961

Netcong, NJ 07857-0961
(201) 347-8383.

Please note that our editorial offices are at a different location. Editorial material, including article submissions, press releases, letters to the editor, and products for evaluation should be sent to:

Atari Explorer
7 Hilltop Rd.
Mendham, NJ 07945
(201) 543-6007.

Advertising and dealer sales are also handled by the Mendham, NJ, office. ■

gests Barbara Monahan, customer relations supervisor. "It's best to call in the early morning or late evening."

Callers on the East Coast can actually save money by waiting until the rates go down and calling between 4:00 and 5:00 p.m. Pacific time. Also, avoid calling on days immediately following holidays. After a holiday, the staff faces an extra accumulation of mail and an especially large volume of phone calls occasioned by problems that cropped up during the extra hours people had to spend with their computer systems during the holiday period.

Before you call the main Customer Relations number, call the recorded message center first. This three-minute message was designed to respond to the most common inquiries. Don't be put off by the fact that it is a recording; the chances are excellent that the answer to your question can be found on this tape. "Approximately 60% of the calls received by Customer Relations concern the availability of 5200 joystick replacements, a subject that is amply addressed in the message," says Diana. "If all callers would listen to the tape before call-

ing us, our customer service representatives would be free to handle the more complex inquiries."

Diana admits that it is often difficult to get through on the phone, "but when we receive roughly 1,000 calls a day, what can you expect?" During peak hours, callers may hear a message to the effect that "the system is not responding—the phone is off the hook." This is a default message played by the local telephone company when the lines are overloaded and is absolutely untrue. Customer Relations telephone lines are never intentionally disconnected.

When you do get through to speak to someone, Diana asks that you please remember your manners; don't waste your time berating the person who has answered your call and wants to help you. The life of a Customer Relations representative is not an easy one, and the last thing he or she needs is to be

and accessory configuration, software version numbers, etc. If you are calling about a program crash, try to remember exactly what you did to cause the bomb, and try to duplicate it. What did the screen look like? What error message was displayed?

Try to isolate the exact nature of the problem before you call. For instance, if you are having problems getting a new word processor to print, try printing something with another program to find out if the fault lies with the printer or the software. If you can accurately describe the problem, you are half-way to a solution.

The Atari Bonanza

The Atari Bonanza is a mail-order service instituted by Atari because users in remote locations often have trouble finding software and accessories available locally. Bonanza orders may be

Approximately 60 percent of the calls received by Customer Relations concern the availability of 5200 joystick replacements.

treated like a verbal punching bag. Remember, these representatives are not responsible for the problems you are having, but they are more than willing to help you solve them—especially if you are courteous.

Technical Support

Before contacting Atari's technical support staff, make sure that you have exhausted all of your other options. Don't reach for the phone whenever you have a problem with your computer. First, read all of the documentation thoroughly, and if that doesn't help, check with your dealer—especially if the product is under warranty.

If you still can't figure out what is wrong, call or write Customer Relations for technical support. When calling, be near your computer if possible, so you can follow any directions the staff may give you. Many times they will be able to walk you through the steps required to solve your problem.

Briefly summarize the exact nature of the problem you are experiencing. Have available as much information as possible, including the computer model

charged to your Visa and MasterCard account, but Atari does not ship orders COD.

If you know what you want and its price, Diana asks that you place your order by mail, as this frees the staff and the phone system to handle problems that require immediate attention.

Although they do process orders, Diana emphasizes that "Customer Relations is not in competition with retailers," and callers are initially referred to local dealers. If you still have a problem after consulting a retailer, Customer Relations will work with you directly.

Important phone numbers: (408) 745-4851, recorded message center; (408) 745-2367 or (408) 745-5759, Customer Relations staff; (408) 745-2004, technical help line.

Order address:

Atari Customer Relations
P.O. Box 61657
Sunnyvale, CA 94088.

Defective merchandise return:

Atari Customer Relations
390 Caribbean Dr., Door # 17
Sunnyvale, CA 94089. ■

Q When and where can I find all the new Atari products I have been hearing about?

A The Atari XEP80 80-column card, SX212 modem, Mega 2, and Mega 4 are now available. The XEP80 and SX212 can be purchased through Atari dealers or direct from Atari. The Megs, which can be purchased only through dealers, are also "in the pipeline."

The XEP80, Atari's 80-column card for the 8-bit computers, requires a composite video monitor. (Most TVs lack sufficient resolution to display 80 columns of text.) Software that uses the operating system to send text to the screen or printer will work with the XEP80 immediately. *AtariWriter 80* and *Silent Butler 80*, which will take full advantage of the 80-column display, are in the works. Look for more news about these products in future issues. The XEP80 carries a suggested retail price of \$79.95.

The SX212 is a Hayes-compatible modem with a standard RS-232 port for the ST and PC, and an Atari SIO port for Atari 8-bit computers. With the ST or PC, all you need to get up and running is a standard RS-232 cable and a terminal program.

Atari 8-bit users will need a special handler and terminal program called *SX-Express* to use the SX212. This package is not yet available, but the modem can also be used with an 850 interface or with a public-domain program called *RVERTER* (see below). The SX212 has a suggested retail price of \$99.95.

The Mega 2 and Mega 4, which comprise the newest Atari product line, include a Blitter chip and two or four megabytes of RAM. They run all properly-written ST software and use ST peripherals. The Mega 2 has a suggested retail price of \$1699.95 with monochrome monitor; \$1899.95 with color monitor. The Mega 4 has a suggested retail price of \$2399.95 with monochrome monitor; \$2599.95 with color monitor.

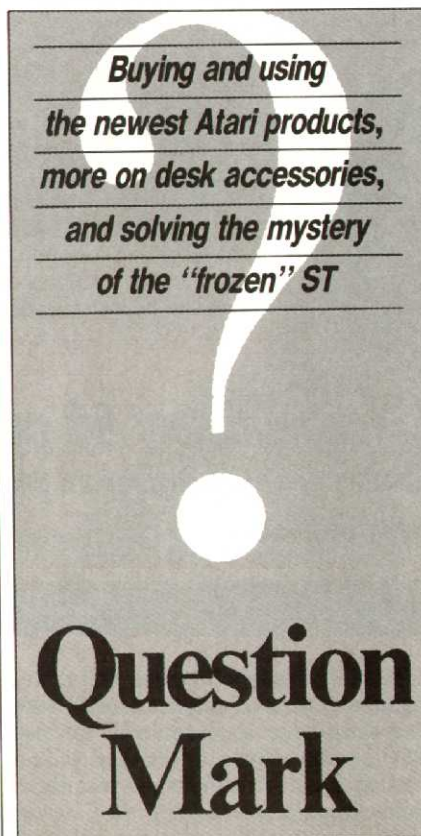
Q Please tell me more about ST desk accessories. How do I use them?

A When the ST is turned on or reset, it checks for any files with an .ACC extender. These desk accessories are loaded into memory, and remain available from within any GEM-based program.

Small, handy utility programs are often made into desk accessories, because they are so convenient. For example, the

Control Panel is a desk accessory that allows you to change the screen color or key repeat rate from within your word processor, for example. Or, using the VT-52 emulator, you can log onto your favorite BBS without loading another program. Both of these desk accessories are included with every ST.

A word of caution: A corrupted desk accessory can cause your ST to behave strangely. When you first get a new desk accessory, put it on a floppy disk by itself, and boot the machine from that



By MARK JANSEN

disk. If all goes well, go ahead and put the accessory on your regular boot disk. If the ST seems to keep re-booting itself or otherwise acts abnormally, the desk accessory is probably damaged. Try another copy.

Q You have said that Atari maintains a library of printer drivers for software they sell. How do I get drivers for non-Atari software?

A Your local Atari dealer is a good source of printer drivers, as is the manufacturer of your particular software package. They often maintain libraries of printer drivers and will provide them to you at minimal or no cost.

If neither your dealer or the software company can help, try a local Atari user group or an information service like Genie. In both places, you will find large libraries of software and other files to make your life easier and plenty of knowledgeable people eager to help answer your questions. In fact, you will probably find someone else who has the same printer/program combination you have and has already developed a driver.

Q I pressed the Alternate and Help keys on my ST at the same time, and the computer seemed to freeze. What happened?

A The Alternate-Help combination on the ST starts a "screen dump," which causes the system to print whatever is on the screen on an Atari SMM804 (or compatible) printer. If no printer is available, the computer will freeze for about 30 seconds, then come back to life. This is described in the ST Owner's Manual.

Q I would like to use the Atari SX212 modem with my 8-bit computer, but I don't have an 850 interface. Until *SX-Express* is available, what can I do?

A You will need a standard Atari SIO cable (like the ones that connect a disk drive to the computer) and a collection of files including *RVERTER* and *AMODEM74*.

These files are available on the Atari Base BBS (408-745-5308) and on major telecommunication networks like Genie under the filename SX212.ARC. You must first unARC the files, then follow the instructions in the README.DOC file.

Q I have an Atari 1027 printer and need new ink rollers. Where can I get them?

A The 1027 ink rollers can be purchased directly from Atari. See the Atari Bonanza ad elsewhere in this issue.

Q When I use the XEP80, some programs don't use all 80 columns on the screen. Can you tell me what's wrong?

A Nothing is wrong; some software assumes a 40-column display, so all text is formatted to look good in 40 columns. When shown on an 80-column display, this looks strange, but should otherwise work fine. ■



ATARI ST POWER



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Incredible COLOR video digitizer. • The first and only full color digitizer for the ST • Uses standard video inputs like video camera, VCR, or video disk. • Works in all ST resolutions. Low res provides 16 shade black and white or full color pictures. • Pictures can be used with Degas, Neochrome, Powerprint and others. • Automatic calibration of contrast, brightness and white balance. • Plugs into cartridge port for easy set-up. • Capture your picture or that of your favorite star. **ONLY \$199.95**
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MEGADISK is actually one megabyte of RAM that simply plugs into your cartridge port. It acts as an added disk drive that's ultra fast and always ready for use. Like a Hard Disk, MEGADISK won't lose its memory when your computer is turned off. It comes with its own power supply and battery back-up system so its independent of your computer.

Megadisk can be configured according to your needs. • Set it up as one large disk • An 800K double sided disk and a 200K hardware print buffer • Or as two 400K single sided disks and a print buffer

Megadisk will work fine with your current system whether you have a hard disk and two drives or you're just getting started.

Megadisk is perfect for those who want the high speed of a hard disk for a lower price. Its even better for power users or software developers who may already own a hard disk and two drives but want extra speed and power. Megadisk can also emulate other cartridges for testing and back-up. In addition Megadisk can be used with Switch/Back to allow you to instantly jump between two full size one meg applications

\$299.95

Megadisk Clock Option - Adds a Clock/calendar card to your Megadisk cartridge. Contains replaceable Three year battery 29.95

Polydisk

Polydisk is a 512K version of a Megadisk. Polydisk gives you the same fast boot features, the high speed access, and the print spooler. Polydisk has a power supply (like Megadisk) but does not contain a battery back-up.

Note: Those with only 512K of main memory can use Switch/Back with a Polydisk, just like those with one Meg.

Polydisk (512K Solid state drive) **Only \$199.95**
 (Clock option card is also available for Polydisk \$29.95)



BLOW YOURSELF UP

Imagine your picture on a 6 foot poster. Create a business graph that can cover a wall. Quality output for posters, t-shirts, news letters, and more. **POWERPRINT**

Whether it's a photo digitized with ComputerEyes, a masterpiece created with Degas, or the winning screen from your favorite game, POWERPRINT can print it with unequalled clarity and resolution. PowerPrint supports ALL ST resolutions. It prints multiple sizes up to **GIANT WALL SIZED POSTERS**. Print 16 shades for incredible detail. Print the whole screen or **ZOOM** in on just the part you want. POWERPRINT offers unique effects, including rotate, mirror and inverse options. Selective shading option allows you to print multi-color pictures on any printer by printing one color at a time (using color ribbons). Powerprint lets you capture and print almost any ST screen. Works with Star, NEC, Citoh, Gemini, EPSON, XM8048 and compatible printers. **ONLY \$39.95**



High Quality sound digitizer for the ST This powerful hardware and software package lets you sample real world sounds and play them back on any Atari ST Add special effects like Echo, Reverse, looping, pitch manipulation, mixing and envelope control. Turns your Atari keyboard into a musical instrument to play songs with your digitized sounds (also works with any MIDI keyboard). Digisound makes it simple to add sound to your own program, too! Unleash the incredible sounds in your ST with DIGISOUND. Supports sampling from 5 to 40Khz. DIGISOUND is the choice of the professionals. DIGISOUND was used to create the voice in Chessmaster 2000, and other commercial programs.

DIGISOUND ONLY \$89.95

DIGISOUND PROFESSIONAL

All the excellent features of DIGISOUND plus these great extras
LOGARITHMIC SAMPLING - Special hardware extends the sound quality far above the other ST sound digitizers. Logarithmic sampling and playback (external amplifiers only) greatly extends the dynamic range while reducing distortion and noise.

Internal Real Time Mixing - Input from a stereo and a microphone so you can sing over a tape.

\$149.95

SWITCH/BACK - Turn your ST into two; requires 1 meg - Hardware & Software

\$69.95

ST PROTECTION TECHNIQUES Book & Disk Package

\$39.95

NEW HACK BACK Special OFFER

The Alpha Systems HACK PACK contains all our finest products for making Back-up copies. Analyzing, Understanding and Protecting your Atari programs. It comes complete with Atari Protection Techniques (Book and Disk I), Advanced Protection Techniques (Book and Disk II), The Chipmunk, The Scannerizer, The Impersonator and Disk Pack 1000. Worth over \$150. Get them all for the special price of **Just \$99.95**

Atari Software Protection Techniques Vol I & II

These Book and Disk packages detail the most advanced copy protection methods in use today. They guide you through the techniques used to create the protection as well as the copying techniques to get around them. They include information on Prehooking • Hacking • On-line security • Black boxes • Self-destructing programs • Pirate bulletin board systems • Logic bombs • New piracy laws • Hardware data keys • Weak sectoring (Phantom, Fuzzy and unstable sectors) • Overfilled tracks • CRC errors • Bank Select cartridges and MUCH, MUCH MORE. The disks include automatic program protectors, Protection Scanners, directory hiding and more.

BOOK I and DISK I \$24.95
BOOK II (Advanced protection) and DISK II \$24.95
Special Offer, Order both sets for Only \$39.95

CHIPMUNK

Automatic Disk Back-Up System. Make perfectly running unprotected back-up copies of hundreds of the most popular Atari programs. Chipmunk's sophisticated programming Automatically finds and **REMOVES copy protection** from most Atari programs. Back-up even heavily protected programs with ease. Finally, a back-up system that needs no special hardware or skills.

(If you need a full list of what Chipmunk copies, call or write for our free catalog) **\$34.95**

Scannerizer Automatically scan & analyze commercial programs. Unlock programming secrets and learn from the masters **\$29.95**

Impersonator Cartridge to Disk back-up system. Create running back-up copies of any cartridge (up to 16K) **\$29.95**

NEW CHEAT

Get more from your games with CHEAT Tired of spending days trying to beat a game? Tired of getting stuck just when you need another life? CHEAT is an innovative new product that gives you the chance you need to beat your favorite games. Cheat works with hundreds of Atari games to give you unlimited lives or power. End the frustration and get hours more enjoyment from your games. (Call or write Alpha Systems for our free catalog with a full list of the programs that work with Cheat) **ONLY \$24.95**

BASIC TURBOCHARGER

NOW for the first time a BASIC programmer can get the power, flexibility and incredible speed of machine language. **BASIC TURBOCHARGER** is a **book and disk package** that contains over 150 ready to use machine language routines. Complete instructions show how to add them to your own BASIC programs to get these features and more. • Smooth Scrolling • Player/Missile control • Load & Save Picture files • Sorting and Searching • Special Effects Graphics • Incredible Speed • Much, Much More • Over 150 programs. You've heard of the power of Assembler, now harness it for your own needs. **\$24.95**



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ATARI 8-BIT POWER

ALPHA SYSTEMS is constantly innovating to provide more power for your 8-bit Ataris

NEW PARROT II

An All New Parrot sound digitizer for your Atari. Parrot II is a sophisticated new hardware device that plugs into your joystick port. Parrot II has two inputs. One for a microphone and one for a powered source such as a tape player, radio or Compact Disk.

The Powerful Parrot II software lets you record sounds into your computer and play them back on any Atari. Parrot II turns your computer's keyboard into a musical instrument with nine different sounds covering three octaves each. The sounds can be anything, a dogs bark, a piano, a complete drum set, a symphony or your own voice.

Parrot II lets you modify the sounds on a graphic display to create brand new sounds and special effects. Best of all, the sounds and voices can be put into your own programs that can be used on any standard Atari. Explore the world of digital sound and music. **ONLY \$59.95**

Pre-Recorded Sound Disk More pre-recorded sounds for Parrot **\$4.95**
PARROT II Demo Disk (Does not require Parrot to run) **\$5.00**

NEW POP-N-ROCKER

A fast paced, multi-player trivia game that mixes questions with real songs (digitized with Parrot). Be the first to identify the songs and answer the music trivia questions. **Pop-N-Rocker** comes with three data disks and lets you add new questions so it will never get old. You can use a Parrot Sound digitizer to add new songs too! Use any kind of music from Rock to Classical to Nursery Rhymes. A new concept in entertainment and a perfect add-on for Parrot. **\$24.95**

COMPUTEREYES & MAGNIPRINT II +

Turn your computer into a digital portrait studio. This complete package lets you **capture, save & print** digital images from your **Video Camera, VCR or TV**. **COMPUTEREYES** hardware plugs directly into your joystick ports for easy use. Print your picture on a 6 foot poster **\$119.95**

ComputerEyes camera system Comes complete with everything above, plus a black and white video camera and connecting cable. **\$329.95**

Graphics 9 Software - Add a new dimension to your **COMPUTEREYES** pictures - captures images in 16 shades of grey. **\$12.00**

Magniprint II +

Easily the most powerful print program available today. Print graphics from almost any format in hundreds of shapes, sizes, and shades. Supports **color printing** and lets you create **giant posters**. **Magniprint II+** lets you stretch and squeeze, invert, add text, adjust shading and much more. Works with EPSON, NEC, Citoh, Panasonic, Gemini, Star, XM801, and compatible printers. (850 interface or equivalent required) **\$24.95**

Graphics Transformer

Now you can combine the most powerful features of all your graphics programs. Create print shop icons from a Koala pad picture, from a photo digitized with ComputerEyes, or any picture file. **Graphics Transformer** lets you **Shrink, Enlarge and Merge** pictures for unequalled flexibility. **\$22.95**

YOUR ATARI COMES ALIVE

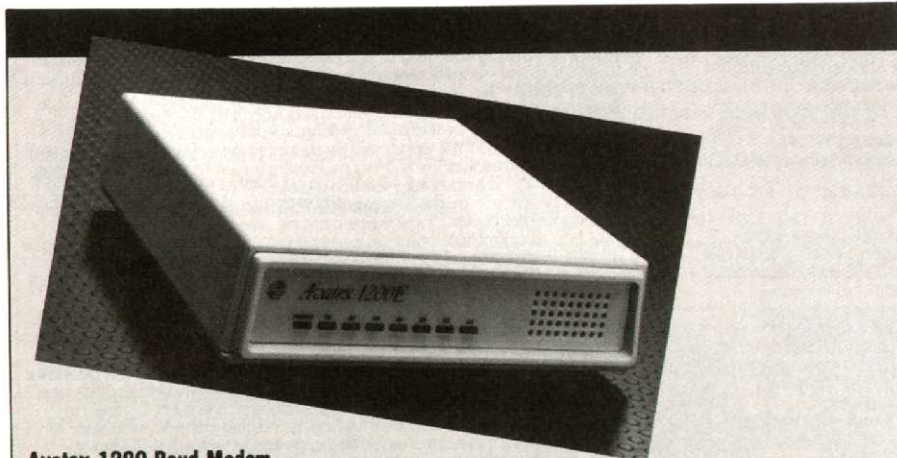
SAVE MONEY Finally an alternative to buying expensive computer add-ons. Your Atari Comes Alive shows you how to **build them yourself**. This **'How-To' book and disk package** gives you complete step by step instructions and programs needed to build and control these exciting devices and MORE. • Light Pen • Light & Motor Controllers • Alarm Systems • Voice Recognition • Environmental Sensors • Data Decoders • More than 150 pages. **Your Atari Comes Alive \$24.95**



GIANT WALL SIZED POSTERS.

ALPHA SYSTEMS 1012 SKYLAND DRIVE MACEDONIA, OH 44056 **FREE BONUS: DELUXE SPACE GAMES** (3 games on a disk) Free with any order of 3 or more items. Include \$3.00 ship & hdg (US Canada) Ohio res. add 5 1/2% sales tax. Foreign orders add \$8.00 ship & hdg. Call or write for free catalog. Customer Service Line (216) 467-5665 M-F 9-3

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 ■ NEW PRODUCTS



Avatex 1200 Baud Modem

The Avatex 1200e is a 1200/300 bps stand-alone Hayes-compatible modem. Features include manual/automatic originate/answer, call progress option, Bell and CCITT (international) opera-

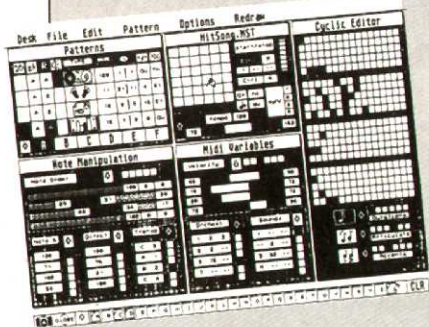
tion, and dip switches for permanent option settings. \$99.

Elec & Eltek (USA) Corp., 1230 Oakmead Pky., Ste. 310, Sunnyvale, CA 94086, (408) 732-1181.

*Recent releases
 of hardware and software
 for Atari 8-bit
 and ST computers*

New Products

MUSIC SOFTWARE



Intelligent Computer Music Systems announces *M* for the Atari ST. *M* is an interactive composing and performing system that allows the user to specify basic musical material as notes and chords, determine the ways in which that material will be transformed, and then perform the music by manipulating screen controls, playing control keys on a MIDI keyboard, or "conducting" with the mouse on a multi-directional grid. \$200.

Intelligent Computer Music Systems, Inc., P.O. Box 8748, Albany, NY 12208, (518) 434-4110.

MIDImouse Music has released *Fast Tracks ST*, a performance-oriented MIDI sequencer for the Atari ST. A menu-driven user interface is used throughout the program, and code for the MIDI processing (record/playback) portion was written for optimum speed and accuracy. The sequencer is structured to allow up to 16 sets—collections of up to 16 sequences, consisting of up to 16 tracks each—to reside in memory at one time. \$129.

Also available is the *Matrix12/Xpander Patch Librarian*, a program that allows patch data to be loaded from or sent to an instrument, saved on disk, examined, or transferred from file to file. Included on the disk is a set of 100 performance sounds created with the Matrix 12. \$49.95.

MIDImouse Music, Box 272, Rhododendron, OR 97049, (503) 622-4034.

RAM Expansion for ST

Terrific Corp. has released EZRAM II, a 512K to 2.5Mb expansion board for Atari 520ST, 520STfm, and 1040ST computers. This increase in RAM is said to improve the performance of such memory-intensive applications as spreadsheets, graphics packages, databases, and desktop publishing programs.

Installation of EZRAM II requires no soldering or trace cutting on the motherboard. \$139.95.

Terrific Corp., 17 St. Mary's Ct., Brookline, MA 02146, (617) 232-2317.

Mods, Fixes, & Upgrades

The Midwest Atari Group—Iowa Chapter (MAGIC) has released "Mods, Fixes, & Upgrades" for owners of 8-bit computers. This 48-page booklet contains articles reprinted from various Atari user group newsletters. Fifteen hardware projects are described with illustrations, schematics, and parts lists. The table of contents mentions RAM upgrades, keyboard fixes, joystick modifications, and disk drive alterations to name a few. \$3.00.

MAGIC, P.O. Box 1982, Ames, IA 50010-1982.

NEW PRODUCTS



2400 Baud Modem and 10Mb Removable Floppy Drive from Supra

Supra Corporation announces the SupraModem 2400, a compact Hayes-compatible that supports asynchronous operation at 300, 1200, and 2400 bps. It features automatic answer/dial (tone or pulse), two modular phone jacks, programmable-volume speaker, and a one-year warranty. User configurations are specified in software and stored in non-volatile memory. \$179.95.

Also new from Supra is the SupraDrive FD-10, a 10Mb removable floppy disk drive for Atari ST computers.

The FD-10 is like a floppy drive in that storage is limited only by the number of disks available, but each removable 5 1/4" disk holds 10Mb of data and can be accessed at speeds approaching the speed of a hard disk drive. It comes

complete with software and cables, ready to plug into the DMA port. \$895.

Supra Corporation, 1133 Commercial Way, Albany, OR 97321, (503) 967-9075.



PRODUCTIVITY SOFTWARE

Regent Software has announced *The Informer*, a graphic database for the ST. Point-and-click functions are used to create and manipulate up to four databases simultaneously, and *Neo-Chrome* and *Degas* images can be incorporated into a form or treated as data in a database. Sub-lists of information can be developed using statistical and relational operators, and records can be sorted according to content or type, in ascending or descending sequence. \$99.95.

Regent Software, 7131 Owensmouth, Ste. 45A, Canoga Park, CA 91303, (818) 882-2800.

Hi-Tech Advisers announces a time and billing, office management package for the Atari ST. *Office-Pro* offers time scheduling integrated with billing for up to 999 staff members. Mail merge and other office functions are supported. \$199.

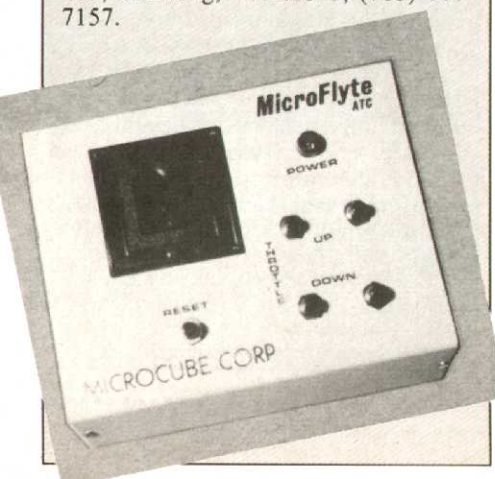
Also available is *Super Sales-Pro*, a point-and-click point of sale/inventory control system designed to accommodate medium to large wholesale, retail, and mail order businesses.

Hi-Tech Advisers, P.O. Box 7524, Winter Haven, FL 33883, (813) 294-1885 or 293-3986.

Microflyte Joystick for ST

The Microflyte Joystick is a fully proportional, continuously variable controller for flight simulator programs. It plugs into the mouse port of the ST and offers three modes: standard pointer control, proportional control, and variable sensitivity adjustment control. \$119.95.

MicroCube Corporation, P.O. Box 488, Leesburg, VA 22075, (703) 777-7157.



GRAPHICS SOFTWARE

Graphics Transformer from Alpha Systems allows users to convert images from one 8-bit graphics program to another and combine pictures created with different programs in one screen. *Graphics Transformer* works with Kola Pad, Atari Touch Tablet, ComputerEyes, Print Shop, Magniprint II+, Graphics Master, Strip Poker, Atari Graphics Light Pen, images created with Basic programs, and more. \$24.95.

Alpha Systems, 1012 Skyline Dr., Macedonia, OH 44056, (216) 467-5665.

MichTron has released *Master CAD* for the Atari ST. The program allows the user to project any two-dimensional object into a 3D image. In addition, objects can be moved, copied, rotated, or flipped horizontally or vertically. Proportions and textures can be changed, and objects can be imported or exported to or from other objects. The user can observe an object from various viewpoints and angles, external or internal, transparent or solid, or observe the

object in orthogonal, perspective, axonometric, or oblique projection from any angle. \$199.95.

Also new from MichTron is *GFA Object*, a program for constructing three-dimensional pictures that can be manipulated in free space through rotation, resizing, and displacement. Objects are drawn on the screen by setting the points, edges and surfaces in the graphics editor, and the screen displays a large straight ahead view of the object combined with two smaller pictures of the top and side. \$99.95.

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

Art Gallery: Fantasy is a collection of clip art monsters, mythical creatures, treasures, and other fantasy symbols from Unison World. The ST package includes 140 pieces of art for use with *PrintMaster Plus* and *NewsMaster*. \$29.95.

Unison World, 2150 Shattuck Ave., Ste. 902, Berkeley, CA 94704, (415) 848-6666.

NEW PRODUCTS

SYSTEMS SOFTWARE



Alpha Systems is now shipping Basic Turbocharger for 8-bit Atari computers. This book and disk package has 167 complete, tested, ready-to-run machine language routines that programmers can use in their own programs. A few of the topics covered are scrolling, sorting, searching, player/missile control, loading and saving of picture files, and special effects. \$24.95.

Alpha Systems 1012 Skyland Dr., Macedonia, OH 44056, (216) 467-5665.

MichTron announces *The GFA Basic Book*, an intermediate tutorial for the GFA Basic Interpreter designed for the person who wants to gain an understanding of the more complicated as-

pects of ST programming. The accompanying disk holds more than 75 programs and files, many of which can be imbedded directly into the user's programs. \$39.95.

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

Prospero Software has released Prospero Fortran for GEM, a program development environment for the ST, which features a four-window source editor, books on AES bindings and VDI bindings, a symbolic debugger, and an improved linker. The Fortran compiler is a complete validated ANSI standard Fortran-77 level compiler. \$199.

Prospero Software, Inc., 100 Commercial St., Ste. 306, Portland, ME 04101, (207) 874-0382.



ENTERTAINMENT SOFTWARE

Epyx announces *Arctic Antics: Spy vs. Spy III* for Atari 8-bit computers. The game features a split screen that displays the action as the white spy and the black spy try to outsmart each other in their search for the punch card, gyroscope, fuel canister, and launch briefcase that are essential to the launch of the rocket ship that will help one of them escape a chilly demise. \$24.95.

Epyx, 600 Galveston Dr., Redwood City, CA 94063, (415) 366-0606.

Strategic Simulations has announced *Sons of Liberty*, a game that recreates the American Revolution battles of Bunker Hill, Saratoga, and Monmouth for Atari 8-bit computer users. Using the game system from *Gettysburg: The Turning Point*, the new game will appeal to beginning, intermediate, and advanced gamers. \$39.95.

Strategic Simulations, 1046 N. Rengstorff Ave., Mountain View, CA 94043, (415) 964-1353.

Space Quest II—Vohaul's Revenge from Sierra On-Line is the sequel to *Space Quest—The Sarien Encounter* for Atari ST computers. Players rejoin Roger Wilco, sanitation engineer turned reluctant space hero as he faces a brand new set of disasters in his attempt to thwart the evil scientist Sludge Vohaul. \$49.95.

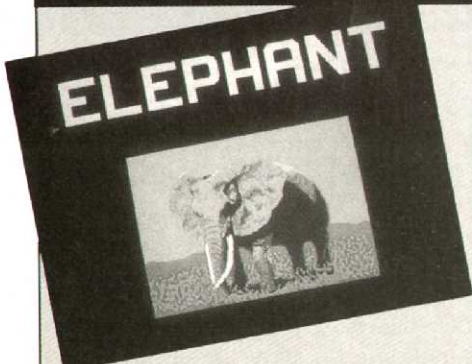
Police Quest—In Pursuit of the Death Angel, also from Sierra, takes the ST user on a realistic trip into the world of vice, drugs, and homicide and requires that he follow strict police procedure throughout the game. \$49.95.

Sierra On-Line, Inc., P.O. Box 485, Coarsegold, CA 93614, (209) 683-4468.

The newest version of *F-15 Strike Eagle* from MicroProse takes advantage of the graphics capabilities of the ST to add realism to the popular simulation of the Air Force fighter plane. Mission scenarios range from Southeast Asia to the Persian Gulf with four skill levels to ensure continuing challenge. \$39.95.

MicroProse, 180 Lakefront Dr., Hunt Valley, MD 21030, (301) 771-1151.

EDUCATIONAL SOFTWARE

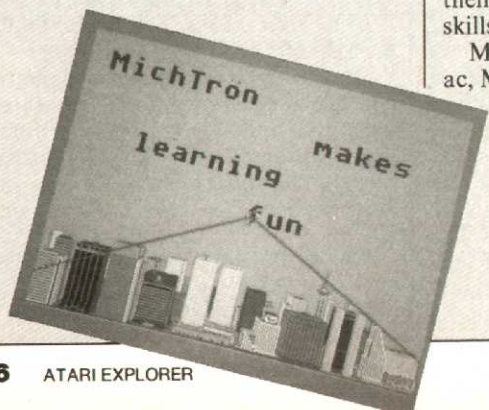


MichTron has released three new educational software packages for the Atari ST, each of which sells for \$39.95.

Algebra I, Volume I includes two programs—Linear Equations, which includes 66 different kinds of equations demonstrating algebraic axioms and principles, and Verbal Problems, which includes 30 different kinds of story problems in ten different areas.

ABZoo teaches young children letter recognition and develops their reading and typing skills. And *Invasion* is a game designed to help ST users improve their basic typing, spelling, and math skills.

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

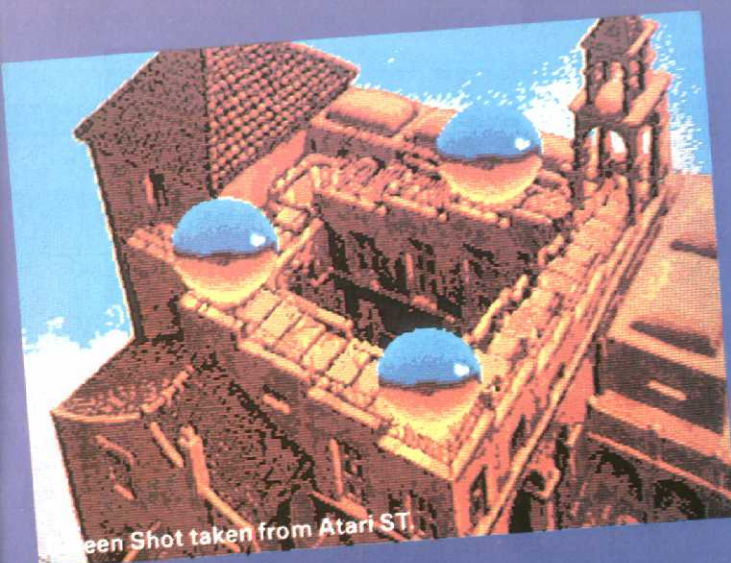


THE ADVANCED ART STUDIO

The only art package that lets you design sprites, animate, and fly to Paris for the weekend...

Unleash the creative potential of your Atari ST or Commodore 64. Among the stunning features you will find at your fingertips: On the 520 *Icon driven Toolbox with all options available on one screen *2 work screens plus separate sprite design grid *High speed draw, shapes, spray, fill, copy, brush and picture manipulation *Sophisticated window routines including mask, stretch, squash, flip, smooth and rotate *All drawing functions are available in magnify mode plus directional scrolling of the magnifying grid in four directions *Extensive sprite design system including choice of sprite size, large on-screen sprite store, auto outline, draw with sprites as brushes and much more *all sprites can be out put as data ready for inclusion in other programs *On screen animation of sprites.

On the 64 *Windows, Icons-pull down menu-pointing devices *Operates in high-res mode. Full control over color attributes* All information on screen *16 pens, 8 random sprays, 16 user definable brushes* Windows can be inverted, cut and pasted, enlarged, reduced, squashed, stretched, flipped and rotated *Solid and texture fill option *Wash texture feature *3 levels of magnification with pan and zoom, pixel clear and plot *Full range of facilities in multi-color mode plus transfer from hi-res to multi-color *Comprehensive edit.



Screen Shot taken from Atari ST.



Screen Shot taken from Atari ST.



Screen Shot taken from Atari ST.

Firebird are running an Advanced Art Studio promotion with Ahoy! Magazine, Atari Explorer Magazine, and Quantumlink. Look in Ahoy!, Atari Explorer or on Quantumlink for details, or clip this coupon and mail it to AAS Competition, Firebird Licensees, Inc. 71 Franklin Turnpike, Waldwick, NJ. 07463 for details.



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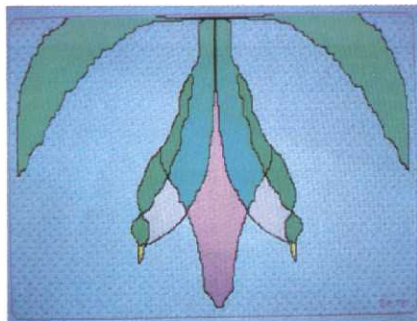
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Age.....

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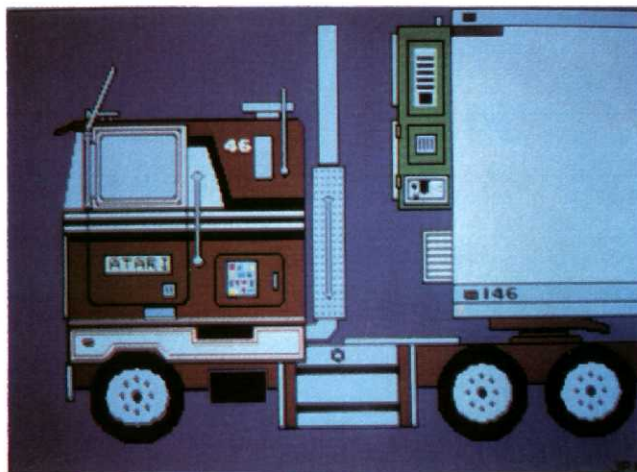
Art Deco Flower (Degas)
by Beth Jane Freeman
of Wantagh, NY.



Day & Night (NeoChrome) by Johnny Masuda of Springfield, VA.



Jimi Hendrix (Degas) by Arthur Rahn, Jr. of Harrisburg, PA.



Truck (NeoChrome) by Joseph Kyle of Fancy Gap, VA.



Fisherman (Degas) by Rogelio Yap, Jr.
of Norwalk, CA.



Bikers (NeoChrome) by Frank Christensen of Graham, WA.



AMX (Degas) by James Duffin of Toronto, ON.



Oriental Scene (Degas) by Geoff White of Concord, MA.

Graphics Gallery

The ten winning images displayed on these two pages were chosen from the more than 60 images submitted in the months of October and November 1987. Of the ten winners, four were done using *NeoChrome* and six using *Degas*, which is roughly the same ratio found in the entire group of entries.

Top prize (a three-year subscription to *Explorer*) in the *Degas* category goes to James Duffin of Toronto for his disk of 21 drawings of military aircraft. It was difficult to choose the best of the 21,

but we finally narrowed our collection of favorites down to a Harrier, Grumman Tomcat, Soviet Tupolev, and the winner, the Aeritalia AMX.

In the *NeoChrome* category, top prize goes to Victor Albino of Woodinville, WA, for his *Jungle Queen* image. All of the other winners whose entries are displayed on these pages will receive one-year subscriptions (or extensions) to *Atari Explorer*.

To enter our ongoing Graphics Gallery contest, submit your image(s) on disk in either *NeoChrome* or *Degas* for-

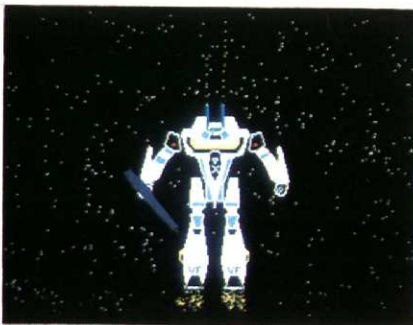
mat. Your disk must be labeled with the format used and your name and address. Also send a self-addressed stamped envelope with 39 cents postage for the return of your disk. We will return your disk with *ten new images* in the format of your choice.

Your entry must include a signed statement as follows: "I certify that the image(s) submitted is (are) my own personal work and that no portion was copied from any image belonging to another person or organization or from copyrighted printed or video material. I give *Atari Explorer* the right to print my image(s) and/or use it (them) in promotional material or computer show displays."

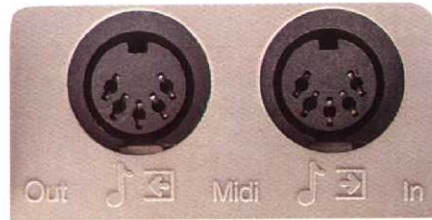
Please allow eight weeks for the return of your disk. If you are a subscriber, please include an address label (or copy) showing all code numbers so that we can extend the correct subscription if you win. ■



Jungle Queen (NeoChrome) by Victor Albino of Woodinville, WA.



Batteloid Robot (Degas) by Miguel Pineiros of Quito, Ecuador.



**THE DIFFERENCE
BETWEEN A COMPUTER THAT
MAKES MUSIC,
AND ONE THAT MAKES TROUBLE.**



Of all the personal computers you can buy to make music, none makes it easier than Atari computers.

That's because, unlike the others, the Atari 512-kilobyte 520ST™, 1-megabyte 1040ST™, and 2- and 4-megabyte MEGA™ computers have more of what you need already built-in.

Here's what we mean.

MIDI. The Key to Electronic Music.

As you may already know, the MIDI interface is the key to electronic music.

If you're unfortunate enough to not be working with an Atari, you'll have to buy an interface separately.

And make sure it's compatible with the rest of your equipment, not to mention your software.

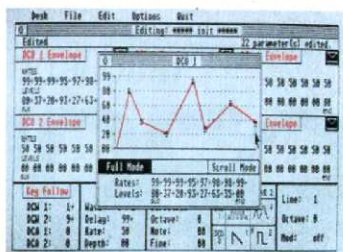
And then you'll have to make sure everything is installed correctly.

What's that like?

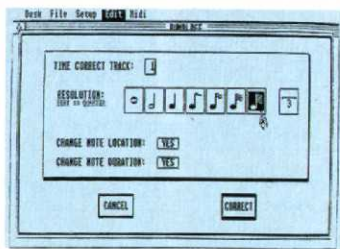
You know the song, "What are you doing for the rest of your life?"

Atari ST™ and MEGA computers, on the other hand, have a MIDI port built right into the back of the computer.

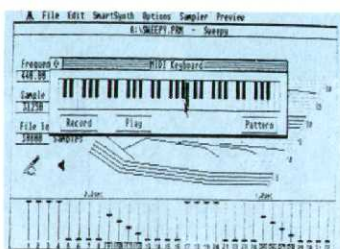
So you can connect all kinds of equipment—synthesizers, samplers, drum machines, SMPTE controllers, pitch-to-MIDI converters—as easily as plugging into an amp.



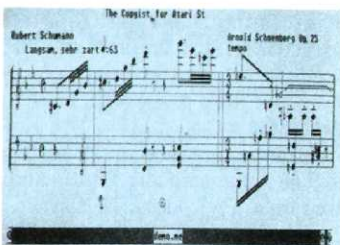
CZ-ANDROID™ Hybrid Arts™



MIDISOFT STUDIO™ Passport™



SOFTSYNTH™ Digidesign



THE COPYIST™ Dr. T's™ Music Software

A Musician's Music Box.

No other computer company has made the commitment to music and musicians the way Atari has.

That commitment, by the way, doesn't end with our hardware.

We're working in harmony with all the major music software houses to produce the software you want to make music with.

And building a distribution network of music dealers—not computer dealers—who know electronic music well enough to help you, no matter how much you know.

This Should be Music to Your Ears.

The Atari ST and MEGA computers are just parts of a full system. So there are lots of things you can add when you're ready.

Like our MEGA File 20™ 20-megabyte hard disk for storing your magnum opus.

And our SLM804™ laser printer for publishing it.

Plus one of the largest libraries of music software in the industry.

But perhaps the nicest thing about an Atari is how little it costs.

With what you save on an Atari, you could buy yourself a synthesizer. And some software.

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Win a Trip to The Louvre!

To demonstrate the capabilities of *The Advanced Art Studio* graphics package, Firebird Licensees in conjunction with *Atari Explorer* is sponsoring a graphics contest in which the first prize winner will receive a fully paid round trip flight to Paris, France, plus hotel accommodations in Paris for four days.

The Advanced Art Studio is a sophisticated yet easy to use graphics package designed by Chris Hinsley specifically for the Atari ST. It offers facilities to design screens, game maps, and animated sprites in a single system. And it uses the same screen format as *NeoChrome*, so pictures can be exchanged between the two systems.

The Advanced Art Studio uses an icon-driven toolbox with all options available on one screen. It has two work screens plus a separate sprite design grid. High-speed functions are available to draw shapes, fill areas, spray, copy, and manipulate images. Window routines include mask, stretch, squash, flip, smooth, and rotate. All drawing functions are available in magnify mode, which offers the ability to scroll the magnified grid in four directions.

The things that set *Advanced Art Studio* apart from other graphics programs are its unique special features, which include an extensive sprite design system with choice of sprite size, large on-screen sprite store, and auto outline. Sprites can also be used as brushes. In addition, sprites add a powerful animation facility; animation can be performed at any speed by calling a sequence of sprites as well as by the

traditional color cycling method.

Contest judges will be looking for entries that are both aesthetically pleasing and interesting, and that take advantage of the unique features of *The Advanced Art Studio*.

Contest Rules

1. Graphic images must be created with *The Advanced Art Studio* and submitted on a 3½" Atari ST disk.
2. Entries must be postmarked by

**Firebird offers a trip to Paris
for the best**

Advanced Art Studio graphic

June 1, 1988. Neither Firebird nor *Atari Explorer* can take responsibility for entries lost or damaged, however caused.

3. Entries should be submitted to Firebird Licensees, Inc., Attn: Graphics Contest, 71 Franklin Tpk., Waldwick, NJ 07463.

4. Winning entries will be chosen based on creativity, originality, and skill. The decisions of the judges are final. Judges include David Ahl and Peter Kelley of *Atari Explorer*, Tom Benford of Benford Communications, and two representatives of Firebird Licensees.

5. Entrants may not be employees of Firebird Licensees, Inc., Atari Corp., or

subsidiaries, affiliates, or agencies of either company.

6. All entries become the property of Firebird Licensees, Inc. including intellectual property rights and world-wide publishing rights. Firebird will not undertake to sell any entry for commercial gain.

7. All entries must include the following signed and dated statement: "The enclosed entry is my own work. I hold the rights to it and its use and guarantee that I have not infringed any copyrights. I am legally entitled to pass on the rights for the use of my entry to Firebird Licensees, Inc."

"I am not an employee of Firebird Licensees, Atari Corp., or any subsidiary, affiliate, or agency of either company."

8. First prize is a round-trip flight to Paris, France, plus four days hotel accommodation for one. Awarding of the prize is contingent on the winner's ability to obtain the required visa and any other necessary documentation. No cash equivalent prize is offered unless the winner is under the age of 18 and is unable to travel alone or arrange for an adult traveling companion.

9. Second through fifteenth prizes are Firebird software packages.

10. Winning entries will be published in the September/October 1988 issue of *Atari Explorer*.

12. The contest is open to residents of the United States and Canada. No purchase is necessary. Void where prohibited.

So rev up your ST, get those creative juices flowing, and start painting! ■

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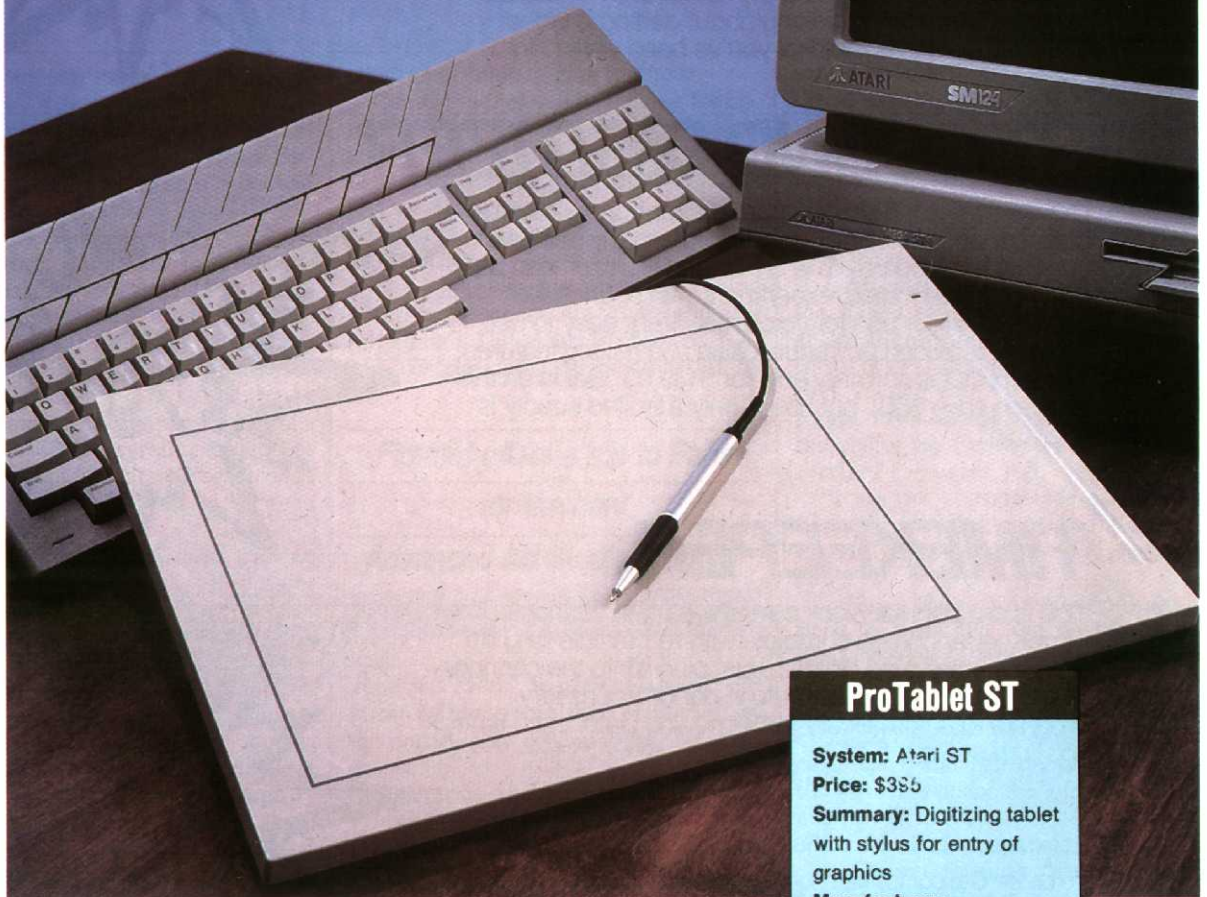


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ProTablet ST

System: Atari ST

Price: \$385

Summary: Digitizing tablet with stylus for entry of graphics

Manufacturer:

Quantum Microsystems
P.O. Box 179
Liverpool, NY 13088
(315) 451-7747

Using ProTablet, I found I could sketch a cartoon in a half hour or so compared to two hours or more to do a comparable drawing using the mouse.

By David H. Ahl

ProTablet ST

ProTablet ST is a digitizing tablet for the Atari ST that uses an electronic stylus instead of a mouse for data entry. While, theoretically, the stylus can be used in place of the mouse for all operations, in practice, it is most useful for entering graphic information.

ProTablet ST consists of both hardware (an electrostatic tablet and electronic stylus) and software (programs that let the ST recognize input from the tablet).

The Hardware

The tablet is actually the Grafnet Model 01, a proven performer in the PC world, made by Mitsubishi Corp. Measuring 11" x 17" x 1", it has an active entry area of 8.25" x 11.8" (210mm x 300mm, the size of a standard European A4 sheet).

Resolution is 0.1mm, although in practice, the computer cannot record anything like the resolution that the tablet can produce. In other words, in the horizontal dimension, the tablet is able to define 3000 points, whereas in low resolution (used by *NeoChrome*, *Degas*, *Easy-Draw*, and *Art Studio*), the ST has a horizontal screen width of only 320 pixels. Even in monochrome high resolution, the screen width is only 640 pixels, or about one sixth that of the tablet.

The tablet comes with an external 12-volt dc power supply with a long 6-foot cable. A shorter 4.5-foot cable terminates in a female DB-25 connector that plugs into the RS-232 (modem) port of the ST. A third cable connects the electronic stylus to the tablet. The tablet uses electrostatic (not magnetic) coupling, so it is not dangerous to floppy disks; nor is it sensitive to metal objects or RF interference.

A DIP switch on the bottom left of the tablet allows you to set the transmission speed (1200 to 9600 baud), parity, scaling (inches or millimeters), data read speed (5 points/sec to 60 points/sec), and operating mode. Pressing the stylus down is equivalent to pressing the left mouse button, so for consistency



Figure 1. Pirate drawing by David Ahl.

Digitizing tablet from QMI

makes graphics entry a breeze



Figure 3. Making a collage with both traced and sketched elements is easy with ProTablet ST.

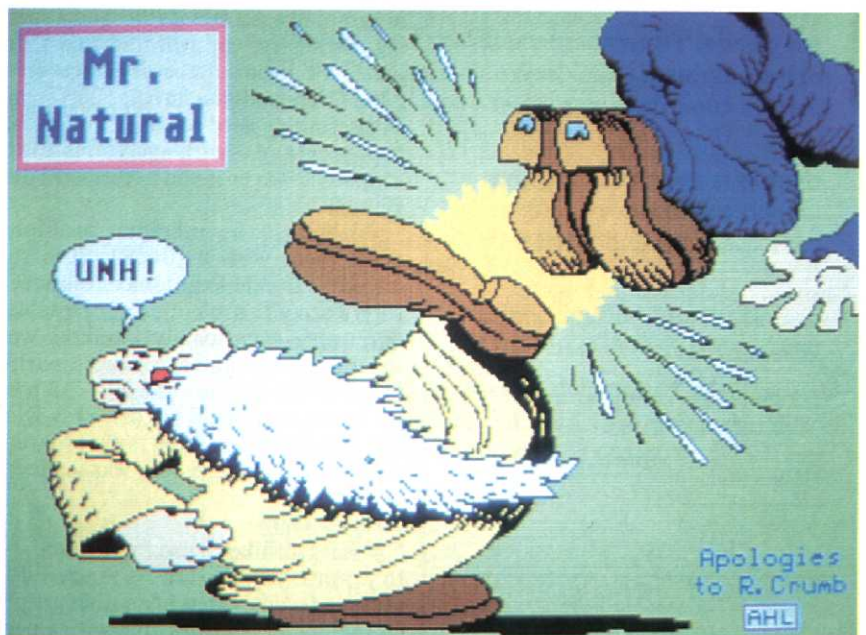


Figure 2. Tracing of Mr. Natural from a comic book cover, © R. Crumb, 1970.

PRODUCT REVIEW

with mouse operation, Mode 4 should be used. In this mode, the location of the stylus always shows on the screen (like the mouse arrow) but data is recorded only when the stylus is pressed down. For the most part, you will want to leave the DIP switch as it is set when the tablet is shipped (9600 baud, 30 points/sec, and operation Mode 4).

The stylus must be pressed down fairly firmly to keep the internal switch on. Frankly, I found this necessity to press on the stylus slightly annoying and wondered why the pen could not be equipped with an external on/off button along with the stylus pressure switch. That way, you could use whichever you found most comfortable.

Trial and error became my main guides as I learned how to use the tablet.

As the tablet is sensitive to the stylus to only 0.5mm (about $1/50$ ") above the surface, you cannot have many sheets of paper or pages of a book between the stylus and tablet surface; a single sheet works best.

Use of the mouse or tablet/stylus is an either/or operation—only one is active at a time. To switch between them, you must press the Alternate, Shift, and Control keys together. I would have preferred both the mouse and tablet to be active simultaneously, as some operations seem more appropriate for to the mouse and some for the stylus.

Moreover, you may well want to use a drawing scale that places some screen menu items out of the active range of the stylus, in which case you will find yourself wearing out the Alternate/Shift/Control keys as you toggle between mouse and stylus.

The Software

The software consists of a desk accessory—actually three programs—which must be copied to your boot floppy or hard disk. Once installed, you will find QMI Tablet on the Desk menu.

The three tablet programs use 20,390 bytes of memory which, in a 512K computer, doesn't seem excessive. However, if you leave them loaded—which you would naturally do if you have a hard disk—and load in a memory-hungry program like *1st Word Plus* and a spelling dictionary, you will find that there just isn't room for everything on a 520ST. Thus, if you have a 520ST, you will definitely need separate floppy disk boot programs—with and without ProTablet ST—even if you have a hard disk system.

Although the memory problems don't occur with a 1040ST, it is still advisable to delete the tablet desk accessory when you are not using the tablet, because it occasionally interferes with other programs and accessories, particularly those that use the RS-232 port. For example, I could not drive my Diablo serial printer from any program while the tablet accessory was loaded.

Using the Tablet

What is it like to use ProTablet ST? In a word, sensational! As Andy Eddy said in a recent review of another graphics tablet, "it's like drawing with a pencil versus drawing with a brick." Using ProTablet, I found I could sketch a cartoon (like the pirate in Figure 1) in a half hour or so compared to two hours or

more to do a comparable drawing using the mouse. Tracing drawings is even faster (see Figure 2—apologies to Robert Crumb).

You might note that the drawing in Figure 2 is a bit out of proportion. That happened because I used the same scaling parameter for the x and y dimensions. Makes sense, right? Wrong. Until I figured out my own system, scaling was the most difficult part of doing a drawing. The documentation was totally useless, offering only one sentence about scaling: "The x Scale and y Scale are used to divide tablet coordinates (250 units per inch) into the ST's screen coordinates."

In the Tablet accessory program, you must set four parameters, x and y scale and x and y offset (distance of the origin of your drawing from the physical lower left corner of the tablet). The screen dimensions of a low-resolution ST screen—as used in most drawing packages—is 320 × 200 pixels (physically, 8.4" × 6.2" on a color monitor). After much experimentation, I found that if you want to fill the screen and retain the correct proportions, you must multiply the width of the drawing in inches by 8.0 and the height by 12.5 to get the x and y scale parameters. How this relates to the single sentence in the documentation is anybody's guess.

Actually, the documentation is by far the worst part of ProTablet. The tablet itself comes with a 15-page booklet in English, German, and French furnished by Mitsubishi. Other than telling you how to set the DIP switch, it serves no purpose. The two-page READ.ME file on the disk is equally abysmal, although it does describe the rudiments of tablet operation.

Trial and error became my main guides as I learned how to use the tablet, and I soon developed my own chart of physical drawing widths and heights and their corresponding scale entries.

Nevertheless, despite the poor documentation and the problem of switching back and forth between stylus and mouse, the ProTablet is a fabulous graphics entry tool that is an absolute godsend for those interested in serious graphics work. For freehand drawing and transferring existing artwork on paper to the electronic medium, and for sprucing up those ubiquitous clip art drawings for desktop publishing, you just can't beat a graphics tablet. Once you try ProTablet ST, you will never be satisfied with mouse-drawing again. ■

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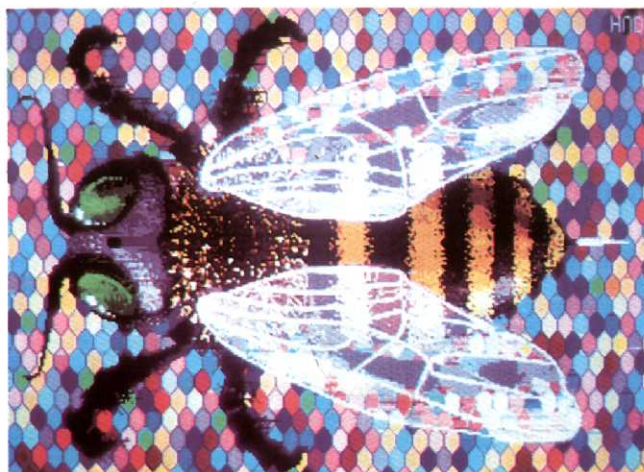
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Spectrum 512 Breaks the Color Barrier

A graphic breakthrough—allows 512 simultaneous colors on the ST



The graphics power of the Atari ST is formidable, and its multi-color capability has always been a large part of that power. Yet that capability itself has remained a constraint. The limit has been that of 16 simultaneous colors from a palette of 512. Lots of colors to choose from, but only a couple of handfuls to pick for any single screen.

All that has changed with the advent of *Spectrum 512*, from Antic Software. *Spectrum 512* is a paint program with a very big difference: it allows up to 48 colors per scan line, and all 512 colors the Atari ST is capable of creating can appear on the screen simultaneously. In addition, the program offers related features never before possible with 16-color paint programs. These include anti-aliasing, which smoothes jaggies in diagonal lines; automatic creation of smooth color ranges between any two colors; and composite multiple pictures, all of which retain their original palettes, on the same screen.

Seeing is Perceiving

Perception is a tricky topic. Resolution and color are closely related, at least as far as your eye is concerned; with 512 colors, perceived resolution of even the ST low-resolution mode is increased threefold. The availability of such a large palette also allows complex, subtle shading—something which can only be hinted at with 16 colors.

Through software alone, *Spectrum*

512 can provide capabilities comparable to the hold-and-modify mode of the Amiga computer (which is hardware generated). This is a solid breakthrough and one that ST graphics fans will not long care to be without.

Spectrum requires a good size chunk of RAM in which to accomplish this magic; the documentation recommends that you pull the desk accessories off your system disk if you are operating with a 520ST. Another peculiarity of *Spectrum* is that it requires the chips in your ST to be properly "synchronized." A program in the AUTO file of the *Spectrum 512* disk will check the sync of your machine, displaying vertical red lines if it checks out. If it does not, you are instructed to power down for at least 15 seconds, then reboot your system. Apparently there is a random aspect to this process, but sooner or later you will be in sync. And so you will remain until the next time you power down.

One other thing you need to know before booting the program: machines built before December 1985 require an MMU graphics chip upgrade (about \$30) to run *Spectrum 512*.

Spectrum allows you to boot it from low or medium res, but *Spectrum* format pictures themselves are always in low-res format. Once the program is loaded, you see a drop-down menu very similar to those you see in many other

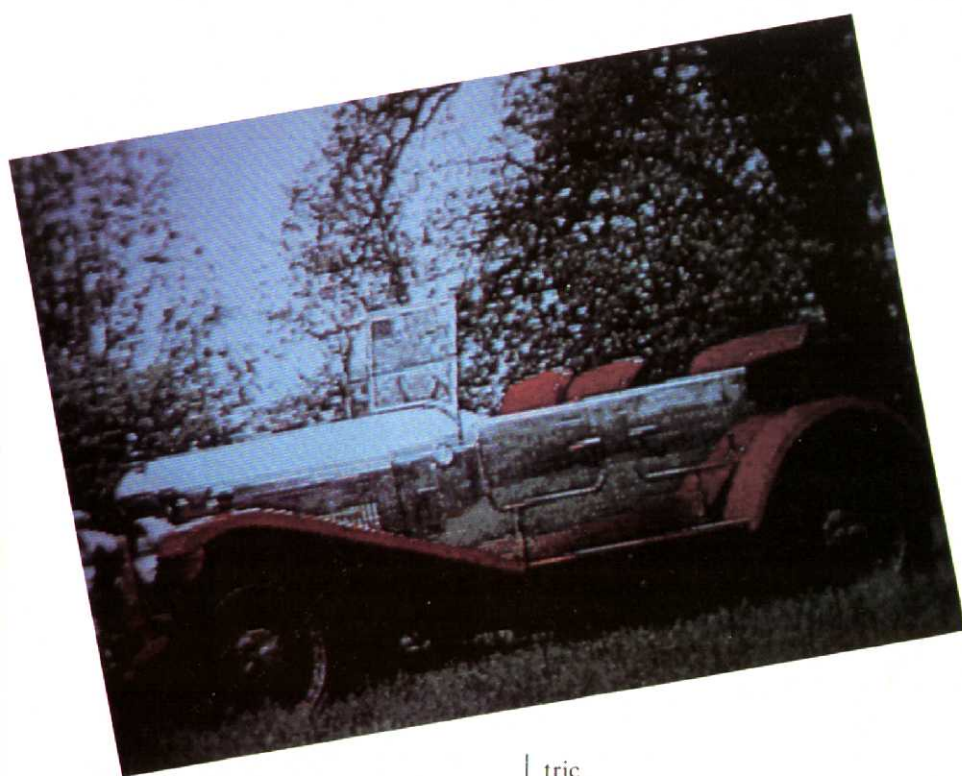


paint programs. You will recognize icons for drawing, brushes, polygons, circles and ellipses, eraser, fill, pattern fill, magnify, and airbrush, all reminiscent of others with which you may already be familiar.

High Power, Low Grace

But there the similarity ends. *Spectrum* sports many unique features, and it takes a bit of real patience to learn to use the product effectively. The user interface is, well, a bit awkward, both in the way it unfolds and in the extensive use of left vs. right mouse button clicks. You may find yourself getting into new modes without knowing quite why or unable to extricate yourself from a mode the same way you got in. It is unfortunate, but the odd combination of mouse clicks and key presses that you must learn before you can feel comfortable with *Spectrum 512* is quite eccen-

By JOHN J. ANDERSON



Spectrum 512

System: Atari ST

Required equipment: Color monitor

Version reviewed: 1.0

Copy protection: No

Summary: A graphic breakthrough for the ST.

List price: \$69.95

Manufacturer:

Antic Software

544 Second St.

San Francisco, CA 94107

(415) 957-0886



EASE OF USE



PERFORMANCE



ERROR HANDLING



DOCUMENTATION

tric.

On the bright side, they are very much worth learning, because *Spectrum 512* has some unique and very powerful features. Among them are the following: The aforementioned anti-aliasing, the buffer, gradient fill, and no zag.

Anti-alias is a picture enhancing tool. The reason that computer pictures have jagged diagonals and chunky circles is that low-resolution diagonal lines create a "stairstep" effect known as *aliasing* (for years we have called these "the jaggies"). One way to smooth the appearance of these chunky lines is by shading them with darker pixels of the same color—and *Spectrum 512* will do this automatically.

The program features three different functions, each of which produces a different result: the anti-aliaser, the blurrer, and the contraster. These effects can be set to various "breadths" and can be applied to all or part of any screen.

The anti-aliaser is designed to smooth only the "stairstep jaggies" of diagonal lines and color boundaries. The blurrer softens all the lines and boundaries, regardless of where or how they appear. The contraster increases the definition between color areas by comparing adjacent pixels and then brightening the lighter ones and dimming the darker ones.

The buffer is an area of memory set aside to store pictures or selected blocks

from pictures. It can store up to 12 full pictures on a 1040ST or two full pictures on a 520. The buffer is one continuous chunk of memory which represents a "virtual canvas." You can scroll through the buffer by holding down the right mouse button and moving the cursor up and down. This creates a very neat film strip effect, the practical applications of which escape me just now. But it's great to play with.

After defining a specific area on the screen, and entering two or more initial colors into that area from a custom palette, gradient fill automatically fills a smooth range of colors between them. This is an exceptionally powerful feature and a useful one for creating extremely subtle effects heretofore impossible on an ST. Seamless shading from dark to light is something ST owners have had to envy for a long time. Now this feature is finally at their fingertips.

The no zag function affects lines, polygons, and circles/ellipses. When active, no zag pulls jaggies right off the screen. No zag also smoothes sharp angles into graceful French curves. When

***Spectrum* sports many unique features, and it takes a bit of real patience to learn to use the product effectively.**

you witness the results of this feature, you will be hard-pressed to believe you are in low-res (320 X 200) pixel mode. Curves become silky smooth, and all evidence of jaggies vanishes entirely. An allied function rectifies fills with no-zagged lines.

Powerful Palettes

A color matrix, available at all times from within the program, gives you access to all 512 available colors. You can also match colors by clicking on them in any specific picture. The color matrix itself can be clicked-and-dragged so you can see whichever part of a picture you need to see at the same time.

But *Spectrum* does not stop at this master palette. The documentation states, "Although a painter may have hundreds of tubes of paint in the studio, only a few are on the palette at a time." Well put. And *Spectrum* offers three

hybrid palettes to help the ST artist: Floating, Fixed, and Custom palettes.

The Floating palette automatically provides 26 shades of any color you select. This is indispensable in creating shaded objects.

In the Fixed palette, the starting color and the shading area do not change—just the active color. The shaded areas remain fixed. While the shading area behaves differently in the floating and fixed palettes, the Blending area works the same in both. You give it two colors, and it automatically produces all the color blends between them.

You can define up to 196 colors for inclusion in a Custom palette. To do this, you make use of a special version of the color matrix, known as the Palette Editor.

So, through use of multiple palettes, you can choose the one that best helps you through the task at hand—then you can move on to another palette better-suited to the next task. Though learning how they work is one of the real challenges of *Spectrum 512*, these palettes are a very powerful feature of the program.

You can define up to 196 colors for inclusion in a Custom palette.

Loading and Saving Files

In addition to its own 512-color picture format, *Spectrum 512* can load *NeoChrome* pictures; *Degas* or *Degas Elite* low-res pictures, either normal or compressed; and .IFF format pictures. The .IFF option is included primarily to load Amiga low-res or HAM (hold-and-modify) pictures. These pictures must be no larger than 50K and must have the extension .IFF.

When you load an .IFF picture, an alert box appears and asks you to choose Dithering: On or Off. This is designed for loading Amiga HAM pictures which may originally have used as many as 4096 colors. The *Spectrum* dithering algorithm blends adjacent color pixels to effectively simulate more than 3000

colors on the Atari screen.

The program can save files in compressed or uncompressed Spectrum formats. Uncompressed files require over 51K of disk space. Compressed files can vary from 20K to 50K depending on the complexity of the picture. An extension (.SPU for uncompressed files and .SPC for compressed files) is automatically appended when a file is saved.

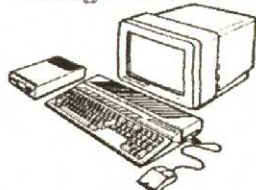
The Bottom Line

Spectrum 512 is not copy-protected, and it lists for \$69.95—an extremely reasonable price, considering that the program brings an entirely new graphic facet to your ST. The documentation accompanying the package leaves a lot to be desired, but it does cover the most important features of the program.

Also, *Spectrum 512* is designed to work with Antic's *Cyber Studio* and *CAD-3D* packages. At press time, we were still waiting for promised upgrade software, which will allow the ComputerEyes image capture system from Digital Vision to photodigitize in dithered *Spectrum* mode. We will report on this capability in a future issue. ■



Image Scanner



What Is IMG Scan?

IMG Scan is a simple, inexpensive device which turns your dot matrix printer into an image scanner allowing you to scan any page that can be put into your printer! Keeping in line with Atari's power without the price philosophy, IMG Scan finally makes image scanning simple and affordable. This brings powerful graphic capabilities to desktop publishing, image processing, and graphic art applications on the Atari ST! At \$99.95, the IMG Scan opens doors that were closed by expensive and inferior video digitizers.

This entire brochure was created on an Atari ST using a desktop publishing program and IMG Scan. All images and line drawings were reproduced with IMG Scan, imported into the desktop publishing program, and printed on an Apple Laserwriter. This is how easy IMG Scan is to use.

SEYMOR-RADIX
P.O. Box 166055 Irving Tx 75016 (214)255-7490



Fig 2. This image was scanned from an original cover removed from *Vanity Fair* magazine with IMG Scan and printed on an Apple LaserWriter.

How It Works

The operation of IMG Scan is very straightforward. A small cartridge (approx: 1.6" X 1.9") plugs into the Atari ST's cartridge port and is connected to the printer's head via a thin, flexible image cable. This image cable can be attached most anywhere on the print head using nothing more than a piece of adhesive tape. The user is at option to use any method he may come up with to mount the cable, but is not encumbered by an inflexible mounting bracket. This is one reason that IMG Scan can be made to work on most any printer. With the image cable attached to the print head, the printer is controlled by the IMG Scan driver software. The software can be set for sizing the scanned image among 20 different levels of magnification or reduction. Since 256 gray levels are recorded, and the ST is capable of displaying only 16 colors at a time, the contrast of individual gray level ranges can easily be adjusted and assigned to color palette positions. The image may then be colorized or saved to disk etc.

Applications

IMG Scan is an indispensable tool in desktop publishing. It is very useful in things like adding photographs, charts, clip art, line art, or anything that can be scanned, to newsletters, business cards, letter heads, etc. You could for example, put your own picture on your own letterhead! Also it can be used to create a computerized photo album. Send pictures of family and friends over the phone lines. And of course, IMG Scan is perfect for use with art programs to enhance your art creations.



Fig 1. This image was scanned from a photocopy of a *National Geographic* cover with IMG Scan and printed on an Apple LaserWriter.

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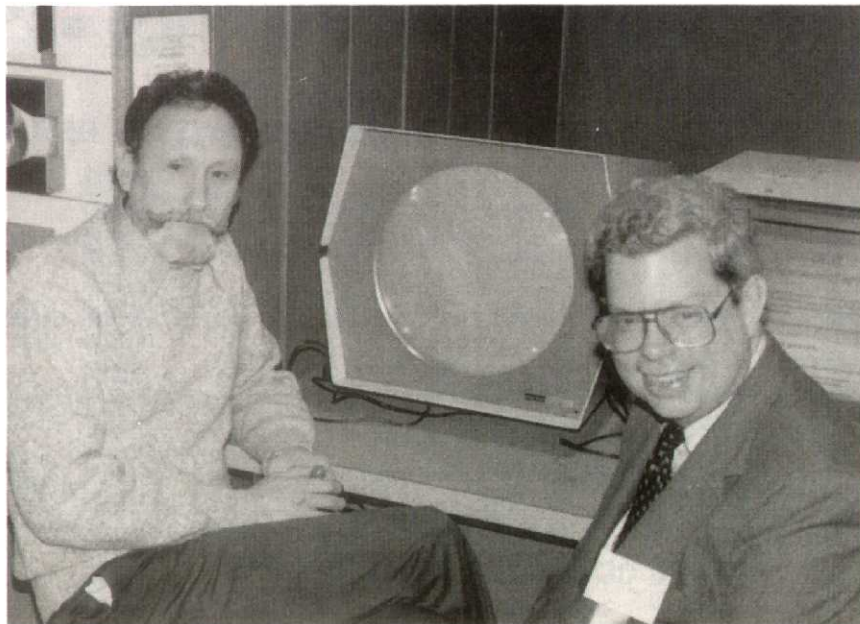
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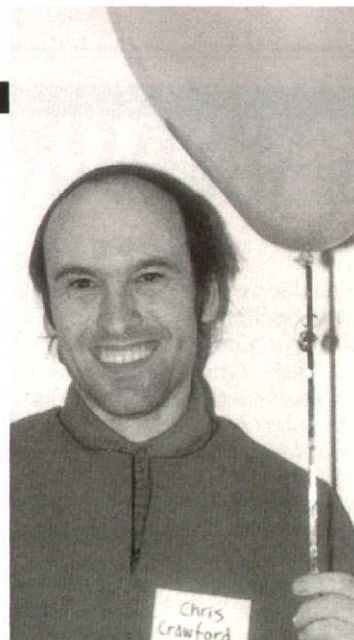
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Shag Graetz (left) and Slug Russell pose with Spacewar, the guest of honor.

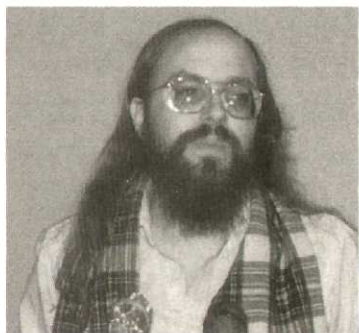


Game Designer Chris Crawford was on hand to participate in a panel discussion.

Happy Birthday Spacewar!



Tom Snyder (left) of Tom Snyder Productions plays an all-too-quick game of Spacewar with his "software buddy," Peter Reynolds.



Ken Arnold, creator of Rogue, tells the Saturday morning audience how the game came into being.

*Computer Museum celebrates
the 25th anniversary
of computer gaming*

Was it Pong? Life? Eliza? Willy Higinbotham's bouncing ball? The debate continues in academic circles, in civil courts, and among dedicated gamers: which was the first real computer game?

While each of the above has its proponents and, to be sure, many points in its favor, most computer historians agree that the progenitor of the interactive games so many of us enjoy today was created in 1962 by three MIT students on a PDP-1.

Using only about 9K of computer memory, Martin "Shag" Graetz, Stephen "Slug" Russell, and Alan Kotok created Spacewar, a two-player game in which the earliest space warriors, controlling tiny rocket ships on a circular CRT screen, tried to obliterate one another while avoiding the gravitational pull of a deadly "heavy star" in the center of the screen.

To commemorate the event that spawned a multi-billion dollar industry, The Computer Museum in Boston held a 25th birthday party last November. The weekend of festivities attracted



Shag Graetz plays a game of Star Raiders, one of the many direct descendants of Spacewar.



Dave Lebling (left), author of Zork, chats with Chris Morgan, former editor of Byte magazine.

By BETSY STAPLES



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CX30	Paddle Controllers	\$11.95
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CX75	Light Pen	\$39.95
CX80	Trak Ball — HCD	\$14.95
CX85	Numeric Keypad	\$24.95

SUPPLIES AND ACCESSORIES

CX87	Modem Cable for 850 Interface — for any modem	\$24.95
CX853	16K RAM Module for 800 Computer	\$19.95
CX82	Black & White Monitor Cable	\$24.95
FC100626	Ink Rollers (NOW AVAILABLE)	\$ 3.95

5 INK ROLLERS for \$10.00

SPECIAL

such notables as Tom Snyder of Tom Snyder Productions; Dave Lebling, creator of *Zork*; Ken Arnold, creator of *Rogue*; Chris Crawford, creator of *Eastern Front*, *Balance of Power*, and other popular games for the Atari; *Atari Explorer* Publisher David Ahl, author of *Basic Computer Games*, the bestselling computer book ever; and, of course, the men who started it all, Graetz, Russell, and Kotok.

The real guest of honor, Spacewar, was running on a PDP-1. Most of those who tried it, including Tom Snyder,

Most computer historians agree that the progenitor of the interactive games so many of us enjoy today was created in 1962 by three MIT students on a PDP-1.

pronounced the relatively simple game quite difficult to play. Games didn't last long for these inexperienced players, and most found that they were able to play about three games of a Spacewar translation that was running on a Macintosh alongside the PDP-1 in the time it took the monster mini to re-set itself.

The entire museum was open to guests, who were free to wander from complete setups of antique hardware like the PDP-1 to demonstrations of voice recognition, robotics, and other leading edge technologies. The thing that impressed us most was a piece of hardware about the size of a Volkswagen Microbus to which was taped a 5 1/4" floppy disk. The explanatory plaque described the Microbus as a data storage device and noted that the floppy was capable of storing more data than that enormous hunk of iron.

The Computer Museum, located on Museum Wharf, is a fascinating place and well worth an afternoon of your time when next you find yourself in Boston.

ATARI ORDER FORM

Mail order form and payment to:

NAME _____ () PHONE _____ **Atari ST, Dept. M9**
 ADDRESS _____ **P.O. Box 61657**
 CITY _____ STATE _____ ZIP _____ **Sunnyvale, CA 94088**

Please allow six to eight weeks for delivery.

PART#	DESCRIPTION	PRICE	QUANTITY	TOTAL

Use blank paper for additional items.

- Check or money order enclosed.
 VISA or MasterCard

Exp. ____ / ____

Signature _____

SUB TOTAL

CALIF. RESIDENTS
 ADD 7%
SALES TAX
 Shipping and handling
 (under \$50, add \$3.50;
 over \$50, add \$5.00;
 over \$100, add \$7.00)

TOTAL \$

No COD's, please
 Outside USA, add \$10 to cover shipping

8-BIT POWER WITHOUT THE PRICE

COMPUTER SOFTWARE — 8-Bit

AX2034	AtariWriter Plus (includes Proofreader)	disk	\$ 49.95
AX2033	Proofreader (for AtariWriter)	disk	\$ 16.95
CX415	Home Filing Manager	disk	\$ 14.95
DX5082	Silent Butler	disk	\$ 24.95
CX418	Home Manager (includes Family Finance and Home Filing Manager)	disk	\$ 24.95

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CXL4018	Pilot Kit	cart	\$39.95
AX2025	Microsoft Basic II	disk/cart	\$29.95
CXL4003	Assembler/Editor	cart	\$24.95
CX8121	Macro Assembler	disk	\$24.95
CX4117	Invitation to Programming III	tape	\$ 7.50
KX7099	BASIC Tutor	tape	\$19.95

(includes Invitation to Programming I & II and two books,
Inside Atari BASIC and Programming Tips and Tricks)

SPELLING, GRAMMAR, AND READING

CX4126	Speed Reading (grade 9—adult)	tape	\$24.95
RX8059	Skywriter (grade 1—6)	cart	\$17.95
AED80002	Spelling in Context/2 (grade 2)	disk	\$ 6.95
AED80003	Spelling in Context/3 (grade 3)	disk	\$ 6.95
AED80004	Spelling in Context/4 (grade 4)	disk	\$ 6.95
AED80005	Spelling in Context/5 (grade 5)	disk	\$ 6.95
AED80006	Spelling in Context/6 (grade 6)	disk	\$ 6.95
AED80007	Spelling in Context/7 (grade 7)	disk	\$ 6.95
AED80008	Spelling in Context/8 (grade 8)	disk	\$ 6.95
AED80054	Prefixes (grade 3—6)	disk	\$ 6.95
AED80069	Word Games (elem)	disk	\$ 6.95
DX5050	Mickey, Great Outdoors (gr. 2—5)	disk	\$ 6.95

MATHEMATICS

The Secret Formula Series teaches mathematical concepts by asking the player to create formulas that will duplicate a series of numbers generated by the computer

Available on disk only

AED80020	Secret Formula—Elementary (grade 4—6)	\$ 6.95
AED80021	Secret Formula—Intermediate (grade 6—8)	\$ 6.95
AED80022	Secret Formula—Advanced (grade 9—12)	\$ 6.95
AED80060	Counting (K—grade 2)	\$ 6.95
AED80055	Metric & Problem Solving (grade 3—7)	\$ 6.95
AED80011	Division Drill (grade 7—9)	\$ 6.95

SCIENCE AND SOCIAL STUDIES

The Atarilab series teaches science through experimentation.

AED80013	Atarilab Starter Kit	cart	\$59.95
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AED80056	The Marketplace (grade 3—8)	disk	\$ 6.95
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CX8107	Stock Analysis (adult)	disk	\$ 9.95
CX8108	Stock Charting (adult)	disk	\$ 9.95

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AX2020	Music I (Theory Lessons)	\$24.95
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COMPATIBLE WITH XE GAME SYSTEM

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CXL4013	Asteroids	cart	\$ 6.95
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CXL4027	Qix	cart	\$ 6.95
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CXL4025	Defender	cart	\$19.95
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RX8044	Joust	cart	\$19.95
RX8048	Millipede	cart	\$19.95
CXL4022	PacMan	cart	\$19.95
RX8045	Pengo	cart	\$19.95
RX8033	Robotron: 2084	cart	\$19.95
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NEW

Cartridge Software for the XE-Game System
and 8-Bit Computers

RX8063	Rescue on Fractalus!	cart	\$22.95
RX8064	Ballblazer	cart	\$22.95
RX8077	Battlezone	cart	\$19.95
RX8078	Star Raiders II	cart	\$19.95
RX8081	Blue Max	cart	\$19.95
RX8082	Lode Runner	cart	\$22.95
RX8083	David's Midnight Magic	cart	\$19.95
RX8084	Hardball	cart	\$22.95
RX8086	Barnyard Blaster	cart	\$22.95

ATARI® XE VIDEO GAME SYSTEM

\$149⁹⁵

INCLUDES: 64K Keyboard (Built in Missile Command)
Light Gun and Joystick
Flight Simulator (Cartridge)
Bug Hunt Game

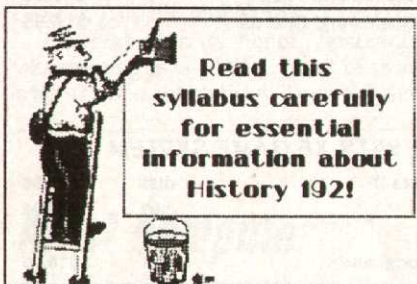
What You Need to Succeed

History 192

C.S.U., Sacramento

Spring 1988

Prof. Kohsky



A word to the wise is sufficient.

Asking for an F

A Note on Plagiarism

Plagiarism means attempting to pass off something written by another person as one's own work. As such, of course, it is a form of cheating that must be treated accordingly.

**A form of cheating
--and sure to make a
bad situation worse.**

Plagiarism offends me, among other reasons, because there is an implicit assumption on the part of the student who engages in it that he will be able to best me in this particular battle of wits. Such a belief is not one that I care to encourage, and I am therefore willing to expend whatever effort is required to demonstrate that it is patently false.

My policy, therefore, has always been to automatically reward stu-

dents who plagiarize with a course grade of F, with no further discussion of the matter whatsoever.

I trust that the point I am seeking to make is by now clear: no matter how desperate your situation may seem, plagiarism in any class that I happen to teach is guaranteed to make it worse.

The best way to protect yourself against the charge of plagiarism is to make sure that you always: (1) express yourself entirely in your own words except when quoting; and (2) cite a source each time you make use of material from it, whether by paraphrase or direct quotation.

Plagiarism is inconsistent with the intellectual honesty that a university is supposed to represent. If you have any doubts whatsoever about whether you may have committed an act of plagiarism, please consult with me before submitting the work in question.

Interpreting The Cold War

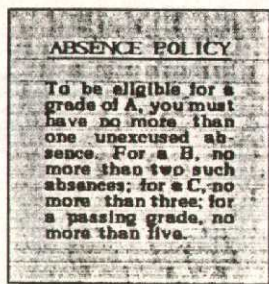
*How Did Conflict Begin,
What Perpetuates It?*

The purpose of this course is to familiarize students with recent interpretations of U.S. History. This semester, the course will focus primarily on the period since 1945, with particular attention to the Cold War and arms race between the U.S. and the U.S.S.R.

As a student in History 192, you will read six books—one from each of the groups listed below—and write a paper of four to six (type-written, double-spaced) pages. The purpose of each paper is to set forth and analyze the historical interpretation advanced by the author(s).

It follows, therefore, that, in order to do well in this course,

Continued on p. 2



This newspaper-style syllabus is the finished product of the process described in the accompanying review of *Fleet Street Publisher*.

Fleet Street Publisher

A hands-on look at a moderately priced desktop publishing

package from Spectrum Holobyte

By FRANK KOFSKY

I am, I confess, something of a reformed skeptic on the subject of desktop publishing on the Atari ST. I recognize the enormous potential of desktop publishing, but I was disappointed by early versions of both *Publishing Partner* and *Fleet Street Publisher*.

As I thought about preparing this review of *Fleet Street Publisher*, I decided that it was important to offer you a clear idea of what it is like to use the program. I decided, therefore, to take you step-by-step through the process of constructing a printed page, explaining the nature of each procedure and discussing difficulties as they occurred.

The first question was: what kind of page? As I am constantly in need of new course outlines for my students, it didn't take long to decide on a syllabus as the type of document.

Next came the matter of format. Having worked on and for too many newspapers to bother recounting, this choice, too, was an easy one. The final product would be a syllabus page in the form of a newspaper.

Introducing WYWIYG

As I said, I am a bit skeptical about desktop publishing. This skepticism springs from two considerations, both of which should be addressed before going any further.

By now, any schoolchild can tell you that WYSIWYG ("whiz-ee-wig") stands for "what you see is what you get." No software that I know of achieves perfection in presenting on a monitor screen the appearance your copy will possess when printed. But even if it did, what is more important, to my way of thinking, is the question of whether the software is such that WYWIYG ("why-we-wig")—"what you want is what you get."

The difference is elementary. Even if what is on the screen should be a completely accurate rendition of what will emerge from your printer, if it isn't what you want, what good does it do you to see it displayed with total fidelity?

A crude but telling example: some of the numerals in the *Fleet Street* 60-point Medieval Bold font carry with them annoying black specks that I was unable to eliminate (see the number 192 in the logo of the page shown in the title illustration). Believe me, I derived absolutely no satisfaction from having these

bits of debris faithfully reproduced on the monitor screen when what I wanted was to be rid of the damn things entirely!

The second point is of a different nature: even supposing that your software behaves just as it should and WYWI-WYG, does it follow that desktop publishing is the answer to your every prayer? Each person, of course, has to answer this question for himself.

But, being an only partially reformed skeptic, perhaps I will be forgiven for suggesting that the response may sometimes be in the negative. You can, to be sure, whip up some stunning pages with desktop publishing software—but at what cost in time and energy?

In the long run, you might be better off simply taking your copy and layout ideas to a first-class printing establishment and letting the shop personnel do the hard work of translating your wishes into reality.

In theory, all of us are capable of repairing our own automobiles and fixing our own plumbing; but in practice, we generally prefer to hire experts for these tasks and reserve our time for other purposes. Why should it be different with putting out a publication? If such thoughts be heresy, make the most of it.

Getting Down to Business

These ruminations disposed of, let us proceed to the business at hand. The first thing you do in *Fleet Street*, following the usual preliminaries, is to select the New Page entry from the Options menu. This calls up a box that permits you to set the dimensions, margins, and gutters (spaces between columns) of the page you want to create by either using pre-determined values or creating your own.

The page corresponding to U.S. Letter, for example, measures 8½" by 11", comes with ½" left, right, and bottom margins and a top margin of 1". Once you have inserted the number of columns you want in the appropriate space, the program calculates the gutters and, if necessary, recalculates the side margins.

After some deliberation, I decided to set up my pages on the basis of six pseudo-columns, which would allow me to have a printed page with either two real columns (each one comprised of three pseudo-columns), three columns (two pseudo-columns each), or a combination of the two.

After confirming your entries, the program puts a blank page on the

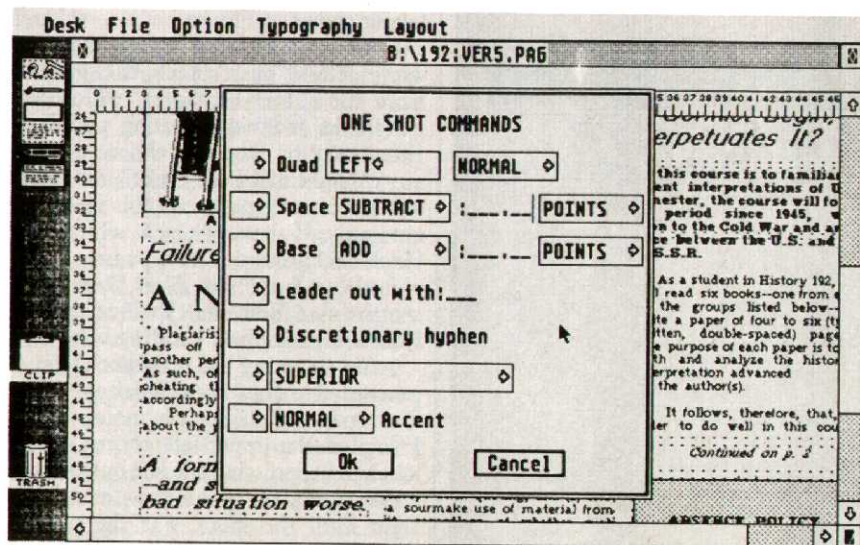


Figure 1. The One Shot option allows you to make one-time changes in justification, character spacing (kerning), and other type specifications. Note the toolbox at the far left and the rulers in pica units at the top and left of the page.

Fleet Street Publisher

System: Atari ST

Required equipment: Two disk drives and/or hard disk recommended.

Version: Beta 1.1

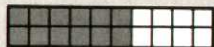
Copy protection: No

List price: \$149.95

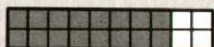
Summary: Moderately powerful desktop publishing software; moderately convenient to use.

Manufacturer:

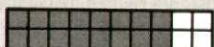
Spectrum Holobyte
2061 Challenger Dr.
Alameda, CA 94501
(415) 522-3584



EASE OF USE



PERFORMANCE



ERROR HANDLING



DOCUMENTATION

screen, with dotted lines indicating the columnar arrangement you have selected. These lines, however, are merely guides; before putting either text or pictures onto the page, you must first create a *block* of the corresponding kind on the page.

In the toolbox, which sits at the far left of the screen, (see Figure 1) you find a cluster of six icons at the top, an icon labeled CLIP that is obviously meant to represent a clipboard well below them, and the familiar trashcan icon at the bottom.

The topmost icon allows you to work with—generate, move, resize, rescale, and discard—picture blocks. The second one permits editing of a picture, albeit crudely, on a pixel-by-pixel basis. Next comes the icon for creating and manipulating boxes—and also, rather inconveniently, vertical, and horizontal rules.

Under the box-rule icon lie the two text-related icons, the first of which controls operations with text blocks, while the second enables text-editing features. Finally comes the overflow icon, which is highlighted when a given text block is not large enough to hold all of the material you have tried to place in it at the current type size and face.

Starting at the Top

I thought, initially, that I would compose a syllabus for my lower-division survey of U.S. history, History 17B. I changed my mind as I went along, but retained the essentials of the first-page

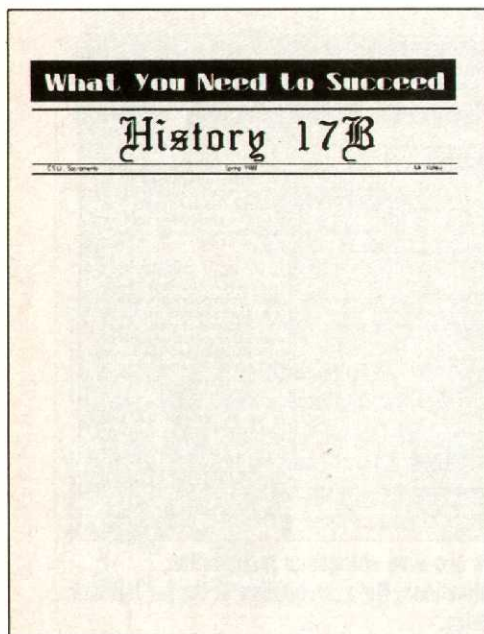


Figure 2.

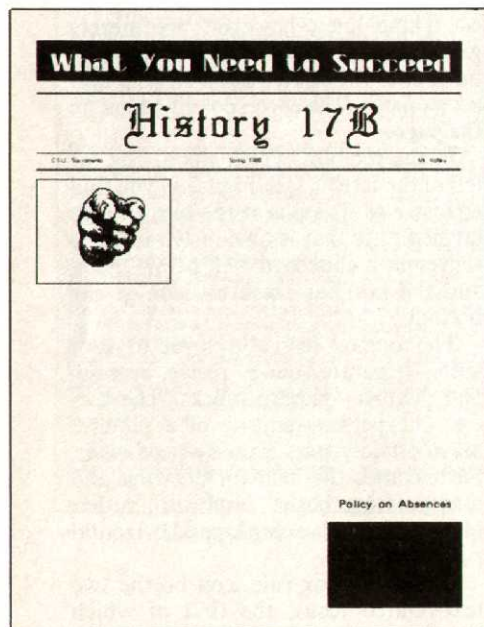


Figure 3.

layout shown in Figure 2.

I borrowed the idea for writing with white letters on a black background from the tutorial chapter, which explains the technique. Using the Text Effects option, you can choose type in any of eight different "inks" and eight different backgrounds; in this instance, obviously, I have chosen white ink, black background. The type face is 30-point West End Bold, *Fleet Street's* attractive Art Nouveau typeface, chosen from the Face, Size, Leading box.

After selecting the text-block icon, I proceeded to draw a text block at the top of the page by placing the mouse where I wanted the upper-left corner of the block to be, pressing the left button key, and dragging the mouse down and to the right until the block was the correct size, then using the dotted guidelines to position it exactly.

If I had needed to do so, I could also have gone into the 200% magnification mode (a process that consumes considerable time as the program redraws the screen) to make certain that the block was placed on the page correctly.

Alternatively, I could have gone into the Layout menu and selected Current Text Block. This would have produced a box on the screen, telling me the x- and y-coordinates of the upper-left corner of the block, its height and its length. To alter any of these properties of the block—to move it, to resize it, or both—I would merely have to type in new coordinates or dimensions.

To assist me in this procedure, I might first have selected Rulers from the Options menu to have rulers—in inches, centimeters, or picas (which are not normally used to express vertical measure)—displayed along the top and left margins of my page.

To increase the height of the black background while leaving the height of the text unchanged, I altered the *leading* (the amount of space left above and below a line of type) of this one line. *Fleet Street* sets the default value of this variable at 75% above, 25% below. Following the suggestion in the tutorial, I increased the values to 125% above, 50% below the baseline to achieve the effect I wanted.

In the Beginning: Logos

Next came the logo—in this instance, the number of the course. To give the page the look of a metropolitan daily, I selected 60-point Medieval Bold. I centered it horizontally and drew a long, narrow text block to contain the addi-

tional information about the course.

Positioning the text where I wanted it proved to be less than straightforward, because *Fleet Street* is quirky when it comes to entering text directly. For example, backspacing between Spring 1988 and Mr. Kofsky caused the former to change position. Although it is difficult to draw and work with small text blocks, it might have been easier to create three such blocks and position them individually, using the Current Text Block menu item to align them vertically.

Generating the three horizontal lines, or *rules*, shown in Figure 2 revealed one of the major—and truly inexplicable—inconveniences of this program. The essence of the procedure is to click on the box-rule icon in the toolbox, attempt to draw freehand the ruler you wish to insert, select the Box Rule entry from the Layout menu, then use a dialog box to set the height or the *measure* (width) of the box equal to the *weight* (thickness) of the line. In other words, you draw a two-dimensional box and collapse it to a one-dimensional line.

Down and Down We Go

Once the top of my page was more or less to my liking, I proceeded to consider the remainder. The first page of most newspapers is laid out with the main story at the right edge of the page, directly under the logo. Pictures, boxes and other attention-getting typographical features are then used to provide points of secondary interest.

Experience with desktop publishing software has taught me that it is generally wiser to position these pictures and boxes on the page before adding the text, for the simple reason that it is easier to manipulate text so that it flows around a picture than the reverse. Accordingly, I decided to add a picture at the left edge to balance the lead story and a box at the bottom right to balance the picture.

Figure 3 shows my first attempt at implementing this concept. I started with a drawing of a pointing finger that I lifted from *Printmaster Plus*, converted to *Degas* format via *PM Interface*, and finally ran through the *Fleet Street* art-conversion program to get it into the IMG format that the program requires.

To add the image to my page, I selected the picture-block icon from the toolbox and drew a picture block the upper-left corner of which lay along the left edge of the left column. In theory, the exact size and shape of the block was

unimportant, because the program always redraws the block to conform to the dimensions of the picture. In practice, however, for reasons I will come to, it is best to make certain (by using the column guides) that the picture block is exactly as wide as the space you want it to occupy.

These preliminaries attended to, I went to the File menu and selected the option to Merge Picture, then manipulated the file box until I could select the image I wanted from the data disk in my external disk drive.

Once a picture is in place, you have several options: You can use the mouse to drag it elsewhere on the page. You can change the size of the picture by dragging any of its four sides. You can

Boxed In

In accordance with the typographic principle of using a serif face for text (serifs are "tails" on the letters that ostensibly make for better continuity in reading) and a sans serif face for headlines (the absence of tails is said to give the large letters greater clarity), the lines in the shaded box at the bottom-right corner of the page are set in 12-point Serif Bold, the headline, in 14-point Sans Serif Bold. The shade of grey with which I filled the box is evidently much too dark.

The appearance of the box is substantially improved in the third version of this page (Figure 4), owing to a lighter shade of grey, a smaller type size, and a 2-point rule at the top of the box. Note

Fleet Street makes it easy to produce documents made up of a series of single pages; it is correspondingly difficult to create a multi-page document in which text and pictures run from one page to another.

move, resize, or rescale it (resizing changes the dimensions of the picture block while leaving those of the image unaltered; rescaling changes the dimensions of the image itself). Or you can begin editing the picture one pixel at a time (an operation best conducted at 200% magnification).

For my purposes, it sufficed to crop the picture so that it was one column wide, with the hand roughly in the center of the column. When I had the hand where I wanted it, I placed a 1-point box around it.

Editor's note: In our use of Fleet Street, we attempted to crop a graphics image, part of which fell off the page. This took many tries and was nearly impossible to do accurately. We also tried rotating an image a few degrees for a better effect. Unfortunately, you get only one chance to do this, because picture data is lost on each rotation. By the second or third rotation, the image becomes badly mutilated.

We also found that grabbing very small objects with the mouse required the patience of Job and the dexterity of a neurosurgeon.

also that the banner across the top of the page has been italicized. The idea of using a grey background for the line beneath the logo was not one of my better ones.

For reasons with which I will not bore you, History 17B gave way to History 184 by the time I came to version four (Figure 5), and the one-column picture in the former was replaced by a much larger one (taken from the quite useful graphics library provided on one of the *Fleet Street* disks).

In placing the picture on the page, I first drew a picture block that began at the left edge and extended to the exact middle of the page, then used the box called up by selecting Current Picture Block to learn the width of this block. After merging the picture onto the page, I repeated the procedure to find actual height and width of the picture, calculated the ratio between them, and used this ratio and the width of the picture block before merging to determine the height the picture would have after rescaling. Last, I entered this information into the picture-block information box, and clicked on Rescale. After a

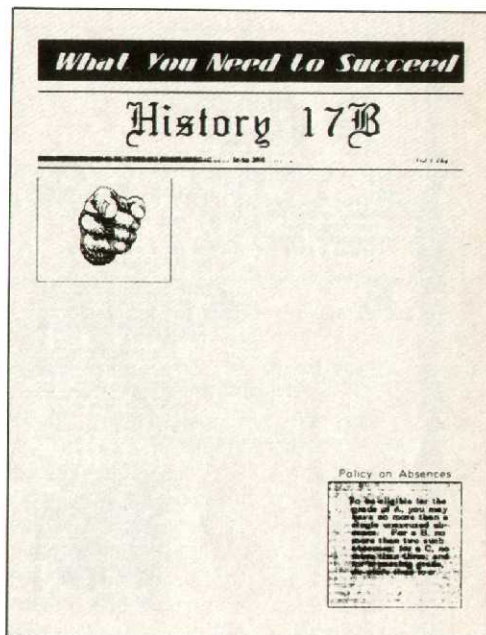


Figure 4.

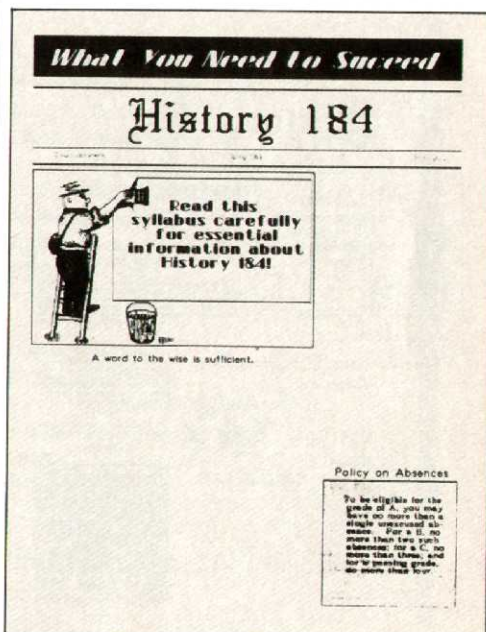


Figure 5.

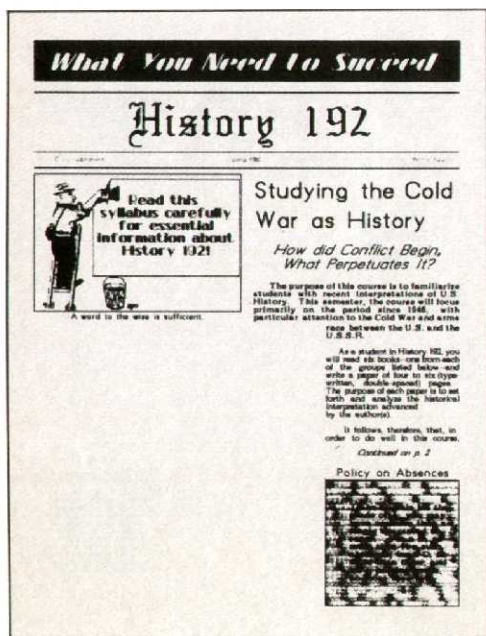


Figure 6.



Figure 7.

considerable delay, the picture appeared redrawn with the correct dimensions in the position I had assigned it. I then entered the text into the the advertisement.

Historical Change

The syllabus for History 184 was even more short-lived than that for History 17B, as we find that History 192 has taken its place in Figure 6. More to the point, we finally have a genuine "story" on the page. (Not only that, but we also have a new ribbon in the printer, which improved the appearance of this and the subsequent pages appreciably.) This brings us to the crucial question of how *Fleet Street* handles text, on which topic I am afraid I must say a few unkind words.

the Clipboard, then move it to the continuation page. If you later add or delete words to or from the initial portion of the story, any changes that must be made to the portion on the continuation page must be carried out by hand—not exactly the height of convenience.

Putting the Text in Its Place

I began work on the right half of the page by defining a text block that extended from the middle of the page to the right edge, writing a main headline in 26-point Sans Serif Bold and a secondary headline in 18-point Sans Serif Bold italic. When it came to inserting the text itself, I was at once confronted with the problem of having it flow from one and a half columns to one (from three of the pseudo-columns to two).

Entering new text directly from the keyboard is always a bit of an adventure, as you struggle to effect the paragraph indentation, hyphenation, and the like, that you want.

Number one, although the program supposedly is able to import any text in ASCII format without the necessity for reformatting, such did not turn out to be the case with this material, which I composed using the most recent version of *Word Writer ST*. After merging the text onto the page, I noticed lines of uneven length and spaces inserted, seemingly at random, between words; this meant that I had to smooth out the appearance of the text myself.

Number two, entering new text directly from the keyboard is always a bit of an adventure, as you struggle to effect the paragraph indentation, hyphenation, and the like, that you want.

Number three, *Fleet Street*, unlike *Publishing Partner*, evidently has been designed to produce documents that are a sequence of individual, self-contained pages, as opposed to multi-page document in which text (and even pictures) flow smoothly between pages. As a result, text-routing facilities in the program are primitive at best.

You can link text only among columns on a page; to jump a story from one page to another, as I have done here, requires that you store the overflow in

It seemed to me that the easiest way to go about this would be to define a pair of text blocks of the requisite size and have the text flow between them. Loading the text into the top block caused the overflow icon in the toolbox to light up. I clicked on it to pick up the overflow, moved the cursor over the second text block and clicked again; more of the text ran into the second block.

Using the Face, Type, Leading option, I set the first paragraph in a bold face, which takes up more room than a plain face, so I had to move some of the overflow from the first block to the second. Despite my best efforts at positioning the blocks correctly with respect to each other, there remained a large gap between "arms" in line five and "race" in line six.

The next version of the page (Figure 7) shows marked changes from its predecessor. I changed the typeface of the main headline and removed the gap between the upper (wide) text block and the lower (narrow) one. This I did by moving the cursor to the last line of the upper text block, selecting Info at Cursor to learn the y-coordinate of this line and doing the same for the first line of

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DS5068	Biology, Vol 1	\$19.95
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NAME _____ ()
PHONE _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
Atari ST, Dept. M9
P.O. Box 61657
Sunnyvale, CA 94088

Please allow six to eight weeks for delivery.

PART#	DESCRIPTION	PRICE	QUANTITY	TOTAL

Use blank paper for additional items.

- Check or money order enclosed.
 VISA or MasterCard

Exp. _____ / _____

SUB TOTAL

CALIF. RESIDENTS
ADD 7%
SALES TAX
Shipping and handling
(under \$50, add \$3.50
over \$50, add \$5.00;
over \$100, add \$7.00)

TOTAL \$

No COD's, please
Outside USA, add \$10 to cover shipping

Signature _____



Figure 8.

The procedure for working with a scanned image could hardly be more straightforward.

the narrow column. I then summoned the information box associated with Current Text Block and entered a new y-coordinate in the appropriate place to raise the lower block.

The box at the lower right also came in for its share of revision, as you can see. I rewrote the headline and placed it inside the box. In addition, I changed the size and face of both headline and text. The shadow effect I created by drawing two 4-point rules, one horizontal, one vertical. The new ribbon in my printer made it evident that the shade of grey within the box was still too dark to print well, so I used a lighter one in subsequent versions.

A Second-story Job

On the right side of the page, we have the beginnings of another story. Note the secondary headline, "Failure Assured": using the underline feature here resulted in a 1-point line that extended well beyond the last letter of the text; backspacing to get rid of it also removed part of that letter, as Figure 7 illustrates. So, I had no choice but to create and position a line myself, using the box-rule feature.

Text for the second story makes its appearance in the next incarnation of the page (Figure 8). The picture is gone, and in its place are three lines of 14-point Serif bold type inserted into the left column, with space left above and below for a pair of horizontal rules.

Because *Fleet Street* does not allow you to have text flow around, rather than over, a text or picture block, I had to place the text on the page in three separate blocks. Worse yet, even though I linked the three blocks in the approved manner, I had to make insertions and deletions in the text whenever I moved the three-line insertion to see where it looked best.

Fleet Street does not automatically see to the task of cross-column alignment (ensuring that text in all columns is aligned, so that the baseline of a line of text in one column coincides exactly with that of the corresponding line in the adjacent column). You can, however, perform the task manually.

As you can see, the appearance of the box in column three has once more undergone some alterations.

Into the Home Stretch?

My final chore was to adjust the spacing between the l and the 9 of 192 in the logo, and that between the a and the t of What and the Y and o of You in the

banner headline across the top of the page. The effect of this adjustment (known as *Kerning*) can readily be seen by comparing the logo and the banner headline as they appear in earlier versions of the page with their appearance in the final one.

To adjust kerning, you select One Shot Commands, calling up a box (shown in Figure 1) that allows you to make one-time changes in justification, character spacing, and so on, at the location of the cursor.

When I reached this point in my labors, I thought that I had at least completed the page-designing aspects of my review. Discovering at the Seybold Desktop Publishing Conference that the latest edition of *Fleet Street* had the ability to merge images scanned at 300 dpi onto a page made it plain that my rejoicing was premature.

How It's Done

The procedure for working with a scanned image could hardly be more straightforward. After you select the option to Merge Picture and let the program know which image you want, a box on the screen informs you of the current resolution (in dpi) of the picture and asks you to select the resolution at which you want it placed on the screen. Your choices are 300 × 300 dpi, 180 × 180 dpi, 150 × 150 dpi, 72 × 72 dpi, or any other pair of numbers you care to enter.

Once you have indicated your selection, the program places a schematic representation of your picture in the picture block you designated prior to initiating the merge. Although this representation may not bear an especially close resemblance to your picture, the point is that its size is identical to that your picture will have when it is printed at the resolution you have chosen. Thus, you can move, resize, rescale, or even rotate the picture by carrying out these operations on its representation, confident that the printed results will correspond exactly to what you had in mind.

What you cannot do, unfortunately, is put any portion of the picture that overflows the page into the Clipboard, so that the overflow might later be placed on the next page to construct a two-page spread. This fact reinforces my earlier observation that *Fleet Street* makes it easy to produce documents made up of a series of single pages, with the corollary that it is correspondingly difficult to create a multi-page docu-

ment in which text and pictures run smoothly from one page to another.

The page in Figure 9 shows the result of my experimentation with scanned images.

And in Conclusion

I am now familiar with two of the three desktop publishing programs currently available for the Atari ST, and the question inevitably arises as to which one is the best. While, I do not pretend to make this a comprehensive survey of the two, I think it may be useful to conclude this review by making some comparisons between *Publishing Partner* and *Fleet Street Publisher* (I am not familiar enough with *Easy-Draw* to include it in the comparison).

Overall, I believe that *Publishing Partner* offers a fair number of significant features not found in *Fleet Street*: procedures such as text routing for the creation of multi-page documents; greater ease of adding rules to a page; circular, elliptical, and round-cornered boxes; a larger set of tools in the toolbox; and so on.

Tending to offset this margin of superiority, however, is the fact that *Publishing Partner* is both more difficult to use and still generally more prone to self-destruct than its competitor. Certainly, *Publishing Partner* recently has been improved in the latter regard; but *Fleet Street* came to us with only a single major defect—working with the box feature too often resulted in a bomb message—and that has been fixed in the latest version.

As far as typefaces are concerned, *Fleet Street* had a clear-cut advantage, initially—several of its typefaces are handsome indeed—but SoftLogik and others have been developing a series of new and quite attractive fonts for its program; and what's more, it strikes me that some of the fonts in the latest edition of *Fleet Street* look just a shade less appealing than they did in an earlier version. The verdict in this department? A tossup.

Likewise, more or less, for the manuals. Each is thorough and detailed, although the manual for *Publishing Partner* has more typographical errors—hard to forgive in a desktop publishing program—and is written in a less literate style than that of *Fleet Street*.

What truly sets the two programs apart, for the time being at least, is the fact that one of them is able to incorporate and manipulate images scanned at

Focus of Class Is on Learning How to Recognize Best Historical Interpretation

From p. 1

that in order to do well in this course, you should think long and hard about the nature of historical interpretation, and especially about what distinguishes a good (valid, cogent) interpretation from a less good one. As a matter of course, your paper should discuss such things as the degree to which the argument of the book is supported by the evidence, the quality of the sources on which it rests, whether it contains fallacious reasoning, etc.

Discussions and Papers

At the same time you are assigned a book, you will also be assigned a due date. On that date, you will come to class with the paper you have written about your book, prepared to lead a discussion about both book and paper. You must also make a copy of your paper for every student in the class. We will read the paper at the beginning of each class, then discuss it and the book it treats.

In this way you will: (1) get some idea about the books you are not read; and (2) benefit from having your work criticized by a jury of your peers. This latter feature is, perhaps, the main reason why this class is taught as a seminar.

Final Project

In addition to the six papers you will write during the semester, there is a final project that is due at the last meeting of the class. This project consists of an analysis of the interpretation of the arms race and the Cold War advanced by Georgi Arbatov in his book *The Soviet Viewpoint*. (Arbatov discusses a number of other topics as well, but they are not relevant to this assignment.)

Your analysis, in turn, will be based on the six books that you have read during the semester and the remaining books that you have heard discussed. Your final paper must contain:

- [1] a minimum of 45 citations (footnotes);
- [2] a minimum of six (6) citations from each of the books you have read;
- [3] numerous citations to other books discussed in class and to my commentary and that of your fellow



Fidel Castro in the Sierra Maestra. During the 1960s, the Kennedy administration tried to have him assassinated.



See what History 192 did for me!



This dummy-dodo was so stupid that he declared himself a socialist.

students (for which purpose you will need detailed, dated notes on class discussions);

[4] footnotes and bibliography, each prepared according to the form set out in *A Manual for Writers of Term Papers, Theses, and Dissertations* by Kate

L. Turabian;

[5] approximately 10 pages of text, exclusive of footnotes and bibliography.

Figure 9.

300 dpi whereas the other is not. Far be it from me to denigrate clip art; much of it is impressive, and some of it is downright wonderful. Still, nothing has quite the same impact on the printed page as a well-conceived photograph. And the long and the short of it is that *Fleet Street* now has the ability to make use of such photographs, whereas *Publishing Partner* does not. That, to my way of thinking, gives *Fleet Street* a decisive advantage.

To offset it, *Publishing Partner* would have to boast some no-less-powerful feature or group of features—and this it simply cannot do at the moment. How long this situation can be expected

to last is another question altogether. Few things in this world are more mutable than computer software; and I wouldn't be astonished to discover that by the time you read this review, *Publishing Partner* had caught up with its rival.

For myself the choice at present is clear: with the aid of *Fleet Street*, ST Scan, and my trusty Canon IX-12 scanner, I shall continue the search for more effective ways to grab and hold the attention of the innumerable students who would prefer to find themselves anywhere but in a history professor's classroom. ■

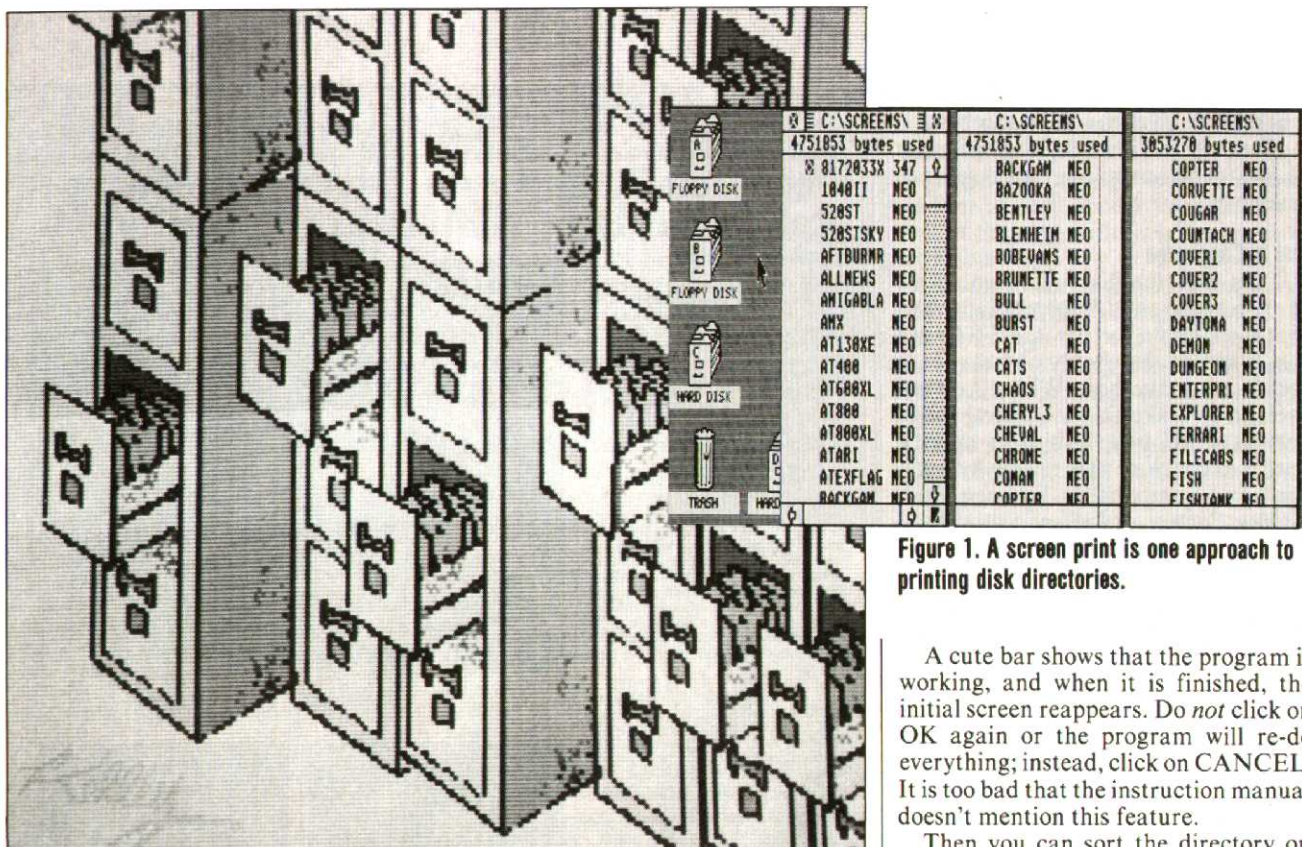


Figure 1. A screen print is one approach to printing disk directories.

Directory Directions

Two programs to help you keep track of your disk directories

Back in the old days when my Apple II or TRS-80 floppy disk could hold seven or eight files at most, it wasn't too big a chore to write the file names on a label and put it on the disk. When I started to use a PC (clone) and the number of files on my disks started to grow, I increasingly relied on the MS-DOS DIR utility with the /W option (four filenames across) to display my directories on the screen and print them out.

But with the advent of the ST, GEM, and TOS, everything the computer users of the world had learned about directories and file management had to be tossed out. Now you can show a directory only in a window—a maximum of 19 lines per shot—and heaven help you if you build some really big files (like the 700 graphics images I have in one file). You say you want to print your directory? Forget it!

But don't despair. Help is on the way.

Super Directory

The wrapper of *Super Directory* by Mark Feldman claims that it is a powerful (isn't everything?) but easy to use (ditto) disk cataloging program that allows you to load, save, sort, edit, find (locate stray files), and print floppy and hard disk files in a convenient format. The package contains a disk with the *Super Directory* program and a sample directory along with a 12-page manual.

When you load the program, a blank screen with a menu of choices at the right of the screen appears. You normally start with the top choice, Add, if you want to form a directory of the files on the currently active drive; if not, you would use Disk to choose another drive. The Add sub-menu requires that you choose a disk number (like 001 or CCC) and drive, after which you click on OK, and the program starts tucking all the files on the disk into memory.

A cute bar shows that the program is working, and when it is finished, the initial screen reappears. Do *not* click on OK again or the program will re-do everything; instead, click on CANCEL. It is too bad that the instruction manual doesn't mention this feature.

Then you can sort the directory on any of several parameters, including file extensions, paths, filenames (alphabetical), date, time, category, or remarks. These last two items can be added to each file name by using the Edit selector—a process that is poorly described in the manual but, fortunately, reason-

Super Directory

System: Atari ST

Price: \$39.95

Summary: Loads, sorts, searches, saves, and prints disk directories.

Manufacturer:

MichTron

576 S. Telegraph

Pontiac, MI 48053

(313) 334-5700

ably intuitive.

When you are satisfied with the look of your directory, you should save it. You can also print it in several formats—in one column (shows filename, extension, directory number, path name, time, date, size, and remarks) or in two or three columns (shows filename, extension, directory, and size).

Intuition is not a good guide for print-

By DAVID H. AHL

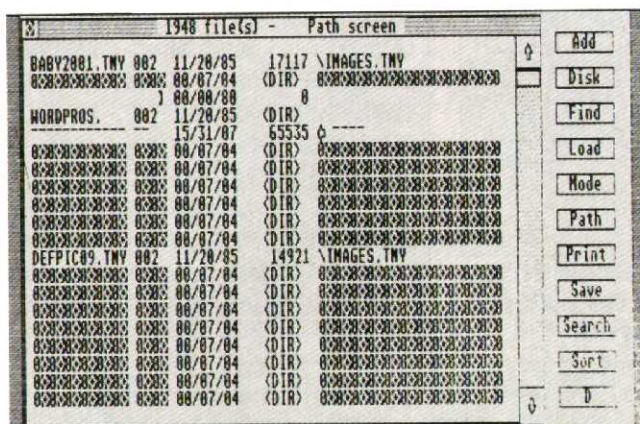


Figure 2. Main menu screen of Super Directory has options on the right. The program "found" a number of ersatz files on my hard disk D which had to be eliminated with the edit feature.

ing. If you click on OK, the program exits print mode; instead, you must click on Window+ to print the entire file as shown in the window and beyond, and you must make sure the slider is at the top of the window from which you want to print.

Pros and Cons

Super Directory is great for finding duplicate files by simply sorting on filename. When my hard disk was nearing capacity, I sorted on filename and discovered that I had seven copies of CONVPICS in various folders. I eliminated five of them for a saving of 200K. It also showed me at a glance that I had duplicate copies of several .NEO and .TNY files that I had forgotten about.

One problem I had with the program was that it occasionally "found" strange files and windows to which it assigned some bizarre characteristics (creation dates of 1904, gibberish names, remarks, and the like). The editor did allow me to eliminate these.

When you have added or loaded a directory, the File menu is always highlighted, but it is not active (i.e., it is unresponsive to mouse clicks). Thus, to quit the program or load another directory, you must close the directory window on the screen—another bit of information that should be mentioned in the manual, but isn't.

The program itself provides many useful functions: saving a directory, sorting it, searching it, and printing it. However, because of the ersatz files feature and the questionable quality of the documentation, I must have to downgrade my final rating to a conditional recommendation.

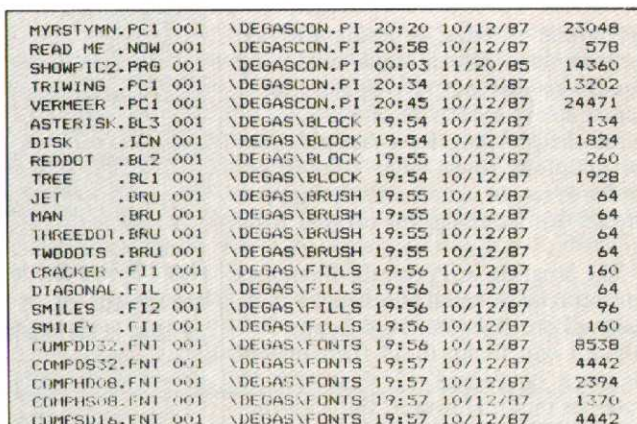


Figure 3. Portion of a one-record-per-line listing with full pathnames.

DEGASCON.PIC 001	<DIR>	DESKTOP .INF 001	560	EMULATOR.ACC 001	6451
ENTRIES .CON 001	<DIR>	NEOENTRS.CON 001	<DIR>	NEOWORK . 001	<DIR>
PLANES .DEG 001	<DIR>	SCREENS . 001	<DIR>	SPECTRUM. 001	<DIR>
SPECTRUM.XXX 001	<DIR>	AHDI .PRG 001	4035	TKAUTO .PRG 001	8562
TK HI .RSC 001	1532	APP .TXT 001	33104	AUTORACE.TXT 001	23692
BASIC .PRG 001	138944	BASIC .RSC 001	4648	BASIC .WRK 001	270
EARHART .TXT 001	24240	HONGKONG.TXT 001	24274	M .TXT 001	1324
MARCO .BAS 001	22113	MARCO .TXT 001	21550	NEPTUNE .TXT 001	8867
PARMODS2.BAS 001	210	PARMODS.BAS 001	196	PARQUET1.BAS 001	2842
PARQUET2.BAS 001	2950	README . 001	720	SHUFFLE .BAS 001	270
SUBWAY .BAS 001	26237	SUBWAY .TXT 001	25849	TOUR .TXT 001	19831
WESTHO .BAS 001	20684	WESTHO .TXT 001	20111	S20STSKY.NEO 001	32128
ATEXFLAG.NEO 001	32128	CAT .NEO 001	32128	CHERYL3 .NEO 001	32128
CDUNTACH.NEO 001	32128	JUGGLER .NEO 001	32128	JUMPMEN .NEO 001	32128
MYRSTYMN.NEO 001	32128	NEOSHOW .PRG 001	5857	README .DOC 001	606
TRIWING .NEO 001	32128	VERMEER.NEO 001	32128	ASSIGN .SYS 001	510
BLOCKS . 001	<DIR>	BRUSHES . 001	<DIR>	DEGELITE.PRG 001	149852
DEGELITE.RSC 001	20618	FILLS . 001	<DIR>	FONTCONV.PRG 001	18360
FONTEDIT.PRG 001	21367	FONTS . 001	<DIR>	PICTURES. 001	<DIR>

Figure 4. Portion of a three-records-per-line directory listing.

Disk Label Maker

A nifty program from the Pittsburgh Atari Computer Enthusiasts (PACE) does a great job of printing floppy disk labels and doubles as a limited-feature directory program.

Run with the normal defaults, the program will read the directory from the disk in drive A and print the volume name of the disk, the names of all the files on the disk, the number of free bytes, and the type of disk on a 2 $\frac{3}{4}$ " \times 1 $\frac{1}{16}$ " label. Filenames are always printed in alphabetical order.

However, there are many additional options. For example, you can automatically number your disks, add or change volume names (on the label, not on the disk itself), print or hide (not print) the contents of folders or ARCED files, hide filenames with various extensions (BAK, FNT, HLP, DAT, etc.), and print on other label sizes.

It is the ability to print on other label sizes that lets the program double as a directory program. For example, if you

Label JRB Program

System: Atari ST

Price: Program, \$7; Labels, \$5

Summary: Program makes labels and printed listings of disk directories.

Manufacturer:

P.A.C.E.

P.O. Box 13435

Pittsburgh, PA 15243

BBS (412) 963-1355

specify a label size of 8 $\frac{1}{2}$ " \times 11", the program will print on a full sheet of paper. The program includes four standard label sizes: 2 $\frac{3}{4}$ " \times 1 $\frac{1}{16}$ " either full label or folded over the top of the disk, 5" \times 3" (file card), and 8 $\frac{1}{2}$ " \times 11". It also allows you to specify any other label size that you wish.

One problem I had in printing 8 $\frac{1}{2}$ " \times 11" sheets was that the program forced

my printer to issue an automatic line feed/carriage return, thus producing double-spaced output. Specifying a non-standard label size of 8.3" x 11" cured the problem. Be aware also that the program resets your printer defaults; to return to normal printing, you should turn your printer off and back on.

The program will print the filenames on your label as small as necessary to fit them all on. On a standard floppy disk label, it will fit up to 24 filenames in standard condensed 12-point size (6 lines per inch). However, the 25th filename will force it down to a microscopic 6-point size (12 lines per inch).

On larger labels, it will use standard (non-condensed) output if there is enough room. All printing is done in bold (overstrike), a thoughtful touch for increased legibility.

PACE makes the program available to other Atari clubs, so you may be able to get it from a local user group. If not,

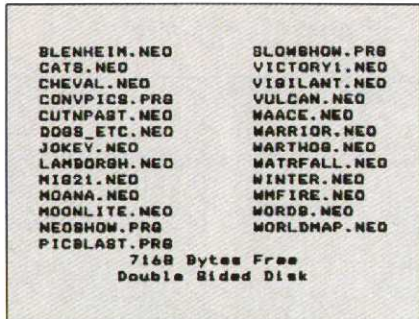


Figure 5. Two disk labels, one with 24 files and one with 25. Up to 48 filenames could be listed in the smaller type size.



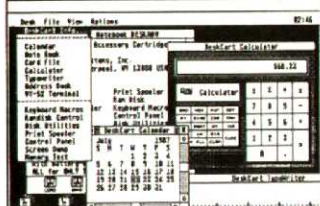
Figure 6. Portion of a directory listing produced with the PACE label program.

the cost of the program is \$7.00, and a packet of pin feed blank labels for 3 1/2" floppy disks is an additional \$5.00. I

recommend the PACE labels, because that size is not yet widely available at office supply dealers.

Quality products for your ATARI ST from Qmi

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- Includes 17.5" x 11" tablet, digitizing pen, cable and driver accessory.
- User-selectable active drawing area upto 12" x 8"!

\$395.00

New and Improved

*Need to know the latest version
of a software package? Find it here*

Welcome to the first installment of New and Improved. This feature will appear in every issue of *Atari Explorer*, bringing you the latest information on program updates.

Software packages are constantly being enhanced by their publishers to add features, fix bugs, and incorporate the latest technological advances. To derive the maximum benefit from your software investment, it is important to know what updates have been made to the packages you use. If you are not

using the most current version of a package, contact the manufacturer to find out what enhancements have been made and what you have to do to obtain the new version.

Working from information provided by the publishers themselves, we have compiled a list of the most current version numbers of many popular 8-bit and ST software packages and software/hardware products. Program version numbers are often found printed in the documentation, on the title screen, in a README text file on disk, or in an About . . . item in the left-most menu on the GEM desktop.

While every attempt has been made to make this list as comprehensive as possible, we realize that a few fine products may have been omitted. If you would like to see a specific program added to this list, please send your suggestion to New and Improved, *Atari Explorer*, 7 Hilltop Rd., Mendham, NJ 07945.

Note: we have not included entertainment and educational programs in this list because, as a general rule, these packages are not updated frequently.

8-Bit Programs

Action, OSS	3.06	Guitar Wizard, Baudville	11602
B/Graph, Electronic Arts	1.1.1	Kyan Pascal, Kyan Software	2.02
Bank Street Writer, Broderbund	1.0	MYDOS, Supra	4.3
Basic XE, OSS	1.2	PaperClip with Spellpak, Electronic Arts	2.0
Blazing Paddles, Baudville	04412	Print Shop, Broderbund	1.0
ComputerEyes, Digital Vision	1.3	Print Shop Companion, Broderbund	1.0
Desktop Performance Studio, Virtusonics	1.1	SpartaDOS Construction Set, ICD	3.5A
Draper Pascal, Draper Software	2.0	TypeSetter 130XE, XLent Software	1.4
First XLent Word Processor, XLent Software	2.1	TypeSetter 48K, XLent Software	1.3
FlashBack, ICD	1.1		

ST Programs

Aegis Animator, Aegis Development	2.10	Magic Sac, Data Pacific	5.5
Agenda+, Inagem Technologies	1.9	Mark Williams C, Mark Williams	2.1.7
Alice Pascal, Looking Glass Software	1.5	MasterPlan, ISD Marketing	1.0
APL.68000, Spencer Organization	6.05C	Modula 2, Jefferson Software	1.1
Athena II, Iliad Software	1.8	Modula-2, TDI Software	3.01A
BB/ST, QMI	1.12	MT C-Shell, Beckemeyer Development	1.10
BBS Express ST, ICD	1.3	Multi-Manager, New World Software	1.0+
CAD 3D, Antic	2.02	Music Studio, Activision	1.0
ComputerEyes Color, Digital Vision	1.3	OS-9/ST, Microware	2.1
ComputerEyes Mono, Digital Vision	1.0	P.M. Interface, XLent Software	1.1
Dac-Easy Accounting, Dac Software	1.0	Payroll Master, Royal Software	1.3
Dac-Easy Payroll, Dac Software	1.0	PC-Ditto, Avant-Garde Systems	3.0
Data Manager ST, Timeworks	1.1	Personal Pascal, OSS	2.0
DataTrieve, Abacus Software	2.03	Philon Fast/Basic-M, Philon	1.35
dbMan, Atari	3.0	Print Master Plus, Unison World	1.61
Degas Elite, Electronic Arts	1.1	Pro Fortran, Prospero	2.1
DeskCart, QMI	1.02	Pro Pascal, Prospero	2.1
Dollars & Sense, Monogram Software	1.2	Professional C Development, Megamax	2.0
EZ Calc, Royal Software	1.32	Publishing Partner, SoftLogik	1.03
EasyDraw, Migraph	2.2	ST Hard Drive Utility Disk, Supra	2.72
First CADD, Generic Software	1.0	ST Sprite Factory, Future Software Systems	1.1
1st Word, Atari	1.06	ST-Talk Professional, QMI	2.0
1st Word Plus, Prospero	2.02	STAccounts, ISD Marketing	2.0
Flash, Antic	1.5	SwiftCalc ST, Timeworks	1.1
Fleet Street Publisher, Spectrum Holobyte	1.0	The Chameleon, Future Software Systems	1.0
GFA Basic, MichTron	2.027	The Manager, BMB Computerscience	1.0
GFA Compiler, MichTron	2.02	Thunder, Electronic Arts	1.31
Hard Disk Toolkit, Beckemeyer Development	1.03	True Basic, True Basic	2.0
IS Talk, Electronic Arts	2.03	VIP Professional, ISD Marketing	1.2
Interlink ST, Intersect Software	1.74	Word Writer ST, Timeworks	2.0
Inventory Master, Royal Software	1.2	WordPerfect, WordPerfect	1.0
LDW Basic Compiler, Logical Design Works	2.0	Write 90°, XLent Software	1.3
LabelMaster Elite, Migraph	1.0	Zoomracks II, Quickview Systems	1.0
Lattice C, Metacomco	3.04		



QMI DeskCart

**A hardware and software package
that offers a clock/calendar
and 14 useful desk
accessories for the ST**

DeskCart consists of two related components, an external cartridge and an installation disk. The 14 desk accessories are actually stored in 64K of ROM in the cartridge along with the clock/calendar and lithium battery (3- to 5-year life), while the disk is used to store files and boot the system. The package also includes a comprehensive 42-page manual.

Immediately after plugging the cartridge into the slot on the left side of the ST (it protrudes just 2³/₈"") and powering up, you will notice a time display (12-hour) at the far right edge of the menu bar. If you are in the Eastern time zone, the time and date may be correct, as QMI seems to test the units with the actual time and date.

After loading, you must put BOOT-CART.ACC and DESKCARD.RSC on any disks from which you boot, and you are in business. From then on, when you point at Desk or the Atari symbol on the menu bar, DeskCart appears at the top of the list of options. Clicking on it displays a list of the 14 DeskCart accessories. GEM normally allows only six items on the desktop, but DeskCart counts as only one, so the package actually increases the total capacity of the desktop to 19 (5 on the desktop and 14 on DeskCart).

To set the time or date, you select Control Panel (Figure 1), which is a distinct improvement over the standard control panel in that options are clearly labeled: less/more, slow/fast, on/off.

By DAVID H. AHL

New default values can be set and permanently saved, and the clock display toggled on and off from this accessory.

The Calendar and Appointment Book (Figure 2) are really two accessories rolled into one. The calendar shows a month at a time and can be scrolled from 1940 to 2040. Clicking on a particular day brings up a blank appointment book form with space for time, subject, and comments. An exclamation point in the first character of the subject field will cause an alarm bell to sound at the specified time. Buttons on the appointment book display allow you to add,

delete, update, print, find, or clear appointments and scroll through the rest of the month.

The Notebook, Card File, and Address Book accessories are similar to the Appointment Book, but each has some nicely conceived touches to make it more useful for its specific purpose. Card File notes, for example, are automatically indexed by the title of the card, while the Address Book will automatically dial a telephone number—assuming you have a dial-up modem connected.

Files on all of these mini-databases are stored in ASCII format, so they can be exported to a word processor or mailing list program if you wish. The only problem I had was with the Address Book, which allows for only a three-line address, leaving no room for a company name or a foreign country.

The Calculator can be operated in either decimal or hexadecimal. In decimal, it uses scientific notation and has the full range of trig and log functions you would expect to find on a low-end TI or HP scientific calculator. In Hex, it has a range of programmer functions, including AND, OR, XOR, Left Shift, and Right Shift. It allows you to use the numeric keypad or mouse to enter calculations; I found the keypad much faster.

Like most of the other accessories, the Calculator remains on the desktop—either under or on top of other windows—until you deliberately close its window (Figure 3). It also retains your last total on its display, so you can click back and forth, working with figures located, for example, on many dif-

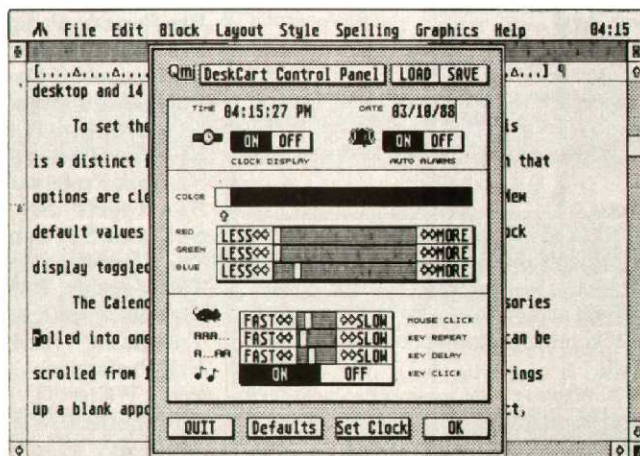


Figure 1. The DeskCart Control Panel is a distinct improvement over the standard ST control panel.

ferent pages of a word processing document without having to pull down the DeskCart menu each time you want to use the Calculator.

The Typewriter accessory is a handy way to type a quick note or address an envelope without having to run your word processor. Actually, even when using a word processor, I found this an extremely handy way to address envelopes.

The VT-52 Terminal is basically identical to the one in the normal desktop. Indeed, its only virtue is that it allows you to eliminate the one on the desktop, thus freeing up one of the six slots for something else.

The Keyboard Macro function allows you to build a set of macro keys for the phrases and keyboard sequences you use most often. Macros are defined by the Alternate key plus a number or an upper- or lower-case letter. You can store a different macro file with any application you are running (word processor, database, or spreadsheet), making this an especially versatile and useful accessory. A line feed/carriage return is automatically appended to the end of each macro unless you remember to end it with a tilde (~).

The Ramdisk allows you to save and recover files from a phantom disk (which you must install like any other disk) at very high speeds. You must remember that this is only a work disk, and anything stored on it vanishes when you turn off your computer. Frankly, I'm not sure that this is a real time saver on a hard disk system, but on a floppy-based system it probably is.

The Disk Utilities accessory allows

you to perform housekeeping functions normally found on the desktop without actually having to exit your application program. One nice feature of the format utility is its ability to format disks in an enhanced 10-sector format, which adds about 10% to the capacity of a floppy disk.

The Print Spooler accessory was one I was really looking forward to using, particularly for screen dumps that seem to take forever. Unfortunately, it seemed to have a mind of its own and inserted some extra line feeds, giving my screen dumps zebra stripes. Using the DeskCart Screen Dump accessory produced the same result so I reluctantly turned the spooler off. It may well work with other printers (I have a somewhat unusual Oki 282). For standard text, it seemed to work correctly.

The Screen Dump accessory is basically identical to pressing Alt/Help ex-

cept that you can have it print in the standard vertical format or a page-filling horizontal format.

The Memory Test checks out the memory of your computer and shows how much is available and which version of TOS is installed. Don't be impatient; it takes 30 seconds to run.

The DeskCart manual is well illustrated and written in a chatty style that seems designed to put you at ease. Unfortunately, author Henry Fay, Ph.D., assumes a fair amount of knowledge on the part of the reader/user, so while beginners may feel at ease, they may also have some difficulty making full use of the accessories at first.

Overall, DeskCart is well conceived and executed. Its wildcard and directory functions are better than TOS (shows 255 files rather than 100), and its disk drive icons are handier to access. With the exception of the three-line limitation on name and address files, the database functions are very good. While some of the accessories are redundant with TOS (VT52, screen dump, utilities, and control panel), QMI has done a good job of sprucing up the original versions.

The keyboard macros and typewriter are exceptionally useful, and the calculator is quite good. I am ambivalent about the Ramdisk and print spooler, having found several combinations of software/hardware with which the latter doesn't work and only a few with which it does. Nevertheless, the total package of a clock/calendar with 14 desk accessories, most of which are eminently useful, adds up to a high recommendation for DeskCart. ■

DeskCart

System: Atari ST

Price: \$99.95

Summary: Clock/calendar cartridge with 14 desk accessories.

Manufacturer:
Quantum Microsystems, Inc.
P.O. Box 179
Liverpool, NY 13088
(315) 451-7747

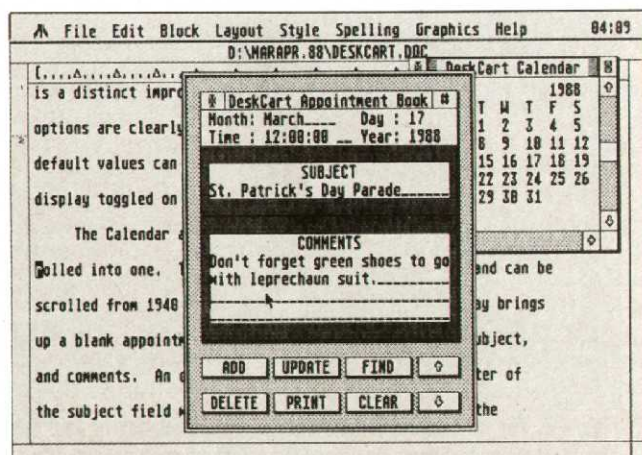


Figure 2. The Appointment Book keeps track of the important events in your life.

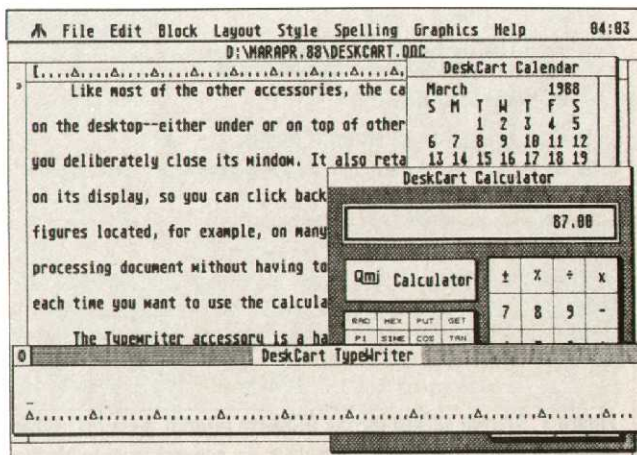


Figure 3. Several accessories can be in use on the desktop at one time.

*DBSense: For the adventuresome,
it makes a lot of sense*

Bottom Line

By TED CHIPPS

About a year ago my local Atari dealer warned me that I would probably require a programmable relational database with a built-in word processor to meet the needs of my direct mail list business. He suggested that I not be tempted by easy-to-use file managers—that I avoid the costly upward spiral of upgrading from one file manager to the next. Sooner or later, he argued, I would need the relational capabilities of a more sophisticated system to produce bills and specialized sales letters.

At that time, the only relational databases I was familiar with were *DBMan* and *R-Base*, both of which were selling for about \$200. Price was definitely a barrier, but even worse was the thought of learning a database language while minding the details of a growing business.

I simply didn't want to take the time

to learn, and—far worse—I was afraid I wouldn't be able to master a programming language. I had watched several friends end up hiring expensive consultants to do "simple jobs"—jobs they had planned to do themselves—using Lotus 1-2-3 or *dBase III* on their IBM clones.

Fearing the same fate, I began looking at simple file managers. The last words I wanted to hear were "fully programmable relational database."

Beware of Disks in Plain Brown Wrappers

Several months later, however, a program called *DBSense* arrived on my doorstep for review. Encased in a plain brown padded envelope, the program boasted no slick shrink-wrap or flamboyant multi-color packaging, just a 3½" disk and a small 66-page user manual.

The manual presented a clean,

DBSense

System: Atari ST
Price: \$49.95
Summary: An exceptionally competent, fully relational database manager with built-in word processor at a bargain price.
Manufacturer:
Sense Software
105 Iron Mountain Rd.
Warwick, NY 10990
(914) 986-2711

EASE OF USE

PERFORMANCE

ERROR HANDLING

DOCUMENTATION

straightforward exposition of how *DBSense* worked—all in words, all in teeny tiny type—with not a single illustration or diagram. The program, it said, operated in TOS without benefit of GEM-interface. There was no extraneous filler or glitz to distract you from the task of learning to use the program. It was about as appealing as the prospect of parsing verbs from a Latin textbook on a sunny afternoon.

I immediately put the new arrival

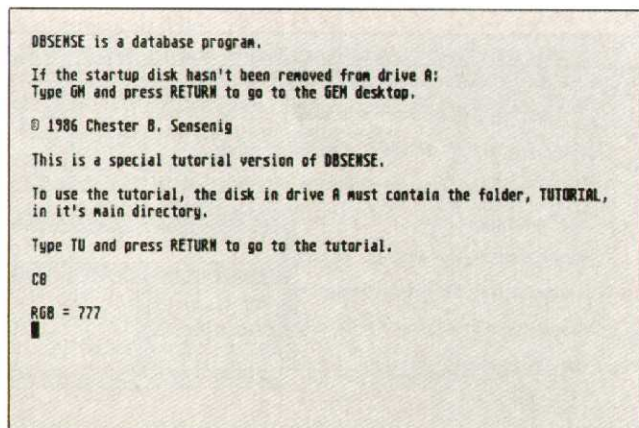


Figure 1. Startup screen for the *DBSense* tutorial. Note that screens appear in black with white characters. To convert them to black on white, the *CO* command is issued. 777 is the response to the *RGB* prompt that makes the conversion.

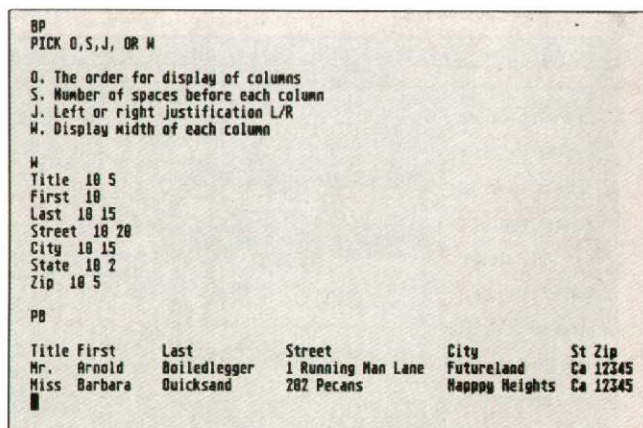


Figure 2. The *BP* command controls the screen display of your DB. The *W* command allows you to set the width of each column (the default value is 10). After values are set, the *BP* command displays the results.

This choice from the menu loads a DB for a checking account. The next several menu choices use this DB for experimentation.

Use the TU command to return to the menu.

Ck #	Mo	Da	Yr	Debit	Credit	Balance	Codes	Description
2467	01	03	86	96.49		436.32		Electric
2468	01	13	86	31.93		1959.92		Telephone
2469	01	18	86	93.55		1866.37		Insurance
2472	01	28	86	9.97		1856.40		Book
2470	01	23	86	37.75		1818.65		Book Club
2471	01	23	86	26.18		1792.47		Book Club
2473	02	01	86	117.97		1674.50		Charge Card
2474	02	01	86	84.28		1590.22		Electric
2475	02	04	86	4.58		1585.72		News
2476	02	08	86	41.42		1544.30		Telephone
2477	02	08	86	16.88		1528.38		Magazine
2478	02	08	86	9.97		1518.33		Book

Figure 3. The tutorial uses the handy checking account procedure to acquaint you with alphabetic and numeric sorts.

aside, opting to explore the fancier-packaged databases that I could rent from my Atari dealer. For the most part, these were file managers—all GEM-based and all excellent for what they were designed to do, but with limited capabilities.

I soon decided that my Atari dealer had been right all along—it would be cheaper and less painful to make the sizable investment of time and money required to get a relational database up and running on my system than to tailor my requirements to the capabilities of a simpler program. And the more I thought about *DBSense* with its no-nonsense approach and \$49.95 price tag, the more sense it made. I discovered that I was willing to trade the convenience of pull-down menus and mouse control for the convenience of a program that would do exactly what I wanted it to do.

DB: The Core Construct of *DBSense*

The manual makes it clear that the DB is the heart of *DBSense*. Sometimes DB is short for database. Other times it means data block. And on other occasions, it represents the program that puts the other DBs through their paces.

The DB is defined as an array of rows and columns. It may have from one to 255 columns and as many rows as the memory of your ST permits.

Creation of a DB is very simple, because there is only one kind of data—ASCII—and column widths are not specified. This also means that *DBSense* files can be exported to any other database, spreadsheet, or word processor that uses ASCII files.

DBs are compact, because *DBSense* is written in assembly language; the number of bytes needed for a data entry is the number of characters plus one. With a 520 ST (TOS in ROM), you

have room for more than 400K of DBs; with a 1040 ST, the count more than doubles to 900K.

Tutorial Demonstration

The READ.ME file on the disk explains that there are two versions of *DBSense* on the disk. The regular version is in the AUTO folder and runs when the disk is booted from drive A. The tutorial version takes you through 15 steps to acquaint you with the keyboard commands required by the program.

Typing KC, for example, calls up three screens full of commands. Fortunately, these mnemonic two-letter codes—CS for clear screen, SA for save all, RP for run program—are easy to remember.

After assaulting you with a wave of keyboard commands, the tutorial goes on to teach you how to create your first DB with the FB (first block) command and how to size it with BP (block parameters).

As you begin to build your database, you type FB, and the program asks you to enter the number of columns you want your DB to have. Then you are asked to type in the headings for those columns.

Next, you learn how to enter data into your DB with the AL (add lines) command. The column labels prompt you for data, and as you finish one row, the program prompts for the next. When you finish, you have created a database called names, which you can save and retrieve from disk.

The block parameters command allows you to change the way columns and data appear on your screen and to hide those columns that you do not want displayed.

230 ABC Computer
 B 350 @ 28,000 9/4/85
 S 120 @ 43,500 3/31/86

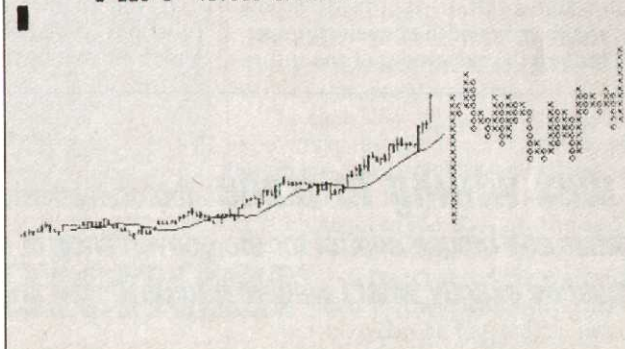


Figure 4. Even graphs can be created with *DBSense*. This one plots weekly prices for ABC Computer in traditional and figure reversal formats.

A Compiler Version: *CDBSense*

DBSense also comes in a compiler version called *CDBSense* at the same price. Compiled versions of a program can run as much as five times faster than non-compiled versions, but they do require *CDBSense* to be present on the disk.

CDBSense can be a real plus for those who run the same programs over and over again, particularly if they are lengthy.

CDBSense does, however, require that each program be compiled before running and places some restrictions on the use of certain keyboard commands.

Compiling destroys the program DB, so it must be saved to disk prior to compilation if you think you will need a variation of the program in the future. Compiled programs can also be saved to disk but cannot be altered once compiled.

A bonus Calculator program comes with the compiled version.

Even though *DBSense* and *CDBSense* are identical in so many ways, I recommend that non-programmers start with *DBSense*, because it requires fewer steps to operate correctly. ■

The BP menu allows you to specify the following: the order for display of columns, the number of spaces before each column, left or right justification, and the display width of each column.

Through the remainder of the tutorial

letter addressed to you, demonstrating some of the report power of *DBSense* emerges from your printer.

If you require only basic database functions, you may feel that your needs have been met by the end of the tutorial.

I was willing to trade the convenience of pull-down menus and mouse control for the convenience of a program that would do exactly what I wanted it to do.

al, you learn how to sort, edit, and move around in your database; move from one DB to another; load several DBs at once; and send information to your printer.

The tutorial ends with a dramatic demonstration by the built-in word processor. In step 15 you are asked to enter your own name and address. Presto! A

The keyboard commands enable you to store, retrieve, edit, update, and rearrange data and display information on the screen or on paper. But *DBSense* can do much, much more, and it is a shame that the tutorial ends as soon as it does.

DBSense Programs

The good news is that you don't have to be a programmer to realize the potential of *DBSense*. The bad news is that you must read and study chapters two and three of the manual very carefully to be able to take advantage of the more than 20 important programs which lie hidden in those chapters and which you can use with the databases you create.

I wanted to find out how difficult it would be to modify a given program for use with my mailing lists, so I took a close look at the program called Report. This program is designed to print out a standard 6-line X 40-character label of the sort that I use in my direct mail operation. It used a DB called Names, which I had created in the tutorial, and it executed well.

But the information I needed was different from the information captured by Names. This meant that I had to either alter Names or create a new data DB and modify the Report program. I chose to create a new DB called Mail.

Much to my surprise, since I had no programming experience, it turned out to be quite easy to modify the Report program. I began by printing the program out and making my changes on the hard copy.

I first changed all references to Names to Mail. Then, because I had no use for the Mr. Mrs. Ms. column in the original DB, I deleted all references to it. I did, however, want to be able to sort

my names by street, so I changed the Street and Number column into two separate columns.

The first time I ran the program, it stopped and told me there was an error in a specific line. I made the correction and tried again. I got another error message, but when that was fixed, the program worked and typed out the label just as I wanted it.

Canned Procedures

DBSense offers several canned procedures that you can use simply by creating your own DB and substituting it for the one in the example. Among them you will find a checking account program to help you balance your checkbook and four programs to help you calculate and display the dividends from your stock holdings.

For those who prefer statistics to economics, there are programs to calculate the averages and standard deviations of columns, row averages, and weighted averages.

One of the handiest programs for the small businessman—but one that requires some study and program modification—is a complete billing package that even types your invoices for you.

To demonstrate the graphic capabilities of *DBSense*, there is a stock chart program. One graph shows a scaled version of weekly high, low, and close. The other is a "point and figure" chart with a two-box reversal. These are intended only to show what can be done, not to help you plan your investment strategy, but they are, nevertheless, impressive. Graphics created with *DBSense* can be sent to your printer for hard copy.

Conclusions

DBSense is not for users who expect to have a database up and running 45 minutes after opening the box. Not only does *DBSense* not have a box, it requires that you spend time experimenting. Because the documentation is terse, you will probably have to do as I did and learn through trial and error.

If you are interested in database design, you will find *DBSense* an excellent tool with which to construct your models. To fill the gaping holes in the user manual and provide a solid introduction to database technology, however, I recommend *Database: A Primer* by C. J. Date, published by Addison-Wesley.

These caveats notwithstanding, serious database users will find that *DBSense* more than repays the investment in time required to become proficient in its use. ■

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ORDER INFO: Write/call. Use check, MO, MC or VISA/Amex 4%. Software shipped free, accessories pay actual UPS cost.

PRODUCT REVIEW

Z-Time is an internal clock/calendar chip that installs in an ST to "permanently" remember the time and date. The package comes with a clock chip, a disk with several time and date utility programs, and a large sheet of installation instructions. Versions are available for the 520ST, 520STFM, and 1040ST.

At first glance, the 14½" X 25" sheet of instructions, complete with diagrams of the guts of your ST, may be intimidating. However, eight steps take you

Z-Time

System: Atari ST

Price: 520, \$49.95; 1040, \$59.95;

Summary: Clock/calendar with 5-year lithium battery on a plug-in chip.

Manufacturer:

Terrific Corp.

17 St. Mary's Ct.

Brookline, MA 02146

(617) 232-2317

the higher chip.

To use the calendar/clock, you first run a utility program to set it. From then on, the built-in lithium battery will keep it going for five years or more. You probably will want to run the time setting utility twice a year to adjust for daylight saving time, but in general you can set that program aside.

On each disk from which you boot, you must install the Z-TIME.ACC program in the root directory or the RTC.PRGM in the AUTO folder. Then,

whenever you boot up, the current time will be shown (in 24-hour format) at the far right-hand edge of the menu bar. This display can be toggled on and off.

But the nicest aspect of using the device is that all your files will automatically be marked with the correct date.

A clock/calendar may not sound like an item essential to your happiness and well-being, but I guarantee that after two days with Z-Time, you will kick yourself for not having bought it the day you bought your computer. ■

Z-Time Clock Calendar

A device that will keep your ST up-to-date

easily through the process of removing the bottom cover, unplugging the keyboard, removing the metal shield, removing the ROM chip and installing the Z-Time unit in its place with the original ROM chip in the Z-Time socket, and repeating the instructions in reverse order to reassemble the ST. (Oh, yes, your warranty is voided somewhere around Step 4.) The only tools you need

are a #1 Philips head screwdriver, long nose pliers, and a small standard screwdriver.

The only place I had trouble with was the large metal shield which, because of the increased height of the Z-Time plus ROM chip, would not fit back on the metal securing tabs. With a small hammer, I reshaped the cover to fit around

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By DAVID H. AHL

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Disk Label Program and Labels

P.A.C.E., the Pittsburgh Atari User Group, has developed disk label programs for both ST and 800/XL/XE computers that offer more features than most commercial programs for a fraction of the cost.

The programs read all file names on a disk, sort them, and print them on pin feed labels (or paper) of any size you specify. The type size is decreased as necessary to fit all the names on the label. Most common printers (Epson, Oki, Star, etc.) are supported, or you can enter your own printer codes. The programs have options for consecutively numbering labels, showing free space, not printing files with specified extenders, and, for the ST only, opening ".ARC" folders and printing labels that fold over the edge of 3½" disks.

The programs are available from many local user groups or directly from P.A.C.E.

Label program for 800/XL/XE	\$ 5.00
Label program for 520/1040ST	7.00
200 pin feed labels for 3½" disks	5.00
ST label program plus 200 labels	10.00

Pittsburgh Atari Computer Enthusiasts (P.A.C.E.)
P.O. Box 13435 Pittsburgh, PA 15243
BBS (412) 963-1355

(Sponsors of the 2nd Tri-State Atari Computer Show
Pittsburgh, PA, April 23-24, 1988.)

In an attempt to serve our readers better, we have changed the focus of User Friendly a bit. From now on, the column will contain tips, programs, hints, and features that should be of interest to all Atarians—whether or not they belong to a user group.

User Friendly is dedicated to sharing the best material culled from the dozens of Atari user group newsletters sent to our editorial offices each month. These newsletters range from several photocopied pages stapled together to professionally typeset publications that rival the quality of some consumer magazines.

All of the reprints found here appear with the gracious permission of their authors and the publishers of the newsletters in which they first appeared. While every attempt is made to retain the style and flavor of the original, most items are edited for length and clarity.

Note to newsletter editors: If *Atari Explorer* is currently on your user group's mailing list, please check the address. Many groups are still sending their newsletters to us by way of Sunnyvale—a route that adds weeks to the delivery time. If we are not already on your mailing list, we would like to be. Please send all newsletters to *Atari Explorer* at 7 Hilltop Rd., Mendham, NJ 07945.

Real Programmers by Hervyn Mach

• Real programmers don't eat quiche. They eat Twinkies and Szechwan food washed down with caffeinated beverages.

Real programmers don't play tennis or any other sport that requires you to change clothes.

• Real programmers don't write specs. Users should consider themselves lucky to get any programs at all and be happy with what they get.

• Real programmers don't write applications programs. They program right down to the bare metal. Applications programming is for feebs who can't do systems programming.

• Real programmers don't comment their code. If it was hard to write, it should be hard to read.

• Real programmers don't document. Documentation is for simps who can't read the listings or the object code.

• Real programmers don't draw flow-

**Real programmers
don't eat quiche;
turning off call waiting;
and some POKES that will
give you better control**

User Friendly

By OWEN LINZMAYER

charts. The code speaks for itself.

• Real programmers don't plan ahead. They have a gut feel for the work required.

• Real programmers' programs never work right the first time. But if you throw them on the machine, they can be patched into working in "only a few" 30-hour programming sessions.

• Real programmers never work 9 to 5. If any real programmers are around at 9:00 a.m., it's only because they are still up from the night before.

• Real programmers don't write in Basic. Actually, no programmers write

in Basic after the age of 12.

• Real programmers don't write in Cobol. Cobol is for wimpy applications programmers.

• Real programmers don't write in Fortran. Fortran is for pipe-stress freaks and crystallography wienies.

• Real programmers don't write in PL/1. PL/1 is for programmers who can't decide whether to write in Fortran or Cobol.

• Real programmers don't write in Pascal or Bliss or Ada or any of those pinko computer science languages. Strong typing is for people with weak memories.

• Real programmers don't play tennis or any other sport that requires you to change clothes. Mountain climbing is OK, and real programmers wear their climbing boots to work in case a mountain should suddenly spring up in the middle of the machine room.

Reprinted from the November 1987 issue of *MVACE News*, the monthly publication of the Miami Valley Atari Computer Enthusiasts, 4551 Glenheath Dr., Kettering, OH 45440.

Turn Off Call Waiting by Lee Hutcheson

Isn't modern technology great? With call waiting service, you can always get that emergency telephone call. The problem, however, occurs when you are in the middle of downloading a long file and the call waiting signal tries to notify you of another call. The signal interrupts the computer transmission, garbles your data, and can cause the modem to drop the carrier detect.

Fortunately, on some telephone exchanges it is possible to turn off the call waiting "feature" for the duration of a call. Use the following procedure before making a call to cancel call waiting:

1. Listen for the dial tone.
2. Touch-tone: Dial *70. Rotary: Dial 1170.
3. Listen for second dial tone.
4. Dial the number you want.

If you are a subscriber to three-way calling, you can cancel call waiting while a call is in progress. Assuming you have rushed out and subscribed to both of these services, here is the procedure for temporarily canceling call waiting

Center for Theory and Simulation in Science and Engineering

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FACILITY
(CNSF)**

USER GROUP MEETING

Wednesday, November 11
700 Clark Hall
2:00 pm

Movies Made at the CNSF

Refreshments will be served

Atarians are not the only ones who enjoy user group meetings. On a recent tour of Cornell University's new Supercomputer Facility, we saw these posters everywhere.

Listing 1.

```
10 REM DISABLE BREAK KEY
20 POKE 16,64 : POKE 53774,64
30 PRINT "TRY STOPPING ME WITH THE BREAK KEY"
40 GOTO 30
```

Listing 2.

```
POKE 580,5 : REM RESET NOW CAUSES COLD START
POKE 580,0 : REM NORMAL USE OF RESET KEY
```

while a call is in progress:

1. Press the receiver button for a half-second to put the present call on hold.
2. Listen for a dial tone.
3. Touch-tone: Dial *70. Rotary: Dial 1170.
4. Press the receiver button for a half-second to return to the original call.

Warning: Putting the call on hold as described in step 1 will normally cause loss of carrier detect if the modems are already "talking." This procedure will probably be of use only if you have made voice contact and subsequently decide to initiate modem contact. Nor will this procedure work if a third party is already trying to reach you.

Of course, the best and cheapest way to solve this problem once and for all is the way I did. Cancel call waiting altogether, and your transmissions will never be disturbed.

Reprinted from the July and August 1987 issues of Personal Computer Focus, the monthly publication of the Coastal Area Atari Users' Group, P.O. Box 5098, Biloxi, MS 39534-0098.

A Trip Down Memory Lane by Henry Malavolti

In this article we examine a couple of locations in the memory of Atari 8-bit computers that give you greater control over who can see your Basic program listings.

The first location disables the Break key. The second makes the Reset key cause a cold start when pressed, just as if the power had been turned off and on. The final locations make it impossible for another user to LOAD or LIST your program.

Disabling the Break Key: Locations 64 and 53774 turn off the Break key. POKE a 64 into both of these locations, and the user will not be able to turn off or stop the program by pressing the Break key. Disabling the Break key makes your program more user-friendly by reducing accidents. However, the locations should be checked and re-POKED through a subroutine after a PRINT command is issued through an OPEN "E" or OPEN "S": after a system reset, and after a GRAPHICS command. To make it work, use the short program in Listing 1.

Forcing a Cold Start: Placing a non-zero value into memory location 580

Listing 3.

```
10 GOSUB 1000
20 REM JUST CREATING A FEW VARIABLES
30 A = 100 : B = 200 : C = 300
40 PRINT "VARIABLE A = ";A
50 PRINT "I'M COUNTING TO ";C
60 PRINT "TRY TO STOP ME WITH THE BREAK KEY."
70 FOR COUNT = 1 TO C
80 FOR WAIT = 1 TO B : NEXT WAIT
90 PRINT COUNT, : NEXT COUNT : PRINT
100 PRINT "DONE! TRY LISTING ME." : GOTO 2000
1000 REM DISABLE BREAK KEY
1100 POKE 16,64 : POKE 53774,64
1200 REM FORCE COLD START IF RESET
1300 POKE 580,5
1400 REM REPLACE VARIABLES WITH CARRIAGE RETURNS
1500 FOR D = PEEK(130) + PEEK(131)*256 TO PEEK(132) +
    PEEK(133)*256 : POKE D,155 : NEXT D
1600 RETURN
2000 REM SAVE PROGRAM TO DISK
2100 END
2200 POKE PEEK(138) + PEEK(139)*256+2,0 : SAVE"D:FILENAME"
```

Tri-State Atari Show

The Pittsburgh Atari Computer Enthusiasts are sponsoring the Tri-State Atari Products Show on April 23 and 24, 1988.

The show will be held at the Robert Morris College in Moon Township, PA, a suburb of Pittsburgh which is "within a few miles of the Pittsburgh International Airport, convenient to hotels, and accessible by public transportation."

Hours are 10:00 a.m. to 6:00 p.m. on Saturday and 12:00 noon to 5:00 p.m. on Sunday.

For more information, contact President Lanny Shoup, P.A.C.E., P.O. Box 13435, Pittsburgh, PA 15243. ■

makes your machine think that the power has been turned off briefly whenever the Reset key is pressed. In effect, the Atari does a cold start.

If you add the lines in Listing 2 to your Break key disabling routine, when someone tries to stop a program by using Reset, the program is lost from memory and cannot be listed.

Variable and Statement Pointers: Locations 130 and 131 contain the address of the beginning of the variable name table in memory. Locations 132 and 133

contain the address of the end of the table.

By POKEing all of the locations between these two addresses with a 155 (155 is the ATASCII value for Return), you keep the variables in a program from being displayed. Instead, every occurrence of a variable in the program listing is replaced by a carriage return.

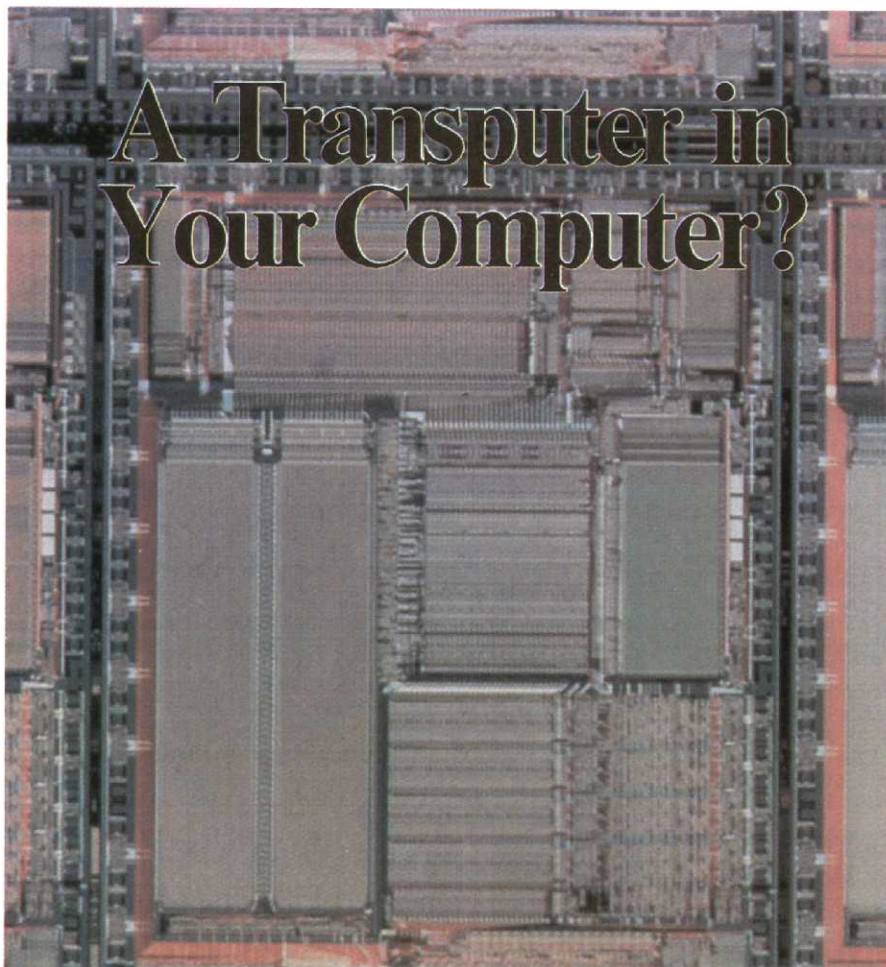
Locations 138 and 139 control the current Basic statement pointer. If you modify these locations, your program will only RUN from a disk. It cannot be LISTED, LOADED, or CLOADED.

C: will work if the user wants to copy the program on tape. In order to use this location, the POKES must be in the last line of the original program.

Type in the sample program in Listing 3 and SAVE it to disk using a name different from that in line 2200. Turn your machine off and then on again to clear memory. LOAD the program from disk and remove line 2100. Now RUN the program again. A working, protected copy should be saved to disk under the name you used in line 2200. This version of the program can't be LISTED. The only way to use the program is with the command RUN "D:FILENAME".

Reprinted from the October 1987 issue of The Sorcerer's Apprentice, the monthly publication of the Michigan Atari General Information Conference (MAGIC), 28111 Imperial Dr., Warren, MI 48093. ■

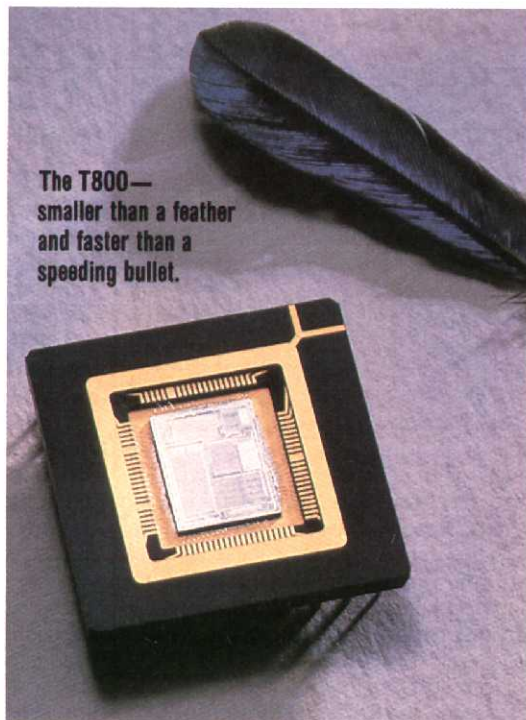
A Transputer in Your Computer?



The Inmos T800 up close.

The next generation of computers will be Transputer-based and will work in parallel

The T800—smaller than a feather and faster than a speeding bullet.



On a recent visit to the Cornell National Supercomputer Facility, Kenneth Wilson, director of the Facility, was talking about “advancing the art and science of parallelism.” Said Wilson, “In the future, it seems likely that supercomputers will get their speed from many processors acting in parallel, with top-of-the-line machines having thousands, perhaps millions, of processing units.”

Current commercial supercomputers, which consist of exotic high-speed processors, have neared the technological limit in the processing power they can provide. But by combining large arrays of processors basically like those in today’s microcomputers, engineers can achieve practically limitless power at costs that will plummet because of mass production.

One of the most promising new chips with which Cornell is experimenting is the Transputer. Developed by Inmos, a small semiconductor company based in the U.K., the Transputer differs from other advanced microprocessors, like the Motorola 68020 and Intel 80386, in three important ways.

First, it has a smaller instruction set and is virtually a RISC (Reduced Instruction Set Computer) device. Second, it is designed to support parallel processing using a large number of interconnected Transputer chips. And third, it is extremely fast; with its on-board floating-point unit, it is currently the fastest single-chip processor in the world, with speed equivalent to that of a DEC VAX 8600 super-minicomputer.

Given the extraordinary performance of the Transputer, there is good reason to believe that it will have as much or greater impact on the workstation and upper-end microcomputer markets as it will on the much smaller supercomputer market. And, indeed, that is what the engineers at Perihelion Software in England believe, having incorporated the Transputer into Atari’s first workstation product.

Parallel Processing vs. Multi-tasking

To understand the Transputer, you must first understand parallel processing. Unfortunately, the terms *parallel processing* and *multi-tasking* are confused. They both mean doing two or more things at once—or do they?

Parallel processing means executing a program on more than one processor, with different parts of the program being executed simultaneously, each on its

By DAVID H. AHL

Definition of Terms

own processor. On a parallel computer, adding more processors will cause an increase in the execution speed of the program, limited only by the ability of the programmer to split the algorithm into a sufficient number of concurrent parts and by the speed degradation caused by communication between the processors.

Multi-tasking means executing more than one program on a single processor, with slices of the processor time being allocated to the various programs. To the user, the programs may appear to run concurrently, but in fact they do not. In multi-tasking, the only ways to increase speed are to run the processor at a higher clock rate (16MHz vs. 8MHz, for example) and to speed up memory transfers by using cache memories and fewer wait states. However, these techniques can be used with the processors in parallel systems as well, so inherently parallel processing will always be faster than multi-tasking.

While it is possible to use standard microprocessors like the 80386 and 68020 in parallel machines, it is much more difficult to design parallel systems around these chips than around one like the Transputer which already has communication links built in. Furthermore, programming a parallel system of 80386 chips is a horrific task, because each chip was designed to be the master of an entire system.

Transputer Hardware

The original published specification for the Transputer indicated that it would have 4K of RAM on the processor chip itself. Because of a hasty transfer of Transputer production from a plant in Colorado to one in Wales, which was not set up for advanced fabrication, the first chip (the T414), released in October 1985, had only 2K on board.

Inmos was then faced with three options: living with a 2K device (not acceptable), rebuilding the plant in Wales (too costly), or redesigning the layout of the chip for the older fabrication process (the best choice). During the redesign, Inmos engineers found they could clean up some of the internal logic structures, thus saving enough space to incorporate a floating-point processor on-board along with the required 4K. This new device was called the T800.

The advantage of having a floating-point processor on the cpu chip cannot be overemphasized. An external floating-point chip, such as the Motorola 68881 or Intel 80287, must communicate with the cpu itself and thus, on many operations, is actually slower

• **Asynchronous:** Data transmission in which the time interval between characters transmitted can vary arbitrarily, with synchronization accomplished by start and stop bits added to each character.

• **Blitter:** A graphics chip that performs transfers of blocks of bits at a high speed.

• **C:** A general-purpose programming language featuring economy of expression, modern control flow and data structure capabilities, and a rich set of operators and data types. It is usually used with the Unix operating system.

• **Cache Memory:** A mechanism interposed in the memory hierarchy between main memory and the cpu to improve memory transfer rates.

• **CAD:** Computer Assisted Design.

• **Channel:** A software communication interface. (See Link)

• **Gigabyte:** One billion bytes.

• **Link:** A hardware communication interface.

• **Multi-tasking:** Executing more than one program on a single processor.

• **Parallel Processing:** Executing a single program on more than one processor.

• **Wait State:** The number of instruction cycles that the cpu must wait between completing an operation and transferring the result to memory.

• **Workstation:** A high performance microcomputer, often connected to a mainframe or supercomputer. ■

than the cpu alone.

The T800 floating-point unit can perform 64-bit arithmetic at a sustained rate of 1.5 MFLOPS (million floating-point operations per second). As a result, a 20MHz T800 performs about ten times as fast as an 80286/80287 combination and five times as fast as a 68020/68881 combination on a standard Whetstone benchmark.

With its on-board memory, the Transputer is actually an entire computer on a chip. It contains a more-or-less conventional cpu capable of arithmetic, logic, and memory transfer operations; the 4K of on-board memory; a conventional memory bus capable of addressing up to four gigabytes of external memory; and four high-speed (20 Mbits/sec), asynchronous, serial communications links. Thus it is possible to download a small (4K) program through one of the links and have it executed without providing any external memory at all.

Unique in the Transputer are the communications links that allow a number of Transputers to be hooked together in a way that resembles the way microcomputers are connected in a local area network. The beauty of this design is that the Transputers can be hooked together with nothing more complex than a pair of wires. Equally important, the communications links run concurrently with the processor itself, so the Transputer can perform calculations while it is communicating with up to four other Transputers—with little or no degradation in the processing speed.

The design of a reduced instruction set computer usually requires a tradeoff. With fewer simple instructions, a machine can run faster, but it may take two or three instructions to execute an operation that can be performed in a single instruction on a conventional chip, thus negating the speed advantage. Inmos has addressed this problem on the T800 with micro-coding—many of the instructions are quite high level and perform frequently used complex operations of Occam, a communications-oriented language designed to run on the Transputer.

The processor has microcoded support for processes at two priority levels. High priority processes may preempt low priority processes after any instruction and run until they relinquish control of the processor. Low priority processes are round-robin scheduled on a timeslice basis. However, a timeslice can end only on certain defined instructions, thereby reducing the possible number of intermediate states to a minimum and speeding the mechanism of process switching.

The Transputer also differs from a conventional RISC design in that for temporary storage it uses "workspaces" in the 4K on-board RAM rather than a large number of programmable registers. This is possible, because the 80Mb/sec on-board static RAM is so fast that it functions like the registers of a conventional processor.

The T800 also has three instructions that aid in performing high-speed graphics operations. These instructions are optimized for eight-bits-per-pixel color graphics rather than for monochrome bit-mapped graphics. They perform block moves on two-dimensional byte arrays, allowing the T800 to act like a Blitter (bit-block transfer) chip in animation and windowing applications.

The Occam Language

Designers of the Transputer worked hand-in-hand with the designers of the Occam language, so the Transputer in-

struction set is optimized for executing Occam programs. Occam assumes that many processes, including arithmetic, logic, memory transfers, and communication, will occur on multiple cpus, so input/output processes are incorporated in the very heart of the language.

The processes that make up a program can be executed on the same or different cpus in a network. The channel (or link) joining two processes can be physically represented by a memory location on one Transputer or by a hardware link between different Transputers, and the programmer need not know which will be used when he writes the program.

Like Pascal, Occam 2 (the current version) supports different data types, including 16-, 32-, and 64-bit integers and real (floating-point) numbers. Channels carry not only numbers, but structured data objects such as strings, arrays, and graphics blocks, so message-passing is greatly simplified.

Inmos has also written a C compiler for the Transputer. However, because C does not support true concurrent operations, modules in C must be written and then bound together with a small "harness" program written in Occam 2.

Transputer Computers

While a self-contained microcomputer could be designed around a single T800 Transputer, it would not make a great deal of sense to do so, because the Transputer is currently not supported by any industry standard operating system. Thus, universities and most third-party manufacturers are choosing to put Transputers into high-performance subsystems that can be connected to a conventional microcomputer, such as an IBM PC/AT, DEC MicroVAX, Sun workstation, or Atari ST, which can provide the operating system, mass storage, and programming interface.

Of course, for specialized applications, such as animation and CAD, that do not require a standard operating system, a Transputer-based workstation may make sense, and at least one manufacturer has announced such a "personal supercomputer."

Transputers are also being used as node controllers for parallel mainframes by manufacturers like Floating Point Systems. The Cornell supercomputer system, for example, has five FPS 264 and two FPS 164 computers working in parallel and linked to the main IBM 3090-600E cpu. In addition, Cornell is using Transputer-based front-end terminal/workstations with their supercomputer. They have designed a proprietary operating system to allow it

to run C++ (C-Plus-Plus), a language described by Wilson as "as much beyond C as C is beyond Fortran."

The Atari Abaq

The Transputer-based Atari Abaq was designed by Perihelion, Ltd. in England and is based on the T800 Transputer chip running at 20 MHz. It will have 4Mb of dynamic RAM, 1Mb of dual-port video RAM, a color blitter chip, three buffered 20 MHz links, a true DMA (direct memory access) SCSI port for a hard disk, and three internal expansion slots. Despite all this hardware, it will not be a stand-alone product, but rather will use the Mega ST as a front end. It will be possible to add additional Transputers, either as a local area network or as part of a multi-processor array.

The Abaq has four screen modes. Mode 0 has the highest resolution, 1280 X 960 pixels, with four color bits per pixel, allowing up to 16 colors. It is best suited for desktop publishing and engineering drawings.

Mode 1 has 1024 X 768 pixel resolution and eight bits per color (256 colors), making it most suitable for CAD, color pictures, and business graphics. Mode 2 has 640 X 480 pixel resolution, but offers two screens (instead of the usual one) of eight bits per color each, which will allow high-speed animation.

Mode 3 has 512 X 480 pixels with 24 bits per color (16.8 million colors!) which will allow true color and smooth shading for 3-D modeling and the like.

While the Transputer itself is fast, the inclusion of a blitter in the basic unit ensures that the processor is not burdened with screen graphics housekeeping. The blitter implements very fast raster graphics operation, such as the drawing of detailed type fonts. It also provides a 32-bit wide pipeline, which allows eight screen pixels to be updated simultaneously in Modes 1 and 2.

Square area fills are performed by the blitter at the rate of 128 megapixels per second, and arbitrary two-color drawing is done at the rate of 64 megapixels per second. What this means is that in graphics Mode 2 (animation), the entire screen of 307,200 pixels can be updated a staggering 218 times per second—more than seven times the rate of standard video!

While the basic Abaq system will include one Transputer, it will be possible to plug in three additional boards, each containing 1Mb of memory and up to four Transputers, for a total of 13 Transputers in the system box. Furthermore, as a result of the parallel nature of the system, it will be possible to connect the

unit with additional external Transputers.

The expansion slots can also be used for memory cards (up to 64Mb on each), graphics cards, and other peripherals. The full Transputer bus is brought out to each slot, so any type of peripheral can be connected.

Helios Operating System

Atari has contracted with Perihelion Software to produce a new operating system, Helios, for the Transputer. This system will have file compatibility with MS-DOS but will be different from conventional systems such as MS-DOS, TOS, and Unix, as none of these has the ability to take advantage of the parallel processing capability of the Transputer.

Tim King of Perihelion wants the new system to be the standard non-Occam operating system for the chip and has written it in a mixture of Occam and C. System tools include a macro preprocessor, a C compiler, an assembler, and a linker. Later versions will include a debugger as well.

Helios presents a low level interface that should be familiar to programmers who have worked with Unix. Each user runs a number of tasks which can communicate among themselves using a simple message-passing protocol. A message can be transferred between two tasks in the same machine or between tasks in different processors.

Each task is constructed of a number of interconnected Transputer processes which can communicate either by message-passing or by sharing data. Different tasks can be written in different languages, as all communication at this level is via message-passing.

The user interface has two parts. First is a command line interface similar to the Unix C-shell, which provides the usual Unix commands. This is coupled to an implementation of Xwindows V11 to provide a familiar windowing mechanism.

The programmer's interface will be complemented by a "point and push" graphic interface for the less experienced user. This will use a mouse and pull-down menus and will be implemented on top of Xwindows.

Thus, the Atari Abaq will be one of the first commercial Transputer-based workstations available at a relatively low price point. The Abaq, whether in its basic form or with multiple Transputers, will offer extraordinary computing power, sensational animated graphics, and versatile high-speed communications, and will be the harbinger of a new generation of personal computing. ■

The most striking thing about the classic coin-op and video games is their repetitiveness. Even scrolling shoot-outs like Vanguard, Super Cobra, and Cosmic Avenger, which had several action screens, left the best players cycling through the phases at ever-increasing speeds. Eventually, exhaustion dulled the reflexes sufficiently to finish the round.

Computer action and action-strategy games generally have greater replayability than these arcade classics, because they are more complex. The larger number of variable factors in contemporary computer action games makes it difficult for a player to master the mental and physical strategies required for success as quickly as he did in Gorf or Space Invaders.

But sooner or later, boredom enters the picture. As your skill grows, it takes longer to post a new record. The further the distance to a new high score, the greater the likelihood that a trivial mistake during the weary climb toward the record will trip you up and ruin the effort. After a while, you learn to play the game so well that it ceases to challenge. The disk is retired to the software shelf with full honors, and another game assumes the honored position next to the drive.

Construction kit software, a relatively new wrinkle in the fabric of entertainment software, can extend the fun indefinitely. After solving all of the 150 playfield puzzles contained in *Lode Runner* from Broderbund, owners of 8-bit Atari systems can use the special module included on the disk to create

new ones. In fact, many users discover that they get a bigger kick out of creating customized games with construction kits than they did out of playing the program author's version.

It Started with a Silver Ball

The idea of a program that allows a non-technical user to design a game is not a new one. Although noble, flawed efforts like *The Arcade Machine* from Broderbund appeared in the early 1980s, Bill Budge deserves credit for popularizing the concept with *Pinball Construction Set* (\$14.95) which is still available for Atari 8-bit machines in Electronic Arts' Classics series.

"Have it your way" games for all Atari computers

This remarkable program, still delightful after nearly half a decade, set the style for virtually all construction kits to come. The amateur pinball wizard uses the joystick to point the on-screen cursor at components in the "parts box" and drag them to where the pinball playfield is assembled. The features can be positioned in any desired combination and colored to suit individual preference.

Pinball Construction Set also lets you set parameters for ball action and major elements of the electronic pinball table. By repeatedly testing the design-in-progress, you can refine the field until it works smoothly. You can then save

the newly created pinball game to disk for later play.

Electronic Arts has so far denied ST owners the enjoyment of *Pinball Construction Set*, but two other publishers have recently stepped into the breach with similar products for the 16-bit system.

The advanced graphics of the ST make *Pinball Wizard* (\$34.95) from Accolade the best-looking computer pinball simulation ever slapped into a disk drive. The program comes with a prepared pinball game, but the focus is on the construction module.

The playfield elements, located in a parts box on the left side of the main display, capture a lot of the color and excitement of actual pinball. The flippers, bumpers, rollover targets, gates, and other features are large and beautifully drawn.

Building a complete pinball table from scratch is surprisingly simple. You use the familiar click-and-drag technique to transfer each part of the playfield. There is an unlimited supply of each type of part, so those who dote on three- and four-flipper games can let their imaginations run wild. The same click-and-drag method allows you to move features around the table to achieve new and different configurations.

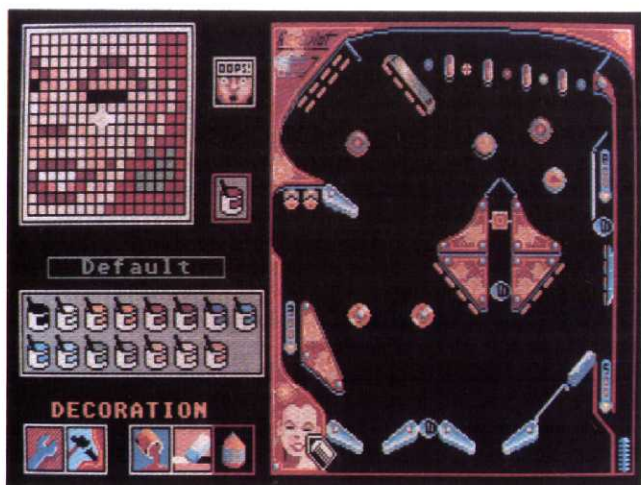
A bank of eight icons controls all major phases of the construction kit. For example, clicking on the drawing of a wrench throws the program back into construction mode.

Activating the paint pot icon gives you a choice of Decoration or Obstacle

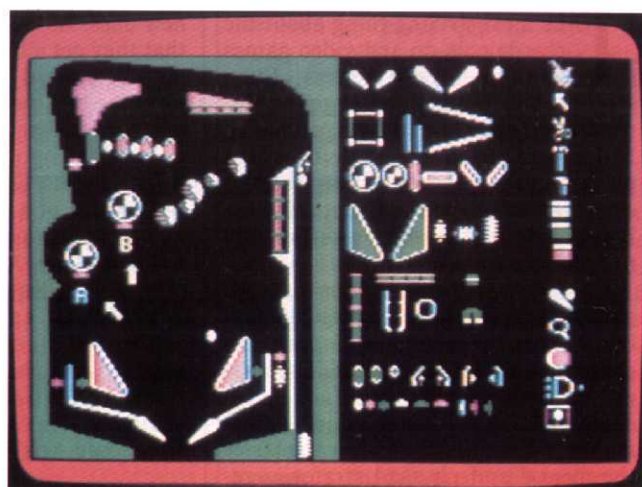
Construction Kits Are Forever



By STEVE RICHARDSON



● Pinball Wizard



● Pinball Construction Set

setting. The ball passes harmlessly through anything drawn in the Decoration mode, but it is deflected by anything added in the Obstacle mode. Two icons at the top of the screen switch back and forth between the settings.

The ? pictograph prevents confusion when working with the paint pot. When clicked and held, all decorations temporarily disappear. Releasing the mouse button restores the table to normal status.

The eraser icon is a real work-saver. You can remove all objects, leaving just the frame; substitute the standard frame included on the game disk; or wipe the screen blank. You can decorate the table first and, if the play features just don't work right, start fresh without losing the artwork.

The slide bar icon leads to a control panel, which adjusts six major factors: slope (the incline of the table), tilt (sensitivity to jostling), elasticity (the "bounce" in the bumpers), stroboscope (the visibility of the ball), and number of balls (one to five).

In addition, *Pinball Wizard* lets you establish bonus point rewards for fulfilling certain conditions, like knocking down all the targets. The bonus can be a double score, a triple score, or an extra ball.

The documentation does a fair job of explaining the system, though the presentation cries out for diagrams. The organization of the rules is also somewhat haphazard. Everything is there, but a more logical arrangement of key topics, each clearly marked with a descriptive heading, would have made information much easier to find. The construction system isn't difficult to

understand, but a drawing in which each icon was labeled and explained would speed the learning process.

Visually, *Pinball Factory* (\$39.95) from MichTron is not as impressive as the *Accolade* title, but it has some other strengths. The most obvious are the complete art program, the capacity for multi-ball play, and the user-modifiable backglass.

Wild Fire, a sample pinball game, is included on the disk. Created by Harry Lafnear, a MichTron engineer, it is both an inspiring example and an entertaining game in its own right. Modifying this playfield is much easier for a novice than starting with a blank screen.

In *Pinball Factory*, the user interface employs a menu rather than icons. The precise method of operation is also a little different. You click on a game-part and then click again to deposit a similar piece on the playfield. One good point about this system is that it makes it easy to position multiple copies of the same playfield feature without returning to the parts box.

Can You Dig It?

Boulder Dash Construction Kit (\$24.95) gives a third lease on life to one of the most popular action-strategy contests of all time. Peter Liepa and Chris Grey created *Boulder Dash* in 1984 for First Star Software. The visual hook of cascading rocks caught the attention of computer gamers, and the fun of steering Rockford through the puzzle-like playfield sparked a cult following which outlasted the original manufacturer. (First Star left the publishing field in 1986, though it is still active as a design house.)

A sequel, *Super Boulder Dash* reached market in 1987 under the Electronic Arts banner. Even its assortment of new caves, which incorporate play-features not found in the original, could not permanently satisfy the demands of the *Boulder Dash* cult.

Now Epyx provides the obvious answer to the apparently insatiable desire for more playfields with a construction kit designed by Fernando (*Astro Chase*) Herrera of First Star. It is the second title in the Maxx Out series by

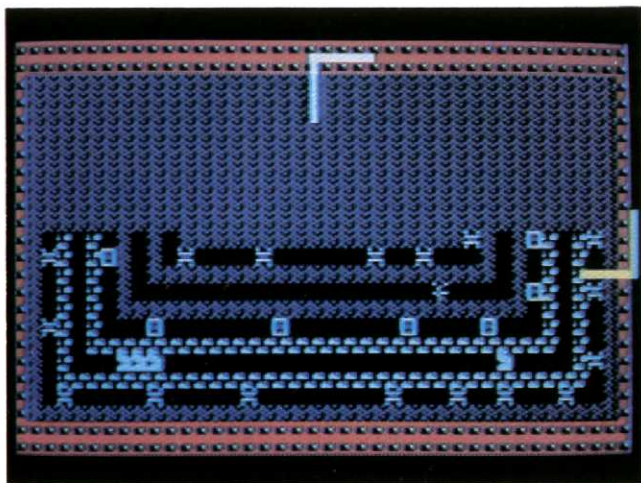
Creators of Construction Kits

Accolade
20813 Stevens Creek Blvd.
Cupertino, CA 95014
(408) 446-5757

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

Epyx
600 Galveston Dr.
Redwood City, CA 94063
(415) 366-0606

MichTron/Microdeal
576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700



● Boulder Dash Construction Kit

● Airball Construction Set

Epyx.

The 15 complete playfields on the disk should inspire would-be designers while serving as an introduction to the game for newcomers. Frankly, Herrera's screens probably won't please purists. They stress the special features, like the butterflies that change into diamonds, at the expense of delicate manipulation of rock piles. They are not bad, just different from what the Burying Brigade might expect. Perhaps diehards will use the construction kit to produce more screens in the classic, rock strewn mold.

The instruction manual, introduced with a three-page cartoon strip, covers all phases of playfield creation in a brief, yet thorough manner. As with most Epyx documentation, the organization is excellent, though there is a tendency to gloss over the details. An on-disk tutorial would have been a thoughtful touch, but most users will quickly learn to transfer screen elements from the parts box to the playfield. A four-page folder summarizes controller (mouse or joystick as appropriate) and keyboard commands.

Boulder Dash players often say that they enjoy the mental part of the game as much as the rapid on-screen movement. Rockford's legion of followers will definitely want to own this gateway to the mysteries of *Boulder Dash*. And those who haven't visited the caves should correct this oversight at the first opportunity.

Having a Ball

Eddy Scio's *Airball* from Micro Deal for the Atari ST earned mention on many 1987 Best of the Year lists for its

blend of arcade action and fantasy adventure. The manual deliberately left many aspects of the game unexplained to force players to learn as they go, so it is somewhat surprising to see *Airball Construction Set* (\$24.95) make its debut less than a year after the earlier title. At the very least, this product has more information than a hint book for those who are still perplexed by *Airball*.

This program is quite different from the other construction kit programs dis-

existing numeric value with a cursor. You simply type a new number on the keyboard and hit return to confirm the entry.

The room under construction is not visible on screen at all times, but it can be called up in seconds from the Edit menu. After you build and save several rooms, the Explore option on the Extra menu facilitates testing. The same menu has a Restore function, which wipes out all rooms currently stored in

The advanced graphics of the ST make Pinball Wizard the best-looking computer pinball simulation ever slapped into a disk drive.

cussed here. *Airball* is, first and foremost, an action-adventure, so the basic unit of work is the room, not the playfield. You pick the doors, floor, and special objects for one location and then proceed to do the same for each room connected to it. Before long, you have a new multi-screen landscape through which to steer the bouncing ball. Individual rooms or whole games can be saved on a formatted disk for later recall.

The work screen has a roster of room specifications. You can set these parameters either by selecting a choice from the appropriate pulldown menu or by pointing the cursor at the data line to be edited and clicking. This replaces the

RAM in case the trial run proves the new room a dud.

The beautiful three-dimensional graphics of the ST make this construction set especially challenging; each object, for example, must be positioned with regard to height as well as length and width. Portals hanging in the sky and stairways to nowhere are common features of novices' first rooms.

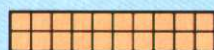
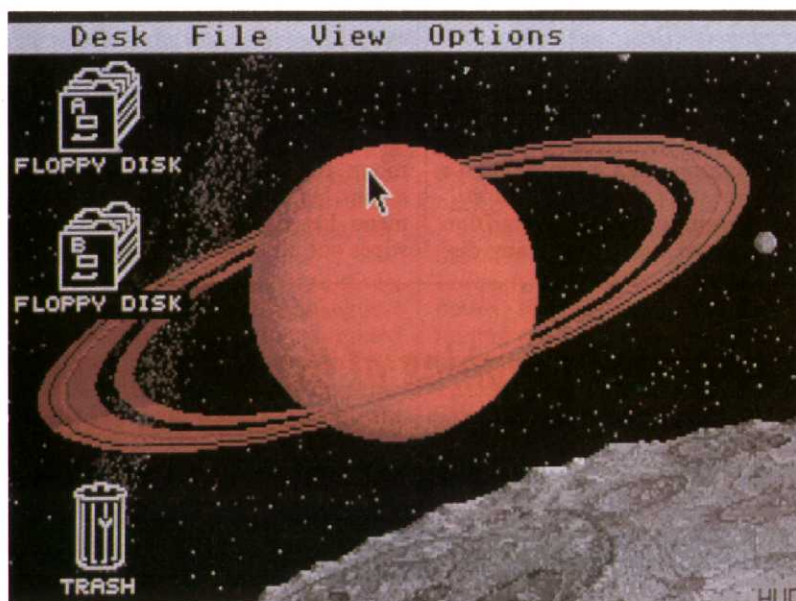
Enthusiasts frequently cite interactivity as the major strength of computer entertainment software. Construction kits push interactivity to a higher level of sophistication than ordinary programs. They can transport even those who lack technical expertise into a new world of creativity and fun. ■

Software

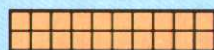
A very varied mix of products and opinions

Survey

Easel/ST



EASE OF USE



PERFORMANCE



DOCUMENTATION

System: Atari ST
Copy protection: No
Summary:
Simple-to-use
desktop art loader
List price: \$19.95
Manufacturer:
Computer
Fenestrations
P.O. Box 151
Lake Monroe, FL
32747
(305) 322-3222

If you're tired of looking at the kelly green desktop that came with your ST and changing it to puce just doesn't do it for you, you will be happy to hear that Computer Fenestrations wants to help you add excitement to your desktop. Their *Easel/ST* program, when placed in an AUTO folder, will load any *Degas* or *NeoChrome* picture you choose as the background of your desktop.

Bob Breum of Computer Fenestrations notes that the product is particularly useful to dealers who want to catch the attention of potential customers, but users like you and me definitely appreciate the extra pizzazz it can give to

something as mundane as perusing a directory.

The program works in all resolutions, though you need to place three different screens—one for each of the three resolutions the ST supports—in the root directory of your boot disk, if you want to change from one to the other. *Easel* automatically notes what resolution you are in and loads the compatible image. In addition, when you exit a program and return to the desktop, your background image is restored in its original palette.

The only negative comment I have concerns the documentation. Most of the small brochure is used to describe

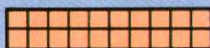
how to copy the program onto your boot disk—something that is covered amply in the ST operating instructions and a task that most ST users will have down pat by the time they begin to consider changing the desktop.

The positive side of this minor criticism is that copying the program and your images to the boot disk is the most complicated part of using the package.

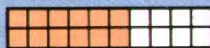
While far from a necessity for ST users, the bargain price and ease-of-use of *Easel* make it attractive and fun. As Breum says, it could become the electronic equivalent of the refrigerator door as the family art gallery.

—Andy Eddy

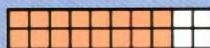
Test Drive



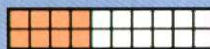
EASE OF LEARNING



CHALLENGE



GRAPHICS



DOCUMENTATION

System: Atari ST

Required equipment:

Color monitor; joystick

Copy protection: Yes

Summary: An impressive driving simulation; lacks depth.

List price: \$34.95

Manufacturer:

Accolade

20813 Stevens Creek

Blvd.

Cupertino, CA 95014

(408) 446-5757



Test Drive by Accolade is more a driving simulation than a traditional car racing game of the Pole Position sort. Test Drive allows you to take five of the world's most exotic sports cars out for a spin on a winding mountain road, trying to avoid various obstacles while racing against time.

Test Drive is distributed on two copy-protected 3 1/2" disks but can be run on a single-drive system if you don't mind occasional disk swaps. The protection scheme is particularly annoying, because the program spends a considerable amount of time loading sections of code between games. This waiting period could be all but eliminated if provisions were made to install Test Drive on a hard disk.

After booting up, you are presented with graphics screens depicting the five available cars and specification sheets, which detail the performance ratings of each. These performance ratings supposedly describe how the cars handle on the road, though I didn't notice any significant differences aside from the obvious—top speed and acceleration.

After you select the car you want to drive, it takes a little under a minute for the game itself to load into memory. The game screen depicts what you would see seated behind the wheel, including functioning dashboard instruments, a rear view mirror, and a radar detector clipped to the sun visor. The interior matches that of the car you have selected.

The road ahead is an inclined stretch of asphalt with a mountain bank to the right and a precipitous cliff on the left. If you run off the road, you will total the car. Your task is to reach the top of the mountain as fast as possible, posted

speed limits be damned.

You control the car using a joystick, though certain options, such as toggling the sound effects and pausing the game, are selected from the keyboard. Ingeniously the joystick serves as your steering wheel, manual gear shift, accelerator, and brake. While this may sound confusing, it is remarkably easy to use. An optional control setting allows the joystick to emulate the actual shift pattern of the car, making it much more difficult to operate.

Sitting in neutral you watch the tachometer jump as you press down on the gas. Drop the car into gear and your wheels chirp, your head snaps back, and you're off! As you thunder up the mountain keep in mind that the road ahead is full of potholes, other vehicles, and radar traps. Depending on how you react to these obstacles, they range from annoying to deadly.

Every few minutes your car automatically pulls into a gas station where your performance thus far is evaluated. There are four gas stations along the way, and a dealership at the top of the mountain. If you successfully manage to drive the car back to the dealership, the game is over, and you can enter your name in the hall of fame which is saved on disk.

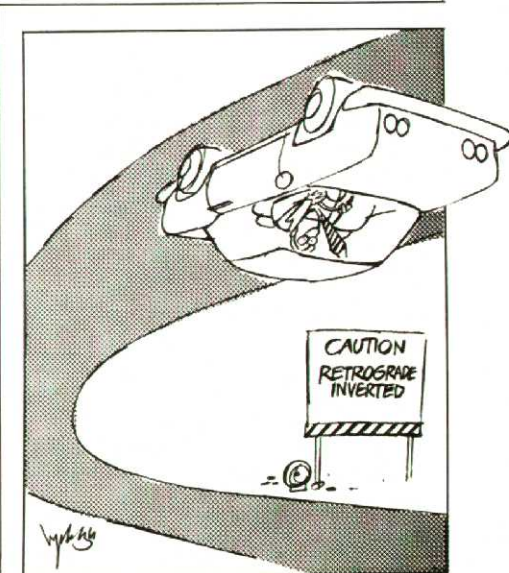
The documentation for Test Drive consists of a five-page pamphlet which contains no illustrations and several inaccuracies. For instance, a reference is made to water slicks, yet none appear in the game. The documentation also fails to explain how extra cars are awarded (two at each gas station). These omissions are indicative of a product rushed to market.

The graphics in Test Drive are impressive to say the least. The road flows

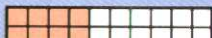
smoothly from a point on the horizon until it disappears underneath your wheels. While the graphics are captivating, the sound effects leave much to be desired. Sure, little details are included, like the screeching of tires as you round a corner too tightly, but police sirens, an impressive crash, and digitized voices are all missing.

To be sure, you may be tempted to buy Test Drive on the strength of its graphics alone, but repeated play will reveal the major flaw of this game: lack of variety. The obstacles you face do not appear randomly, but rather, always in the same locations, making it easy for a novice to master the game. Depth and complexity could have been added to the game with weather conditions, scenery disks, a construction set, or racing modules. However, as it stands, Test Drive should be approached with caution.

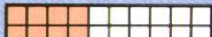
—Owen Linzmayer



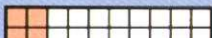
Marble Madness



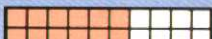
EASE OF LEARNING



CHALLENGE



GRAPHICS



DOCUMENTATION

System: Atari ST

Required equipment:

Color monitor; joystick recommended

Copy protection: Yes

Summary: Another half-rendered version of an arcade classic

List price: \$34.95

Manufacturer:

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171



A few years ago, Atari came out with a labyrinthine coin-op game called Marble Madness. In it, the player maneuvered his ball toward a finish line on a thin track, around strange obstacles like acid puddles and mischievous worms, before time ran out. It became a classic, mixing

an easily-grasped, yet intensely challenging, task with vivid sound and realistic graphics.

During the past year, the folks at Electronic Arts have adopted a schizophrenic stance regarding the ST version of this coin-op favorite—one minute they announced that it would be re-

leased; the next minute they denied the previous announcement. They have finally released it, but don't get your hopes up; the long-awaited package looks like a leftover from a 2600.

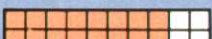
The sound is unremarkable, and the graphics are sloppy. For example, when your marble falls off the rear of a

The most interesting name on the software scene is Microdaft, though their strategy is not at all daft; they are committed to bringing new software into the Atari 8-bit market. The company has recently brought two games over from the U.K. and plans to bring more in coming months.

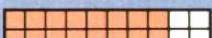
Dropzone, one of the latest imports, is fashioned after the arcade classic, *Defender*. In *Defender*, you are interfered with and chased by multitudes of flying nasties, whose objective is to swoop down and capture the few remaining survivors left on the surface of the planet over which you are all flying.

Dropzone is quite similar, though it contains a few (mainly cosmetic) variations. In the new game, your onscreen counterpart is an astronaut with a rocket backpack, and the assailants don't try to kidnap your planetbound kin... they opt instead to blow them off the planet. The main difference is that in *Drop-*

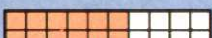
Dropzone



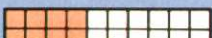
EASE OF LEARNING



CHALLENGE



GRAPHICS



DOCUMENTATION

System: 48K 8-bit Atari

Required equipment: Disk drive and joystick

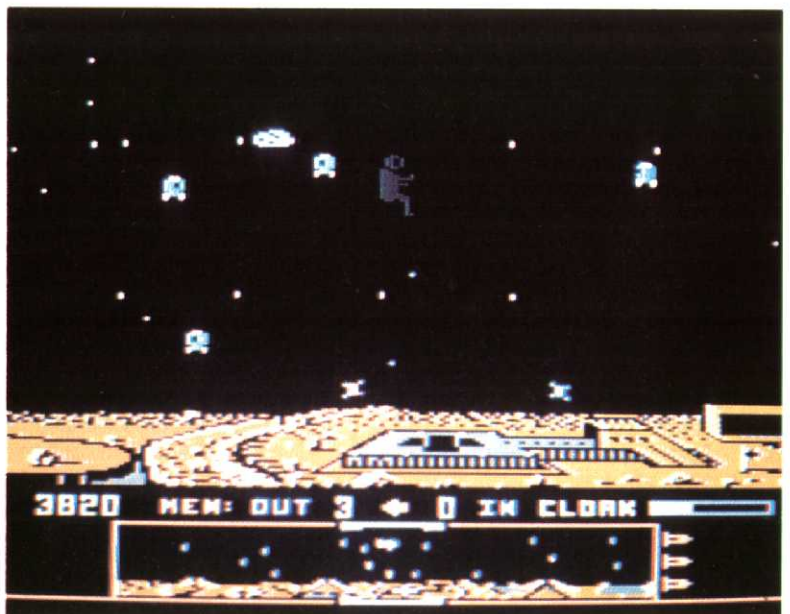
Copy protection: Yes

Summary: Tough Defender-like battle

List price: \$24.95

Distributor:

Microdaft
19 Harbor Dr.
Lk. Hopatcong, NJ
07849



track—something that happens annoyingly often—the ball seems to disintegrate in mid-air rather than appearing to pass behind the track. Granted, this effect would be a lot easier to accomplish with player/missile graphics, a feature not inherent in the ST operating system, but other game designers have programmed around this omission with much more realistic results.

Mouse and joystick control are both difficult, and even after you think you have mastered the control system, the ball occasionally takes what appears to be a completely unprovoked dive off the track.

To compensate somewhat for the difficulty you are sure to have controlling the ball, EA appears to have moderated the fierce opposition you face from the various antagonists and obstacles, which makes losing your marbles easier to avoid.

To say that EA has disappointed us is an understatement. With games like *Starglider* and *Goldrunner* to show how well games can be done on the ST, there is no excuse for a travesty like *Marble Madness*. It's too bad EA has taken a great concept and turned it into an anticlimax.

—Andy Eddy

zone, you can snatch up your compatriots and park them safely in a space station—thus the title of the game.

Dropzone keeps your fingers flying. *Defender* had many buttons for controlling its many features, but the 8-bit machines lack the luxury of a custom dashboard. Luckily, the programmer has limited the controls to one joystick, the space bar for bombs, the Esc key to pause, and any other key to toggle an invisibility cloak.

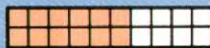
Even with these simplified controls, you will succumb to pressure in the heat of battle, because taking your hand off the stick to strike a key is risky given the unrelenting pace of the game. I would have preferred a keyboard option, which could have given the player better control over all aspects of the game. Better documentation, too, would help the player master the game.

Dropzone is a decent piece of software, but risks alienating the player with a seemingly impossible task. I can't help thinking that if the designer had given the player a smoother, slower paced learning curve, Microdaft could have had quite a hit on its hands. As it is, enjoyment of the game will probably be limited to the most talented of joystick jockeys.

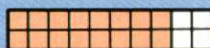
—Andy Eddy



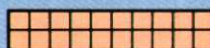
Airball



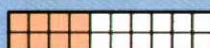
EASE OF LEARNING



CHALLENGE



GRAPHICS



DOCUMENTATION

System:

Atari ST

Required

equipment:

Color monitor;

joystick

recommended

Copy protection: Yes

Summary: Challenging mix of maze and adventure genres

List price: \$39.95

Distributor:

MichTron

576 S. Telegraph

Pontiac, MI 48053

(313) 334-5700

Airball, the latest game from the Microdeal/MichTron combo, is an imaginative amalgamation of two of the most popular kinds of entertainment software—the maze game and the adventure, with the accent on the maze component.

At the start of the game, you find that you have been transformed into an inflated sphere by the Evil Wizard. You search for treasure as you make your way through a series of castle rooms, avoiding potentially puncturing threats. Your ultimate goal is to retrieve the Wizard's spell book and return it to the starting room. At that point, you will learn what you have to do to reassume

your human form.

In addition, you are up against time pressure in the form of a slow leak. To keep yourself rolling, you must occasionally reinflate yourself by bouncing onto one of the pumps strewn about the course. Further caution must be taken not to overindulge, as you may pop.

The game taxes your reflexes, forcing you to leap over an assortment of obstacles to get to bonuses and connecting doors. The castle is lavishly decorated with figurines and other graphic adornments. While many of these decorations are unrelated to the task at hand, it is nice to have pretty things to look at while playing. It is no surprise that the company that created *Goldrunner*, another visual bonanza, is responsible for *Airball*.

Airball does have a few shortcomings, the first of which concerns documentation. Understandably, the programmers wanted to leave most of the mysteries of the game undocumented, to be discovered along the way. But I think that a bit too much is left out of the explanation. For example, I would like to know why you can bounce your balloon safely on some craggy peaks, while others will cause it to burst. The documentation is mute on the point.

Also, unlike most games, *Airball* has a scoring system that is in no way indicative of how well you are doing. You can bloat your point count by flipping back and forth between two rooms and collecting the treasures that randomly pop up. You will not face any danger, nor will you get any closer to finding the spellbook.

Those minor criticisms notwithstanding, *Airball* is a good test of any player's mettle and talent. If you like maze games, *Airball* will surely find its way into your disk drive often.

—Andy Eddy

Discache



EASE OF USE



PERFORMANCE



ERROR HANDLING



DOCUMENTATION

System: Atari ST

Price: \$29.95

Summary: Disk cache program speeds disk accesses.

Manufacturer:

Amgem, Inc.

P.O. Box 1338

Bethesda, MD 20187

(301) 762-8870

The *Discache Disk Enhancer* is a system for caching (or storing) frequently used disk sectors in RAM so they can be accessed very quickly. *Discache* will run on any ST or Mega ST computer either as a desktop application or as a program automatically run at startup. It works with both floppy and hard disk drives.

A cache is a portion of memory that has been set aside for high-speed data transfers to and from the CPU. Caches come in two types: a CPU cache, which comes between the CPU and main system memory, and an input/output cache, which comes between main memory and various I/O devices.

Discache is an example of the second type. Basically, it holds data from the last read of the physical disk drive. Subsequent calls by the program for disk data are read at high speed from the cache if the data is there; otherwise data is read from the drive.

Disk writes work differently, passing right through the cache to the physical drive, after which the cache is updated. A clever refinement in the disk writing

process is checking to see if the new data to be written to the disk matches the current data in the cache; if it matches there is no reason to rewrite the data to disk, because it is already there.

For example, if you change one line of a 350-line Basic program or one sentence in a ten-page document, only the disk sector that contains the change must be rewritten, not the entire file.

Obviously, if you assign more memory to the cache, it will hold more data and require fewer physical disk accesses, thus yielding a greater speed increase. As nice as it would be to assign 512K to the cache, in reality a 520ST has about 310K of free memory and a 1040ST about 820K before installation of an application program. After installation of, say, *1st Word Plus* on a 520ST, only 37,530 bytes of free memory remain. If you specified the cache as 32K—the default value—you would have less than 5K for your document (about 2 1/2 double-spaced pages)—not even enough for this review. An accessory program supplied with *Discache* shows the amount of free RAM available at any point, thus helping you to allocate memory to your cache.

A further limitation is the fact that one cache does not serve all disk drives; if you have one floppy disk and three hard disk partitions and want to use a cache with all of them, you must allocate four cache partitions. A small 16K cache can result in a worthwhile speed improvement (10% or so), although for most applications, 32K to 64K is a better choice. In program development, you can get some really significant speed improvements (30-40%) but they require cache sizes of 256K or more.

Once installed, *Discache* is totally invisible. In general, I found it least useful in word processing (very few disk accesses), more useful in graphics (15% speed improvement in slide show programs), and most useful in program compilation and development (40% speed improvement in Basic disk I/O).

The quality and clarity of the six-page manual ranges from mediocre to grim. The AUTOCACH program mentioned in the manual was not on my disk and the DIRCACHE program on the disk was not described in the manual (it caches single-sector reads and is most useful on a 520ST). Despite these problems, the package itself will provide significant benefits for most users (especially 1040ST owners), and at \$29.95, represents an excellent value.

— David Ahl

Power Print ST

Betsy tossed *Power Print ST* on my desk one day and said, "Take a look at this; it's a screen print program." Said I, "Who needs a screen print program when you can simply press Alt/Help and get a screen print?"

Said she, "Look at it anyway."

So I did and found that *Power Print ST* goes far beyond the standard Alt/Help screen print. It prints a standard size image across the paper or a larger image running the length of the paper. It lets you print images with the shades reversed, images up to eight times the original size, small portions of a larger screen image, and mirror images (great for making T-shirt transfers). The program supports both Epson- and NEC-compatible printers.

Power Print ST accepts images in six formats: *NeoChrome*, *Degas* normal and compressed, *Tiny*, .IFF (the Interchange File Format used on the Amiga), and *Doodle* (whatever that is). Once the program is loaded, the right mouse button (or the F1 key) flips you back and forth between the image and the menu screen.

From the menu screen, you can load an image, print it, change the shadings, or select other options such as image size and print direction.

When an image is printed, each color pixel is represented by between one and eight dots in a 2 x 4 array on the printer. Normally, the dots represent darkness rather than different colors, so a medi-

Deep Space

If you are a fan of space fiction, you have undoubtedly imagined yourself piloting the Starship Enterprise, fighting evil Kingons, or defending the Empire from within the deteriorating innards of the Millennium Falcon. Now, with *Deep Space* you can come closer to the realization of these fantasies than you ever thought possible.

In *Deep Space* you play the role of a soldier and explorer traveling through five unfamiliar galaxies, which define the levels of play. Moving from one galaxy to another is devilishly difficult; you must find the appropriate stargate, a task that requires that you become familiar with both the star charts in the manual and the long range scanner and other instruments on your display.

But navigation is not the only requirement for advancement; you must



EASE OF USE



PERFORMANCE



ERROR HANDLING



DOCUMENTATION

System: Atari ST

Required equipment: Dot matrix printer

Copy protection: No

Summary: Versatile screen print program

List price: \$39.95

Manufacturer:

Alpha Systems
1012 Skyland Dr.
Macedonia, OH 44056
(216) 374-7469



Figure 1. Altering the printer bit patterns for different colors can enhance the printed image.



Figure 2. Portion of image destroyed shown in 4x magnified view.

um red, a medium blue, and a medium green will all have the same dot pattern. *Power Print ST* lets you alter these dot patterns to improve the appearance of the printed image. (See Figure 1.)

You can also invert the shades in the printed image so that blacks become

white and vice versa—like a photographic negative.

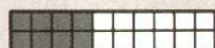
The Zoom option lets you select a portion of an image for printing. This is especially good for enlarging a small portion of an image and creating a blowup of that part.

The only glitch I found during many hours of using *Power Print ST* is that after printing, the program tends to destroy a portion of the bottom left of the image. (See Figure 2.) This is more an annoyance than a serious drawback, because you can always reload the image and continue.

The disk also contains a desk accessory program, Screen Saver, which overrides the normal ST screen print facility and allows you to capture almost any screen from another program as a *Power Print* picture file by pressing Alt/Help. Such files are automatically saved and named.

With its clearly written 28-page manual and quick reference card, *Power Print ST* will be a welcome addition to the software library of any ST owner.

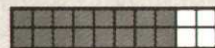
—David Ahl



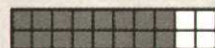
EASE OF USE



PERFORMANCE



ERROR HANDLING



DOCUMENTATION

System: Atari ST

Required equipment: Color monitor

List price: \$39.95

Summary: Highly addictive space simulation

Manufacturer:

Psygnosis, Ltd.
Liverpool, England

Distributor:

Computer Software Services
2150 Executive Dr.
Addison, IL 60101
(800) 422-4912

also amass energy units by destroying enemy spacecraft and collecting the bodies of your alien opponents.

Should you forget to activate your

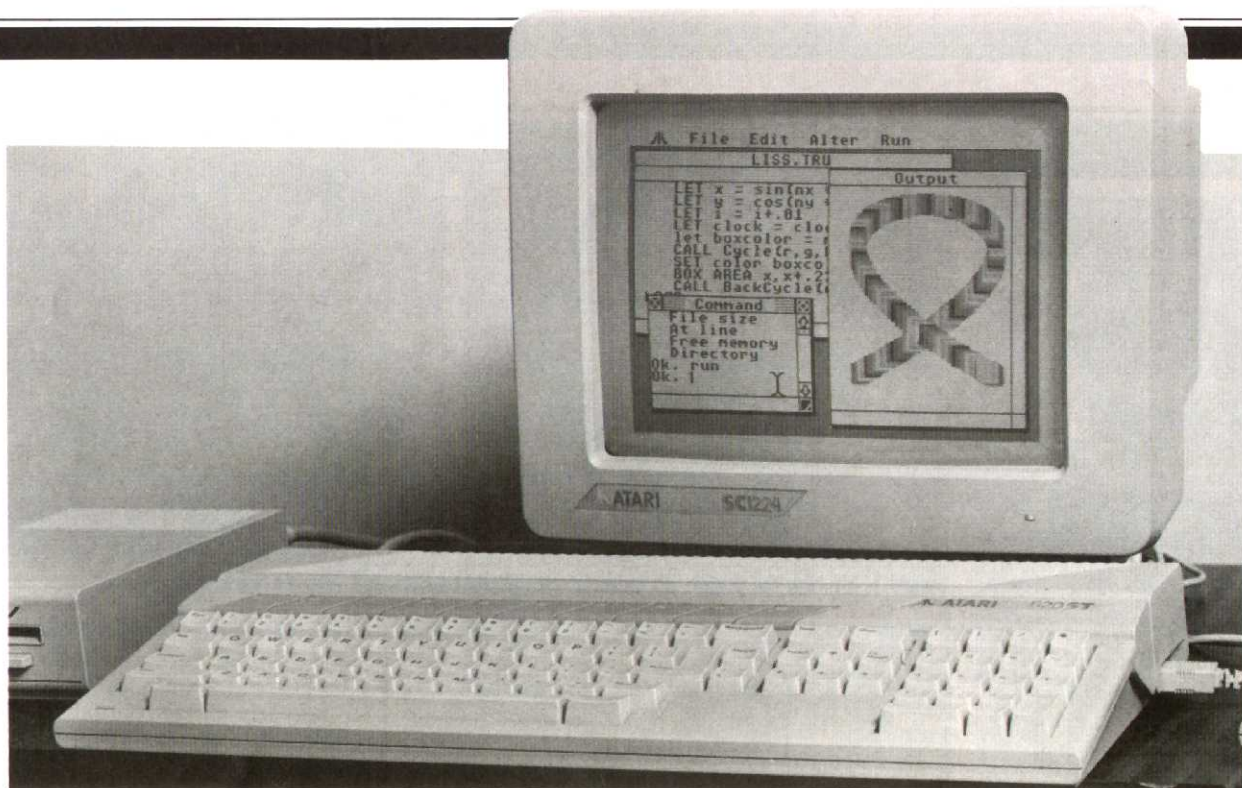
shields and incur battle damage, you can order from your home star system a repair drone that will bring all systems back to 100% efficiency.

It is possible to move from higher level galaxies to lower level ones, but I have not found it rewarding to do so. Even if you succeed at returning to your home system, your only rewards are a "thumbs up" from your superiors and the opportunity to restart the game from level one.

Although the game is lots of fun to play, the program seems to bog down as the computer constantly redraws the rotating enemy spacecraft, the planets, and your current surroundings. Perhaps Psygnosis will release a version of *Deep Space* that makes use of the Blitter chip. It would be a dream come true to have this or a similar simulation operating so fast that redrawn objects could move like high speed sprites.

Deep Space is undeniably the best spacewar simulation I have played. Despite the less-than-ideal rate of execution, it is graphically superior, and, although it is difficult to learn, it is also highly addictive.

—Frank Eva



Kemeny and Kurtz release a well-supported new Basic for the ST

Figure 1. Lissabox: Black and white reproduction doesn't do justice to this animation program, which creates an optical illusion when running in full-color.

True Basic

In 1964 John Kemeny and Tom Kurtz created Beginners All-purpose Symbolic Instruction Code as part of a program at Dartmouth College aimed at giving every student access to computing facilities. The simplicity of the language made it ideal to implement within the limited memory space of early microcomputers, and by the late 70's, more people were programming in Basic than any other language.

Over the intervening years, Dartmouth Basic has evolved in response to the introduction of structured programming concepts and progress in the capabilities of computing hardware. "Street" Basic, on the other hand, has remained locked into the compromises that were required to make it run on the early micros.

Kemeny and Kurtz have produced True Basic to provide a programming environment, true to the spirit of their original creation, while incorporating the features made possible by 20 years of hardware and software advances. They felt the most important new ideas were modular programming, subroutine libraries, recursion, and the use of the powerful graphics abilities of the new generation of computers. They have combined these new features, with

their original goals of creating a simple language with an elegant, easy-to-use programming environment.

True Basic, Inc. was started with the goal of making this new system available on many computers in a form that would allow programs to be transported without the problems associated with street Basic. To do this, the people at True Basic, Inc. made True Basic a b-code system. This means that the program you write is compiled to an intermediate b-code form that then runs on a b-code interpreter that is specific to the microprocessor being used.

How Have They Improved Basic?

With any change in a language comes the question: "Will I still be able to use the programs I have already written?" True Basic is backward compatible; the unstructured programmer's old friends: GOTO and GOSUB are still there. The main problems you will have transferring old programs to the new system are the result of using multiple statements per line, which is not allowed, and using certain machine-specific features that are not implemented.

Line numbers are now optional, and

one program statement per line promotes readable code. I was happy to find that the LET statement is made optional by using the NoLet command, a feature that almost allowed me believe I was programming in Pascal.

There is no performance penalty for including comments in your code, as was the case with some interpreted Basics. You can use either the familiar REM statement or an exclamation point preceding a comment that is on its own line or that follows a program statement on a line. Note that the familiar apostrophe designator for remarks does not work.

Improved Control Structures

The new control structures that have been added to the language will bring joy to the heart of every advocate of structured programming.

The familiar counted FOR NEXT loop has been joined by a versatile DO LOOP structure with a conditional test before the loop is executed, or after, or both. This gives you maximum flexibility, because you can set the loop up so that its contents may not be executed at all, may be executed once even if the condi-

By STUART DUDLEY DIMOND

**EASE OF USE****PERFORMANCE****ERROR HANDLING****DOCUMENTATION****System:** Atari ST**Version:** 2.0**Price:**

True Basic Language	\$79.95
Noncommercial Runtime	79.95
Developer's Toolkit	49.95
3-D Graphics	49.95
Advanced String Library	49.95
Sorting and Searching	49.95
Mathematician's Toolkit	49.95
Structured Basic Programming	28.00

Summary: Basic at its best, with libraries to provide the kind of support that programmers wish every language had.

Manufacturer:

True Basic, Inc.
39 South Main St.
Hanover, NH 03755
(800) 872-2742

tion is not satisfied, or may be executed as many times as necessary to meet the condition.

For those occasions when you may need to exit from the middle of a loop, there are EXIT FOR and EXIT DO statements that can be used within an IF statement to set the exit condition.

Two other additions, an ELSEIF and a SELECT CASE, have been made to the vocabulary of control structures. The ELSEIF construct aids in the use of nested IF statements for making multiple decisions. The SELECT CASE allows you to choose one of several different options and has the convenience of a concluding ELSE statement to catch all the possibilities that were not specified in the tested cases.

As a language, True Basic does suffer from one inadequacy. The structured programming philosophy includes two kinds of structure concepts: structured programming and structured data. In redesigning the language, Kemeny and Kurtz have done a fine job of grafting good control structures onto the language, but they have ignored the impor-

tance of structured data. An elegant data structure can sometimes make a problem much easier to solve. It can be argued that someone who needs structured data types could write a subroutine library to simulate them using strings, but I still think it is unfortunate that they weren't included in the language specification.

True Basic Matrix Statements

The improvements in True Basic go beyond the new control structures. For the benefit of mathematics-oriented users, a whole class of matrix statements has been added to perform operations on arrays efficiently. Statements exist to input data to an array from the keyboard or from DATA statements, to print arrays, and to assign one matrix to another. Matrix arithmetic is also performed.

Higher level operations are available, too. Statements exist to take the inverse and the transpose of an array, to compute the determinant, and to compute the dot product of two vectors. An array can also be zeroed, have every element set to 1, or be set as an identity matrix with a diagonal of elements set to 1.

Machine-Independent Graphics

Another area of improvement is machine-independent graphics support. There are several levels of graphic support, starting with simple PLOT statements that put points, lines, elliptical lines, shaded areas, and text on the screen.

When you want to do faster graphics manipulations in a smaller area, you have an equivalent set of BOX functions that permit you to define the area in which they work. Color is supported to the limits of your system, and a very simple mouse interface is available.

A really nice feature is a special kind of subroutine called a PICTURE that is made up of PLOT statements and may be subject to a number of transformations when called by DRAW. Five built-in transformations exist to shift, scale (two kinds), rotate, and shear a picture, but if you are doing a lot of graphics you will appreciate the fact that you can also create your own. The last graphics feature is a simplified windows interface.

Documentation

True Basic, Inc. can be proud of their documentation. The package comes with a 330-page True Basic Reference Manual and a 117-page Atari ST guide. The reference manual is the same for every computer system and is well written, with logical organization, and eye-

pleasing graphic design. The Atari ST Guide includes the material to get you started with the system and describes the aspects of the language that are specific to the ST.

Software Libraries

One of the great benefits of True Basic and its availability on a number of computer systems is the fact that it creates a user base large enough to finance extended support of the language system. This is manifested in the supplementary libraries, which extend the capabilities of the language with solutions to many common programming problems.

These Libraries are well documented and provide plenty of tutorial material. Lots of demonstration programs are in-

Here at last is a system that conforms to the ANSI standard and encourages good, structured programming practice.

cluded, and the source code of the library routines is provided, so you can learn from it and customize it for your specific applications.

Noncommercial Runtime Package

The Runtime package is a must if you want to write programs that can be distributed to others. This package contains a stand-alone b-code interpreter that is bound to a compiled version of your program, so that it will use less memory and start more quickly than an unbound program that you compile and run.

This is an area where True Basic is at a disadvantage compared to a real compiler, because even a small program that makes no use of the external libraries yields a .PRG file of 75K or more.

Developer's Toolkit

It seems unlikely that anyone will use True Basic to develop commercial applications, so perhaps it is a misnomer to call this package a Developer's Toolkit. It does provide the kind of extended support of the GEM environment that will be useful to those who write GEM-oriented programs.

The good news for those who want to use GEM with a minimum of effort is the True Windows Library, a library of

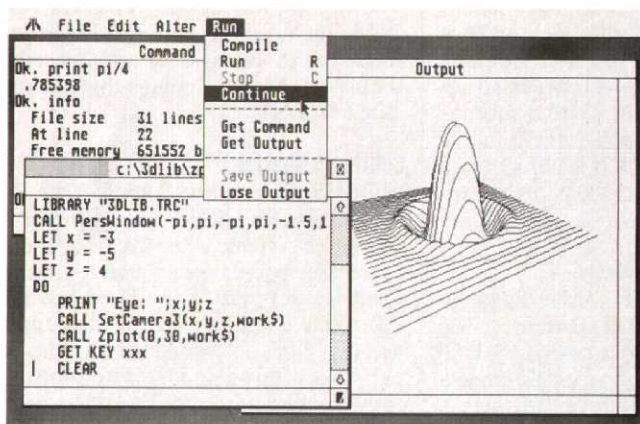


Figure 2. A demo program from the True Basic 3-D graphics library produces sophisticated graphics with one subroutine call.

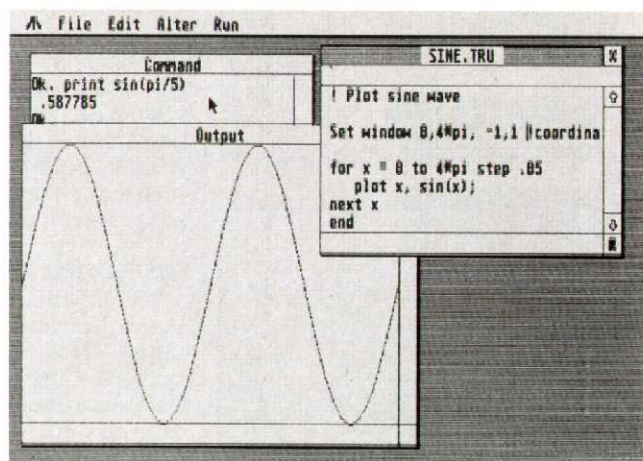


Figure 3. This sine wave program shows the three True Basic windows in operation: the source window at the upper right, which contains the short program; the output window, which displays the curve; and the optional command window.

routines that permits you to set up and display menus, show dialog boxes, and perform all the useful manipulations of windows that you may desire.

When your program needs to check the system configuration or search directories, the appropriate GEMDOS and BIOS routines can be accessed by the routines in ExecLib. These routines are used in turn by four new DO commands on the disk that allow you to create and remove a directory, show the files in a directory, and show the remaining disk space.

When the True Basic SOUND and PLAY commands are not powerful enough, you can use SoundLib, which contains subroutines that permit direct access to the registers of the ST sound chip, and PlayLib, which will perform three-voice music by using strings in the same format as those required by the PLAY command.

HexLib is a complete number base conversion library. The SysLib contains the low level routines for complete access to AES, VDI, DOS, BIOS, and XBIOS. Routines are available to PEEK and POKE memory locations, to create pointers to strings, and to move blocks of memory to and from strings.

3-D Graphics

The other True Basic Library packages are worth having for the work and programming time they can save. 3-D Graphics, in particular, is desirable for fun as well as utility. The routines in the Library let you draw wireframe graphics and control the viewpoint from which you see them.

No hidden line removal is done except by Zplot, the routine that allows

you to plot certain kinds of mathematical functions. This is a compromise that means the resulting pictures are not always as pretty as they might be, but they are drawn more quickly than they would be if hidden lines were removed.

Several types of projections can be made of 3-D images, and views can be scaled by scaling routines. Two programs, Record and Playback, make it possible to have the computer create and save 3-D movies and play them back.

The documentation for this package is worthy of special mention, because it includes a fine mini-tutorial on 3-D graphics and an excellent bibliography.

Advanced String Library

The Advanced String Library provides four libraries of string and text routines, a collection of useful programs, and a dictionary of 37,000 words in compressed form. StrLib has a large selection of routines to manipulate strings, format messages, match strings, and perform operations on character sets in a manner similar to the Icon programming language.

For the programs you write that must print reports and manipulate textual material, the TextLib will supply time-saving help. The PatLib draws on the inspiration of the Kernighan and Plaugers book, *Software Tools*, to implement many kinds of operations on "patterns" of text. Snobol, a string-oriented language that preceded Icon, offered the concepts that are embodied in the table handling routines of TabLib.

Sorting and Searching

The True Basic Sorting and Search-

ing package contains most of what you would learn in a college course on data structures. If you want to sort and search either numerical or string arrays, the routines are there to do the dirty work. Sortn and Sorts use the Quick Sort method to arrange numerical or string arrays in ascending order and offer a pair of reversing routines to reverse the sorted array if you desire descending order.

If you want to define the comparison performed on the data to be sorted, two routines, Csortn and Csorts, are available. Also included on the disk are the Heap Sort, Selection Sort, and Bubble Sort. After you sort an array, you can search it or a particular item with the Searchn or Searchs binary search routines or, in some cases the linear search.

This disk also contains the compiled versions of the routines and the source code, so the knowledgeable user can modify the routines to suit a specific application.

Mathematician's Toolkit

The Mathematician's Toolkit contains five compiled libraries that will be indispensable to anyone who uses his ST for serious number-crunching. HugeLib makes possible integer and real number calculations to as many as 100,000 digits.

If you need complex arithmetic and functions, you will appreciate the power of CmplxLib. Two matrix libraries are provided; MatLib draws on the power of HugeLib to perform high precision matrix calculations, and complex vectors and matrices can be dealt with by CmatLib. If you want to write programs that allow the user to enter an

equation to be evaluated, FnLib makes this possible.

Structured Basic Programming

Included with the review package was a copy of *Structured Basic Programming*, the True Basic textbook written by Kemeny and Kurtz. The wealth of experience these men have in teaching Basic is clearly evident in this book. The first section of the book is devoted to teaching the language and how to program. The remaining three sections, which need not be studied in sequence, cover text applications, mathematical applications, and other applications.

The stated purpose of the authors is to teach programming and problem solving skills, rather than discuss computers in general. The book is a fine introduction to True Basic and to the concepts of structured programming.

Conclusion

The True Basic language system has a lot to offer. In a world filled with mongrel versions of Basic, here at last is a system that conforms to the ANSI standard and encourages good, structured programming practice. The only clearly negative aspects of the system are the loss of speed because of the b-code implementation and the large size of bound programs.

I discussed the adverse effect of the latter characteristic with a representative of True Basic, and he said the company will definitely consider the possibility of creating a public domain interpreter that would run compiled True Basic programs. This would make it much less expensive for those who want to upload and download programs on networks and bulletin boards. He also told me that Business Graphics and Scientific Graphics libraries will soon be available for the ST.

The availability of the wide selection of special purpose libraries and applications programs is a real plus for this system. These libraries and programs are a result of the fact that True Basic has been ported to many machines in a form that permits source code to be transferred with few problems. This is a desirable aspect in itself, if like me, you are forced to use one of those machines with the three letters on it at work or at school.

Most Basic users will find this system provides everything they want in a programming environment: simplicity, ease of use, and good support. Try it, it may well be what you are looking for. ■

Puzzles Problems

By DAVID H. AHL

This month most of our puzzles and problems have to do with various properties of numbers, including some important and interesting types of special numbers. While all of these problems can be solved with pencil and paper, you will generally find it much easier to write a short computer program to solve them. Answers are on page 80.

Greatest Common Divisor

The integers that divide into 12 are 1, 2, 3, 4, 6, and 12. The integers that divide into 18 are 1, 2, 3, 6, 9, and 18. Thus, the common divisors are 1, 2, 3, and 6, and the greatest common divisor is 6. Your challenge is to write a short program that will find the greatest common divisor of any pair of numbers. Try out your program with these pairs: 49 and 139, 1124 and 1472, 76084 and 63020, 7854 and 13398.

Powerful Integers

Can you find the four integers that satisfy this equation:
 $A^B \times C^D = ABCD$

Special Numbers

The four-digit number 3025 is special. The sum of the first two digits (30) and the last two digits (25) is 55. If you square 55, the original number, 3025, is obtained. Find all four-digit numbers that have this property.

Armstrong Numbers

An Armstrong number is any n-digit number in which the sum of the nth power of each of the digits is equal to the original number. For example, $1^3+5^3+3^3=153$. Can you find three other three-digit Armstrong numbers?

Amicable Numbers

An example of a set of amicable numbers is 17,296 and 18,416. When you add all the divisors of 17,296 you get 18,416, and when you add all the divisors of 18,416 you get 17,296. Find two other sets of amicable numbers.

Prime Numbers

A prime number is an integer which cannot be computed as the product of two smaller factors. The numbers 5 and 7 are prime numbers, but 4 and 6 are not. The first few prime numbers are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79. Can you write a program to find all prime numbers less than 1000?

Perfect Numbers

A perfect number is one in which the sum of its factors, other than itself, equals the original number. For example, $6=1+2+3$ and $28=1+2+4+7+14$. A formula for generating perfect numbers is:

$$2^{n-1}(2^n-1)$$

in which the factor 2^n-1 must be a prime number. Can you find all the perfect numbers less than 1000?

Bouncing Ball

A high-bounce ball rebounds one-half the distance from which it falls on each bounce. If it is initially dropped from a height of 10 meters, how far has it traveled by the time it hits the ground 100 times?

These days, programmers think nothing of writing 300K or 400K programs. After all, memory is cheap. But it wasn't always that way.

Back when I started programming, in the mid-50's, we calculated available memory in bits—and I don't mean megabits or even kilobits. Even as recently as 1970, memory was still an expensive commodity. In fact, when I was at Digital Equipment Corp. marketing computers to schools, in 1970-71 our big seller was a PDP-8/f with 4K of memory. That 4K had to hold not only the user's program, but the operating system and Basic language interpreter as well. With Basic loaded, users had exactly 526 bytes for their programs!

I recall writing many programs to fit in those 526 bytes, but my two most exhilarating moments came when I jammed in a lunar lander program and when I wrote a version of the Hammurabi land management game to fit. Both of these were extremely tightly coded, had minimal dialog, and used every memory-saving device known to man.

I am a believer in short programs—not because short is good per se, but because short programs are usually fast and economical in terms of both resources and people time. So we are starting an on-going competition for the best programs that fit in 1K or less.

Contest Rules

- Programs—including data, dimensioned arrays, etc.—must fit in 1K (1024 bytes) or less.

- Programs may be written on either an Atari 8-bit or ST computer in any standard, widely available language.

- Programs must be submitted with a disk containing the program (and language, if possible), a hard copy listing, a sample run, and a description of the program and its purpose. If you want the disk returned, include return postage.

- Entries should be submitted to 1K Contests, Atari Explorer, 7 Hilltop Rd., Mendham, NJ 07945.

- Winning programs will be chosen on the basis of usefulness, originality, and quality of programming style.

- One or more programs will be selected as winners every issue and will appear in *Atari Explorer*.

- The author of each winning entry will receive a three-year subscription or extension to *Atari Explorer* plus a recently-released game package.

By DAVID H. AHL

1K Programming Contest

Lunar Lander Program

The lunar landing simulation shown in Listing 1 is an example of a program that fits in 1K. Actually, the logic and computations fit in about 500 bytes, but I have included at the end some longish PRINT statements, which evaluate the

quality of the landing. Also, to allow the program to run in both 8-bit and ST Basic, I have not taken advantage of any machine-specific language features.

The program simulates the descent of a lunar landing module during the last 500 feet. At the 500-foot point, you are

LUNAR LANDER

ATARI KEY

- Any Atari 8-bit or ST computer
- Atari Basic or ST Basic

```

10 CLEARW 2 : FULLW 2 : 'ATARI ST ONLY
20 PRINT "LUNAR LANDER BY DAVID AHL" : PRINT
30 PRINT "SEC", "FEET", "SPEED", "FUEL", "BURN RATE"
40 T=0 : H=500 : V=50 : F=120 : PRINT
50 PRINT T,H,V,F : INPUT B
60 IF B<0 THEN 150
70 IF B>30 THEN B=30
80 IF B>F THEN B=F
90 V1=V-B+5 : F=F-B : H=H-.5*(V+V1)
100 IF H<=0 THEN 160
110 T=T+1 : V=V1 : IF F>0 THEN 50
120 IF B=0 THEN 140
130 PRINT "**** OUT OF FUEL ****"
140 PRINT T,H,V,F
150 B=0 : GOTO 90
160 PRINT "**** CONTACT ****"
170 H=H+.5*(V+V1)
180 IF B=5 THEN D=H/V : GOTO 200
190 D=(-V+SQR(V*V+H*(10-2*B)))/(5-B)
200 V1=V+(5-B)*D
210 PRINT "TOUCHDOWN AT";T+D;"SECONDS"
220 PRINT "LANDING SPEED";V1;"FT/SEC"
230 PRINT F;"LBS OF FUEL REMAINING"
240 IF V1>.5 THEN 260
250 PRINT "CONGRATULATIONS. PERFECT LANDING!" : END
260 IF V1>2 THEN 280
270 PRINT "BAD JOLT. CRAFT DAMAGED." : GOTO 290
280 PRINT "SORRY, YOU BLEW IT. NO SURVIVORS."
290 PRINT : PRINT "TRY AGAIN..." : GOTO 30

```


SAMPLE OUTPUT

LUNAR LANDER BY DAVID AHL

SEC	FEET	SPEED	FUEL	BURN RATE
0	500	50	120	? 0
1	447.5	55	120	? 0
2	390	60	120	? 0
3	327.5	65	120	? 0
4	260	70	120	? 0
5	187.5	75	120	? 25
6	122.5	55	95	? 25
7	77.5	35	70	? 25
8	52.5	15	45	? 10
9	40	10	35	? 5
10	30	10	30	? 5
11	20	10	25	? 5
12	10	10	20	? 12
13	3.5	3	8	? 5
14	.5	3	3	? 7

**** CONTACT ****

TOUCHDOWN AT 14.1583 SECONDS
 LANDING SPEED 3.31662 FT/SEC
 0 LBS OF FUEL REMAINING
 SORRY, YOU BLEW IT. NO SURVIVORS.

TRY AGAIN...

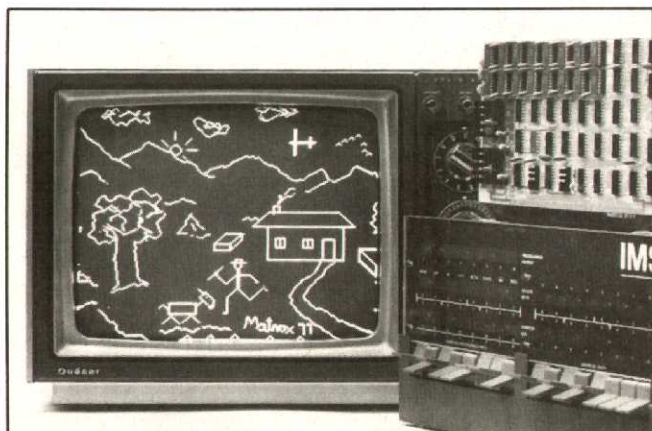
SEC	FEET	SPEED	FUEL	BURN RATE
0	500	50	120	? 0
1	447.5	55	120	? 0

descending at a rate of 50 feet/second and you have 120 pounds of fuel remaining. You, as the pilot, must input the burn rate (in pounds of fuel) of your retro rockets each second. A burn rate of 5 will maintain your speed, while higher burn rates will slow you down and lower burn rates will allow gravity to speed you up.

Incidentally, the program has one important simplification that prevents it from being used from higher altitudes. Specifically, it assumes that the weight of the fuel (120 lbs.) is negligible compared to the weight of the module (16,500 lbs.). At higher altitudes, this is not true. For example, at the separation point 120 miles up, the fuel weight is 16,000 lbs. As it burns, and the total weight of the capsule and fuel decreases, the slowing effect of a given burn rate increases.

As you gain practice landing the capsule, you should be able to set it down in less than 12 seconds with more than 15 pounds of fuel remaining. By the way, a negative speed means you have given it too much thrust and are beginning to go back up. Good luck; the space program needs proficient astronauts. ■

Picture Quiz



How well do you know your personal computing history? Can you identify this computer, the processor it used, and the bus it used? Can you identify the graphics board shown at the upper right? Do you know what year the computer was introduced? Give yourself 20 points for each correct answer. Answers are on page 80. ■

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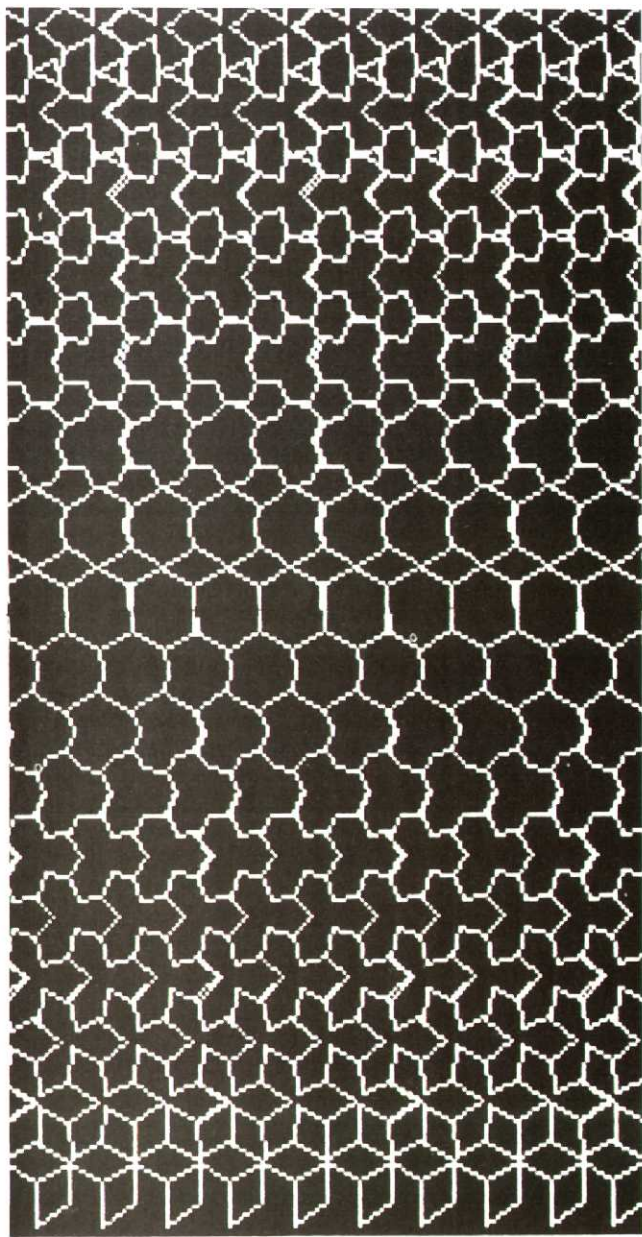
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*This fascinating program produces
rows of tessellating tiles
and transforms them into new designs*

Parquet Deformations

By **RICHARD KEISER** and **ALLAN MOOSE**

Tessellation has fascinated mankind for centuries. We are all surrounded by tessellations—surfaces covered with regular, repeating designs. Just look at any kitchen floor or bathroom wall. Even nature has its tessellations, the most familiar of which is the honeycomb.

Man has been creating tessellations at least since the Middle Ages, as can be seen on the walls of the 14th century Spanish palace known as the Alhambra. In more recent times, the work of the Dutch artist M.C. Escher has inspired interest in exploring the intricacies of tessellation. Contemporary writers such as Martin Gardner and Douglas Hofstadter have added further to the public awareness of tessellation through their columns in *Scientific American*.

The study of tessellations is by no means limited to artists, architects, and popular science writers. Physicists study them to gain insights into the study of crystallography. Mathematicians have related tessellations to group theory. Even psychologists have studied them, particularly those created by Escher, to learn how the mind deals with perceptual ambiguity between background and foreground. However, for obvious reasons, it is in works of art (particularly those of Escher) that tessellations have found their most popular appeal.

The Legacy of M.C. Escher

Escher's earliest works, dated 1936, are simply sketches of some of the mosaics on the walls of the Alhambra. He subsequently created his own tessellations, but with the addition of animal motifs (the Moorish builders of the Alhambra were forbidden by their religion to create images of living things—a ban which Escher considered "a pity").

One of the first tessellations he created was the woodcut "Eight Heads" in which eight different male and female heads tile the plane and can be viewed alternately as foreground or background. Escher's art was by no means limited to works based on tiling a surface. In later works, including "Encounter" and "Reptiles," the tessellating animals are not bound to the plane, but take on three-dimensional form and leave the plane.

Another class of Escher works, epitomized by the woodcut "Day and Night," provides the inspiration for this article. In this group, the tessellating designs gradually change shape as they progress across or down the page. Thus, for example, birds might gradually become checkerboard fields of hay, or they might metamorphose into fish as in "Sky and Water I."

Finally, Escher's woodcuts "Metamorphosis I" and "Metamorphosis II" illustrate all aspects of his work with tessellations: the use of both simple geometric motifs and life-like objects; the gradual melting of one shape into another; and the shift from two-dimensional to three-dimensional form and back.

Metamorphosis

It was on the subject of the gradual metamorphosis of one shape into another that Hofstadter wrote one of his "Magical Themes" columns in *Scientific American*. In the column, Hofstadter described the "parquet deformations" created by William S. Huff and his students at the State University of New York at Buffalo.

In their work, simple geometric shapes are slowly deformed as they move across a plane. Deformations are accomplished by a number of simple techniques, including lengthening or shortening a line, introducing a "hinge" into a line segment so that it can flex, rotating a line or group of lines that form a natural subunit, and introducing a small bump or "tooth"

into a line segment. If allowed to continue long enough, such deformations can have completely unexpected results, with the tiles at one end of the work bearing little or no resemblance to those at the other end.

(As an aside, the idea of producing a sequence of figures by deforming lines in a regular way, and the resulting change in form produced thereby is reminiscent of the fractals studied by Benoit Mandelbrot of IBM.)

In his article, Hofstadter went on to talk about the use of computers in creating such designs and to question to what extent a computer can create *new* deformation techniques. We left the latter question to Hofstadter to ponder and decided to consider instead how to create simple parquet deformations on our Atari computers.

To that end, we wrote the programs Parquet and Parquet2, which produce rows of tiles that are gradually deformed as they move down the plane. To keep the programs simple, we limited them to simple geometric shapes—diamonds and hexagons—and a simple deformation technique—flexing the sides of the tiles in or out.

There are, of course, many other methods of deforming tiles, just as there are many other tile shapes that lend themselves to deformation. We hope that these programs and some of the ideas embodied therein will inspire you to investigate more complex tiles and deformation processes.

Writing the Program

We will not undertake a complete line-by-line analysis of the program logic. Instead, we will provide a general overview of the logic behind the *ideas* of the program and then outline *how* those ideas are implemented in the program.

In writing these programs, we had three goals: to make use of rotational and translational symmetry, to write programs that could be easily generalized, and to illustrate the deformation process. By generality, we mean that, although we specifically wanted the programs to draw hexagons and diamonds, we didn't want that to be a limitation; we wanted them to be flexible enough to draw any shape.

Consequently, we decided that the shape of the tessellating figure should not be written into the body of the program, but should be specified in DATA statements at the end of the program. These statements contain the coordinates of the vertices of the first drawn, or *seed*, tile. Thus, changing the shape or size of the tile is merely a matter of changing these DATA statements—the program itself remains unchanged.

When describing an individual shape, such as a tile, it is usually easiest to consider it as a unit independent of the rest of the plane (or screen). In such a situation, the coordinates of the vertices of the tile are given, not as absolute (screen) coordinates but *relative* to the center of the tile. This is an important point, because the center of the tile serves as our reference point through much of the program.

As an analogy, consider a football play. If you were told that, from the line of scrimmage, the quarterback drops back five yards while one receiver goes ten yards downfield and another receiver goes 50 yards downfield, you need to know *where* the line of scrimmage is to know what the play looks like. Similarly, when we specify how far the vertices of the tile are from the center, we need to know *where* the center is to know what the tile looks like.

You might summarize the football play by giving the players' final positions in yards *ahead* of the line of scrimmage. Thus the quarterback's "coordinate" is -5 , while the two receivers have coordinates of 10 and 50. That -5 makes

sense even though we know there is no -5 yard line.

Likewise, if one of the vertices of our tile is ten units to the left and five units above the center, we can assign it *relative* coordinates of $(-10,5)$ and not be troubled by the fact that there is no such screen location.

Converting from these relative coordinates to absolute screen locations is just a matter of adding the individual relative coordinates of a vertex to the screen coordinates of the reference point—in this case, the center of the tile. Thus, if the center is at $(20,20)$, the relative point $(-10,5)$ is at the actual screen point $(10,25)$. Note how easy it is to move the tile anywhere on the screen—we need only change the absolute coordinates of one point—the center—and the vertices automatically fall into place.

Man has been creating tessellations at least since the Middle Ages, as can be seen on the walls of the 14th century Spanish palace known as the Alhambra.



Now that we know how to represent the shape of the tile with relative coordinates and how to translate these relative coordinates into actual screen locations, we must ask where on the screen can we put the tile. More specifically, where on the screen can we locate the *center* of the tile so that the entire tile will fit on the screen? (Since the end zone is ten yards long, if we place our line of scrimmage any further downfield than the defensive 40-yard line, our wide receiver will run out of the end zone.)

The point to recognize here is that the *largest* relative coordinate—50 in this case—represents the *smallest* distance from the edge of the field at which we can place the line of scrimmage. Likewise, the *largest* (in absolute value) x and y relative coordinates of the vertices of our tile represent the *minimum* distance from the edge of the screen at which we can place the center of the tile. If we have one vertex at $(-10,5)$ and another at $(-5,-10)$, our center can be no closer to the edge of the screen than $(10,10)$.

The First Tile

Now that we have located the center, the next step is to draw the first tile. If we have specified all of the vertices, then it is just a matter of converting them from relative to absolute coordinates and drawing straight lines from one to the next. However, we always try to make the computer do as much work as possible.

In this case, we first note that almost any shape that can tile a surface completely has some sort of *rotational symmetry*. This means that if you rotate the shape around its center through some fraction of a circle, you get back the original shape. If this is the case, and it is with diamonds and hexagons, then we need specify only part of the shape—say, two sides—and let the computer rotate that part as often as necessary to close the shape.

How do we rotate part of a shape? Fortunately, linear algebra provides the operator we need—a rotation matrix.

This matrix is written as

$$\begin{bmatrix} x' \\ y' \end{bmatrix} = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix}$$

where (x',y') is the point to which (x,y) is rotated through the angle θ . For us, this translates into the two equations

$$x' = x \cos \theta + y \sin \theta$$

$$y' = y \cos \theta - x \sin \theta$$

If we must rotate the part of the shape N times to produce a closed figure, the angles θ (expressed in radians) through which we must rotate it are $\theta, 2\pi/N, 4\pi/N$, etc.

We have now defined part of our tile—usually two line segments with three vertices—by relative coordinates, located the center of the tile on the screen by finding the largest (in absolute value) individual x and y relative coordinates, and drawn one complete tile by rotating the part of the tile around the center as often as necessary.

To produce a whole row of tiles, we need only repeat this process, shifting the center of each successive tile horizontally a distance equal to the width of a full tile until we reach the right edge of the screen. This illustrates another type of symmetry—*translational* symmetry or symmetry of movement.

If we now wanted to produce another row of tiles, identical to and directly beneath the first we would only have to shift the center back to the left side of the screen and down a distance equal to the height of a tile, and repeat the drawing, rotating, and shifting operations. However, we have two other considerations here: we may want to stagger the rows of tiles, as Parquet2 does, and we want to deform successive rows of tiles.

Staggering rows is easy enough. Instead of putting the centers of the tiles directly under those of the row above, we shift them right by a distance of half the width of a tile. Each subsequent row will be shifted right or left, as appropriate, by the same distance.

Unfortunately, the distance we must move down is not the same, and in fact varies with the shape of the tile. For squares, it would be equal to the height of a tile; for diamonds, half the height; and for hexagons, the square root of three times the



height. This will have to be a formula written into the program.

Deformation of Character

Deforming the tiles is more difficult. Conceptually, it is rather simple—we just take each side of the tile in turn and, keeping the endpoints stationary, move the midpoints alternately in toward the center and out away from the center one unit at a time.

The problem is in determining *where* to move the midpoint—that is, given the coordinates (absolute or relative) of the endpoints, what are the coordinates of the point one (or two or three) unit(s) closer to (or further from) the center of the tile than the midpoint of the line?

If the line happens to be horizontal or vertical, there is no problem. For example, the midpoint of a horizontal line has the same y -coordinate as its endpoints and has an x -coordinate equal to the average of the x -coordinates of the ends. Moving the midpoint toward or away from the center is just a matter of moving it up or down—that is, the x -coordinate stays the same and the y -coordinate increases or decreases by 1. If, however, the line is a diagonal, we can still find the midpoint easily enough; moving it is the hard part—the distance and direction of movement depend entirely on the inclination of the line segment.

It would be much easier for the purposes of this exercise if we could *make* each side horizontal long enough to deform it and then put it back where it belongs. Fortunately, we already have the tools available to do just that—relative coordinates and rotation. In the words of the mathematician, what we want to do is translate each line segment to the origin, rotate it onto the positive x -axis, deform it as explained above, and finally rotate and translate it back into position. For us, the procedure is as follows:

Take each of the defined sides in turn. Pick one endpoint—it doesn't matter which—and call it (x_1,y_1) . Call the other end (x_2,y_2) . Now find the coordinates of the second end *relative* to the first; they are (x_2-x_1,y_2-y_1) . (The coordinates of the first point relative to itself are $(0,0)$, of course.)

Next, find the *inclination* of the line, or the angle θ which it makes with the x -axis. If the line is vertical, $\theta = \pi/2$; if the line slopes to the right (if $x_2 > x_1$), then

$$\theta = \tan^{-1} \left(\frac{y_2 - y_1}{x_2 - x_1} \right)$$

and if the line slopes to the left (if $x_2 < x_1$), then

$$\theta = \pi + \tan^{-1} \left(\frac{y_2 - y_1}{x_2 - x_1} \right)$$

Now rotate both endpoints (in terms of their coordinates relative to the first point) through this angle, using the equations given above. The point $(0,0)$ will not move, of course, but the other point (call it (x_3,y_3)) should now have a y -coordinate of θ , meaning that the line is now lying horizontally on the x -axis.

Finding and deforming the midpoint is now trivial—its x -coordinate will $x_3/2$, and its y -coordinate $\pm 1, \pm 2$, etc.

An example may be in order here. Suppose one of our sides has endpoints at $(1,1)$ and $(4,5)$. Call $(1,1)$ the first point— (x_1,y_1) —so that the coordinates of the other point relative to it are $(4-1,5-1) = (3,4)$. Now find $\theta = \arctan(4/3) =$ approximately 53° . Rotate this point as follows:



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PROGRAMMING

$$x' = x \cos \theta + y \sin \theta = 3 \cos(53^\circ) + 4 \sin(53^\circ) = 5$$

$$y' = y \cos \theta - x \sin \theta = 4 \cos(53^\circ) - 3 \sin(53^\circ) = 0$$

In other words, a line from (1,1) to (4,5) is equivalent to a line from the origin to (5,0). (You may recognize this as a 3, 4, 5, right triangle.) The midpoint of this line is the (2.5,0), and we might "deform" this to (2.5,1) if this is the first iteration.)

Now, all we need to do is move this deformed midpoint back to where it belongs. This is just a matter of rotating it through $2\pi - \theta$ and adding (x1,y1) to its coordinates. Thus, our point (2.5,1) is rotated through approximately 307° to (.7,2.6) and then translated out to (1.7,3.6).

To produce a whole row of tiles, we need only repeat the process, shifting the center of each successive tile horizontally.



Of course, we need make all of these calculations only once—only for the sides of the tile that are actually defined and only for the first tile of a row. The rest of the first tile and all of the other tiles in that row are derived from the defined sides by rotation and shifting as usual.

This, however, requires "remembering" those calculations. In particular, note that while each side was originally defined by only two endpoints, it is now defined by its two endpoints plus the "deformed" midpoint. Therefore, the original array into which we stored the coordinates of our vertices (usually three of them) is no longer sufficient, and we must define a new array into which we will store the coordinates not only of the original vertices but also of the new midpoints (usually five in all). This array is filed once at the beginning of each row, and it is the points in this array that are plotted, rotated, and shifted to produce the full row of tiles.

Program Notes

Listing 1 is the program listing for Parquet in Atari ST Basic in low resolution mode. Listing 2 shows the changes necessary to turn Parquet into Parquet2, and Listing 3 contains the changes necessary to adapt either program to Atari 8-bit computers.

As much as possible, we have grouped any lines that may have to be changed at the end of the program. These are machine-specific commands, such as graphics and the shape-specific DATA statements. The main body of the program—from the beginning to line 5020—won't have to be changed at all, except possibly to compensate for idiosyncrasies in different versions of Basic.

If you want to convert the program to another version of Basic, the machine-specific routines which you must provide are the following: At line 5050 there should be a subroutine to initialize the graphics screen, clear it, and set whatever graphics mode is necessary. At line 5100 there should be a subroutine to plot (or locate) a single point at the coordinates

PARQUET and PARQUET2

ATARI KEY

- Any Atari 8-bit or ST computer
- Atari Basic or ST Basic

Listing 1. Listing of Parquet in ST Basic.

```

1   REM PARQUET DEFORMATIONS
2   REM BY RICHARD H. KEISER
9   REM *** INITIALIZATION ***
10  GOSUB 5050
20  PI=3.1415927
30  READ WID, HEI
35  XF=0:D=0:DPRIME=0
40  READ NVERTS,NROTS
50  DIM VERTS(NVERTS,2)
55  REM *** READ VERTICES & LOCATE CENTER ***
60  XCENTR=0:YCENTR=0
70  FOR I=1 TO NVERTS
80  FOR J=1 TO 2:READ VERTS(I,J):NEXT J
90  IF ABS(VERTS(I,1))>XCENTR THEN XCENTR=ABS(VERTS(I,1))
100 IF ABS(VERTS(I,2))>YCENTR THEN YCENTR=ABS(VERTS(I,2))
110 NEXT I
115 XCENTR=XCENTR+1:YCENTR=YCENTR+1
120 REM *** PLOT FIRST FIGURE ***
130 FOR RT=0 TO NROTS-1
140 THETA=RT*2*PI/NROTS
150 FOR I=1 TO NVERTS
160 XOLD=VERTS(I,1):YOLD=VERTS(I,2):GOSUB 5000
170 IF XNW>D THEN D=XNW
180 IF YNW>DPRIME THEN DPRIME=YNW
190 IF I=1 THEN GOSUB 5100:GOTO 220
200 GOSUB 5120
220 NEXT I:NEXT RT
230 D=2*D:DPRIME=2*DPRIME
235 REM *** PLOT REST OF FIRST ROW ***
240 XF=XF+D
250 IF XCENTR+XF+(D/2)>WID THEN 500
260 FOR RT=0 TO NROTS-1
270 THETA=RT*2*PI/NROTS
280 FOR I=1 TO NVERTS
290 XOLD=VERTS(I,1):YOLD=VERTS(I,2):GOSUB 5000
300 IF I=1 THEN GOSUB 5100:GOTO 320
310 GOSUB 5120
320 NEXT I:NEXT RT:GOTO 240
500 NWVERTS=2*NVERTS-1:DIM NW(NWVERTS,2):OFFSET=0
990 REM *** MOVE CENTER BACK TO LEFT ***
1000 YCENTR=YCENTR+DPRIME
1002 IF YCENTR+(DPRIME/2)>HEI THEN END
1004 XF=0
1006 OFFSET=OFFSET+1
1008 REM *** FILL ARRAY WITH DEFORMED VERTICES ***
1010 FOR I=1 TO NVERTS-1
1020 X1=VERTS(I,1):Y1=VERTS(I,2)
1030 NW(2*I-1,1)=X1:NW(2*I-1,2)=Y1
1040 XOLD=VERTS(I+1,1)-X1:YOLD=VERTS(I+1,2)-Y1
1050 IF XOLD=0 THEN THETA=-1*SGN(YOLD)*PI/2:GOTO 1100
1060 THETA=ATN(YOLD/XOLD)
1070 IF XOLD>0 THEN THETA=THETA+PI
1100 GOSUB 5000
1110 XOLD=XNW/2:YOLD=OFFSET*(-1)^(I+1)
1120 THETA=2*PI-THETA:GOSUB 5000
1130 NW(2*I,1)=XNW+X1:NW(2*I,2)=YNW+Y1
1140 NEXT I
1150 FOR I=1 TO 2:NW(NWVERTS,I)=VERTS(NVERTS,I):NEXT I
1155 REM *** PLOT ROW OF DEFORMED TILES ***
1160 FOR RT=0 TO NROTS-1
1170 THETA=RT*2*PI/NROTS
1180 FOR I=1 TO NWVERTS
1190 XOLD=NW(I,1):YOLD=NW(I,2):GOSUB 5000
1200 IF I=1 THEN GOSUB 5100:GOTO 1220
1210 GOSUB 5120
1220 NEXT I:NEXT RT
1230 XF=XF+D
1240 IF XCENTR+XF+(D/2)<=WID THEN 1160
1245 REM *** GO BACK FOR NEXT ROW ***
1250 GOTO 1000
4990 REM *** ROTATION SUBROUTINE ***
5000 XNW=COS(THETA)*XOLD+SIN(THETA)*YOLD
5010 YNW=COS(THETA)*YOLD-SIN(THETA)*XOLD
5020 RETURN
5040 REM *** INITIALIZATION SUBROUTINE ***
5050 FULLW 2:CLRW 2:COLOR 1,0,1:RETURN
5090 REM *** CURSOR TO 1ST POINT SUBROUTINE ***
5100 XSTRT=XCENTR+XF+XNW:YSTRT=YCENTR+YNW:RETURN
5110 REM *** PLOT TO NEXT POINT SUBROUTINE ***
5120 LLINEF XSTRT,YSTRT,XCENTR+XF+XNW,YCENTR+YNW
5130 XSTRT=XCENTR+XF+XNW:YSTRT=YCENTR+YNW:RETURN
5990 REM *** DATA SECTION ***
6000 DATA 303,166
6005 DATA 3,3
6010 DATA -9,-5,-9,5,0,10

```


(XCENTR + XF + XNW, YCNTR + YNW). At line 5120 there should be a subroutine to plot a line from the last point plotted (or located) to the coordinates (XCENTR + XF + XNW, YCNTR + YNW). Finally, line 6000 should be a DATA statement containing the width and height, respectively, of the graphics screen.

Lines 6005 and 6010 are the DATA statements that define the shape of the tiles. Line 6005 should contain two numbers: NVERTS is the number of vertex coordinate pairs in line 6010, and NROTS is the number of times these vertices must be rotated around the center of the tile to produce a closed figure.

For an in-out deformation such as this, NVERTS should normally be 3. This is because in the deformation process each subsequent line segment is bent in the opposite direction, so defining two line segments (with three vertices) will preserve the in-out symmetry of the deformations.

For example, to plot diamonds, NVERTS should be 3 and NROTS should be 2; to plot hexagons, NVERTS should be 3 and NROTS 3.

Listing 1 has been set up to plot hexagons. To make it plot diamonds, try:

```
6005 DATA 3,2
6010 DATA 0,10,-9,0,0,-10
```

We have included REM statements throughout the program listing, so you should have little trouble reading through it and figuring out how the ideas presented here are implemented.

Conclusion

We have only just scratched the surface of possible shapes and techniques for deforming them. Start with the programs given here and experiment with other shapes—squares would be easy, but try others as well. Some shapes lend themselves more to one program than the other—hexagons look better when deformed with Parquet2, while squares work only with Parquet. Consider why this is so, and use your conclusions to guide you in designing new candidates for deformation. Then see if you can develop new deformation techniques to overcome these limitations.

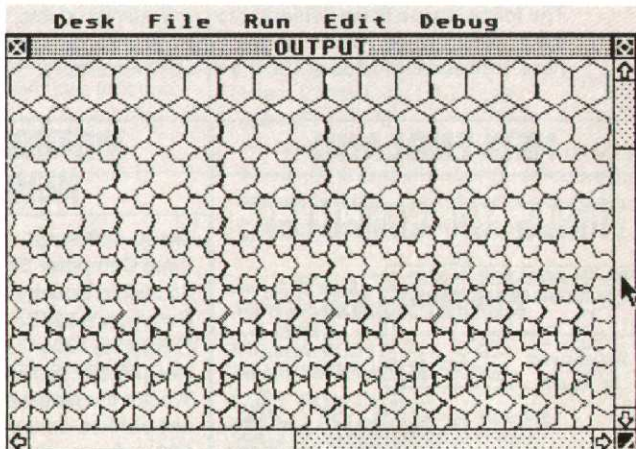
One of Escher's later prints, "Order and Chaos," depicts a perfect dodecahedron surrounded by shards of broken glass and pottery, crumpled paper, and other bits of trash. Our works, with their gradual transitions from regular diamonds and hexagons to irregular, indescribable shapes, represent an updated view of Order and Chaos. ■

Listing 2. Lines to be changed for Parquet2 program.

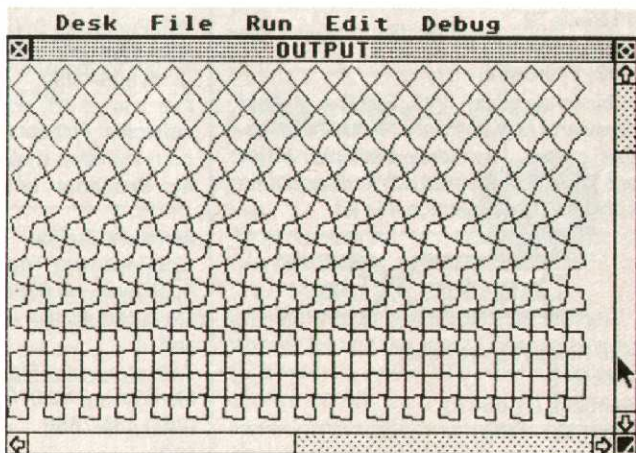
```
25 EPS=.1
130 FOR RT=0 TO NROTS-2
180 REM *** DELETE IN PARQUET2 ***
230 D=D*D: DPRIME=.866*D
1003 IF ABS(INT(XF/D+EPS)-(XF/D))<EPS THEN XF=D/2:
      GOTO 1006
1160 FOR RT=0 TO NROTS-2
```

Listing 3. Lines to be changed in Parquet for Atari 8-bit Basic.

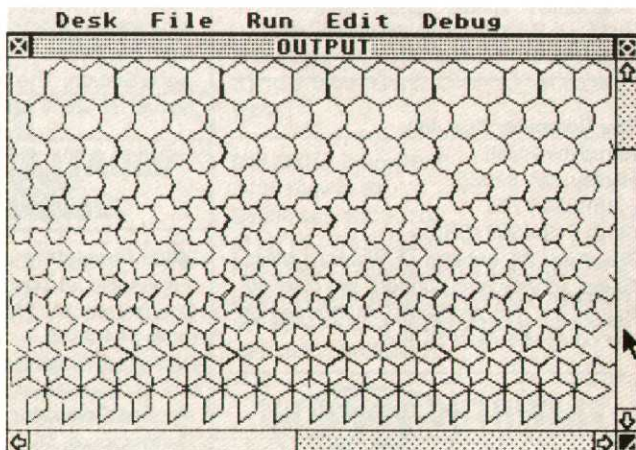
```
80 FOR J=1 TO 2:READ R:VERTS(I,J)=R:NEXT J
5050 GRAPHICS 8:POKE 710,192:RETURN
5100 COLOR1:PLOT XCENTR+XF+XNW,YCNTR+YNW:RETURN
5120 COLOR1:DRAWTO XCENTR+XF+XNW,YCNTR+YNW:RETURN
6000 DATA 319,160
```



Output 1. Hexagon pattern from Parquet program.



Output 2. Diamond pattern from Parquet program.



Output 3. Hexagon pattern from Parquet2 program.

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Puzzles Problems

ANSWERS

Problems are on page 69.

Greatest Common Divisor

See Listing 1.

Numbers	GCD
49 139	1
1124 1472	4
76084 63020	92
7854 13398	462

Powerful Integers

A=2, B=5, C=9, D=2

Special Numbers

2025, 3025, 9801

Armstrong Numbers

See Listing 2.

Amicable Numbers

The program in Listing 3 is straightforward and will solve the problem—eventually. By using a dimensioned array and some knowledge of factors, you ought to be able to improve on it by at least a factor of 100. We will publish the best improved version in a future issue.

Prime Numbers

See Listing 4.

Perfect Numbers

While the program in Listing 5 will produce the correct answer, perfect numbers are also generated by the Amicable Number program in Listing 3.

Bouncing Ball

30 meters.

Listing 1.

```
10 PRINT "FIRST NUMBER";:INPUT A
20 PRINT "SECOND NUMBER";:INPUT B
30 R=A-B*INT(A/B)
40 A=B : B=R
50 IF R>0 THEN 30
60 PRINT "GCD IS ":A
70 GOTO 10
```

Listing 2.

```
10 PRINT "NUMBER AND CUBES"
20 FOR N=100 TO 999
30 A=INT(N/100) : A3=A^3
40 B=INT(N/10)-10*A : B3=B^3
50 C=N-100*A-10*B : C3=C^3
60 IF N<>A3+B3+C3 THEN 80
70 PRINT N;A3;B3;C3
80 NEXT N
```

```
NUMBER AND CUBES
153 1 125 27
370 27 343 0
371 27 343 1
407 64 0 343
```

Listing 3.

```
10 PRINT "AMICABLE NUMBERS"
20 FOR A=1 TO 10000
30 S=0
40 FOR D=1 TO A/2
50 IF A/D<>INT(A/D) THEN 70
60 S=S+D
70 NEXT D
80 IF S<=A THEN 160
90 B=S : T=0
100 FOR F=1 TO B/2
110 IF B/F<>INT(B/F) THEN 130
120 T=T+F
130 NEXT F
140 IF T<>A THEN 160
150 PRINT A;B
160 NEXT A
```

```
AMICABLE NUMBERS
220 284
1184 1210
```

Listing 4.

```
10 PRINT "PRIME NUMBERS"
20 DIM A(1000)
30 R=1 : A(1)=2
40 FOR I=3 TO 1000 STEP 2
50 FOR J=1 TO R
60 IF INT(I/A(J))*A(J)=I THEN 90
70 NEXT J
80 R=R+1 : A(R)=I : PRINT I;
90 NEXT I
```

Listing 5.

```
10 PRINT "PERFECT NUMBERS"
20 FOR N=1 TO 5
30 P=2^(N-1)*(2^N-1)
40 PRINT P;
50 NEXT N
```

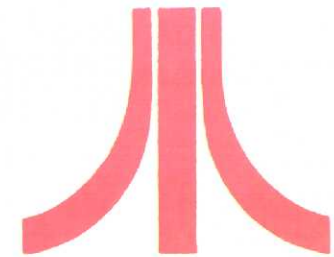
```
PERFECT NUMBERS
1 6 28 120 496
```

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Answers to Picture Quiz

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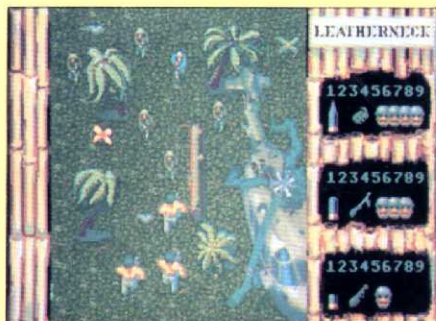
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