

#1 Guide To Atari Computing

START

Volume 5, Number 7 April/May 1991 USA \$14.95 • Canada \$19.95

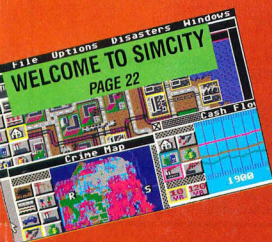
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PAGE 80

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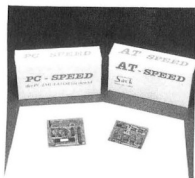


Fantastic Fonts, Page 52



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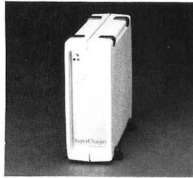
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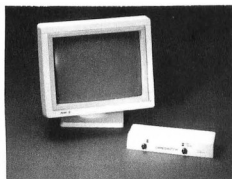
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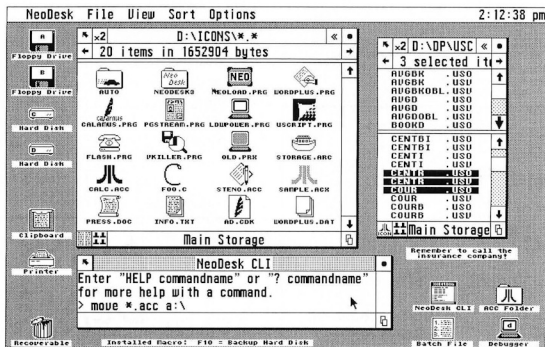


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NeoDesk 3 and the NeoDesk CLI are available from your local dealer, or order toll free by calling (800) 284-GRIB and get FREE 2nd Day Air (US only). Call or write for upgrade and other information.

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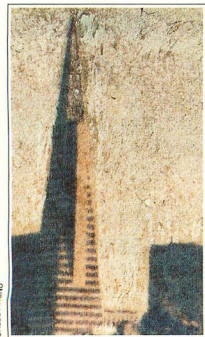
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APRIL/MAY 1991

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START Columnist Makes His Debut
by Bob Brodie



CHLOE ATKINS

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**SIMCITYTIS SWEEPS
START STAFF**
A Three-Part Homage
To The Game That
Enthralled The
Editors *by Betty
DeMunn, James
Burton and Johnny L.
Wilson*

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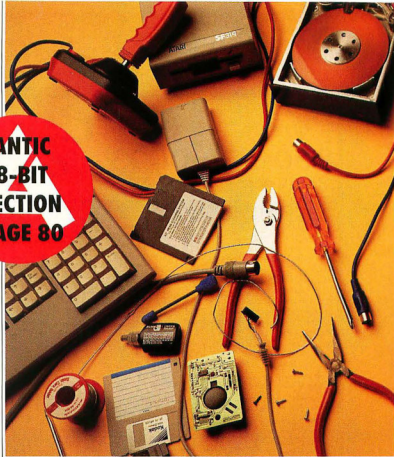
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On The Cover

Fix it yourself with START's troubleshooting guide. Cover model Rusty Russell courtesy of Roman Models & Talent. Photography by Chloe Atkins.

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8-BIT
SECTION
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CHLOE ATKINS

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Ten Experts Dispense Good
Medicine For Your Sick ST
*by William Busby, Greg
"Maddog" Knauss, Dan Moore, Jim Pierson-
Perry, Dave Small and the START staff*

**FIX IT YOURSELF!
TROUBLESHOOTING
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Third-Party Fonts Get An
Eagle-Eye Evaluation
by Dan Fruchey

**JUDGE FOR
YOURSELF!
FONT SAMPLES
ON DISK!**

Departments

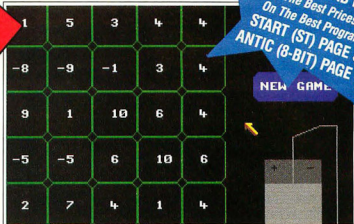
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**DON'T MISS
ANTIC'S GRAB BAGS!**
The Best Prices
On The Best Programs
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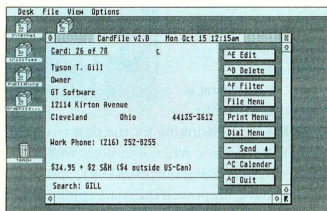


Absolute Zero

TROUBLESHOOTING TOOLS

Here's a folder full of utility programs recommended by Dr. Troubleshooter and his team of 10 experts. Inside you'll find Disk Doctor, a sector editor and file fixer; Hazel, which makes it easy to

choose AUTO-folder programs and desk accessories at boot up; Ram Plus, an excellent RAM disk and print spooler; and many more copyrighted, shareware and public-domain utilities.



CardFile Demo

CARDFILE DEMO by GT Software

You've read the review, now try the program. Look in the DEMO folder for the ARCDed file CARD_ARC.PRG. Read CARDDEMO.DOC for information about the program.

THE CITY FEDERAL LOAN APPLICATION PROGRAM

by James Burton

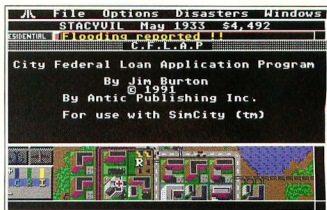
You'll find this SimCity cheat on your START disk, in the ARCDed file LOAN_ARC.PRG. Use it every time your SimCity city is running short of cash. See page 25 for more details.

CITY ICONS by Antic Software

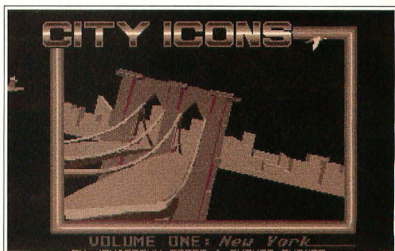
Two archived demos from Antic Software's new City Icon series for CAD-3D 2.0. The first, NYCBGARC.PRG, will unARC to reveal an accurately detailed 3D picture of the Brooklyn Bridge. The second, CITY_ARC.PRG, contains a Cyber Paint animation of the famous bridge. Both require 1MB of memory. NYCBGARC.PRG requires CAD-3D 2.0.

FONT SAMPLES

FONT_ARC.PRG contains sample fonts from Cherry Fonts, Computer Safari and ISD Marketing. Read "The Typeface Trials," page 52, for more details.



The City Federal Loan Application Program



City Icons

START

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START Goes Bimonthly

START wins the "Best Laid Plans" award for 1990. Despite earlier optimism that START would actually get bigger, the complete opposite has happened. Effective immediately, START will appear every other month rather than the monthly schedule we've been accustomed to since October 1988.

The decision to go bimonthly wasn't an easy one. START has a very strong subscriber base and its renewal rate is among the best in the magazine business. But other factors came into play: Atari has all but abandoned the domestic market and third-party developers have been scared away by a lack of a viable user base for Atari products. START constantly receives letters from people who have moved onto other computer platforms, so there is some evidence that the user base continues to decline.

For START it's a simple equation: no developers means no advertisers. Advertising is what pays the production costs of a magazine.

The advertising pool for START has been shrinking for the past two years and there is every indication that that decline will continue as well.

But cutting circulation doesn't mean cutting quality. START, and our parent company Antic Publishing, have supported the Atari community for almost 10 years. Our commitment to that community is as strong as ever.

You can expect some changes as we move to a bimonthly schedule. The cut in the number of magazines you receive in a year means that START has to put out a better magazine than ever. START will probably become more technical, more applications specific. The lack of new product (and not just upgrades) will mean less reviews and more tutorials.

With all that's going on in the world right now we realize we're not giving you the best news. But to use the tired old sports line: it was a business decision and nothing more; it should not be seen as an indication that START's circulation will be cut even more. Remember, START began as a quarterly. When the ST market picked up, START went monthly. Now that the market is slowing down, START is bimonthly. Perhaps things will change with the new hardware recently released by Atari. We'll have to wait and see.

Special Notes

Because the new schedule came into place so quickly, editorially START is still in a monthly mode. What was to be the February issue became February/March; March became April/May. As a result, some of the more time-sensitive material such as Z*Net and Products Update may appear dated. The first all-new bimonthly issue will be June/July, on sale June 1.

Finally, if you subscribe to START, the number of issues you are to receive will be adjusted to the new schedule according to what you originally signed up for (one-year subscribers are now two-year subscribers and so on).



TOM BYRON
START Editor

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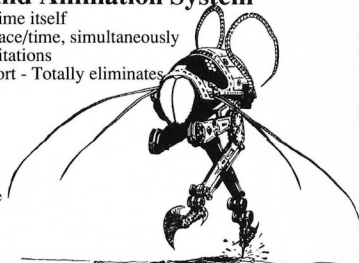
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IN NEVADA

Just A Disagreement

I read with interest the review of our product, *Just Another War In Space* (January 1991). I would like to respond to a number of points made by the reviewer, Greg Knauss.

In the review, Knauss described the interface as "horrible . . . non-intuitive . . . text-based . . . Pseudo-GEM menus and buttons are available, but they are a far stretch from the real thing . . . With a GEM front end, I would easily recommend it . . ." The difficulty for your reader is that Knauss fails to offer even a brief description of the interface he condemns; consequently one is left wondering exactly how the interface fails to measure up to his standards.

The user interface in J.A.W.S. can be summarized as follows: The player commands various spacecraft by using the mouse to click on "controls," which are rectangular regions on the screen that are labeled with the name of the control. A control typically has a white background when it is "off" and a gold background when it is "on." For example, to maneuver a spacecraft, click on the thrust control to accelerate it in the direction of its heading, or click on one of the rotate controls to change the spacecraft's heading. Clicking on one of these controls when it is "on" toggles it "off" and terminates the acceleration or rotation.

By default, the player sees the Main Control Display on the right half of the screen. The player can change this display (e.g., to show more detailed information and additional controls regarding the repair, force field, computer, maneuver and other spacecraft subsystems) by selecting a new display from one of the pull-down menus on the upper right part of the screen.

Knauss criticizes that this inter-

face is non-intuitive. How is it non-intuitive? I might point out that the thrust and rotate maneuver control system described above is similar to the one used in the famous, old arcade game, *Asteroids*, except that in *Asteroids* you press and release physical buttons instead of clicking on "soft" buttons. Most people consider that interface pretty intuitive.

The next criticism is that the interface is "actually text-based! You could almost play this program on a teletype and not notice any difference." The point Knauss seems to be making is: If you are programming on a machine that is capable of doing neat graphics, you should use neat graphics wherever possible. This attitude is disparagingly referred to as the "We-Used-A-Computer-To-Build-A-Duck" Syndrome in the seminal work on data graphic theory *The Visual Display of Quantitative Information* by Edward R. Tufte.

The real issue in displaying information is the use of an appropriate means of expression, depending on the inherent characteristics of the information itself. This almost always requires a mix of text and graphics. J.A.W.S. uses such a mix. For examples, the reader can refer to the screen shots of J.A.W.S. that accompany the review and the Azeroth ad in the January issue of *START*. I suggest that the reader should decide for him or herself if the style of the displays is appropriate.

Knauss also suggests that the interface isn't realistic. The whole point of the interface is that it represents computer screens on the spacecraft that you are commanding. I suggest that if something is a computer screen, then it looks exactly like a computer screen. How much more realistic can you get?

Knauss' stated rationale for not recommending this product is that it

does not have a GEM front-end. GEM was not used essentially to make the product easily portable to other computers. The menus and buttons of the J.A.W.S. interface work in the same fundamental manner as those of the GEM, Apple Macintosh and Microsoft Windows graphical user interfaces. Does Knauss really believe that people will wish to buy or not buy a product simply because it has pull-down (as opposed to drop-down) menus, or because its buttons have rectangular (as opposed to rounded) corners?

The essence of Knauss' effort is to exalt details of form over substance. His work fails as a piece of criticism because he withholds from your readers the type of factual information that would allow them to make an informed choice of their own.

Bob Parkin
Azeroth Publishing
Issaquah, Wash.

Greg Knauss replies:

The "We-Used-A-Computer-To-Build-A-Duck" Syndrome is indeed prevalent on the Atari, as it is on all the bigger-end machines, and while I feel that fantastic graphics are in no way necessary to make a fantastic program, many people who use computers do. The first question ST users often ask when the subject of a new game comes up is, "What are the graphics like?" Personal opinions aside, I must take into account what the average START reader is looking for.

As you mentioned, a potential buyer should indeed "decide for him or herself if the style of the displays is appropriate." However, my job as a reviewer is to render an opinion, and to abandon that responsibility simply to avoid conflict is negligence at its worst. If every reviewer were to follow your

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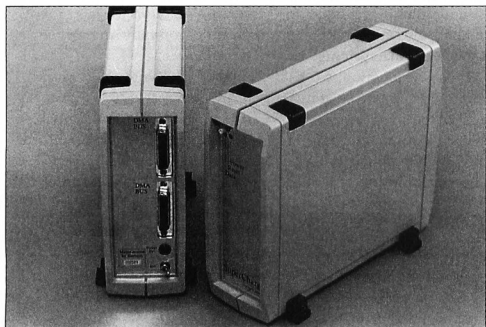
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suggestion, program write-ups would consist solely of the sentence "Check it out for yourself." The purpose of reviews is to avoid that.

Additionally, I still believe that the interface is non-intuitive. Referring to an enemy ship as "GM(#2)-B" instead of highlighting its shape on the screen is non-intuitive. Menu items that do not reverse color as they are moved over is non-intuitive. Abbreviations such as "PPLNT" are non-intuitive. Slow button and menu response is non-intuitive. Two separate 2D views of 3D space is non-intuitive. Long message histories without scroll bar control is non-intuitive.

And to ignore the common, easy-to-use, and fairly fast GEM interface simply to ease porting the program to other computers is just plain lazy. Atari owners expect, and deserve, all their computers are capable of — not necessarily GEM, per se, but something that is at least its equal. The J.A.W.S. interface simply does not meet that requirement. The shape of buttons and the type of menus have nothing to do with it.

I am sorry you did not agree with my opinions; however, I feel that all my criticisms are valid. J.A.W.S., as my review concluded, could have been a good game, recommendable to any tactics buff. But the interface is wanting, and I believe that any objective person would have come to the same conclusion. I do not prize "form over substance," as you letter stated, but functionality over programmer's convenience.

A Million Letters

Of great interest was your article on Donald Thomas, the "ultimate Atari-an" (December 1990).

However, there is something wrong here. Although I support his idea and admire his efforts, there is still something wrong with the con-

ALERT BOX

The phone number for the A.P.E. Newsletter, published in the Products Update section of the December 1990 issue, was wrong. The correct number is (312) 227-2353. We regret the error.

sumer spending time and money to advertise and promote a product for fear of it being discontinued.

Perhaps, rather than gaining Prime Time Live's attention, we should direct a letter a week at Atari begging them to run television commercials during prime time. I disagree that "a million dollars won't take you very far in a national TV and newspaper publicity campaign . . ." On the other hand, a million letters begging Sam Donaldson to give air time to "commercializing" Atari's product is nonsense. Even they are going to say, "Let Atari advertise their own product." This only goes to prove that Atari's public-relations and advertising agencies (if they exist) are failing. Sam Tramiel is a computer genius, but an advertising and business failure.

I suggest we support ISD Marketing (makers of DynaCADD and Calamus) and WordPerfect Corporation and send them \$15.00 to advertise their products using Atari computers in their advertisements. They have done more by producing serious, professional software products than anybody who has ever written a game program and written an Atari ST article.

Jay M. Crutchfield
Des Moines, Iowa

START welcomes letters from readers; however, due to the volume of mail, we can only reply through Dialog Box. Please address your letters to:

START Magazine Dialog Box
544 Second St.
San Francisco, CA 94107

We're not going to condemn or defend anyone working for or on behalf of Atari. We are going to add a few facts to this debate. The last financial report we saw for Atari explained that 82 percent of their sales (and hence their profits) came from overseas. And, according to the Software Publisher's Association, Atari software accounts for less than 2 percent of software sales in the United States.

We don't disagree with you when you say that the ST needs serious, professional software. We don't disagree with you when you say that the burden of advertising should rest on the manufacturer, not on the consumer. And we don't disagree with software developers and computer manufacturers when they say they need a serious return on their investment. — *START Ed.*

Magazine Shuffle

I haven't heard anything from Atari Explorer. I haven't read anything about the demise of this publication and would appreciate any information you could provide with regard to Atari Explorer and/or my subscription.

Carl Schmitt
Fergus Falls, Minn.

The last time we talked to Bob Brodie, Atari's manager of User Group Services, Atari Explorer was still alive and undergoing re-organization. — *START Ed.*

Run It Again, Sam

Is it possible to get reprints of articles?

Daniel E. Gregory
Tujunga, Calif.

Yes. They cost \$3.00. Call (800) 234-7001 to order. Be sure to specify the issue and article title. — *START Ed.*

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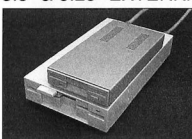
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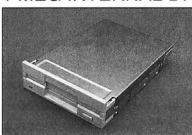
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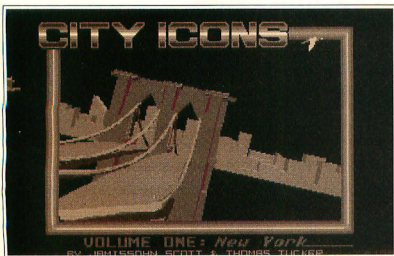
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Manteca, CA 94336
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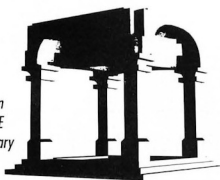
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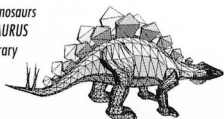
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Atari Corp., Commodore Report Latest Earnings

Atari Corp. reported a third-quarter (ending Sept. 30, 1990) net income of barely over \$3 million on sales of \$89 million, compared to a loss of \$5 million on sales of \$81 million for the same period last year. This year's income reportedly would have shown a \$3 million-plus loss if not for the offset of an over \$6 million gain from Atari repurchasing debentures at a favorable term. Net income per share was 5 cents.

Meanwhile, Commodore announced earnings of \$7 million, or 22 cents per share on sales of \$200 million for their first fiscal quarter ending Sept. 30, 1990. This compares with a loss of \$6.5 million on sales of \$165 million a year ago. Net sales for the quarter increased by 21 percent, attributable to a 50-percent growth in unit sales of the Amiga product line and to favorable exchange rates of major European currencies.

Atari Releases Rights To Hotz Box

Atari has reportedly given Jimmy Hotz the right to market his full-sized Hotz Midi Translator, also known as the Hotz Box. The \$5,000-and-up unit is designed for professional studio and tour use; it is expected that Hotz will be better able to promote and sell it on his own to fellow musicians. Atari will retain mar-

keting rights to any consumer version of the device that allows anyone, regardless of musical background, to free-style solo or accompany prerecorded music with professional results. Hotz was scheduled to join Atari at last January's National Association of Music Merchandisers show in Anaheim, Calif.

MichTron Changes Hands

MichTron, longtime Atari development and import house, has been purchased by Creative Computer Corp. of Newark, Del. CCC's president, James A. Dorsman, has taken over full operation of all technical support, development and publishing for MichTron. Gordon Monnier, former president of MichTron, will be retained by CCC as a consultant. The new MichTron management has promised an "aggressive and exciting new product launch" and continued support of MichTron's existing product line.

According to Dorsman, the "new" MichTron intends to continue distribution and service for the overseas publishers it has worked with in the past, and to seek out new products from home and abroad. This claim is made despite

the fact that the HiSoft line was being shown at Comdex by Goldleaf (Wordflair) and that Talon Technologies is now distributing PC-Speed and AT-Speed. Further, Mirrorsoft, another MichTron overseas connection, has announced that FleetStreet Publisher is being pulled off the market due to poor sales. As a result it is surmised that the MichTron stable is left somewhat vacant of hot products.

Meanwhile, MicroDeal, one of MichTron's main import lines, has announced Replay 8, replacing Replay 4 as an amateur musician's sound sampler and editor. It will feature some of the enhancements of Replay Professional. Availability is not yet known.

MichTron Inc., 3201 Drummond Plaza, Newark, DE 19711, (302) 454-7946.

TT, Mega STE Pass FCC

Atari's new Mega STE has passed FCC testing as a Type B (commercial/consumer) product, and was scheduled to begin domestic distribution as early as mid-January. This marks the first time that any Atari product has been approved for consumer release within 30 days of the first product an-

nouncement.

The TT030 is presently shipping to U.S. dealers as a Type A (commercial use only) device. The price for the base unit (a 2MB RAM, 50MB hard-drive) is still \$2,995. Only value-added resellers and "qualified dealers" will be authorized to sell the TT.

NEWSWIRENEWSWIRENEWSWIRENEWSWIRE

From The Z*Net Newswire

★ After a five-year-long effort the Software Protection Association was pleased to see the passage of a bill that makes software rental (other than non-profit library loans) illegal. The bill prohibits companies from renting software in a manner that allows users to copy and keep the program then return the original disks and documentation for re-rental.

★ Atari Canada announced it has begun a major advertising campaign for the Portfolio, the palmtop computer.

★ In late October, Atari U.K. sponsored a public computer exhibition on a train, visiting key cities around the United Kingdom, attracting some 20,000 visitors. The whistle-stop tour was billed as a "festival of computing expertise" and admission was free.

★ Atari Germany announced it has obtained the contract for one of the largest educational computer orders ever placed by the Soviet Union, succeeding against strong Asian computer competition. The Youth Computer Centre of Eriwan is a free educational facility where young Soviet students are trained for future computer-related professions. The initial order is for \$65,000 worth of ST systems, Atari PC-compatibles and peripherals.

★ The word is out in Germany that the last "regular" German Megas are on the dealers shelves right now. Although most of the German public is not (yet) aware of the new Mega STE, displayed at last Fall Comdex, the prices for the older models are falling drastically. At press time, no official release date had been slated for the Mega

STE at press time.

★ Migraph's Hand Scanner, Touch-Up and Easy Draw are now a part of one of the new STE bundles announced by Atari. (Touch-Up, version 1.6, now lets you save a true grey-scale image in TIFF format. However, the new features require the extended palette of the STE or TT for full use. Older ST units will not have access to all the new features of the upgraded Touch-Up software.)

★ Lake County Atari Computer Enthusiasts (LCA-ACE) presented the Chicago AtariFest '90 on Sunday, Nov. 11, 1990 for a successful attendance of about 750 people in the suburb of Gurnee. Attending vendors and developers included A.P.E. Newsletter, CodeHead Software, CompuServe, D.A. Brumleve, DataQue Software, GENie, ICD, M-S Designs, Reeve Software, SKWare One, Unicorn Publications and WizWorks!.

★ An Atari emulator for the Amiga computer continues to draw comment and fire as it develops. Purporting to be public domain, the file ATARI1 (now in general BBS distribution worldwide) includes illegal copies of TOS and GEM. Reports are that the emulator actually works, at speeds up to half of that of an Atari, although desk accessories do not work, and many programs do not operate. Screen appearance is also said to be very poor. Atari Corp. maintains that distribution of this file is a violation of copyrights retained by Atari, and that distribution is strictly prohibited by law.

★ Users are closing in on what triggers one of the bugs in the new TOS 1.6. Becoming known as the SPC bug (for SHOW, PRINT, CANCEL), it causes an executable program to occasionally be offered for viewing as text rather than loading when double clicked. The bug happens with much predictability if the entire pathname (without drive specifier) totals exactly 16 characters.

★ According to a press release from the public-relations firm of Marken Communications, Atari Corp. shipped several dozen Lynx kiosks to American servicepeople stationed in Saudi Arabia shortly before Christmas in a gesture of good will.

Personnel Changes At Atari

Antonio Salerno — vice president, applications for Atari Corp. — resigned in December 1990. Salerno had been in charge of efforts to persuade major software companies to bring their well-known products to the Atari line, and had less than dramatic success. He is reportedly returning to

Stanford University to complete a masters degree; Leonard Tramiel, head of Atari's technical division, will take over Salerno's duties until a suitable replacement can be found.

Michael Fulton, formerly of Neocept, makers of the popular WordUp document processor, was hired into

Atari's customer and developer support division. (Fulton's hiring fuels earlier speculation that Atari may eventually buy and support WordUp as an Atari-brand product.)

James Grunke, technical guru for the Beach Boys, left the band to replace Frank Foster as Atari's music industry representative and MIDI promoter. (Foster left Atari last September).

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INTRODUCING

BOB BRODIE

START Columnist
Makes His Debut

BY BOB BRODIE

Who is Bob, anyway? And what does he do? First and foremost, I'm an Atari user, just like you. I've been an Atari user for some six years now, starting with an Atari 400, which I still have. My first ST was a 1040ST color system with a 30MB hard disk. I'm presently working on a Mega STE.

I've been involved with user groups for almost the entire time that I've had an Atari computer. After I bought an 800XL and a 1050 disk drive, I started looking for a local user group. I found a book entitled *How to Get Free Software for Your Atari Computer* that listed user groups across the United States. That list included the Atari Computer Association of Orange County, the group that I ultimately joined. Within a year I was the disk librari-

an for our group, and the following year I became the president. I was starting my third term as president when I was hired by Atari Corp.

Working For Atari

In my role as manager of User Group Services, I travel extensively. In 1990 I logged over 60,000 miles visiting user groups and attending shows. I am very active online on GEnie, Atari's official online network. I have just been assigned to be the moderator on BIX for the Atari ST conference, and I also maintain an account on CompuServe. In fact, getting in contact with me is best done via E-mail on GEnie. My electronic mail addresses are BOB-BRODIE on GEnie; 70007,3240 on CompuServe; and BOB.BRODIE on BIX.

Some of the things I'll be doing in my monthly column in *START* is letting you know about some of the things Atari is doing, squelching a few rumors and answering your questions. If you have anything you'd like to ask me about, please write me directly at Atari. My ad-

dress is: Atari Computer Corp., 1196 Borregas Ave., Sunnyvale, CA 94089; Attn: Bob Brodie, Manager of User Group Services.

While I can't respond to all letters, I will do the best that I can. The ones that appear to be the most interesting will be printed in *START*.

The First Letter

Our first letter comes from Joseph M. Klein of New York. He asks "Why do hard disks for the ST seem to cost so much? A typical 20MB hard disk costs around \$250 for an IBM compatible. The ones for the ST seem to cost hundreds of dollars more. What ever happened to 'Power without the Price'?"

Our friend from New York asks a good question. However, if you compare external hard-disk mechanisms, you will find the ones for the ST are still pretty competitive. The real key is the fact that on the 520ST/1040ST/1040STE there is no room for an internal hard disk to be readily added. If you were to check the pricing for external hard disks on the Mac or the Amiga, you

would find that their pricing is typically more expensive than on the Atari ST. Here's where the money for an external hard drive is spent.

Usually, the box-style cases of the IBM compatibles have a lot of room inside for additional equipment, like hard disks. Most of them come with a power supply that can handle the extra load of a hard disk, but that will no doubt vary from case to case. External hard drives have to supply their own power, hence the added cost. Figure at least \$75 for a good-quality power supply.

Pricing on a case can run from \$50 on up, depending on the size and type of the case. Pricing on a case also depends a great deal on how the case is configured. Do you just want a "shoebox" type of case, just enough to get by with? Or do you want to go whole hog and remount your entire system in a single tower-style case? One of my friends showed me a really neat tower case at the last Southern California Atari Faire. It would have let me remount virtually my entire system inside it. It had mounting brackets for up to four hard disks, two Syquest removable hard drives and two floppy drives, a spot to mount the motherboard, a fan for cooling everything, and a really big power supply. The case alone was \$275. If you don't get fancy, figure \$100 for the case.

Next, you will need a host adaptor to use the SCSI hard disks with your ST. These devices are not sold directly by Atari, as they consider them to be an integral part of their hard disks. However, at least two other companies, Supra and ICD, do sell them. Both companies include their own hard-disk software, consisting of formatting software, boot software and other hard disk utilities. Retail cost for these host adaptors is typically in the \$100 range.

Don't Forget The Hard Disk

Then, of course, there is the ques-

tion of the hard-disk drive itself. Hard disks come in a number of different types. There are units that require a hard-disk controller, others that come with a controller built in (SCSI embedded drives). Physically, they come in full-height units, half-height units, 5.25-inch size and 3.5-inch size. Prices on hard disks depend on these factors. In other words, a physically large, slow hard disk with small storage capacity will cost much less than a physically small, high-storage, fast hard disk.

Assuming that the type of hard drive is similar, the extra expense of an external Atari hard drive versus an internal IBM-compatible drive comes from the external-drive components: the case, power supply and host adapter. These push up the price about \$275. However, this is like comparing apples and oranges. If you truly want to compare Atari versus IBM prices, use the price for an IBM-compatible external drive. You'll find that Atari is competitive with IBM.

Roll Your Own?

Of course, if you're familiar with electronics, and know what you're doing, you might want to put together your own hard-disk system. Clearly, you can save some money this way, plus have your system exactly the way that you want it to be. If you're not up to the task all by yourself, there are alternatives. Check with your local user group. Quite often there will be someone who can help you, or might do it for a fee. User groups can also point you to a reliable source that does this type of hardware work.

There are also small, mom-and-pop retailers that specialize in putting together a hard-disk system to your specific needs.

Check with your dealer and see what he suggests. He might not be an advocate of homebrew hard disks, but he might be able to direct

you to a good value in a ready-made hard-disk system.

Anything Else I Should Know?

Not all Atari computers come with the hard disk external to the computer. Some of the models of the Stacy feature a built-in hard disk. For example, the Stacy 4 ships with a 40MB Conner hard disk built in. If 40 MB isn't enough, then it can be replaced by a higher-capacity drive. Note, though, that doing so will void the warranty on the Stacy. One of the members of my user group installed a 100MB hard disk in his Stacy. He felt the most difficult thing was taking apart the Stacy's case and then re-assembling it.

ICD and Supra both have products that allow you to mount a hard disk inside a Mega ST. Check with ICD and Supra for pricing and availability of these products.

Also, the next generation of Atari computers won't have the same limitations as the original did. The new TT computer, and the Mega STE, both come with a hard disk installed. The TT uses the true SCSI standard. If you want a bigger hard disk installed, just flip up the hard-disk portion of the case and put in the 3.5-inch SCSI drive of your choice. The Mega STE is much the same, except that it still has a host adapter mounted internally. You should still be able to replace the built-in hard disk with just about any SCSI 3.5-inch drive.

The Voice Of Experience

What do I use? Well, I have several systems. I travel a lot as part of my job for Atari. That means a Stacy for demonstrations. I have found the Stacy to be a terrific road warrior. Mine has been knocked over a number of times at airport baggage check-in counters and hasn't suffered a fatal blow yet. At work, I just got a TT030, so I am using the built-in 50MB hard disk. ■



SimCityitis Sweeps START Staff

SAN FRANCISCO — Shortly after its release last fall, the Atari ST version of SimCity, an addictive computer simulation of a modern metropolis, infected the editorial staff of START Magazine. Editors argued about who would take the office copy of the game home for the weekend, shared tax tips and played for hours. "My Sims love

me," said START Editor Tom Byron, proud mayor of Byrnsburg. "I have a 97 percent approval rating."

Technical Editor James Burton, mayor of Testville, caught such a severe case of SimCityitis that he wrote a cheat, a "city federal loan application" program which solves a SimCity mayor's biggest obstacle to growth,

lack of funds.

Associate Editor Amy H. Johnson attributes part of her success at governing Amicus to management strategies she learned from *The SimCity Planning Commission Handbook*. "It explained some of the theory behind the simulation," she said, "and gave me some ideas about how to balance the variables."

Byron announced plans to spread SimCityitis through more of the Atari community by publishing a special SimCity feature in the March 1991 issue of START. The feature will include a review of the game, Burton's cheat and an excerpt from *The SimCity Planning Commission Handbook*.

"We admit it," Editor Byron said cheerfully. "We're addicted. Why shouldn't everyone be?"

WELCOME TO SIMCITY

The Most Innovative Game In Years Causes Our Reviewer To Trade Her Role-Playing Sword For A Budgetary Ax

BY BETTY DEMUNN

Do you gripe and groan about your city's government? Well, here's an opportunity to put your money where your mouse is. Award-winning SimCity, the city-building simulation, is finally here for the ST and it's a stunner.

Your goal as mayor/city planner is to design, manage and maintain a thriving community. You start with a random terrain of earth, water and forests. Decide where to locate your residential, industrial and commercial zones. Install a power plant and roads, and ▶



This is the simulated neighborhood surrounding the START offices in the San Francisco scenario.

watch those prolific little citizens (called Sims) move in. The yearly budget pops up and you must set tax rates, fund police, transportation and fire departments, and avoid deficit spending.

Urban Jungle

As your Dream City grows so do some ugly problems. Now you're plagued with crime, pollution, traffic jams and slums. More roads! More rapid transit! More police! More urban renewal! More parks! More everything, including a stadium, airport and seaport. The Sims demand, and if you don't deliver they move out and you're mayor of a ghost town.

Random disasters, such as floods, shipwrecks, fires, tornados and monster attacks, can cause expensive damage. Battling these unwelcome surprises is half the fun, but you can disable them if you're chicken.

A God's Eye View

Looking down, the townscape is moving, changing, evolving before your eyes. Everything "works": tiny traffic signals, planes, drawbridges, helicopters, minute fountains in the park. Your city is alive thanks to peerless graphic animation.

That's the basic play of SimCity, but there are other choices at startup. Included are eight scenarios of famous cities in various states of disaster — the 1906 San Francisco earthquake, Detroit's crime wave of '72, Tokyo's monster attack in '57, even a nuclear meltdown in Boston in 2010. You have limited time and money to correct or repair the problems. Win the key to the city or ride out of town on a rail.

Play SimCity easy, medium or hard. You're the policy maker. Call up graphs to get a quick look at your progress. Tweak your budget, survey public opinion, check city maps. The game is crammed with



Life is good, but expensive, in Stacyville.

countless options. To list them all would take a 51-page manual. Luckily one comes with the game, and deserves its own award for clarity and completeness.

Being GEM-based, SimCity has a familiar feel with icons and windows and menus galore. A mouse expedites gameplay, but the keyboard commands are quite painless.

Uncharted Territory

As suggested in page 28 of the manual, I tried to print the map and sketch my city plan before bulldozing. Unfortunately, the Atari version doesn't have a print option. The person I talked to at Maxis said that suggestion should have been deleted

from the Atari manual. Planning before bulldozing is a good idea, though, so I did some experimenting.

There are two ways to print a SimCity map. First, call up the Map option, then press [Alt]-[Help] to print a screen dump. Be sure to set your control panel to 960 pixels/line first. To get any detailing, you must adjust the colors. Before printing, use the control panel to color the land blue, the forests red and the water green. It's ugly to look at on screen, but at least you can distinguish areas on the printout.

The other way is to use the Snapshot accessory to take a picture of the screen. Again, call up the Map option so all the territory is visible. Save your snapshot as a .P11 file, then import it into DEGAS Elite. In DEGAS you can cut out the map portion and expand it to fill the whole screen, then print it.

The Old Gray Mayor

In its unique way, SimCity is addictive and infinitely replayable. After a few sessions you'll have more compassion for those bumblers in city hall. Personally, this old gray mayor ain't what she used to be.

Betty DeMunn is a stage actress who has played many roles, but not that of mayor.

AT A GLANCE

Game:	SimCity
Type:	Simulation
Company:	Maxis Software 1042 Country Club Drive Suite C Moraga, CA 94556 (415) 376-6434
Price:	\$49.95
Requirements:	512K, color monitor
Summary:	Unique and addictive; you gotta have it!
Note:	SimCity comes on a double-sided disk. Contact Maxis for instructions on how to exchange it for single-sided disks.



THE CITY FEDERAL LOAN APPLICATION PROGRAM, OR, A SIMCITY CHEAT

BY JAMES BURTON
TECHNICAL EDITOR

You're mayor of Poorville. You bulldozed your blighted downtown to make room for a massive redevelopment project that's going to cause land values to skyrocket, but you ran out of money before it could be finished. Or, you're mayor of Irwin Allenville, a city which has suffered an earthquake, a flood and several high-rise fires within the last month. Your budget is drained and you can't clean up the disasters. What's a mayor to do? Do what the big boys and girls do — ask the federal government for bailout money!

As a special service to our readers (and because the programmers at Maxis saw fit to provide only a measly "embezzlement" option, and only as an incentive to send in your registration card!) START presents the City Federal Loan Application Program on this month's disk. The CFLAP provides another

realistic detail to SimCity — deficit spending.

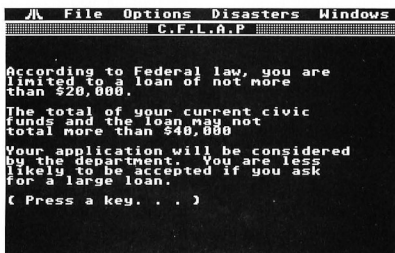
Using your backup START disk, follow the instructions in the file READ_ME to un-ARC LOAN-ARC.PRG. The program LOAN.ACC will appear. Copy LOAN.ACC to your boot disk, or rename it LOAN.PRG and copy it onto your SimCity disk. Reboot, then play SimCity. When you decide you need more cash, save your city, then select City Loan from the desk-accessory menu. If you renamed the program

LOAN.PRG, then double-click on LOAN.PRG to run it. You'll see some instructions, then you'll be asked if you want to log on to the Federal Government Computer Network (using the Vapormodem which is built into every Atari ST).

Once you're online, you'll be asked for the name of your city, then for the amount of money you want. As dictated by federal law, you are limited to a request of \$20,000, and your request plus the funds you already have may not total more than

\$40,000. Smaller loans have a better chance of being granted. When you leave the loan program, load your city back into SimCity, then build that new airport!

By the way, there's a rumor that if you request a certain amount of money (somewhere in the millions), the government's Vapornet program will crash, leaving you with a ridiculously huge amount of money. . . .



You'll have to wade through some red tape before you get your money. What else is new?



THE SIMCITY PLANNING COMMISSION HANDBOOK

BY JOHNNY L. WILSON

When the START staff first saw *The SimCity Planning Commission Handbook* we pounced on it. Here, at last, were all the hints and tips that would keep us SimMayors from being booted out of office. Lacking any education or experience in city planning, we had, of course, failed miserably at our first attempts at governing. Crime spiraled out of control, pollution blanketed the city, housing costs soared, we spent wildly and quickly plunged into bankruptcy.

But then the *Handbook* arrived and gave us an inkling of how to manage the intricacies of city government. When we read the book again, our cities improved some more. Each time we read this book we learned something, because it explains the theory behind the game, and doesn't just list one-two-three hints (which would be difficult to do anyway).

The excerpt that follows is chapter 3 of *The SimCity Planning Commission Handbook*. It explains the model at the heart of the SimCity simulation: the relationship between the Sim population and the number and location of residential, commercial and industrial areas.

Chapter 3 The Population Bomb: Human Resources And Problems

A Chinese proverb reads: "Of all things, people are the most precious." Human resources are a double-edged sword, however. A concentrated population can be an asset, enhancing production and trade, or a liability, contributing to crime, pollution, and excess consumption. It is estimated that the current world population is increasing by over 200,000 people per day. This means that by the year 2000 an additional 2 billion people will have been added to the global population, equivalent to adding urban centers of approximately 5 million in population every 20 days for the rest of the decade. Such unprecedented growth is placing equally unprecedented demands on the world's resources. Alvin Toffler, in *The Third Wave*, has compared the consumption of 87 quadrillion BTUs (British Thermal Units) of energy in the mid-1950s with the incredible figure of 260 quadrillion BTUs in 1980 as one example of the insatiable global demand for resources.

This chapter will consider the double-edged sword of human resources in the context of urban planning and how it can be applied in SimCity. A brief discussion of how urban planners model population growth, along with some observations on how the SimCity model handles population changes, should give you some concrete ideas on what to do about population density, crime, and the quality of life in your own urban simulations.

Up With People: Population Growth Projections

Most urban planners begin with the realization that changes in population result from birth, death, and migration. Perhaps the simplest way to represent population trends is the *residual method*. In this method, the planner takes the last census data for a city, tabulates the actual births and deaths over enough time to establish a birth and mortality rate, projects an estimated population based on birth and mortality, and subtracts

that estimate from the actual population. The residual figure becomes the *estimated migration rate*. Although this method tends to underestimate migration, it does show population patterns very quickly.

Another technique, the *vital rates* method, correlates the birth and mortality rates of a larger area (a county, state, or region) with the local population in order to project future growth. Again, it does not estimate migration closely enough to be anything more than a "quick and dirty" calculation.

A very useful technique, known as the *cohort-survival method*, is often used to make population projections in situations where migration is a limited factor. In this approach, the population is divided into categories by sex and age. Individuals belonging to the same statistical category are known as *cohorts*. Age-specific birth and mortality rates are applied, and a pyramid is developed that adds new births at the bottom as other cohorts are aged upward. This enables planners to anticipate age-specific needs as regards housing, health care, schooling, and so on (see *Figure 3-1*).

In SimCity, you have a much easier job than the typical urban planner. You do not have to worry about the death rate, because the birth rate is always positive. That leaves only the migration problem to consider. Because your score depends on both how large and how effective your city is, you will need to be certain that you are not losing population irresponsibly.

For The People: Managing Land Value

The fundamental factor in the way SimCity handles population is called the rent/bid gradient. This principle essentially asserts that the closer a plot of land is to the center of urban development (represented on the SimCity map), the more valuable it is (see *Figure 3-2*). In real life, this follows logically from the fact that people who live close to where they work and shop have lower transportation costs, hence more buying power and time.

In SimCity, you can observe this principle by means of a simple experiment.

1. Boot the game and select the Start A New City option.
2. In one corner of the map, build a power plant and zone for an industrial development.
3. Zone for two residential developments. One residential development should be in the extreme corner of

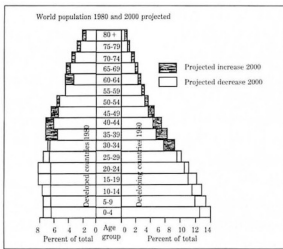


Figure 3-1: Cohort-survival chart

the Close-Up Map window, and the other should be very close to the projected industrial development.

4. Build power lines from the power plant to within one space of each of the residential zones, and build roads from the industrial zone to within one space of each of the residential zones.

5. Connect the final road sections to both zones.

6. Connect the power to the residential zone farthest from the industrial zone first, followed by the one nearest the industrial zone.

Notice that the residential zone nearest the industrial zone will grow faster than the zone farther away.

This is not always as simple in reality as it is in SimCity. The SimCity model posits an *isotropic transport plane*. This means that distances are measured on an ideal plane where everything is equally accessible. The program simply checks for distance from the average geographical center of the population to determine land value (which, in turn, determines whether the zone is growing, stagnant, or declining through decay and migration).

In actuality, the accessibility of a given urban center from a residential location is affected by terrain and transportation factors (availability of transport, amount of traffic or passenger density, commute time, and commute cost). People do not create mental maps of their urban areas to scale. Instead, they place landmarks on their maps based on their *perceptions* of distance, which are largely determined by their memory of the difficulty in getting to each landmark. Because there are so many variables involved in this process, SimCity simplifies the problem by using the isotropic transport plane.

In the quick experiment suggested as a test for the rent/bid gradient, there were no commercial zones added to the mix of services for the economy. In terms of game play, however, SimCity requires a balance between the number of industrial, commercial, and residential zones in order to maximize the availability of jobs. Every month, in game time, the program evaluates each residential zone in terms of land value, availability of jobs, and a quality of life quotient that considers pollution, crime, parks, and accessibility. An efficient, high-scoring city will try to keep all of these factors in balance.

People Who Need People: Commercial Considerations

The rent/bid gradient is even steeper for commercial developments than it is for residential properties. In Sim-

City, as in real life, location is a dominant factor in determining the viability of a commercial development. The program evaluates commercial zones based on a *radius of influence*. Each commercial zone is evaluated according to the accessibility of customers (residential zones), a hidden variable representing an *internal market share* (not in the Commodore version), and the overall balance between commercial, industrial, and residential zones.

The necessity for balance reflects an authentic economic principle known as the *export multiplier effect*. A well-integrated manufacturing center not only produces income from the export of manufactured goods, but its economy is stimulated as new imports return to the manufacturing center. Some of these new imports could be raw materials or machines to enhance production in the exporting industry, but other imports will enlarge the rest of the manufacturing center's economy by becoming part of a local support industry's manufacturing chain (for example, machine parts for a local mechanic to use in repairing the exporting manufacturer's machines or in building new machines) or by entering the wholesale and retail economy. In the case of the former, the local economy will very likely be enlarged when the local supplier decides to export his machinery or expertise to another manufacturing center. Then his exports generate new imports, which add further to the local economy's growth momentum.

There is another multiplier effect, which takes place when a local economy begins to manufacture items to replace those items that the manufacturing center once only imported. This is called the *import replacing multiplier effect*. This principle states simply that when an urban center attempts to produce those items that it once imported, it creates a larger economy by virtue of establishing greater demand. For example, a city that imports textiles begins to develop its own textile industry. This creates an influx of textile workers who must, in turn, purchase clothes made from some of the fabrics produced in the local economy. Hence, the internal demand for textiles has exceeded the amount that used to be imported. Other factors, such as reduced transportation costs and increased supply, reduce the basic prices entered into this growth figure, but the point is valid nonetheless.

In SimCity, you only need to manage the export multiplier effect. Here are a few guidelines for your consideration. In actual city economies, a city that is primarily a manufacturing center may use nearly 70 percent of its industrial production for supplying *external* markets, and a city that is primarily a commercial center may use nearly 60 percent of its commercial production to support *internal* markets.

Because it is the support of the internal market that really makes a city take off economically, it should be your goal to reach commercial center status at the earliest possible moment. In SimCity, the external/internal market ratio starts out at 3:1 (the external market is three times greater than the internal market). As the city's size increases, the ratio is reduced to 2:1 and then 1:1 before it finally flip-flops to 1:2, and so forth. In cities in general, the multiplier generally gains momentum at around 200,000 total population. In SimCity, the multiplier usually kicks in earlier and really starts to accelerate when the total population is between 200,000 and 500,000.

A city that produces more for its internal market than it does for the external market is actually more self-sufficient and, consequently, less vulnerable to external market conditions. SimCity simplifies matters by arbitrarily deciding that all commercial production is for the internal market and all industrial production for the external market.

SimCity's documentation states that the ideal balance between zones is for the sum of commercial and industrial zones to equal the total number of residential zones. The preceding discussion indicates that you should have more industrial zones than commercial zones during the early history of your city and more commercial zones than industrial zones when you reach the metropolis stage.

Industrial Strength Planner: Industrial Considerations

The SimCity program evaluates industrial zones with far less complex calculations than those related to commercial and residential zones. When the industrial zone is evaluated, the program simply wants to know whether the zone is connected to the power grid or not and whether your "Sims" can get to work or not. The zone is upgraded or downgraded on that basis and the result of that function is looped back into the calculation for evaluating residential zones (which, in turn, causes a ripple effect through the entire model). You should also remember that there is a point in the game when you will need a seaport in order to support full industrial development.

Industrial zones have several positive effects in the SimCity model, but there is a negative effect that should be emphasized. Because industrial zones contribute to pollution, and pollution subsequently reduces land value, causing migration and reduced population, it is a good idea to segregate the manufacturing areas of your city from the residential areas.

Urban Jungle: Population Density

High levels of population density tend to signal increas-

es in the crime rate, overcrowding, and slum conditions. Many urban planners insist that this does not have to be the case. Indeed, Tokyo has a much higher population density than New York City with only around ten percent of the crime. Nevertheless, SimCity generalizes this factor and posits a direct relationship between rising population density and increasing crime. It is possible, however, to apply some of the lessons taught by urban planners to your city and reduce the negative effects of high population density.

Many people confuse a concentration of population with overcrowding and poverty. As the visionary Le Corbusier observed, concentration does not have to equal congestion. His perspective was that high-density apartment buildings and office spaces would allow for surrounding open spaces, which could enhance the quality of life.

If one can guarantee that open space will be available for public use as compensation for high-rise buildings, Le Corbusier is probably correct. In modern America, however, territory that would ideally be allotted for open space tends to be usurped by other urban demands. In particular, housing that can support roughly 400 persons per acre requires a parking structure large enough to devour space that could otherwise be utilized for gardens, patios, and playgrounds. An office building that holds 1,200 persons per acre would require a three- or four-story parking garage where one would prefer a park. "The 'green' space to which we aspire and which offers much promise," observe Gallion and Eisner, in *The Urban Pattern: City Planning and Design*, "actually becomes a pavement for the vehicles of transportation." Fortunately, the SimCity player can be somewhat more successful in alternating green belts with high concentrations of population than most urban planners. The SimCity model does not require you to build parking structures. Therefore, you do not have to bulldoze any terrain other than that which is needed to develop the residential zone itself. This means that you can conserve an incredible amount of available forest and shoreline. Because forests and shorelines add to land value and a higher land value reduces crime, building residential areas next to open spaces limits some of the negatives created by high population density. Because planting parks also adds to land value, an aggressive park building campaign can reduce some of the negative factors associated with high-density population centers.

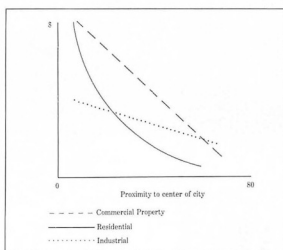


Figure 3-2: The rent/bid gradient

Another way to slow the growth of the crime rate is to strategically place new police departments. Placing a police department in a high population density area does directly reduce the crime rate, but it does *not* directly increase the land value and cause a corresponding increase in the amount of taxes collected. By lowering the crime rate, it *indirectly* raises land values and enhances the taxes collected. Generally speaking, however, new

police precincts add to the expense side of the city ledger.

Alert SimCity players have also noted that *redevelopment* does not work. When land value drops significantly in one of your city's zones, the terrain tiles that depict the buildings in that zone will begin to show decay. My initial impression was that the buildings simply needed demolishing so that new buildings could be constructed. This doesn't work.

When buildings start to decay in SimCity, this is not a function of the buildings themselves. It has nothing to do with the type of buildings in the zone. It is a result of the land value function. This discussion brings to mind the misguided warning posted on a BBS by a novice player: "Watch out for low-valued churches!" as though it were the church bringing the zone down. Instead, it was the land value in the zone bringing the church's value down (unintentionally representative of vandalism, perhaps?).

Therefore, you must solve inner city decay by working on the surrounding problems, rather than attempting a simple, but ineffective, redevelopment program. You must reduce pollution, crime, population density, traffic, and economic stagnation if you wish to revive the values of these zones. As in real life, government-subsidized housing will not accomplish enough if the root cause of an area's problem is, for example, unemployment.

Pop! Go the People! Important Calculations

The final topic of this chapter concerns how the calculations related to population fit together with the changes in your city. First, note that every zone on the map is periodically updated as the EvalPop (evaluate population) function is called. Second, pay attention to the spiral effect in which higher crime and higher population density lead to lower land value. When these factors are updated, the lower land value can cause further ripple effects in your city's economy. ■



A S K D O C T O R

TROUBLESHOOTER

***Faced with a broken ST, a smoking solder gun and no clue what to do? Read on!
Dr. Troubleshooter and 10 experts
have come to your rescue.***

Like any complex machine, computers break. Some problems are easy to fix — a broken cable, a misunderstanding — while some require an experienced technician. But which is which? This troubleshooting guide will tell you. Dr. Troubleshooter assembled a team of 10 experts to explain the simple fixes and tell you when you need that experienced help.

For ease of use, Dr. Troubleshooter split the guide into 10 areas of functionality. Happily, the 10 areas of functionality coincide with the 10 experts' areas of expertise. Each section is organized as follows: a statement or question summarizing the problem; its likely cause; a diagnosis, which is either an explanation of what went wrong or a way of confirming the cause; and a cure, a step-by-step fix of the problem.

Dr. Troubleshooter regrets that this guide is by no means comprehensive. To do such a thorough job would re-

quire several books. Luckily, Ralph C. Turner has written two books which answer hundreds of questions about the Atari ST, covering areas from beginner's confusion about GEM to experienced user's tricks with complex software. *The Atari ST Book and Intermediate And Advanced Atari ST Subjects* are available from Index Legalis Publishing Company, P.O. Box 1822-3, Fairfield, IA 52556 (515) 472-2293.

And last, but not least, at the advice of Mr. Lawyer, Dr. Troubleshooter presents the following disclaimers and caveats.

Number 1: Opening up hardware to perform your own repairs may violate your warranty. Check with the manufacturer before you remove the cover.

Number 2: Undertake any repairs at your own risk. You, and you alone, are responsible for the results, good or bad, of any testing, tweaking, poking, soldering, reseating, replacing or repairing that you perform. Dr. Trou-

bleshooter, the 10 experts, the authors and START magazine make no warranties either express or implied with respect to this troubleshooting guide, its quality, accuracy, merchantability or fitness for any particular purpose.

Number 3: If you don't know what you're doing, ask for help. Your Atari dealer, product manufacturers, user groups and the online services are excellent resources. Use them.

Number 4: There is no ongoing support for this troubleshooting guide. Do not write or call with your particular problem. Dr. Troubleshooter, the 10 experts, the authors and START magazine cannot and will not diagnose or attempt to fix your problem over the telephone or through the mail. If you can't figure out what's wrong, call the manufacturer or take the broken product to an authorized Atari repair shop.

ASK DOCTOR DESKTOP

Why, when I try to run a certain program, do I only get an alert box that says "TOS Error #35"?

CAUSE The program you are trying to run is not executable on the ST. "TOS Error #35" is the ST's way of telling you that it doesn't understand what's contained in the file.

DIAGNOSIS There can be a number of reasons for this. If you downloaded the file from a bulletin board, it could have either been corrupted during the transfer or, more likely, wasn't meant for the ST. If the file has been around for a while, on either a floppy or a hard disk, there is a small chance that the disk has been scrambled.

Also, maybe the disk and file are fine, and the file's contents are not a program. Sometimes a random file may accidentally be renamed as a program (.PRG, .APP, TOS or .TTP files), and the ST will respond with "TOS Error #35" when you attempt to execute it.

CURE Unfortunately, if the file is corrupted, you've got

one shot at fixing it. Disk Doctor, from Antic Software, has an option to try to fix a damaged file. It only works on files whose "table of contents" is scrambled; if the actual file data is corrupted, it cannot reconstruct it. If the latter is the case, better bring out your backup. Disk Doctor is in the TOOLS folder on your START disk, in the ARCed file DSKDRARC.PRG.

In the case of the misnamed file, change its extension to .TXT (use the Show Info... option under the File menu) and double-click on it. If the contents appear as normal, readable text, then it's a data file, not a program file.

How come there are only six desk accessories available when I use my ST, even though I have 15 or so in the root folder of my boot disk?

CAUSE GEM, the ST's user interface, limits the number of desk accessories available at any one time to six. Any extras that are available on the boot disk are ignored.

DIAGNOSIS AND CURE If you need more than six desk accessories at one time, CodeHead Software sells a program called MultiDesk that loads a potentially infinite number of DAs at one time, the amount of memory in your computer being the only limiting factor.

If you would like to be able to choose which six DAs

BY WILLIAM BUSBY, GREG "MADDOG" KNAUSS, DAN MOORE, JIM PIERSON-PERRY, DAVE SMALL
AND THE START STAFF: THOMAS R. BYRON, AMY H. JOHNSON AND JAMES BURTON

The authors thank Toad Computers, Severna Park, Md.; Mid-Cities Comp/Soft, Bellflower, Calif.; and Atari Technical Support for providing valuable answers and advice.

PHOTOGRAPHY BY CHLOE ATKINS

load up each time you use your computer, there are a number of programs that allow you to do that, most in the public domain. Desk Manager 2, HAZEL, and a host of other are available from BBSS and users groups. HAZEL is available on this month's START disk, in the ARCD file HAZELARC.PRG, in the TOOLS folder.

Why does my computer always boot up in low resolution with the default colors even though I changed the settings the last time I used it?

CAUSE You didn't save the changes you made before turning off the computer.

DIAGNOSIS AND CURE To save the changes you have made to your desktop, you need to use the Save Desktop entry in the Options menu. This will write your configuration to disk, in a file named DESKTOP.INF, so it can be automatically reloaded the next time you boot up. Also, you should remember that if you want the options you set in your Control Panel to be restored (colors, double-click speed, etc.), the Control Panel must be present. Even if you saved changed colors, for instance, they will be reloaded only if CONTROL.ACC is in your boot folder.

If you have an STE computer, you may find that the computer boots in low resolution even though you have saved the Desktop in medium resolution. This a bug with TOS 1.6. There is a patch program, STE_FIX.PRG, that fixes this problem. STE_FIX.PRG is on your START disk, in the ARCD file STEFIXARC.PRG, in the TOOLS folder.

My computer is acting oddly. Some programs that have worked in the past don't anymore.

CAUSE There could be several reasons: you have a TSR conflict, you have a corrupted file, or you have a virus.

DIAGNOSIS Dr. Desktop covers viruses and corrupted files in other questions.

The most common reason for programs to stop working is TSR conflicts. A TSR is a terminate-and-stay-resident program, designed to stay in memory and wait for you to use it, like desk accessories and certain programs from your AUTO folder. If you started having trouble after adding a new program to your start-up disk, try removing that program and see if the situation goes back to normal. If it does, then the new program is the culprit.

CURE There are a number of things you can do to avoid TSR conflicts. The CodeHead program AUTO_ORG.PRG reorganizes the order of the files in

your AUTO folder, and that will often remove some conflicts. A few programs need to be run before everything else, or they will heedlessly trample over whatever is in their way. Check the program's documentation. The only way to determine a workable TSR order is through trial and error. Delete everything from your AUTO folder (copy it to another disk first!), then add TSRs one at a time, rebooting each time to test them. If conflicts appear, reorganize them until they stop crashing. Continue until you replace all your TSRs in the AUTO folder.

Some TSRs are sworn enemies; they will not work with one another, no matter what. In that case, get Desk Manager 2, HAZEL, or any other start-up file chooser and simply remove the offending TSR each time you are going to use its enemy.

Every time I try to run a certain program, the computer tells me that I don't have enough memory.

CAUSE Either the program requires more memory than you have available (for example, some START programs will only run on a 1MB machine; you're out of luck if you have an unmodified 520ST), or your desk accessories and TSRs are eating more memory than you realize.

DIAGNOSIS AND CURE Check your program's documentation for the minimum amount of memory required to run it. If you suspect your desk accessories and/or TSRs are interfering, remove some or all of them and reboot before using that program. By definition, DAS and TSRs grab memory (sometime huge chunks, more than you may realize) at boot time and keep it for their sole use until you turn off your machine. If you are having memory troubles often, however, the best solution is to upgrade your RAM.

What do those bombs that appear on the screen mean? Is the computer broken?

CAUSE No. Bombs are just the computer's cute way of telling you that it's had a crash that it couldn't recover from, also known as a fatal error.

DIAGNOSIS Bombs usually result from garbled machine language (a bug in a program, or your ST burping for no apparent reason) or conflicting TSRs. The number of bombs tells you what type of fatal error the problem was — important information to the programmer, but not much help to the user.

If bombs happen regularly at boot up, you may have conflicted TSRs, or possibly a bad chip.

CURE Rebooting the computer and starting over is, unfortunately, the only solution. If bombs happens regularly at boot up, try the cure for conflicting TSRs. If that doesn't stop it, suspect a bad chip and take your computer to a repair shop.



After using my computer for a while, I suddenly start to get scrambled file listings. The problem goes away if I reboot. What's going on?

CAUSE You have encountered the infamous 40-Folder Bug.

DIAGNOSIS Because of a mistake in the early versions of TOS, any time you try to access more than 40 folders in one computing session, the computer will get confused and start returning garbage in windows.

CURE The solution is simple. On this month's START disk you'll find a public-domain AUTO program, called FOLDRxxx.PRG, that will raise this limit to whatever you wish — just substitute the number of additional folders you want for the "xxx" in the filename. One hundred is safe for the vast majority of people.

I just accidentally deleted an important file.

CAUSE You weren't paying attention to the confirmation box, or you don't have the Confirm Delete option active.

DIAGNOSIS On the Desktop, under the Options menu, choose the Set Preferences entry. Along with resolution, you're asked to choose whether you want a confirmation box to appear before the ST performs any file overwrites, copying or deletions. The Yes option should be highlighted.

CURE If you want your preference for Confirm Delete to be available the next time you boot, highlight the Yes choice, exit the menu and save your Desktop.

In order to recover the file you accidentally deleted, use the recover file option in Disk Doctor, which is on your START disk in the TOOLS folder. It only works under specific conditions. If you have written to the disk since deleting the file, its contents have probably been destroyed, leaving it unrecoverable. The best remedy against accidental file deletion is a consistent back-up schedule.

When I try to erase a certain file, the computer tells me, "An item with this name already exists in the directory, or this item is set to Read Only status."

CAUSE The file is write-protected, preventing it from being deleted or changed.

DIAGNOSIS Click on the program to highlight it, then choose Show Info... from the File menu. In the Show Info dialog, you should see that Read Only is highlighted.

CURE Click on Read/Write, then OK. The file can now be modified or trashed.

What can I do to prevent a virus infection?

CAUSE Viruses live on the boot sector of a floppy disk. If you boot your computer from an infected

disk, the virus program is loaded into memory, then run. The virus watches for any disk access, and if it finds a disk that isn't write-protected, it copies itself onto that disk. It stays active until the computer is turned off. After a certain amount of time, a certain amount of copies, or if a certain disk is placed in the drive (a "key" disk), the virus is triggered to do its irritating, or even dangerous, dirty work.

DIAGNOSIS If your mouse suddenly changes direction, if a strange message appears on your Desktop, if part of your screen turns upside-down, you have a virus. Some viruses are known to mimic a hardware problem, such as a jittery screen, apparently trying to fool the user into taking his machine to the repair shop. A worse case scenario; the virus erases a disk, or formats your hard drive.

CURE If you suspect that you've been infected by a virus, use George Woodside's Vkiller program to test all your disks. Vkiller, which detects viruses and erases them, appeared in the May 1990 START. To get the latest version, check with your user group, or download it from CompuServe or GENie.

PREVENTION Never boot your computer with an "unknown" disk. Make a virus-free boot disk, and use it to boot every time. To make a virus-free boot disk, turn your computer off, and leave it off for at least 30 seconds. This is important! It takes a while for memory to be completely cleared, and you want to make sure that any virus in memory is erased. Now remove any disks from your drives, and turn off your hard drive, if you have one. Turn on your ST. Since there isn't a disk in the drive, it will take a while for the system to boot. When the Desktop finally appears, insert a new disk — one fresh from the manufacturer — then format it. From virus free disks, copy any AUTO folder programs or accessories to the disk, then physically write-protect the disk so that no other information, such as a virus, can be written to it. Now, as long as you boot from this disk, a virus cannot infect your ST and spread to other disks. Also, if you forget and boot from another disk and get infected, the virus cannot infect your boot disk because it's write protected.

The protection scheme described above only works if you have TOS in ROM. If you have TOS on disk, now is a good time to upgrade. Talk to your Atari dealer about buying TOS on ROM.

Once you're virus-free, use Vkiller to stay that way. Test any questionable disk before you put it in your machine. By questionable Dr. Desktop means any disk that's ever touched the lips of someone else's floppy drive. Computer viruses, like human ones, strike indiscriminately; you can get one from your best friend as easily as from a stranger.

A S K D O C T O R

KEYBOARD

One specific key on my keyboard doesn't work.

CAUSE You've got either an up problem or a down problem. The down problem is when the plunger underneath the cap of the key, the thing that is pushed down to close the contact, breaks. The up problem is when the small rubber cup (on the 520 and 1040 keyboard) or the spring (on the Megas) that pushes the plunger back up shifts to where it can't do its job.

DIAGNOSIS If the key won't return after it has been pressed, or won't go down in the first place, you've got an up problem. If the key falls off the keyboard, you have a down problem.

CURE If you can salvage the pieces of the plunger, gluing them back together will solve the down problem. Salvaging the pieces of the plunger means disassembling the keyboard unit. This procedure, however, is not easy. It's not a problem to take the cover off the computer. (Be sure to unscrew only the screws near the edge of the machine. There are several screws near the middle of the ST which hold the floppy

drive in place.) The keyboard lifts out. Now you need to unscrew the back cover of the keyboard unit; dozens of springs, or cups, pop out. After you've put them back in place, getting them to stay there while you replace the keyboard unit's cover is a pain.

If you have an up problem, you need to realign the cup or spring that pushes up the key's plunger. Again, with appropriate warnings given above, disassemble the keyboard. Since every cup, or spring, will pop out, just make sure you replace them correctly.

A service center can fix either problem, but they may want to replace the entire keyboard, just to keep



the job simple. Ask what it will cost before handing over your ST.

A whole section of my keyboard doesn't work.

CAUSE Computers that take a lot of abuse sometimes develop cracks in the circuit board's wiring.

DIAGNOSIS Since the keyboard's wiring is laid out like a matrix, usually one wire will carry signals to and from a group of keys. Make sure the non-functioning keys are grouped together. If they're scattered about the keyboard, you have multiple occurrences of the problem discussed above.

CURE The only solution, because the crack is in a lead along a printed circuit, is to have the keyboard replaced.

My whole keyboard is dead.

CAUSE One or both of the keyboard chips is bad. **DIAGNOSIS** There is one chip on the keyboard unit which sends signals to another chip on the ST motherboard via a ribbon cable. To figure out which chip is bad, borrow a friend's keyboard unit and plug it into your motherboard. If your friend's keyboard works, suspect the keyboard unit chip. The motherboard chip also handles input from the mouse and joystick. If these peripherals, as well as your keyboard, aren't working, then suspect the motherboard chip.

CURE Keyboard chips are custom made, so only Atari and some Atari repair shops stock them. Once you get one, it's easy to replace. The chip is socketed onto the bottom of the keyboard unit; you don't need to open it up and experience the flying caps or springs. Simply pry out the bad one and plug in the new one.

It's not as easy to replace the keyboard chip on the motherboard. The chip is a Motorola 6850, available at well-stocked electronics stores. It is soldered to the motherboard, and there are two of them. One 6850 receives keyboard signals; the other controls the MIDI ports. You need to either read the ST's schematic or trace the wiring to figure out which is the right 6850. Then you must remove the bad chip and solder in the new one. If you have no experience soldering, this isn't the time to learn. Take your computer to a dealer.

A S K D O C T O R

FLOPPY DRIVE

I keep getting the error message that my drive "is not responding." What's wrong?

CAUSE It could be anything. Specifically, it could be a

bad disk, a bad cable, a bad drive, a bad power supply, or a bad floppy-disk controller in your ST. You also could be attempting to read a double-sided disk with a single-sided floppy drive.

DIAGNOSIS First, make sure that the drive access light comes on when you try to read the disk. If it doesn't, make sure that the drive has power, and that it's turned on. If all the connections are in place, your power supply may be dead.

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If the access light does come on, try reading another disk. If it works, then your original disk is bad. If it doesn't, try yet another disk (in case the second disk is bad, too). If the drive refuses to read any disks, test the cable which connects your drive to the ST. Make sure it's plugged in! Try replacing the cable with a friend's good cable. If the cable is OK, then the problem is with the drive or the computer. Borrow a friend's drive and connect it to your ST. If it works, your drive is broken. If it doesn't work, suspect your ST.

Before you take your machine into a dealer for repair, make sure you aren't trying to read a double-sided disk with a single-sided drive.

During their first years of manufacture (1985 and 1986), Atari sold both 520-STs and 1040STs with internal single-sided drives. Megs has always carried double-sided drives. Atari also sold an external single-sided drive, called the SF354. To the best of our knowledge, no third-party vendors sold single-sided drives during that period. Check what kind of drive you own by trying to read a single-sided disk (357,376 bytes) and a double-sided disk (726,016 bytes). The Show Info... option under the File menu will give you disk size.

CURE If it's a bad disk, hopefully you've got a backup copy somewhere. For a bad cable, buy another cable from your Atari dealer. If the drive access light refuses to

come on, and you can't hear the motor spin, then your drive's power supply needs replacing, or the power switch is broken. If the drive is still under warranty, follow the warranty instructions. Otherwise, get your local dealer to fix it. Many times, "fixing" a disk drive simply involves replacing the broken drive mechanism with a new one, so you end up with a new drive in an old case. If your ST seems to be the culprit (or if you have an internal disk drive that won't work), you'll also need to see your authorized Atari dealer.

If you're trying to read a double-sided disk with a single-sided drive, you have two options. You can buy a double-sided drive, or you can convert the double-sided disk to single-sided. Most manufacturers of commercial disks will exchange double-sided ones for single-sided. Alternately, you can get a friend with a double-sided drive to copy the files onto two single-sided disks.

I've tried chaining three disk drives to my ST. The first drive works fine, but not the second or third.

CAUSE The ST can access only two floppy drives. When you chain a third drive to your computer, it tries to access it whenever you access the second drive, and

vice versa. Very confusing.

DIAGNOSIS AND CURE Remove the third drive; the second drive should now work fine.

Sometimes I get "garbage" on the Desktop window when I open a disk.

CAUSE Most likely, a worn-out disk. Another possibility is a dirty or worn read/write head.

DIAGNOSIS If it's just a certain disk that sometimes gives you garbage characters, then the magnetic coating on that disk may be wearing thin. If this seems to happen no matter what disk you use, the read/write head on the drive is dirty or worn out, or a piece of hair or other debris is interfering with the head.

CURE If it's a worn disk, you'd better copy it right now! Eventually, the magnetic coating will fail altogether, and the information on that disk will be lost.

For a dirty read/write head, purchase a 3.5-inch disk-drive cleaning kit and follow the instructions to clean the drive. If the problem persists, then the head may be worn out, and it will need to be replaced. Don't try to replace it yourself unless you know — really know — what you're doing. Drive heads need to be precisely aligned in order to work correctly. If you suspect a worn head, it's time for a trip to your Atari service shop.

When I try to save something, I get a message that the disk "is physically write protected."

CAUSE The disk is write-protected.

DIAGNOSIS Write protection prevents data on a disk from being accidentally erased or overwritten. If the sliding tab on the upper-left corner is open, so that the hole is uncovered, then the disk is write-protected and cannot be written to or formatted.

CURE Slide the tab down so that the hole is covered. The disk is now unprotected.

My drive won't read disks from my friend's ST, yet it reads my disks fine.

CAUSE Either your drive or your friend's drive is spinning at the wrong speed. ST drives should spin at a rate of 300 rpm. If a disk was formatted at a slower or faster speed, a drive operating at the correct speed may not read it, and vice versa.

DIAGNOSIS All commercial, mass-produced disks are made at 300 rpm, so see if your drive has any problems reading the original disks from one of your commercial programs. If it reads the disk, then your drive is okay, but your friend's isn't. Use the program SPEED.PRG to test your drive. You'll find it on your START disk, in the ARcEd file SPEEDARC.PRG, in the TOOLS folder.

CURE The drive's speed can be adjusted by your dealer.



A S K D O C T O R HARD DRIVE

Editor's Note: The following troubleshooting guide addresses some of the most common questions about hard drives. Hard drives are, however, very delicate machines and require someone with the requisite knowledge to fix any of the more complex — and potentially dangerous — problems that may occur. Therefore, use this information at your own risk. If you have any doubts about troubleshooting your hard drive, or want information specific to your equipment, call the manufacturer. All of the major hard-drive manufacturers for Atari computers have on-site technical support and service. Their numbers are as follows:

Atari Corp.: (408) 745-2135

ICD: (815) 968-2228

Supra: (503) 967-9075

Toad: (301) 544-6999

Carter Graphics & Computers: (801) 628-6111

Finally, the following information applies equally to fixed and removable hard drives.

My hard drive won't turn on; nothing happens when I flip the power switch.

CAUSE This usually means a problem with the power supply or that the power wiring has gone bad.

DIAGNOSIS Power supplies fail more than anything else on a hard drive. First, check all of your connections — was the drive accidentally unplugged?

The fuse should be your next suspect. If it's not the fuse, there may be other problems. Sometimes a power supply is getting electricity but isn't translating that energy to the drive. Make sure the power strip is "hot." A quick meter check of the power strip by an authorized serviceworker might not hurt. If it's getting power and still nothing is happening, the power supply may have to be replaced.

As far as the wiring is concerned, you'd be amazed at how many times the connector that brings power to the ACASI-SCSI board on hard drives can come loose; that'll paralyze the unit.

CURE If the drive is unplugged, plug it back in. If it's a simple matter of the fuse, make sure the replacement fuse has the same value on both ends (volts and amps) as the old one. If power goes into the power supply and nothing comes out, you've got a bad supply and it will need to be replaced. Make sure it's tested with everything connected to the power supply; an unloaded supply often shows no output at all.

If the problem turns out to be one of those outlined above, you usually don't have to worry about data being lost. This is because the hard disk itself wasn't damaged. If you find out that the actual hard-disk mechanism is broken, then you may be stuck and you've probably lost all of your data. There are shops that can sometimes retrieve data off dead hard disks, but the process tends to be very expensive.

If the wiring is causing the trouble, make sure all the plugs are firmly seated. A loose plug can work for a while, then oxidize and quit. Again, this may have to be diagnosed and fixed by your local serviceworker.

My hard drive's head spins but the drive and the computer don't appear to be communicating with each other.

CAUSE Your first suspect should be a bad hard-drive cable. If this isn't the problem, then the ST's DMA chip should be checked.

DIAGNOSIS DMA stands for direct memory access. Simply put, it's a way for the hard drive to access RAM directly rather than through the 68000 CPU, which would slow down all processing because of the extra load. Since all requests to read and write to the hard drive must go through this chip, the hard drive is effectively incommunicado when it fails.

CURE Swap your ST/hard-disk cable with a new one. Throw away the bad cable — it can't be re-used.

A bad DMA chip is a littler trickier to fix and may require someone who is expert at such things to check it out. Most of the time reseating the DMA chip cures the problem. Reseating is simply pushing down on the chip and wiggling it at the same time. What you're doing is scraping off a tiny layer of oxide corrosion on the pins and on the socket. You'll usually find the DMA chip in front of the hard-disk port. Of course, antistatic precautions are essential; if you don't know what they are, get help from someone who does.

If the cable or DMA chip fixes don't work, hook your hard disk to another ST and see if it works. If your hard drive runs, your ST may be bad — take it to a dealer to get it fixed.

When autobooting from the hard drive, my computer bombs.

CAUSE One of your terminate-and-stay-resident (TSR) programs or desk accessories is incompatible with something else in your system.

DIAGNOSIS As explained by Dr. Desktop, TSRs and desk accessories sometimes don't work well together. Perhaps you just bought the latest file selector. After you installed it onto your hard drive, your computer bombed, even after several reboots.

CURE First, you need to access your hard drive so that

you can disable the offending auto-load program, or to at least experiment with different auto-load configurations. Most manufacturers ship their hard drives with a utilities disk. One of these utilities is usually labeled BOOT.PRG or a variation thereof (for ICD drives, for example, it's ICDBOOT.PRG).

Boot your computer with your utilities disk. Next, turn on the hard drive. When the disk stops spinning, double-click on your boot program. You should notice some hard-disk activity and a brief message flash on the screen informing you that the boot program is installed.

At the Desktop, click once to highlight the icon for either drive A or B, then click on Install Disk Drive from the Options menu. Change the drive designator to whichever partition your AUTO folder is on. The new disk icon will appear; now either disable the offending TSR or experiment with different configurations until your drive no longer crashes.

My hard drive appears to be working, but when I boot up only floppy icons appear.

CAUSE You turned the computer on too soon, your hard-disk cable is bad or there's a problem in the autoboot sequence.

DIAGNOSIS It often takes several seconds for the hard disk to spin up to speed. Nothing can be read from the hard drive (like the boot sequence) until it gets up to

speed. By default, your ST assumes the hard drive is absent from your system.

CURE Wait until the disk stops spinning before you start up your computer (most hard drives include a light — often red — that indicates that the head has stopped spinning). Note that the STE and TT have a built-in delay that lets the hard drive get up to speed so that both the computer and drive can be turned on at the same time. Refer to previous questions regarding faulty cables and problems in the autoboot sequence.

The hard disk squeals unbearably all the time.

CAUSE The small copper "strap" where the head spindle touches the hard-disk mechanism needs oil.

DIAGNOSIS AND CURE A small drop of oil here can cure the squeal, but don't overdo it! Oil attracts dust and if you apply too much, you'll really get a squeaky drive in a few days. Also, very gently loosen the strap, just a little bit, and see if that helps.

My hard drive is damaged beyond repair and the whole unit has to be replaced. Is there any way to retrieve the data or is it gone for good? By the way, I didn't make a backup.

CAUSE Things break all the time and hard disks are no exception. That your data is irretrievable may be due to any number of reasons. It's possible you damaged a sector in one of your partitions. Suffice to say, if you damage one partition sector, they're all lost to you.

DIAGNOSIS AND CURE Electronic data is very fragile. Hard drives were never meant to protect your data from unforeseen circumstances such as coffee spills or magnetic interference, but only as a way to store and access large amounts of information.

Fortunately, there are several ways to retrieve data that seems irretrievable. When a hard drive "crashes," you often can restore the data through a partition-sector editor, which should be included on your hard-drive utilities disk.

Restoring a partition sector is not as complicated as it first sounds. If you took the time to write down all of its specs, then you can use a utility such as Supra's SUPEDIT and punch in the partition sector data. You'll then be able to retrieve the data from your hard disk. If you didn't write down the partition info and never used Meg-A-Minute Elite, which backs up the partition sector, you can either reformat and lose all your data, or try to restore the partition sector by hand. It's not easy to restore a partition sector by hand. But try to remember exactly how many megabytes your partitions were. Mostly, everyone uses even numbers: 5MB or 10MB. Try using these values for partition sizes:

1MB = 2,000 sectors
2MB = 4,000 sectors
5MB = 10,000 sectors
10MB = 20,000 sectors
15MB = 30,000 sectors
16MB = 32,000 sectors

Plug these values into the SUPEDIT partition-edit utility, remembering to leave one-sector "slop" for fencepost error. For example, let's assume you have a strange disk layout of 1MB, 5MB, 10MB and 2MB partitions in that order (C,D,E,F). Your partition table should look like this when you're done with SUPEDIT:

Starting Sector #	Length
1-2001	1MB
2002-10002	5MB
12003-20003	10MB
32004-40004	2MB

You can see what we mean by "fencepost error"; 2,000 sectors takes us from sector 1 to sector 2001, so the next partition starts at sector 2002.

When finished, tell SUPEDIT to write this out as your partition sector. After this, you won't be able to boot from the hard disk, but you will from floppy; follow the procedure outlined earlier for accessing a hard drive through the boot utility.

If the partition-editor fix doesn't work, then forget it; the data's gone and you'll have to reformat your hard drive and restore the data any way you can. And if you didn't make a backup, well, you blew it.

PREVENTION There are a number of ways to back up your hard drive. The most convenient but expensive is the Tape Backup from ICD. It backs up your hard drive onto a cassette tape in a matter of minutes. The DVT VCR backup from Seymour/Radix, does essentially the same thing except to video tape.

The most basic and least costly way to back up your hard drive is to floppies. You can either do a straight copy of your hard drive contents, which can be very time consuming, or you can use one of several floppy-disk backup systems. Data Innovation's Diamond Back will back up your hard drive within minutes; Meg-a-Minute Elite, from the November 1988 issue of START, is republished on this month's START disk in the TOOLS folder. Un-ARC the file MGAMNARC.PRG. The public-domain Turtle also offers an effective solution.

ASK DOCTOR MONITOR

My monitor screen stays black when I turn it on. Is there anything I can do?

CAUSE A monitor screen that stays black often indicates trouble with either the power supply or flyback transformer. It's also possible that your picture tube blew.


DIAGNOSIS Don't bother. Monitors are the one peripheral whose cover you should never remove.

CURE Take your monitor to an authorized Atari dealer for repairs. Do not attempt to fix it yourself; you'll just do more damage.

No matter how much I fiddle with the volume/contrast/power control, nothing happens.

CAUSE There are two possibilities: you have a loose wire, or the control knob has a broken switch.

DIAGNOSIS See the answer above.



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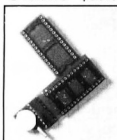
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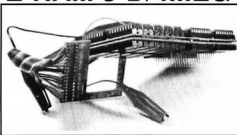
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CURE See the answer above.

The picture on my color monitor rolls vertically (or skews horizontally).

CAUSE Your monitor dropped out of alignment.

DIAGNOSIS It looks like your TV picture after someone's been fiddling with those obscure knobs below the

channel selector.

CURE On the back of your monitor are adjustments for things like vertical hold, horizontal position and brightness. The control knobs may stick out or they may be inset so that you need a screwdriver to reach them. Adjust the knob that corresponds to the trouble you're having. If the problem doesn't go away, see above.

ASK DOCTOR MOUSE

My mouse's movement is erratic; it's bumpy and jerks when it should be rolling smoothly.

CAUSE Gunk has built up on the rollers.

DIAGNOSIS It's easy to check the rollers. Open the small door on the bottom of the mouse, remove the rubber ball, and look at the rollers while spinning them. If you see anything but shiny metal you need to clean them.

CURE It's hard to reach the rollers through the door on the bottom of your mouse, so find a Q-Tip and rub the gunk off the rollers. There are three of them. Often little dust mice will gather between the roller and the circuit board; you'll have to poke them out with a toothpick.



When I move the mouse one direction I don't see any effect on the screen cursor.

CAUSE Probably a broken cable.

DIAGNOSIS According to some reports, 60 percent of all mouse repairs involve broken cables. Almost all breaks occur at the bend in the cable where it attaches to the mouse.

One sign of a bad cable is intermittent operation. For a while the mouse works fine, then something stops working, but jiggling the cable gets it working again. To confirm a bad cable, borrow one from a friend and install it on your mouse. The cable is a self-contained unit that plugs onto the mouse circuit board (you'll have to open up the mouse) by a ribbon cable.

CURE Buy a new cable. Cables are easy to get through a service center or mail order.

One of my mouse's buttons stopped working.

CAUSE Either your cable broke, short circuiting the wire which transmits the button's signals, or the

switch inside your mouse broke.

DIAGNOSIS You can try the "test with a working cable" trick. If that doesn't solve the problem, suspect the switch.

CURE Buy a new cable, or open your mouse and replace the switch. First, buy a switch from a well-stocked electronics store or your Atari repair shop.

There is a difference between the right mouse-button switch and the left, so be sure to buy the correct one. Remove the solder holding the defective switch, pull it out, put in the new one and solder it down.

My mouse is in for repairs. Now I'm stuck with a giant paperweight until I get my mouse back to manipulate the GEM point-and-click interface.

CAUSE You're obviously unaware of the mouse's keyboard equivalents.

DIAGNOSIS AND CURE [Alt]-[Arrow Key] moves the mouse pointer eight pixels. [Alt]-[Shift]-[Arrow Key] moves the mouse pointer one pixel. [Alt]-[Insert]-[Arrow Key] emulates a drag movement. [Alt]-[Insert] emulates the left button. [Alt]-[Clr Home] emulates the right button.

My mouse died and I don't get any response when I try the keyboard equivalents given above.

CAUSE The 6850 chip on the motherboard, the one that handles signals from the keyboard, and the mouse and joystick ports, has failed.

DIAGNOSIS Nothing works — not the two mouse/joystick ports, nor the keyboard.

CURE See Dr. Keyboard's answer to the dead keyboard problem.

Just my mouse died; the keyboard and joystick work fine.

CAUSE It's either the chip inside your mouse, or the optics.

DIAGNOSIS The controller chip handles all the mouse signals. If it dies, so does your whole mouse. The optics are tiny squares of plastic that transmit and receive light. They're mounted on top of the circuit board on both sides of two, small, movement wheels in

a plastic housing. The rollers on these movement wheels are in contact with the mouse ball; moving the mouse causes these rollers and movement wheels to spin. The mouse works by sending light through the movement wheels. The openings in the movement wheel break the light into pulses. The pulses are interpreted to provide the direction and speed of movement.

You can't really diagnosis this problem without replacing components; if your mouse works with new parts, then you know the chip and/or optics broke.

CURE The first step is to open the mouse (remove the screws holding the two pieces of casing together), remove the mouse ball, disconnect the cable and pop the circuit board out of the mouse body.

See how small the chips and the optics are? See how closely they're crowded together? Don't you think it's a good idea to put everything back the way you found it and take the mouse to an authorized repair shop?

No? I was afraid you'd say that. Proceed at your own risk.


Your next step is to buy new components. The mouse chip is a 75339F. The optics come in pairs, a transmitter and a receiver. You can find the chip and the optics at an Atari repair center or a well-stocked electronics store. Next, haul out your Phillips screwdriver, some wire clippers, tweezers or small needle-nose pliers, your soldering iron and a vacuum desoldering tool. Use rosin-core solder, not acid-core.

Remove the bad optics. Looking at the top of the circuit board, the optics on the bottom right of the mouse-ball hole control horizontal movement, the optics on the upper left control vertical movement. There may be a small metal strip around a pair of optics, or they may be held in place with plastic. Carefully remove whatever is holding the optics in place. You may also need to pop out the movement wheels.

Use a vacuum desoldering tool to remove the solder from the bottom

of the circuit board holding the optic leads in place. Turn the board over and from the top, use the tweezers to carefully pull the optic from its housing. This is the time for finesse, not force. To reduce the possibility for error, I recommend you remove and replace one optic at a time.


Install a new optic. Remember, an optic consists of a pair of plastic components. Look at the wires inside the optic you just removed and find an identical optic. Notice the bump on one side of the plastic of the optic. The bump on the face of the optic should point towards the movement wheel when installed. Slide the leads of the new optic through the holes in the circuit



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board; again, don't force them. If they don't slide in easily, check the holes for excess solder and remove it. Using finger pressure, push the optic into the optic housing. It should fit snugly and you must line it up exactly like the optic you removed. Apply the solder to the optic leads from the bottom of the circuit board. Notice how close some of those traces are together — don't solder a short circuit onto the board. Don't cut the excess optic lead yet.

Check the connections. It should be pretty easy to see where each trace leads. Clip a volt-ohm meter set to the RX1 scale to an optic lead and follow the trace to another point and check for continuity. Wait until both leads are soldered and checked before clipping any leads; that way if you have to redo anything you've still got an optic to work with.

Repeat the above procedure until you've replaced all

the suspect optics. I don't recommend replacing optics that aren't bad. That's just inviting trouble.

Replacing the mouse-controller is a little easier, mainly because you have easy access to it. It's located on the underside of the circuit board and is labeled 339. You need to clip the leads, gently pry it off, and solder on the new one. Make sure you orient the chip properly, or else you'll switch power pins and fry the chip. This repair is not recommended for amateurs.

I have a cordless mouse that stopped working. What's wrong?

CAUSE Dr. Mouse doesn't know. Dr. Mouse doesn't want to know.

DIAGNOSIS AND CURE Dr. Mouse prefers to forget Physics 5D, the semester spent studying light and optics. Send the mouse back to the manufacturer for repairs.

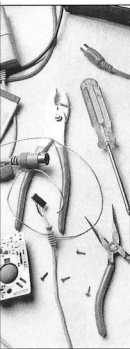
ASK DOCTOR PRINTER

When I try to use my new printer, nothing happens except my ST freezes.

CAUSE Your printer isn't connected properly, isn't turned on, or isn't online. The ST takes a little while to finally determine that the printer isn't going to work. It will eventually give up and return to the Desktop.

DIAGNOSIS Make sure the printer has power, and is connected to the correct port on your ST. Most printers connect to the parallel printer port; some connect to the serial modem port. If you suspect a bad cable, borrow a cable and test it on your computer. Make sure the printer is turned on, and is online (check your printer manual to see how to put your printer online).

CURE If all the connections are okay, see if the printer works on another computer. If it doesn't, then the printer is broken. If the printer does work on another computer, the problem may be in your ST.



When I try to print the screen, only the left two-thirds of the screen gets printed.

CAUSE Unless you tell it differently, the ST assumes that you have an Atari printer connected. Chances are you actually have an Epson-compatible printer.

DIAGNOSIS You need to use the CONTROL.ACC program that came with your ST. This program needs to be in the root folder on your boot disk. Boot your computer so that CONTROL.ACC is loaded and activated, then choose Control Panel from the desk-accessory menu (leftmost menu). (On older versions of the Control Panel, both Control Panel and Install Printer appear under the desk-accessory menu. If you see both, choose Install Printer.) Click on Install Printer, and look at the dialog box that appears. You will see an item labeled Pixels/Line. Note that it's set to 1280.

CURE The 1280 setting needs to be changed to 960. Click on 960, then OK. Now you need to save this information to your disk, so that the ST will remember what kind of printer you have. Click on Save Desktop from the Options menu, and a set-up file called DESKTOP.INF is written to the boot disk. Now, as long as you boot your computer from this disk, with has both CONTROL.ACC and DESKTOP.INF on it, your ST is set up correctly for your printer.

When I print plain text, my printer is okay. But when I print graphics or the screen, I get garbage characters.

CAUSE Your printer is not an Atari printer, or is not a true Epson-compatible. If the program you're using requires a printer driver, you may have the wrong one installed.

DIAGNOSIS The GEM Desktop and many other programs expect the printer to understand Atari or Epson graphics-control codes, Epson being the de facto standard. Most printers are Epson compatible, or they can be made compatible by setting a certain DIP switch or pressing a certain sequence of buttons on the printer's

front panel.

Since programs must work with a wide variety of printers, many use printer-driver files that translate graphics codes to a form a specific printer can understand. If you have the printer driver for the wrong printer installed, the program will output garbage.

CURE Ask the program's manufacturer if it has a printer driver for your particular printer. Read your program manual to discover how to install your driver.

If there is no driver for your printer, or if the program does not use drivers, check your printer manual to see if the printer is switchable to Epson-compatible mode, as outlined above. If so, switch it, then configure your program to use the Epson driver. For example, if a program uses GDOS, Atari's high-resolution printer program, you can use the FX80.SYS printer driver. (The FX80 is an Epson printer.) If your printer isn't or can't be made compatible, be careful to buy programs that specifically state that they work with your printer!

My printouts are getting lighter and lighter. Putting in a new ribbon doesn't help.

CAUSE Your print head is worn out, or the spacing between the head and the platen needs to be adjusted.

DIAGNOSIS Look at your printer manual and find where it describes how to move the print head closer to the platen. If the print is still light after moving the head closer, then the pins on the head may be worn.

If your manual does not describe how to purchase and replace the print head, call some computer repair shops and ask if they can help you. Otherwise, you may have to contact the manufacturer for service.

Some dots or a line of dots is missing from my printouts.

CAUSE A pin on the print head may be damaged or worn, you may have the wrong printer driver installed, or the ribbon may be slack.

DIAGNOSIS If a consistent horizon-

tal white line appears on your printed text, the head is damaged. If a white line appears when you print graphics, but not when you print text, then the problem is with your printer driver. If a random scattering of dots or short horizontal lines are missing from your text, then the ribbon is slack, causing it to get caught in the print head.

CURE To replace the print head, see the previous answer. If the problem is with a printer driver, see the printing graphics problem above. If the ribbon is slack, there is probably a knob that can tighten it. As usual, consult your printer manual!

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ASK DOCTOR

JOYSTICK

Every time I try to play that award-winning game, *Brak The Barbarian Versus The Yuppie Investment Banker*, my joystick stops working.

CAUSE Brak's programmer chose to read the joystick from the mouse port (Port 0) instead of the more commonly used joystick port (Port 1).

DIAGNOSIS The joystick works fine with every other program you own.

CURE The next time you use the that particular program, unplug your mouse and stick the joystick in its place.

My joystick won't work with any program.

CAUSE It's broken.

DIAGNOSIS Usually one of two things on a joystick breaks: the cord or the switch. Using a screwdriver, take apart the joystick. (With some joysticks, watch for springs falling out. They're easily lost.)

Usually check the switch. The way the less expensive joysticks (like Atari's) work is by pushing a flat plastic circle, held perpendicular to the actual joystick, against bubble contacts inside the base. If the

stick is used aggressively, this fairly fragile circle can break. Inspect it for cracks.

If you have a more expensive stick (one that makes a

definite "click" sound when pushed), your joystick uses microswitches to send signals. Push the joystick in every direction and listen carefully for the telltale click. Also make sure the joystick rebounds into the neutral position.

If the switch is intact, check the cord. Using a resistance meter, measure the resistance along the length of the cord, from the computer plug to the joystick switch. Visually check the exposed wiring for fraying or breaking.

CURE The easiest thing to do is just buy a new joystick. But, if you insist...

If your joystick uses Atari's bubble-contact arrangement, slide the plastic circle out of the rubber housing and glue it back together.

If your joystick uses microswitches, take it to an electronics store and try to find a replacement switch. Look for the same brand, if possible. You may not be able to find a replacement or substitute for every microswitch. If you do find one, you'll need to solder it into place.

If the exposed wiring within the base is frayed or broken, you can trim the damaged ends and solder a bridge between them. If the problem is in the long, insulated cord, you're stuck with buying a new joystick.

When I play that award-winning game, *Son Of Brak The Barbarian Versus The S&L Loan Officer*, I can only move Brak in certain directions, but the manual says he can move in any direction.

CAUSE Definitely a broken joystick switch.

DIAGNOSIS See the answer above.

CURE See the answer above.



ASK DOCTOR

MODEM

My modem won't work.

CAUSE Something's amiss. It could be a bad cable or a broken modem.

DIAGNOSIS Make sure the modem has power, and that it's connected to the ST. Most modems have a row of lights labeled HS, AA, CD, OH, RD, SD, TR and MR. When they're lit, they represent activity on some of the modem's data lines. When you turn your modem on, you should see that TR and MR are lit up. TR means

Terminal Ready; it indicates that your ST is communicating with the modem. If it doesn't light up, you might have a bad cable; borrow another cable and see if the modem works with that. MR means Modem Ready. If it's not lit, then something is wrong with the modem. Finally, make sure that the cord connecting the modem to the phone jack is okay. Plug a phone into it and see if you get a dial tone, and if you can dial a number.

CURE If the cable is bad, be sure that you purchase the correct kind of replacement cable! Bring the bad one with you so that you can compare the connectors. Be careful not to buy a null-modem cable or adaptor. A null-modem is used to connect your ST directly to another computer; it isn't designed to talk to a modem.

Unfortunately, there isn't much you can do to fix a

ASK DOCTOR
MIDI

The software is sending MIDI data but I'm not getting any response from my instruments.

CAUSE Either the software is sending non-note data, the MIDI cables are not connected properly, or your MIDI channels are not matched.

DIAGNOSIS AND CURE Just because the software shows it is sending MIDI data doesn't mean you will hear sounds. It is possible the program is just sending controller or system information and not any notes. Double check that there really is a problem before troubleshooting it.

If you're satisfied that the program is sending notes, check the MIDI cable connections. For a simple setup, one cable should run from the Atari MIDI Out to the instrument MIDI In and a second cable should run from the instrument MIDI Out to the Atari MIDI In. If your instruments are chained from one to another, the cables run from the MIDI Thru of the first instrument to the MIDI In of the second instrument, then from the MIDI Thru of the second instrument, to the MIDI In of

the third instrument, etc. For complex setups with a MIDI patch bay, be sure that the MIDI In and Out connections are plugged in correctly and that the expected patch program is in use. Incoming MIDI data may contain program changes that trigger a MIDI patch bay to inadvertently reroute your system connections.

If your cables are correct, then check that your instruments are set to receive on the MIDI channel on which your software is sending. If you don't know which channel that is, vary the instrument receiving channel while the software runs and you should eventually hit it. For a fast check, putting the instrument into Omni mode (if it is capable) makes it respond to any incoming MIDI data, regardless of channel. If there is still no sound even in Omni mode, the problem comes from other cause(s).

The instruments are playing but the results are garbled.

CAUSE You're using non-standard MIDI cables.

DIAGNOSIS The Atari MIDI-Out port incorporates active MIDI-Thru connections (violating the normal MIDI specification). Standard MIDI cables will not pick up this extraneous MIDI-Thru signal, causing your music to

play correctly. Other cables may look like MIDI cables but are designed for other uses and have internal connections that can pass corrupted MIDI data. Unfortunately, there's no way to tell visually how a cable is wired internally.

CURE Make sure you buy regulation MIDI cables. Don't just buy a cable which has a five-pin DIN plug; buy one designed for MIDI data.

My friend and I want to play two keyboards at once into my sequencer. I tried to connect them with a Y-cable and feed it into the Atari MIDI In, but the result is garbled.

CAUSE Incompatible MIDI data stream.

DIAGNOSIS A single MIDI command, such as turning on a note, is actually made up of several separate data bytes in series. A Y-cable would let the merged data streams cut into and interfere with each other in strange and ugly fashions. That's why your music sounds garbled.

CURE What you need is a dedicated MIDI merge unit that intelligently recognizes individual messages coming in and splices them together in a single coherent stream. Such devices are available as stand-alone units or incorporated into some keyboards and third-party Atari MIDI interfaces.

I downloaded a Macintosh sample data file that should be compatible with my sample-editor program, but it could not be read.

CAUSE The MacBinary file header was not deleted.

DIAGNOSIS Some types of MIDI data files are compatible across computers (e.g. samples, patch banks, standard MIDI format sequences). While Atari and IBM files are readily swapped, many downloaded Macintosh files contain an extraneous 128 byte header (MacBinary header).

CURE You can use any binary-editor program to delete this header (try Byte Mechanic from START Special Issue Four) and resave the file. Loading it into your word processor for editing is not recommended.

When I record into a sequencer, I hear only half the notes that the instrument is supposed to be able to play.

CAUSE MIDI Local Control is still on.

DIAGNOSIS Keyboard instruments have two parts: the keyboard controller and the synth sound generator. Normally, you want the two linked so that pressing a key produces a sound. When the instrument is hooked into a sequencer, however, notes are played twice: first, as you press the key, and again as it echoes through the sequencer. Each note is using two MIDI channels, instead of one. As a result, you only hear half as many notes as your keyboard could produce.

CURE Within the MIDI specification is a Local Control



MIDI command which breaks the controller/generator link. Not all MIDI instruments implement it. If yours does, switch Local Control to off. Now pressing a key sends the signal straight into the sequencer without making a sound. The sound generator only responds to MIDI data sent back from the sequencer.

Have trouble sending new patch banks into a synthesizer.

CAUSE Again, there are several possible causes: synth memory protect is on, you need two-way MIDI communications, or you've chosen the wrong patch-file format.

DIAGNOSIS AND CURE Synth memory protect may be on by default, because some synths start in this mode when they are turned on. If memory protection is active the synth will not accept new patch data. There is usually some sort of front-panel control (see your synth manual) which you must set to turn off protection.

While most synths only need one-way MIDI linkage (Atari MIDI Out to synth MIDI In) to receive new patch data, some demand two-way communications (Atari MIDI Out to synth MIDI In and synth MIDI Out to Atari MIDI In). The Casio CZ-101 series is a notorious example. To be on the safe side, always try to keep a two-way communications link.

If you suspect the patch-file format, you have good cause. Patch-editor programs tend to use proprietary file formats to store patch data. In general, patch files created by one program cannot be used in another program even though both are working with the same target instrument. Similarly, you cannot use patch files created for one instrument with another (e.g. send CZ-101 patch file into a DX7). If you run into this problem, you're out of luck. You can't use the patch.

When playing a sequence, the drum part uses the wrong sounds, like whistles instead of the expected hi-hats.

CAUSE The original drum part was recorded with a different instrument.

DIAGNOSIS MIDI instruments have different drum sounds mapped to individual keys. For example, C2 plays snare on one instrument, but D2 plays it on another. If a sequence was recorded using a Yamaha RX-11 drum machine and you play it through a Roland R-8, the drum part will sound quite different from the original.

CURE Many sequencers provide some form of a drum-map editor, which changes the drum sound to note assignment. The alternative is to change the map within your drum machine. ■



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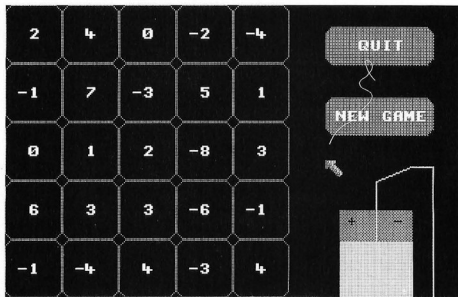
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The Quest For Nothingness

BY TERRY FERGUSSON

What is the sound of one hand clapping? If a tree falls in the woods and no one is there, is there a sound? Can you play Absolute Zero and win? Ponder these mysteries while you play one of the most frustrating puzzle games you'll ever see.

Follow the disk instructions to un-ARC the file ZERO_ARC.PRG from your back-up START disk onto a play disk. Make sure the files ZERO.PRG and ZERO.MBK are in the same directory, then double-click on ZERO.PRG. Absolute Zero runs on color systems only, and is not compatible with the STE.



This is the Absolute Zero play field. It will take you at least 100 moves to bring all the numbers to absolute zero.

The Object Of The Game

After you set the level of difficulty, the computer scrambles the playing field by the number of moves you specified. It is your task to make all the numbers identical. This will normally mean returning all the numbers to zero, but you will win as long as all the numbers have the same value. Every puzzle is guaranteed to be solvable; all you have to do is backtrack the computer's scrambling moves. However, it is possible to win without following the exact path backwards.

The Rules

You can click on any of the 25 squares that make up the board. Clicking with the left mouse button adds one to the square and clicking the right mouse button subtracts one. The irritating catch is, all the squares immediately surrounding the square you click on will do the

opposite. That is, if you add one to a square, every square surrounding it will have one subtracted; if you subtract one from a square, every square surrounding it will have one added.

Start Simple

I suggest starting out with very small levels of difficulty (like one, perhaps?) and gradual-

ly building your skills. By clicking on ?? when you set your level of difficulty, you are able to put in any number you wish. I can solve a 10, and find 25 a consistent challenge.

To win on the more difficult levels, this game requires absolute concentration and a deep understanding of spatial relationships and cause and effect. Or, of course, you can just click away madly until your fingers get sore, like mine. Ouch.

AT A GLANCE

Program:	Absolute Zero
Type:	Puzzle game
Requirements:	512K, low rez, TOS 1.0-1.4
Arcfile:	ZERO_ARC.PRG
Files:	ZERO.MBK ZERO.PRG

When he's not controlling the airspace around Winnipeg, Manitoba, Terry Fergusson enjoys using and programming his ST. This is his first appearance in START.

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The

TYPEFACE TRIALS

Third-Party Fonts Get An Eagle-Eye Evaluation

BY DAN FRUCHEY

Word Processing/Desktop Publishing Editor

Fonts are kind of the DNA of desktop publishing — they're the basic building blocks upon which to create a document. Without fonts, there is no text, and where would computer publishing be without text?

But unlike DNA, fonts can be copyrighted. Most DTP packages include a set of public-domain fonts so that you can get started on a document right away — usually the Swiss and Times Roman families (a family refers to variations of a font: italic, bold, light, etc.). DTP packages also often include fonts that companies develop themselves. Higher-level DTP gives you access to whole font families. ISD Market-

ing, for instance, has licensed literally hundreds of fonts from the Compugraphic family for their Calamus product.

Several third-party developers have created font packages for the Atari desktop publisher. While all offer essentially the same thing — fonts — the packages vary in quality and quantity. (*Editor's Note:* To help you with the selection process the developers of the fonts reviewed here have granted START permission to place samples on our monthly disk. From your backup, double-click on FONT_ARC.PRG, choose Extract, then choose a destination disk from the item selector that appears. You should then see the following files: CH_STEMS.CFN, EXPORT.CFN, SOUVMEDE.CFN, CHERRY.TXT,

CH_STEMS.TXT, ISDFONTS.TXT, SAFARI.TXT.)

Before we begin the actual comparison, let's take a quick look at some of the differences in font structure and then provide some pointers on how to select the right fonts for your particular needs.

Outline Fonts: The New Standard

Although a few word-processing and DTP programs still use bit-mapped fonts for printer output, their numbers are shrinking. Virtually every DTP program released in the last three years uses outline fonts. The latest word processors, Script and PKS Write, follow this trend and even Atari Corp. has converted GDOS to use outline font formats.

The shift toward outline fonts

makes sense. They consume less memory and disk space, they are more versatile than bit-mapped fonts and, in general, they are relatively inexpensive. An outline font can be easily rendered in different sizes, weights and styles from a single file. With the right software there is *virtually* no end to the manipulations you can perform on an outline font.

There are literally hundreds of outline fonts available and, according to font developers, many new offerings will be published soon. Virtually any font available on a PC or Mac computer is available for the ST.

Perhaps the only problem for the DTP industry to solve now is determining which outline format will dominate the Atari market. Four formats are currently available for the ST: Calamus, PageStream, Ultrascript and Postscript. All are similar in nature, though none of them are compatible.

Font Selection

There are many factors you should consider when purchasing fonts. Questions about price, format and availability only scratch the surface. To help you make the best selections possible ask yourself the following questions:

Completeness:

Does your font make use of the entire Atari character set or just the symbols available from the keyboard? Are there both uppercase and lowercase characters in the font? Can you access less commonly used characters such as a copyright

symbol or bullet?

Clarity: Are characters easy to recognize or are they difficult to identify? Does the character style slow reading? Is the character style distinct enough to be read at arms length or do you need to hold the page close to your face to decipher text?

Uniformity: Do letter curves flow smoothly and evenly or do they appear irregular? Do character strokes line up correctly with other components or do the letters appear unbalanced? Does each character appear evenly designed, consistent with the entire font and similar characters in the set? Compared to other characters in the font set do

acter drop-out)? When you enlarge the letters are there noticeable flaws in design?

Versatility: Can the font be used on a daily basis or is it a specialty design that has limited application? If it is a font you plan on using in the body of your documents are there bold, italic and bold-italic variations available? If you change the font to bold, skewed, or any other style is the font still usable? Does the font set include stylistic variations of an individual character that help give the font a unique flavor?

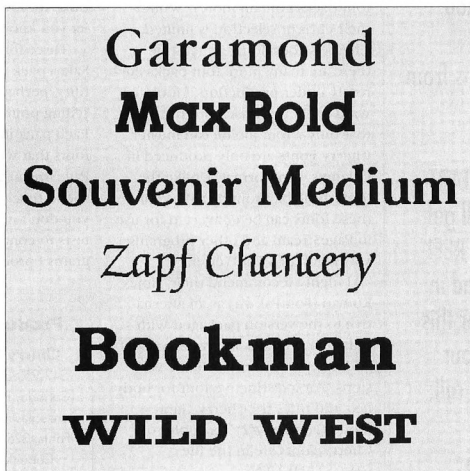
All three font publishers reviewed here stood up to these tests remarkably well. Any apparent

flaws found in the character sets were a matter of design or interpretation, not omission. In many instances the designer had excelled, adding additional touches that made a font more usable than a nearly identical version offered by a competitor.

The Fonts

It's a little difficult to prepare an individual review of each font offered. ISD Marketing alone offers hundreds of fonts and a recent acquisition doubles the size of their font library. To give you the best assessment possible I'm providing an overview of the quality of

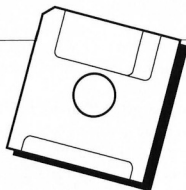
fonts each manufacturer markets, not individual reviews. I've also included comments on distinctive features that mark the brands, and recommendations on some body and display fonts I found particularly pleasing. ▶



Shown here are some of the font samples included on your START disk.

some letters appear too bold or too thin?

Size: What is the smallest point size you will be using with this font? Are the characters clearly distinguishable in that size? Are portions of letters missing in small sizes (char-



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Cherry Fonts

This British Columbia-based company takes a practical approach to font development. They place a strong emphasis on classic styles which have wide appeal and meet the needs of most users. Renditions of classic fonts such as Times Roman and Garamond contain all the detail and subtlety found in the more expensive fonts available from ISD Marketing. Characters are well balanced and easy to read. Font sets support extended European characters, symbols and bullets, along with a few distinctive dingbats no other fonts possess.

Cherry Fonts currently sells five different font packs which each contain at least four full fonts (some font packs contain more). While their current selection is limited, Cherry's Todd Johnson tells me there are many more font packs currently under production. I look forward to their release with the glee that only a font junkie can muster. Cherry Fonts are only produced in Calamus' font format. Unlike the fonts available from ISD Marketing, these fonts can be converted for use in PageStream and other programs via Megatype's Fontverter.

I highly recommend their Times Roman (FontPak #4) as an alternative to the version packaged with Calamus, which is improperly sized and lacks bold and true italic versions. For a distinctive font for body text and titles try Cherry Garamond (FontPak #2). Examples of Cherry Fonts are in the file CH_STEMS.CFN.

Computer Safari

Jay Pierstorff, designer of many popular fonts sold under the Soft-Logik label, now offers collections of fonts through his own Atari dealership, Computer Safari. Safari specializes in display fonts useful for headlines, titles and captions. The collection includes an impressive ar-

ray of distinctive fonts. Several body fonts are also available though not all of the standard variations are included (i.e., bold, italic, bold-italic).

The only drawback with Safari Fonts is the occasional absence of a lowercase alphabet in a character set intended for display use (14-point or greater). While you may not even need the lowercase characters in a title, they're simply not available and typing them on screen produces no visible result. When I imported text using one of these fonts, it appeared as if entire portions of words were missing. Knowing the reason for the lettering gaps I was able to change to uppercase letters or switch fonts. Still, something should be defined in the key positions for lowercase letters, if only to let you know what's happening.

Three fonts are included in each Safari pack. Outside of their versatility, perhaps one of their greatest selling points is their compatibility. Each pack includes versions of the fonts that will work with Calamus, PageStream and Postscript. Why spend time converting fonts when you don't need to? When running tests to compare publishing programs I produce identical pages

Products Mentioned

Cherry Fonts, FontPaks 1-5: \$42.95 each (U.S.); \$49.95 each (Canada; B.C. residents add 6 percent sales tax); add \$2 S/H. Cherry Fonts, 2250 Tyner St., Unit 4, Port Coquitlam, British Columbia V3C 2Z1 (604) 944-2923

Font Packs, \$29.95 each (call for selection). Computer Safari, 606 W. Cross St., Woodland, CA 95695 (916) 666-1813

Fonts, call for price and availability. ISD Marketing Inc., 2651 John St., Unit 3, Markham, Ontario L3R 2W5 (416) 479-1880

with each product using fonts from the Safari collection. This allows me a greater number of parallel options and, when it's necessary to switch programs while producing a single document, no one is able to notice a difference in output. There isn't any.

I especially recommend Computer Safari's Bookman (font pack #5) for body text and Micrographic (font pack #4) for some interesting titling effects. Examples of Safari Fonts are in the file EXPORT.CFN.

ISD Marketing

The distributors of Calamus and Calamus Outline also sell commercial fonts for their programs. These fonts have been purchased from the Compugraphic, Linotype and URW libraries.

To put it bluntly, these are the finest fonts currently available for the ST. You can choose from a wide

range of styles using the most popular display and body-text designs. Can't find the font you want? For a fee ISD will convert any existing Compugraphic font for use with Calamus. I'm unaware of any other company that offers such a policy. All font sets are complete, including the extended European character set and a standard selection of symbols and bullets.

While ISD's fonts are the best, there are also several drawbacks that accompany your purchase. Fonts are only available to registered Calamus/Outline owners and each one is "locked" for exclusive use with a specific copy of the program. Also, forget converting the fonts for use with other programs. None of the existing conversion programs will work. Initially included as an anti-piracy measure, the serial number lock (a measure which was consumer tested and abandoned on PCs)

could hamper sales to individuals who own other programs and want to use the same fonts with each product.

Fonts must be purchased directly from ISD. Delivery of your encoded fonts normally takes a week to 10 days; you can't simply walk into your local Atari dealer and make a purchase.

I recommend ITC Souvenir as an easy-to-read, body-text font and Futura II as a bold choice for captions and headings. Examples of ISD fonts are in the file SOUVMEDE.CFN.

Last Words...?

There's something for everybody in this fine collection of outline fonts. Whatever you choose, you'll find a font that gives new flavor to your documents and adds a little fun to the page-layout process. There's never really a last word on fonts, only an end to the most recent article. ■

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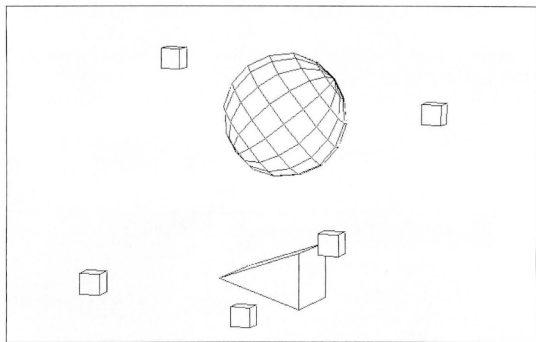
CAMERA CONTROL

Simple Program Adds Drama To Animations

BY RICK MAY

Creating an exciting and dramatic 3D animation is not always the easiest thing to do. In addition to the movement of objects, the animator needs to pay close attention to the movement of the viewer, or the "camera." I have focused on creating complicated camera effects for quite a while now, and my experience teaches me that camera movements can make or break an animation. Moving the camera the wrong direction at the wrong time lessens an object's sense of movement. But the right camera movement combined with the right object movement creates an exciting feeling.

To create a dramatic camera movement via Cyber Studio's Cyber Control takes a lot of time, trial and



This is the example picture EXAMPLE.3D2. The small cubes define the spline of movement through this universe occupied by a sphere and a wedge.

AT A GLANCE

Program:	Camera Control
Type:	Animation utility
Requirements:	1MB, medium or high rez, CAD-3D 2.0, Cyber Control
Arcfile:	CAMC_ARC.PRG
Files:	CAMCNTRL.CTL EXAMPLE.3D2 STARTUP.CTL

error. So to help with this problem, I have written two short programs in the Cyber Control language. CAMCNTRL.CTL, along with CAD-3D 2.0, allows you to edit a spline based on five control points, which the camera follows during your animation. It also allows you to set these control points so that all objects are totally within your viewing area and nothing is cut out. The second file, STARTUP.CTL is to be inserted in front of your animation

script, setting up the spline and camera for your own animations.

Getting Started

You'll need to extract the file CAMC_ARC.PRG, which is on your START disk. Then boot up your disk containing Cyber Control and CAD-3D 2.0. Load EXAMPLE.3D2 into CAD. Take a look at these objects from each viewing window. You will notice five cubes named c1, c2, c3, c4 and c5. These points will ▶

define a spline that your camera will follow. There are also two objects labelled "object1" and "object2," the first being the sphere. Switch over to Cyber Control and load up CAMCNTRL.CTL. Click on the run option and follow along.

Action

After starting CAMCNTRL and clicking on OK in the alert box, the program will take a few seconds to initialize itself. The five control points from CAD-3D are turned into a spline. The spline starts at c1, curves through c2, c3 and c4, and ends at c5. You will be asked to give the number of points on the spline and the type of spline. Larger numbers give you a smoother curve but a slower animation, since the camera steps from one point to the next. See your Cyber Control manual for a description of the types of splines. For this first time we will use a 50-point linear spline, so enter 50. After the spline is created you will be given a four-item menu. Let's go over each option.

Lens Edit: This option lets you change the current camera settings, which are heading, zoom, and perspective. Let's use 0, 25 and 999 respectively.

View: We can view the objects from any point on the spline by typing any number from 0 to 49 (since we created a 50-point spline, 0 is the first point and 49 is the last).

You also need to decide whether to view the objects as a wireframe or a solid. The program then asks whether you wish to look at the center of the universe, or at object1.

Print: All information needed to set up the view, including camera location, zoom, heading and perspective, are printed out. This is very important, because after you have found a zoom and perspective you like, you must enter these numbers each time you use CAD-3D. (If you have no printer, you'll have to

write down all numbers for later input.)

Move: Here is an easy way to xlate or rotate object1. If there is any object movement in your animation, you want to make sure that the object will be visible, and this is a nice way to test it. If you have modelled an object or group of objects that will be animated, you may wish to modify CAMCNTRL so that the Move option will move your own models, and not just object1.

Startup

STARTUPCTL is for you to use for the beginning of your animation script file. It sets up the spline from the five control points and then erases them to keep them out of the camera's way. Remember to input the same number of points in this program as you did in CAMCNTRL.CTL.

Some Pointers

EXAMPLE.3D2 was provided for just that purpose, an example. The idea is for you to place five control points and an object in your already modelled universe.

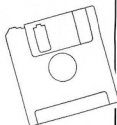
Remember you must always have a object named object1 in CAD-3D. CAMCNTRL.CTL looks for this object when it runs. Also, keep flipping between CAMCNTRL and CAD-3D until you get the control points in just the right place.

Simple But Effective

Yes, these programs are very simple, but they solve many problems and make camera animation much faster without as much trial and error. Play around with it, and make changes to suit your own animation. Maybe even add a second spline for object movement to coincide with camera movement!

Rick May operates Rick May Productions, a computer graphics and animation studio in Florissant, Mo. This is his first program for START.

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OF CANISTERS, CLOWNS, COLLISIONS AND THE (SUB)CONSCIOUS

In Which Perez Has One Life To Live
And Knauss Has Three Games To Review



Medalist's Weird Dreams

Anarchy

BY GREG PEREZ

Put simply, *Anarchy* is *Defender* with an attitude. *Anarchy* is a fast-paced shoot-em-up with dazzling graphics and intense gameplay. Geared mostly to accomplished game players, *Anarchy* truly serves as one of the hottest arcade challenges around.

Your mission as a futuristic fight-

er pilot is to destroy the Anarchists who have taken control of the planet and to protect the life-support canisters which hover above the planet's surface. You are armed with a single-shot laser, but as the game progresses, you may be equipped with a myriad of offensive weapons.

Defend The Canisters

The game field consists of a four-

level, parallax-scrolling, horizontal landscape which smoothly zips by at a breakneck pace. Along the bottom of the screen reside the 10 canisters which you must defend. As the game opens, several Anarchist ships beam into position and start their attack.

If you don't keep close watch over your canisters a Stealer will slowly descend to snatch one up

and tow it to the top of the screen. Only by shooting the Stealer can you recover the canister, and if the canister falls from too high an altitude, it will explode on contact.

Survival Tips

Adding extra weaponry is essential to surviving in *Anarchy*. When you destroy certain enemies they release tokens which fall to the surface. By collecting these tokens, your ship can wield more firepower. Double-laser fire and cannon outriders are some of the extra armaments, but one of the more important firepower tokens is the boost token. Boost tokens add 100 boost points a pop, giving all on-board weapons extra fire capability. The Nackem power gives your ship all weapons and a bonus 500 boost shots to boot!

One Life To Live

In *Anarchy* you are given only one life, but a powerful force field sucks up most of the damage sustained during your mission. After your force shield is depleted, your ship is blown to kingdom come. If you are running low on shields, a top-up token refills your force shield.

Undoubtedly, *Anarchy* is one of the most high-energy games I've played. It brings back the old challenge of the Defender days, while offering an array of enemies and weapons. The frantic action that ensues is superior to any shoot-em-up game out there.



Digitek's *Clown-O-Mania*

Clown-O-Mania

BY GREG KNAUSS

In *Clown-O-Mania*, the player controls Beppo, a little clown, who has set off into a huge multi-level maze to collect valuable crystals. Throughout the maze, there are several different enemies that try to stop Beppo and many things he can pick up to aid his quest.

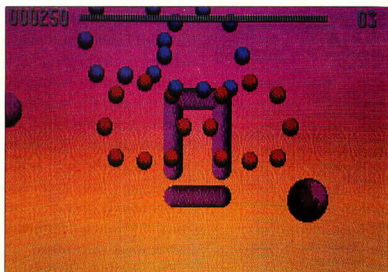
If all this sounds slightly familiar, it's because *Clown-O-Mania* is essentially an enhanced *Pac-Man*. While the game is enjoyable enough, its lack of originality keeps it from being memorable, even with all the things added to disguise its relation to the original maze game.

Clown-O-Mania's greatest divergence from the *Pac-Man* standard is

the fact that the maze is viewed at a three-fourths angle, and is more than one level vertically. While this effect makes *Clown-O-Mania* more interesting visually, it also gives the game its biggest negative: Beppo is hard to control. To move the clown northeast on the screen you push the joystick up, but to move him northwest you push the joystick left. The manual lamely offers "Only practice will make perfect..." as advice.

Clown-O-Mania's other main change is the addition of strategy to the collect-the-dots scheme. One-way tiles, moveable barriers, colored tiles and a limited number of "jumps" make each level a challenge for your planning skills as well as your hand-eye coordination. It's a ►

Accolade's *Harmony*



AT A GLANCE

Game:	Anarchy
Type:	Arcade action
Company:	Psygnosis 29 St. Mary's Court Brookline, MA 02146 (617) 731-3553
Price:	\$39.99
Requirements:	512K, color monitor
Summary:	Frantic action makes for a high-energy shoot-em-up.

small addition, and don't believe for a moment that this is a thinking game, yet it's the biggest tweak on the formula that the game has to offer, and a nice touch at that.

Again, *Clown-O-Mania* is nothing new. It offers a dash of strategy to the generic maze scenario and in doing so creates a fun but forgettable game. *Clown-O-Mania* is the computer equivalent of cotton candy — something to enjoy that quickly dissolves to nothing.

The Game of Harmony

BY GREG KNAUSS

Some programs just don't have any luck. Take *The Game of Harmony*, for instance. It's billed as a "New Age Challenge" in which you create "synergy" by "harmonizing spherules." The full explanation given by the manual is, "Whenever you unify two like-colored spheres, they leave a grateful, musical sigh . . . then dissipate into a state of blissful synergy." I can't think of a less appealing way to describe what turns out to be a pretty fair little game.

The manual would better serve the game by stating, "Balls disappear when they collide." The player uses the joystick to gently steer globes around the screen, crashing like-colored spheres into each other, causing them both to disappear. If two different-colored balls collide, a third one is created between them. Some globes are con-

AT A GLANCE

Game:	The Game of Harmony
Type:	Strategy
Company:	Accolade Inc. 550 S. Winchester Blvd. Suite 200 San Jose, CA 95128 (800) 245-7744
Price:	\$44.95
Requirements:	512K, color monitor
Summary:	Tetris fun packaged in spheres.

nected by rubberbands so that moving one drags another along with it, changing your strategy. If you strip away all of *Harmony's* fancy talk, you're left with more of an offbeat puzzle than a game.

Perhaps *Harmony's* biggest problem is that it's incredibly frustrating . . . but in a good way. The game is like *Tetris*: interesting and addictive, but not as simple as it first looks. You'll either enjoy the preciseness of the program or be driven out of your mind. To collide spheres, it takes a steady hand and careful aiming, but if you take too much time setting up your moves, the time limit runs out and the game's over.

Harmony, if nothing else, is original. It's a fun little game; no masterpiece, but an interesting diversion. You might want to give it a try before buying, just to see if it's too aggravating for you.

Weird Dreams

BY GREG KNAUSS

In *Weird Dreams* you play a man fighting against strange objects in his subconscious. You grab fish from the sky, you stab man-eating flowers, you even battle a ferocious plucked chicken. *Weird Dreams* has to be one of the most original and interesting games ever created, but, unfortunately, its uniqueness is overshadowed by completely frustrating joystick control.

The graphics are detailed and

perfectly strange. The programmers, however, seemed so concerned with making the game an intriguing visual experience that playability suffered badly. Because your on-screen response is so well animated, he's slow to respond to joystick moves. If you want him to duck under the spinning bar in the *Cotton Candy Machine*, you need to push the stick down before the bar is even close to him, or he won't make it to his knees in time. *Weird Dreams* is a game that requires precise timing in almost all of its scenes and having such slow response is so frustrating that it makes this otherwise excellent game almost unplayable.

Interestingly enough, the package includes a well-written and entertaining 64-page novella instead of an instruction manual, and a clue book that explains some of the stranger aspects of the game if you have trouble.

Weird Dreams is, initially, hard to dislike. The novella is funny and worth reading on its own, the graphics are original and interesting, the game's premise is unique and clever. But after trying the same scenes over and over, you get frustrated battling the slow joystick response. Without that to bog down the gameplay, *Weird Dreams* would be a winner.

Greg Perez is fast becoming a specialist at Psygnosis games. Greg Knauss is the Buck Yeager of START game programmers.

AT A GLANCE

Game:	Clown-O-Mania
Type:	Arcade action
Company:	Digitek Software 708 W. Buffalo Ave. #200 Tampa, FL 33603 (813) 222-0006
Price:	\$29.95
Requirements:	512K, color monitor
Summary:	Strategy twist saves this Pac-Man clone from being truly forgettable.

AT A GLANCE

Game:	Weird Dreams
Type:	Graphic adventure
Company:	Medalist International 180 Lakefront Drive Hunt Valley, MD 21030 (301) 771-1151
Price:	\$39.95
Requirements:	512K, color monitor
Summary:	If the joystick didn't move like molasses, this would be a winner.

DIALING FOR DATA

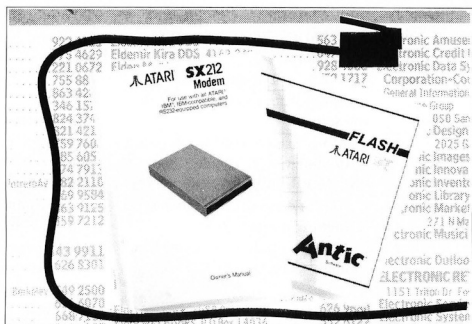
Who You Gonna Call?

BY CHRISTOPHER W. ROBERTS

Telecommunications Editor

A common misconception by the first-time modem user is that to be compatible, a bulletin-board system (BBS) must run on the same brand of computer that you own. Not true. I once ran a BBS on an Atari 130XE (with 1088K of RAM) and had IBM, Macintosh, ST and C64 users among the Atari 8-bitters.

Another common misconception is that you must have a like machine in order to successfully receive downloads. Also not true. If your telecommunications program supports X-modem file-transfer protocol you can use the upload/download sections of 99 percent of the private BBSs in the world. Of course, this doesn't mean that you can use an Atari XE program on your ST, it just means that you can get a copy of it on your disk. It also means you can send copies of shareware and public-domain programs to the BBS for other ST users.



How To Find A BBS

Both GEnie and CompuServe maintain listings of local BBS numbers by state. Magazines like *Micro Times* (in California) and *Computer Shopper* also carry BBS listings. Your local user group more than likely maintains its own BBS. And BBSs often list phone numbers for other BBSs.

What You Need To Go Online

Calling a BBS or an online service requires a few simple items. (Editor's Note: See "Telecommunications" in the May 1990 issue of

START for more information on modems and telecommunications programs for the ST.)

1) A modem and connecting cable. The word modem comes from two words: MODulator and DEModulator. This is just a fancy way of saying what a modem does, which is to convert electrical ones and zeros to audible tones and back again.

Modems commonly use five tones. The first tone is called a carrier. The carrier tone tells the receiving modem "I'm a data modem, let's talk." (Fax modems have different carrier tones.) The other four tones are the send/receive data tones. Two tones are used for the binary number one and two for the binary number zero. Since two modems are always connected, both cannot use the same set of tones to send information. One set of two tones is used to send data from the modem that is initiating the call, while the other modem uses the other set of ▶

tones to send data back to the first.

The ST requires an RS232 modem cable which, depending on the manufacturer, may or may not be included in the modem packaging. Radio Shack carries them for around \$20. Make sure it has a 25-pin, female connector.

2) A phone line. Get touch-tone service even though it usually costs more. Touch-tone quality is far superior to rotary service, significantly reducing data errors.

3) A telecommunications program. There are many for the ST, differing in features and complexity of use.

All telecommunications programs do some basic operations the same way. They convert data typed on the keyboard into data that the modem can transmit. They also interpret data coming from the computer you called and send it to the screen.

Most, but not all, telecommunications programs can send programs and other disk files over the modem and receive files in return. There are several standard formats, called file-transfer protocols, that assure that the computers on either end of the phone line speak the same language. The most common file-transfer protocol is X-modem.

Because disk files, if damaged, will not function, there needs to be a way to verify that nothing was lost or added to the file while traveling over the phone line. X-modem divides the file into small pieces called blocks. Each block received is quickly checked for errors, using a mathematical formula. If errors are found, the sending system tells the receiving system to forget the bad block and then re-sends the same block.

Hayes Compatibility

The modem you own or plan to buy should be Hayes compatible. Hayes is to modems what Epson is

to printers. Hayes set the command standard, which is a way of telling the modem what you want it to do.

The commands that the average user needs to know are plain and easy to learn and remember. The letters AT (for ATtention) begin all commands. The following is a list of basic Hayes modem commands.

ATDT1234567890: Using a touch-tone line, dial the phone

The standards for 9600-baud modems have not been completely worked out yet.

number (123) 456-7890 and wait for a carrier tone.

ATDP1234567890: Using a rotary (pulse) line, dial the phone number (123) 456-7890 and wait for a carrier tone.

ATH: Hang up the phone.

ATX4: Print modem results on the screen.

ATV1: Return word result codes, not numbers. ("CONNECT" not "1"; "NO CARRIER" not "3.")

ATE1: Echo the commands typed (also known as full duplex).

AT: Are you there modem? The modem will respond "OK" or "0."

Baud Rates

The baud rate is the speed at which a modem transfers information. Fortunately, you'll never have to tell the modem what baud rate to use.

Modems are usually "smart" and will automatically adjust the speed. The baud rate of the BBS is nonetheless important to know before you call because you must set your telecommunications program to match the highest baud rate that the BBS and your modem can support. If the BBS you call runs at 2400 baud and you only have a 1200-baud modem, set the terminal program's baud rate to 1200 before you call. If you were calling the same BBS with a 9600-baud modem

you would set the terminal to 2400 baud before you call.

Most BBSs list their baud rate with their phone number. The baud rate that the BBS lists is likely the highest one the BBS will support. If a BBS is listed as 9600 baud, it probably also handles 300, 1200 and 2400 baud.

If you don't own a modem yet, I strongly urge you to get at least a 1200-baud Hayes-compatible modem. Steer clear of 9600-baud modems for now. The standards for this rate have not been completely worked out yet. Many of these

high-speed modems are unable to communicate with other 9600-baud modems made by different manufacturers. Also avoid 300-baud modems, which are very slow and are not recommended for serious telecomputing.

Logging On

When you call a BBS for the first time you'll be asked a series of questions: phone number, address, age, etc. On some BBSs the system will ask for a "handle." This is a nickname that some users go by. Don't be intimidated by all this, it is just the systems operator's (sysop) way of getting to know you and survey the users of the BBS.

When you're lost or don't know what to do in a BBS type [?]. In most cases this means "Help!" and you'll usually get a menu of choices. Also, the first time you call a BBS don't be surprised if you can't go many places or do much in the system. BBS sysops must authorize you to access the system fully.

When you leave the BBS for the first time you'll be given your password. Write it down — you'll need it to log back on the BBS under your account. Many BBS programs do not save your password if you don't log off normally, so never hang up on a BBS. ■

OVERLOOKING THE OBVIOUS

Word Processors Take The Routine Out Of The Routine

BY DAN FRUCHEY

Word Processing/Desktop Publishing Editor

Word processors have replaced typewriters in many homes and businesses. They're quick, easy to use and provide relatively stress-free operation. No more liquid paper to gum up rollers, no more carriage returns at the end of each line, no more individually typed copies. The benefits are almost innumerable.

Less time is spent composing and editing documents, text is retained in a usable format, and documents are uniform and easier to read.

Despite these advantages many people still perceive the word processor as merely an advanced typewriter. Because of this, the system is used inadequately and many hours are wasted manually performing tasks that the software was designed to perform. We often wind up fighting a program that was designed to make our lives easier.

Fully Automated

With the right software just about any repetitive word-processing task can be automated. Page breaks, margins, headers and footers, page numbering, line spacing, justification, hyphenation and many other

Word processors have replaced typewriters in many homes. They are quick, easy to use, and provide relatively stress-free operations. No more liquid paper to gum-up rollers, no carriage returns at the end of each line, no more individually typed copies. The benefits are innumerable. Less time is spent composing and editing papers, text is retained in a usable format, and documents are uniform and easier to read.

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parameters can all be managed by your program. If you find yourself repetitively performing a task (besides typing), check your manual for ways to automatically control the process.

Does It Really Work?

Most of us perceive word processors as parity products. That is, one word processor performs essentially the same job as the next. They all cut and paste, they all search and replace, and they all wrap text automatically.

On the surface this is true, but the intricacies of a particular product can leave the competition far behind. Not all developers interpret consumer needs in the same way and appearances can be extremely

deceiving.

I know of six word processors that produce multiple text columns. Only five of them produce more than two columns. Only three of them show an actual representation of the fonts and page format used in output. Only two of them show you all of the text columns on screen at once and only one of the programs can do all of these simultaneously. Yet each manufacturer boasts of their product's ability to produce multicolumn text.

Some options can make a critical difference in your ability to use a product and they should be examined carefully before you purchase a word processor. Consider the following options carefully:

Multicolumn Layout: How many ▶

columns can the program produce? Can you see and edit the columns on screen? Do you get actual page and font representations on screen, or just Atari's built-in system fonts? Can you see all the columns at once or do you need to page through to view each column separately?

Text Importation: Without exception, all word processors let you import text from other sources; it's the form in which each accepts the text that varies from one to the other.

The ability to import text is invaluable. Have you ever tried to load an ST Writer document into WordPerfect? It may cause a few chuckles when you see the words "Do Do Run Run ST Writer" but the laughter quickly dies as you peruse the document and notice the strange characters and odd formatting throughout.

There are several ways to get around this problem. You can go through the document and change each character and fix each hard carriage return, one by one. But this is a major waste of time. There are alternatives.

First, if you know that you're going to export your document into another word processor, save the document in ASCII text format. This strips away all of the codes peculiar to that word processor, so that you're left with straight text.

When you enter your new word processor and load the ASCII text, you may still have to do some fiddling around with the hard carriage returns. The easiest way around this is to first do a search and replace for all double returns with something like [PARA] or any new-paragraph designator. Then search and replace all hard carriage returns and replace with a space. Now go back and do a search and replace for all the [PARA]s, replace with double returns and you're set.

Of course, in many cases you don't have to do the above. Word-

Perfect includes a utility that converts ST Writer and Word Writer documents to WordPerfect format. Also, the May 1989 issue of START included a program called SIFT that converts ST Writer documents to WordPerfect and Word Writer formats. However, these utilities are

We often wind up fighting a program that was designed to make our lives easier.

not perfect — it's wise to check the document for any irregularities in the format after it's been converted.

Graphics Importation: All of the programs that import graphics use pictures saved in image (.IMG) format. Some include a separate utility that translates a graphic to image format.

The most versatile programs import graphics in many formats including NEOchrome (.NEO), DEGAS (.PII-3, .PC1-3) and Metafile (.GEM) without resorting to a separate conversion utility. While this may use additional RAM and disk space, it saves time and keeps you from using a separate program each time you decide a graphic is needed in a document.

Spell Checker: I've made this point before but it bears repeating. A spell checker is a must for students, writers and professionals who produce written communications in a competitive atmosphere. While friends and relatives are likely to overlook misspelled words, a client or professor is simply not as for-

giving.

Try to use a spell checker that divides words phonetically and suggests possible replacements when a word is misspelled. This is especially important for those of us who have poor spelling skills and those with learning disabilities such as dyslexia. Phonetic spell-checking takes about twice as long as other forms, but the result is worth the wait.

Programs that do not perform phonetic spell checking are usually less complete, with smaller dictionaries and an inability to suggest more than one alternate spelling. If your word processor only has a non-phonetic dictionary, keep a conventional dictionary nearby.

A built-in dictionary that recognizes contractions, possessives, plurals, compound words, and prefix and suffix forms is also a valuable asset. The software spends less time searching for words and gains a significant increase in speed and accuracy.

The phonetic spell checkers recognize most of these variations and editing proceeds smoothly. At times non-phonetic spell checkers simply ignore contractions, possessives and misspelled words when they cannot identify them. In repeated tests, careful checking took up to four times longer, especially in technical documents.

You can overcome some shortcomings by adding words to a user-defined supplemental dictionary. The number of words you can add is limited and searches will generally take longer.

Hyphenation: Hyphenation divides words by syllables and word elements. It is probably one of the most confusing options supplied with any word processor. The rules of hyphenation are as complex as the English language itself. Rules and exclusions are based on con-

Products Mentioned

CodeKeys, \$39.95. CodeHead Software, P.O. Box 74090, Los Angeles, CA 90004 (213) 386-5735

NeoDesk 3, \$69.95. Gribnif Software, P.O. Box 350, Hadley, MA 01035 (413) 584-7887

text, syllables, word length and even the country of origin.

Hyphenation utilities are generally brought into play when producing text that is fully justified across a column to give it an even appearance. This is especially important in multicolumn layouts for periodicals such as newsletters and magazines.

A good hyphenation utility should recognize two types of hyphens: hard and soft. A hard hyphen is placed between words that should be joined either as a matter of convention or to make the meaning more clear (such as state-of-the-art or high-tech). When a hard hyphen is used, the program attempts to keep these words joined together. If a hyphen is required, the only place a word would be wrapped to another line is at the hard hyphen, not within one of the words. Imagine how disconcerting it would be to read "sta-te-of-the- ar-t." Soft hyphens are inserted when the hyphenation utility breaks words apart. Although they appear identical to hard hyphens on screen, the software should automatically add or remove soft hyphens if word wrap changes during editing. The software should change hyphenation in individual words as needed.

Manually placing and deleting hyphens is a painstaking process. If your software can't tell the difference, hyphenation is definitely not worth the trouble.

Footnoting: A footnoting option places references and comments at the end of each page. Layout should be adjusted automatically according to the length of the footnote. Some word processors let you select a different font size or style to differentiate footnotes from body text. Others also assign footnote symbols, numbers and letters automatically according to the format you have established.

Footnotes differ from endnotes, which are only placed at the end of

a document. Endnotes are excellent for bibliographies and author references but they simply cannot replace footnotes. Make sure of what you're getting; some software publishers seem to use these terms interchangeably.

Macros: A macro is simply a set of commands rolled into one. If you have several routine tasks that require many steps to implement, you can bundle them all together in a macro. One example of the effective use of a macro is for the screenwriter who absolutely must have the document in the proper form before presenting a script. A macro set up beforehand will save hours of manual formatting.

Of course, only some word processors have macro-making ability. WordPerfect immediately comes to mind. Gribnif's NeoDesk 3 and CodeHead's Codekeys offer third-party macro-making.

Endnotes ...

If you already own a word processor you can save yourself time and money by learning it well and testing its capacities to their limits. Doing so may extend the life of your current program and fend off the unnecessary purchase of other products such as page-layout programs and additional word processors. If you're in the market for a word processor, remember that the product that claims to be "the same as" may not be, and the options it offers should be examined carefully for completeness before purchase.

A quick word of thanks to those of you who have taken time to write or call with suggestions. As word-processing and desktop-publishing platforms, Atari computers excel like few others and this column is an attempt to shed the proper light on these extraordinary capabilities. Keep your comments coming. ■

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WINTER 86

Features: Jack Tramiel Interview, Buyer's Guide.
On Disk: Noise Doodling; Address Book; Auto Dialer; Label Printer; ST; Writer Secrets.
Reviewed: Mark Williams C.; Menu+.

SUMMER 87

On Disk: The aSTronomer: Text Compression and Huffman Coding with Personal Pascal; Flicker Animation Program; MIDISAVE.
Reviewed: Word Writer ST; Data Manager ST; Swiftcalc ST; Five BASICS compared

SPECIAL ISSUE #2

Features: Drawing and Painting Programs Overview; Desktop Video; How to Set Up Your own MIDI Studio; Rock' n' Roll with Atari; Shopping List of Music Hardware.
On Disk: The Cartoonist; MIDI View; Ear Trainer.
Reviewed: Synth-Droid; Xsyn Patch Editors; Music Studio and Music Construction Set.

SPRING 88

Features: Earthquake; Upgrading Your ST; Dave Mason Interview.
On Disk: Home Budgeting; Exploring Prolog; 1987 Tax Template; Battle for the Throne.
Reviewed: Personal Finance Programs; Desk Accessories Compared.

SPECIAL ISSUE #3

Features: The ABCs of Desktop Publishing; The ST in Business; Business Graphics; Database Overview.
On Disk: Card# Stack Database; START Selector; Play the Market.
Reviewed: WordPerfect; F-15 Strike Eagle

SUMMER 88

Features: Three Years with the ST; Mick Fleetwood Interview.
On Disk: Planning Traveler; Writing Your Own Help Files; Fractal Landscape Generator; Klondike Solitaire.
Reviewed: Microsoft Write

SPECIAL ISSUE #4

Features: Games and Entertainment
On Disk: Naval Battle; World Discovery; Guitar Simulator; Byte Mechanic; ReSTART.
Reviewed: Dungeon Master; Chessbase; Four Sonic Flight Patch Editors; Quantum Paint 1.2.

OCTOBER 88

Features: Programming Under Pressure.
On Disk: Vocabularian; Brickworks; ST Microscope.
Reviewed: Desktop Publisher ST; SMPTE Track; Softsynth; C Language Overview.

NOVEMBER 88

Features: The ST and MIDI.
On Disk: AVS; Script; Appointment Calendar.
Reviewed: LDW Power; MIDI Power; Superbase Professional.

DECEMBER 88

Features: Hardware
On Disk: Wombats II; Santa BBS; Discovery Construction Set; Five Sort Routines.
Reviewed: Monitern's Viking Monitor; DynaCaDD; Five Hard Drives Compared; Ricoh PC Laser 6000.

JANUARY 89

Features: Editor's Choice.
On Disk: GFA BASIC 2.0; Spanish Mastery; STARTKey; Revisited; Slither.
Reviewed: GFA BASIC 3.0; Creator and Notator.

FEBRUARY 89

Features: Thanks for all the Fish; ST: 1999.
On Disk: Naval Battle; Moon Calendar; Kamikaze Chess, Killer Chess; VCR Organizer.
Reviewed: Atari's Planetarium; Robtek's Skyplot; Mirage Sample Editor's.

MARCH 89

Features: Three Artists Who Use the ST; Software Rental.
On Disk: Seurat Draw and Paint Program; Assembled Saucers; ST Coloring Book.
Reviewed: Graphics and Animation Programs Compared; Digigram's Big Band; Overview of Six CAD Programs.

APRIL 89

Features: Jimmy Hotz's MIDI Magic; Dr. T Interview; The New TOS ROM Error Codes.
On Disk: ST Writer Elite 3.0; Poker Solitaire; RAM Baby.
Reviewed: Utilities; R/C Aerocopter; MIDI Draw.

MAY 89

Features: ComputerServe's Sports Forum; Atari Goes to College.
On Disk: Space Wars 2400; GFA Object; 1988 Tax Template; SIFT (START's Instant File Translator)
Reviewed: Buyer's Guide to Telecommunications Programs; Calamus.

JUNE 89

Features: Do Anything Business Computer; Arcade Addiction.
On Disk: GFA Vector, Match Quiz ST; Screenwriting with WordPerfect; ST Pinochle; Exploring Spreadsheets; Traveling Mattes.
Reviewed: Juggler II; Switch/Back; Revolver; Graphics Tool from Migraph; MIDI Drummer.

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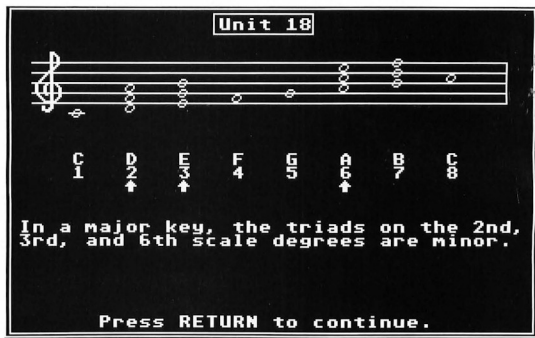
Two Teaching Programs Have Plenty To Offer
Both Amateurs and Pros

BY LARRY A. MAGNELLO

Educational applications are a growing field for the Atari ST. This is particularly true in the music field, where developers can capitalize on the ST's inherent ease of use, graphics capabilities and built-in MIDI ports. One such developer is the Alfred Publishing Comany, which sells the Practical Music Theory course and its associated Music Achievement Series. Author Sandy Feldstein offers a course for the absolute beginner who has never read music before. It can be used for home study or as part of a music classroom.

What You Get

Practical Music Theory is a six-disk, self-instructional, music-theory course, covering the basics from drawing a staff through composing simple melodies. The Music Achievement Series package is a flexible test series on three program disks, designed to evaluate knowledge of music fundamentals. The packages come with instruction manuals, review worksheets, manuscript paper and answers (to guarantee proper learning, even without a teacher).



A typical lesson screen from the Practical Music Theory music-education package.

For this review, I ran Practical Music Theory and the Music Achievement Series on a 520 ST, a 1040 ST, a Mega 2 and a Mega 4. The software runs in low, medium, and high resolution. You have the option of using a MIDI instrument or just the internal monitor speaker. Display graphics appear in low resolution regardless of what monitor you use. The color monitor is more pleasant to the eyes, rather than looking at black background on the high resolution monitor.

Practical Music Theory

The Practical Music Theory course offers 84 lessons divided into three parts. Introductory lessons cover the bass and treble clef staves, notes, timing, ties, slurs, repeat signs, flats, sharps, and major and minor scales. After learning these basics, you are led into more complex musical concepts such as a circle of fifths, chromatic scales, dynamics, triplets, syncopation, major and minor chords, dominant seventh chords, triads, and tempo markings. The last sec-

tion focuses on harmonizing a melody, composing a melody, transpositions, inversions, harmonics, melodic minor, and augmented and diminished chords. Three review sections reinforce what you have learned.

Music Achievement Series

The Music Achievement Series is the first comprehensive publication of computerized tests in music. It is particularly useful for music educators in a classroom setting. With these tests you can assess new students' music ability levels, evaluate music-program objectives, guide student learning and study skills, and evaluate pre-test or post-test scores of students. The Atari ST speeds the collection and analysis of test scores, actually storing each student's score as they complete a test. Teachers can easily review student scores and get computer printouts of the test scores.

Each time one or more students take these tests, the computer generates a new series of items in each section. The computer randomizes the testing program so that each student or group of students has a new and unique set of questions, enhanced by computer graphics. The

AT A GLANCE

Product:	Practical Music Theory and Music Achievement Series
Type:	Music education
Company:	Alfred Publishing Co. 16380 Roscoe Blvd. P.O. Box 10003 Van Nuys, CA 91410 (818) 891-5999
Price:	PMT, \$299.95; MAS, \$199.95
Requirements:	512K, any rez
Summary:	Easy to use and comprehensive.

testing procedure assists the teacher to focus on areas of specific need.

There are three levels of tests or quizzes within the Music Achievement Series, each covering specific lessons such as notation, rhythms, terms, scales and chords. Starting with level 1, you are tested on the basic elements of music theory. Level 2 moves into the areas of major key signatures, symbols and intervals. The final level is for those serious about their musical studies. Included here are the chords, major triads, V7 chords, transposition of music keys, minor scales and harmonizing bass notes of chords.

Teacher's Evaluation

As a composer, arranger and music

teacher, I feel the Practical Music Theory package offers an excellent course for the individual that has never had any music training, as well as for musicians that play by ear and want to learn to read and write music. My only concern is when the program asks you to identify high and low pitches of musical notes. The pitch sounds are played before the program asks you the question "Is the pitch higher or lower?" After a few questions of this sort you catch on that the high and low pitch sounds will be played before you begin to answer the question.

The manuals in the two packages are well done, but in the Music Achievement Series testing manual the ink used in the printing is not dark enough. Overall the documentation is clear and concise and written with both the amateur and professional in mind. The amateur will find this program an easy introduction to music education, while the professional will not feel restricted by it.

This is the first appearance in START of composer, arranger, music teacher and ST enthusiast Larry Magnello.



Silhouette Graphics Auto-Tracing

NEW

for the Atari ST

- Load, modify or create raster graphics images and auto-trace them into GEM vector graphics.
- Auto-tracing features: 1) straight line identification, 2) curve smoothing, 3) curve fitting, and more.
- Open IMG, Degas and MacPaint file formats. Save in IMG format.
- Drawing features include polygons, stars(3-99 pts./sides), parabolas, bspine smoothing.
- Contour data files or screen areas; similar to altitude contours of a topo map.
- At least 1 Mbyte required. Works in Hi Rez and big screen monitors. Math Coprocessors supported.



Exposé

A Desk Accessory
for ST
Desktop Publishers and
Graphic Artists

- View and clip out graphic files from Exposé' GEM window (includes a pen and eraser).
- Capture screens, show disk free space, system memory and view, edit system time/date.
- With the Exposé' notepad, load and save ascii files and send text directly to the main program.
- Access the Atari ST extended ASCII character set and send a character string to an application.
- Load and view Degas, Degas compressed, Tiny, Neochrome, IMG, GEM metafiles and MacPaint files. Converts low and medium resolution to high resolution pictures.
- Comes with special reference files (*.IMG) for Symbols, Dingbat character to keyboard configurations, and font family displays.

Also From **Maxwell** Fractal Fantasy ~ 2D/3D Mandelbrot Fractals, Degas Format.
Megstenders ~ Megas ST keyboard extension cords(6,8,12,25').

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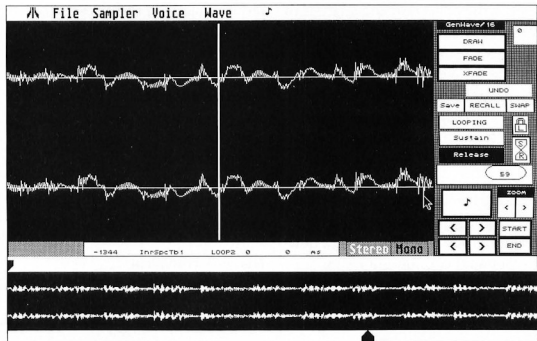
GENWAVE

No-Nonsense Visual Sample Editing

BY ANDRE CYNKIN AND JAN PAUL MOORHEAD

With the release of its GenWave package, Interval Music Systems (previously known as Drumware) is now among the major software developers of sample-editor software. Two generic sample editors are included in the package: GenWave/16, for 16-bit samplers such as the Akai S1000, and GenWave/12, for 12-bit samplers like the Roland S-50. Together the programs support over 20 different sampler instruments and allow you to import and export raw waveform data between any of the supported samplers.

There are a few operational differences between the current versions of GenWave/12 (version 1.24) and



The looping window from GenWave/16 in stereo mode. Note that both stereo channels are affected simultaneously.

AT A GLANCE

Program:	GenWave
Type:	MIDI sample editor
Company:	Interval Music Systems 12077 Wilshire Blvd. #515 Los Angeles, CA 90025 (213) 478-3956
Price:	\$349.00
Requirements:	1MB, high or medium rez
Summary:	Makes editing easier with its speed and automation.

GenWave/16 (version 1.03). The main distinction is that GenWave/16 offers stereo editing while GenWave/12 is mono. GenWave/16 currently has more features, but Interval Music Systems plans to update GenWave/12 with many of them. Since the user guide is based on GenWave/16, we shall focus on it.

Specifics

GenWave uses a GEM Desktop menu bar with six drop-down menus and five specialized work screens. It

does not use standard GEM windows. All displays are of fixed size and cannot be repositioned, resized or scrolled. It uses hardware copy protection that plugs into the joystick port. In addition to its native format, GenWave can read and write sound files that follow the sample dump standard; unfortunately it cannot read the more widely accepted Sound Designer format.

GenWave accepts up to eight samples at a time; however, long samples requiring significant

amounts of memory cause the software to restrict you to fewer buffers. Only one sample (mono or stereo) may be viewed at a time on screen. An Undo Enable option automatically backs up the active buffer into the eighth buffer so GenWave can undo most, but not all, voice-edit operations. Since these operations usually involve serious number crunching with thousands of changes in sample-file data, being able to restore data without incurring disk-access time is a big plus. If you are editing long samples that use a major part of RAM, you can disable the Undo Enable feature and back up your voice to disk.

The Virtual Keyboard

The Note Page has various defaults and option choices, as well as leading to the on-screen MIDI keyboard. This virtual keyboard can transmit single notes, chords of up to four

notes, velocity information (fixed or variable), aftertouch and modulation-wheel info to your sampler to assist in auditioning your edits.

The Wave Menu contains the meat and potatoes of the program. This takes you get to the Voice Info Box, the Loop Page, the EQ Page and the Envelope Page, plus the Sample Rate Conversion and Pitch Transpose Boxes.

You default to the Loop/Draw Page when GenWave starts. Once loaded, the entire sample waveform is plotted across the bottom of the screen in the overview window. You may display the waveform in low or high resolution. The largest portion of the Loop Page holds the magnification window. This has a zoom feature and functions as both a high-resolution display and drawing area, and loop window. The overview window holds two pointers tracking above and below the

display which indicate start, end, or loop points. The pointers determine what part of the waveform appears in the magnification window. You can reposition a pointer by clicking anywhere on its track and then fine tune the position in single-sample increments. Up to eight independent loops can be created with GenWave.

Loop Options

Loops may be recalled or swapped with new edits at the push of a button. GenWave offers four types of crossfade curves — including alternating or bidirectional loops — and lets you select a crossfade width as a percentage of the area between loop start and endpoints. Looplock is another good feature. When activated, the endpoint maintains a fixed distance from the loop start point — very useful for single-cycle loops on pitched sounds. You can use your mouse to redraw any part of the ▶

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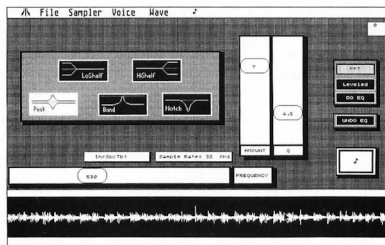
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waveform in the magnification window. A fade function creates a linear fade in/out amplitude ramp.

The Envelope Page supports cut-and-paste editing, gain changes (boosting or reduction), normalization, waveform reversal, phase inversion, drawn digital-amplitude envelopes, stereo panning and pitch envelopes (up to one octave up or down). Whew! Here is where samples can be mixed and/or merged, truncated or extended, boosted or compressed. The waveform can be played backwards or processed through drawn waveform envelopes of up to 640 stages. These editing and processing operations open up a myriad of sonic possibilities.

Fun With The Clipboard

The clipboard buffer on this page is



The digital EQ operating screen for GenWave.

the only part of the program which requires disk access. A sample segment, specified by the start and end points, can be copied to the clipboard. Then the fun begins. You can insert the section into a different location in the sample, replacing the former contents or pushing the data back, or you can mix the two signals together in equal amounts, or you can overwrite the whole buffer with the clipboard data. You can hear your edits with the note button, and GenWave will perform a harmonic analysis of the sound with the FFT module, activated at the push of another button. This module displays a nifty 3D graph of amplitude versus frequency versus time. A shortcoming here is that the display is static; you cannot reorient its time axis. Sometimes this can cause large attack transients to obscure subsequent harmonic activity.

The EQ Page of GenWave has a cornucopia of options. Five types of EQ response are offered: high and low shelf with a 12dB per octave cutoff, bandpass and notch responses with variable bandwidth, and peak response with cut/boost and bandwidth controls. You can select a corner frequency for each response and a wide range of bandwidth choices. The FFT module is handy here; knowing the frequency content of a sound lets you make best use of digital EQ. While adding to the computation time (EQ opera-

tions take about twenty seconds per one second of sample), lowering the amplitude of your sample with the leveling function helps eliminate possible clipping of a sound caused by boosting frequencies.

Sample, Resample And Transpose

Sample-rate conversion digitally resamples a sound at a different sample rate. Primarily, it gets used to convert a pitched sound to a different sample rate (called resample) or to shift a pitch at a given sample rate (known as transpose). Included as an option here, autofilter will equalize a sample before resampling at a lower sample rate. It gently rolls off the high frequencies to help prevent aliasing at the new, lower rate.

Another handsome feature of GenWave is autotend. When selected, this option automatically sends to your sampler any changes you make to the start, end and loop points as you make them. This beats having to send the whole edited sample back to your instrument to hear the new loop. Again, this depends on your sampler; some instruments demand the entire sample be resent just to change loop points.

For people really into automation who want to run GenWave behind their normal MIDI patch-bay configuration, there is autopatch. With autopatch and set-patch assignments made, your MIDI patch bay is automatically switched to allow ST-to-sampler communication when desired, and then reverts back to your master keyboard-controller patch configuration after the data transfer is complete. Pretty decadent, huh?

Stereo Editing

Another wonderful feature of GenWave is its ability to perform stereo

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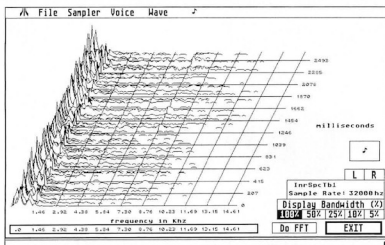
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editing. Sounds take on a new life with the added dimension of stereo. You can do stereo panning, mixing, flanging, chorusing and delay effects that would send Jimi Hendrix back to the studio. You can combine two mono samples to make a stereo sample. To explore maximum stereo imaging and effects, load the same long legato sound into both the left and right buffers and try manipulating them with subtle pitchbend, stereo panning, time displacement, or phase inversion effects. Send the left channel to a sampler panned hard left and send the right to another sampler panned hard right. Put them on the same MIDI channel and put on a pair of headphones to check out fabulous stereo-imaging effects. In stereo mode both buffers must be of equal



The FFT analysis display for a single sample.

length, or the shorter sound's buffer will be increased to match the longer one. Both channels are affected when you edit in stereo mode. You can even draw panning assignments with the mouse on the Envelope Page.

Meeting Their Goal

Interval Music Systems states their goal is "to allow you to realize your

edits in the fastest and most efficient way, thereby freeing you to concentrate on . . . your music." They succeeded by designing a program which minimizes disk-access time and automates some central features. They have broken with several GEM conventions, but this does not detract from the overall user-friendliness of the program. The package is sweetened with the inclusion of MACCEL, Atari's Mouse Accelerator. GenWave is a significant contribution to sampling technology. And remember, sampling may be the only way to get James Brown to your recording session.

Jan Paul Moorbead is a professional musician and frequent START contributor. This is Andre Cynkin's first appearance in START.

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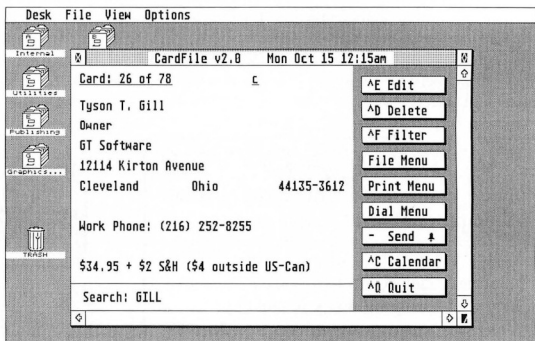
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BY JOHN NAGY

There are many desk-accessory, rolodex-type address books, both in the public domain and as commercial programs. But few offer as much for the money as GT Software's CardFile.

Homebrew

GT is one of many small, independent software companies that feature a limited line of homebrew commercial software. CardFile, like several other low-price applications and utilities, began as shareware, distributed freely and paid for by those who found both the software to be useful and their consciences to be outspoken. Author Tyson Gill



A typical CardFile entry

AT A GLANCE

Product:	CardFile version 2.0
Type:	Application
Company:	GT Software 12114 Kirton Ave. Cleveland, OH 44135 (216) 252-8255
Price:	\$34.95
Requirements:	512K, high and medium rez
Summary:	With plenty of address-book programs to choose from, choose this one.

says that his recent change from shareware versions to commercial versions, and now to a regular retail distributor, has not yet reaped profits, but that things are on a distinct upswing.

And they should. CardFile (now in version 2.0) comes in two versions on the disk, one as an accessory for convenient use anytime from within GEM programs, and a .PRG version for use when memory is short or your accessory list is long. The accessory uses a minimum of

70K data space, somewhat large for everyday use on even a 1MB machine. I have over 100 names and addresses in my CardFile, and have used only half of the basic 20K that is the default buffer size. By resizing the buffer upwards, up to 2,500 cards can be added (though that many could take between 500K and 900K). Fourteen fixed fields are available with the standard GEM data-entry functions, enhanced to include the insert or typeover functions found in word processors.

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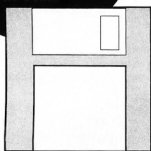
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CARDFILE

CardFile, CardFile failed to load its data. Since I had the autosave feature active, when I exited the program, it overwrote the good file on my hard disk with the corrupted file it had in its buffer. If I had simply turned off my computer, this wouldn't have happened, but I forgot I had turned on the autosave feature. If you're forgetful like me, I don't recommend using this option.

Since it is a versatile phone book, another natural function that is a treat to have is the phone dialer. CardFile will make any standard modem dial the currently selected card with a choice of configurable prefixes. It's a snap to look up a card, hit the dial button, and wait to hear an answer from the modem speaker before even picking up the telephone handset.

Straightforward Search

The search function in CardFile works just as it ought, straightforward and quickly. Always active and on the screen, any keystrokes go right to the search window; [Return] performs the search. While CardFile searches only on the last-name field, filters let you search for partial or full matches in any single or multiple fields. You save a "filter card" made up of any commonly needed selection criteria, apply search to the card, then filter to the list of correct cards. The group entry is particularly useful for creating categories and sub-categories of cards, and selecting them as needed. While the CardFile manual suggests such groups as "ST club" and "Church", I found it useful to use a letter code, which allows a single card to carry several codes. A particular person may be a computer connection (C), a co-worker (W), a very close friend (A), family (F), a creditor (\$), and/or all of the above. I can enter ACW and find all cards of people

who are a close friend, a computer connection and a co-worker. Filters can be either exact match or any-field match, and the key in the filter can be any part of the entry in the field.

Marking Time

Integrated in CardFile is a calendar that handles appointments quite nicely. A reminder function is available that will announce, when the program is first run or the accessory boots, any appointments pending today or tomorrow. I'd prefer to see taggable reminders, as it is an all or nothing setting in CardFile. Alarms would be nice, too, since time handling is already done well in the calendar. Maybe in the next upgrade? Moving from day to day in the calendar is easy, and even better is a one-click move to the next actual appointment entry, forwards or backwards from the currently displayed date. Keyboard equivalents of most commands are prompted in the dialogs and buttons, as they should be for faster use as familiarity grows.

CodeHead Clash

The program notes in the manual and on the disk mention some problems with early versions of HotWire and MultiDesk from CodeHead software, but that updates of the CodeHead products have resolved them. The send function also seems not to work with Script, the graphic word processor from Megamax.

CardFile is one of a handful of address-book programs I have, but it will be the one I use. Not one of the others has impressed me enough to type in the mountain of names and phone numbers I had in the corner of my desk. While I'd like a bit more from the calendar, it's probably inviting enough to get me using it.

*John Nagy is the editor of Z*Net Monthly.*

How To Get START Programs Up And Running

1) Make a backup copy. Run STARTCOPY.PRG (it's on your START disk) and follow the instructions. You will need to have a blank disk ready.

2) Write protect your original START disk. Move the tab on the back of the disk so that you can see through the hole in the disk case.

3) Store the original and use the backup hereafter.

4) Most of the files are compressed so that we can fit more programs on the disk. Programs with the text ARC before the extension (such as SAMPLEARC.PRG) must be uncompressed before they can be used. We use Double Click Software's DC SEA utility to create self-extracting archive (ARC) files. To un-ARC a program, simply double-click on the filename.

5) When the dialog box appears, choose Extract.

6) When the file selector appears, choose a destination disk (hard disk, RAM disk or floppy disk) for the uncompressed files. If you are not sure how to use your

file selector, refer to your ST manual or your replacement file-selector documentation. Do not attempt to use your START disk or backup copy as a destination disk — there isn't enough room to hold the files.

Make sure the destination disk has enough space for the uncompressed files, whose sizes are given below:

Folder DEMO
CARD_ARC.PRG — 159K
Folder TOOLS
DISDARC.PRG — 85K
FRUJARC.PRG — 3K
MGAMARC.PRG — 26K
RAMPLARC.PRG — 43K
STATARC.PRG — 48K
CAMC_ARC.PRG — 8K
SIDE_TWO.PRG — NOT ARC'D
ZERO_ARC.PRG — 80K
CITY_ARC.PRG — 381K
NYBGARC.PRG — 178K

FOLDROCK.PRG — NOT ARC'D
HAZELARC.PRG — 41K
PUHEDARC.PRG — 24K
SPEEDARC.PRG — 8K
STEXARC.PRG — 11K
LOAN_ARC.PRG — 21K
STARTCOPY.PRG — NOT ARC'D
FONT_ARC.PRG — 94K

The screen goes blank, then the files are listed as they are extracted, and marked "OK" if the uncompression is successful.

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<input checked="" type="checkbox"/>	Camera Control	CAMC_ARC.PRG	8K					Requires CAD-30 2.0 and Cyber Control
<input checked="" type="checkbox"/>	Cardfile Demo	CARD_ARC.PRG	156K					Copyright 1990 by GT Software
<input checked="" type="checkbox"/>	City Loan	LOAN_ARC.PRG	21K					Requires SimCity
<input checked="" type="checkbox"/>	City Icon Animation	CITY_ARC.PRG	381K					
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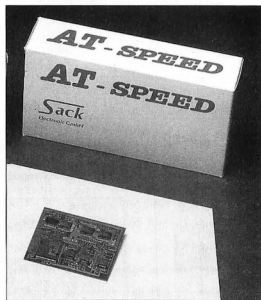
AT-SPEED

Full-Speed IBM Compatibility

BY GAVIN DOUGHTIE

I am writing this review in WordPerfect 5.1, running under MS-DOS on my Mega 4 ST. I'm using AT-Speed, the new IBM emulator from the makers of PC-Speed for the ST. It has a Norton SI rating of 6.7 — nearly seven times faster than an IBM XT. I have waited a long time for an emulator this fast. I am not waiting anymore.

Atari users have wanted to run IBM applications on their STs for years, at first using slow software-only emulators such as PC-Ditto I (Norton SI of 0.3). More recently, hardware-based emulators such as SuperCharger, PC-Speed and PC-Ditto II have boosted IBM emulation speed to around Norton SI



Talon's AT-Speed gives you the power of 80286 IBM-emulation.

4.5. These emulators were based on CPUs similar to the 8088 chip found in the original IBM PC. AT-Speed is the first hardware emulator to use the more powerful 80286 CPU found in the IBM AT.

Soldering Required

The AT-Speed hardware consists of a clean-looking, surface-mount circuit board slightly smaller than an ST floppy disk. It holds an 80286 microprocessor and a few other chips, and does not have room for a math co-processor. Two 64-pin IC sockets

are provided to piggyback the AT-Speed board onto the ST's 68000 CPU.

To install AT-Speed, you must solder one of these sockets to the legs of the ST's 68000. This is a straightforward job that shouldn't take a good technician more than twenty minutes. If you've never soldered before, however, this isn't the time to learn — hire somebody who has. On 1040 STs you must also cut a hole in the RF shield to make room for the board.

The AT-Speed board plugs into the IC connector once you've soldered it to the 68000. This allows you to remove AT-Speed from the computer without having to desolder it. If you already use PC-Speed you only need to unplug your PC-Speed board and plug in AT-Speed.

Simple Software

The ST software for running AT-Speed is simple — you first run `ATS_INST.PRGM`, a GEM-based install program, to establish how your ST system is set up. Saving your installation choices modifies the main `AT__SPEED` program file. Double-clicking on the installed `AT__SPEED` program boots the ST

AT A GLANCE

Product:	AT-Speed
Type:	Hardware-based accelerator board
Company:	Talon Technologies 243 N. Highway 101 #11 Solana Beach, CA 92075 (619) 732-6511
Price:	\$399.00
Requirements:	Any ST, STE or Mega
Summary:	Fast, dependable and compatible with most software.

into DOS mode. A warm boot ([Ctrl]-[Alt]-[Delete] or pressing the ST's reset button) followed by [Esc], exits DOS mode.

If you have two or more megabytes of RAM in your ST, you can configure the AT-Speed software as a desk accessory. Thus, DOS can be booted from within an application on the ST. Exiting DOS will then take you back to where you left the application on the ST. Handy if you need to switch back and forth between DOS and TOS applications.

Easy To Boot

Since the ST uses the same hard-disk format as IBM-compatible machines, both TOS and DOS programs can reside on the same hard disk partition. To make the ST's hard drive auto-boot under DOS, however, it is necessary to format a partition with the DOS "FORMAT C:\S" command. Not only does this erase all the files on the drive (TOS as well as DOS), it also rewrites the boot sector of the drive with a DOS boot record. This means that only one operating system can be started from a given hard disk partition.

Fortunately, AT-Speed's installation software allows a different partition to be used for the DOS boot partition. On my computer, the C: partition holds the regular TOS boot record used by the ST on startup. The D: partition has been formatted under DOS. By making D: my DOS boot partition I am able to start DOS from my hard disk without voiding the TOS boot record on C:.

Hercules Trimmed

AT-Speed supports 80-column by 25-line text in color and monochrome. It emulates CGA and Tandy 1000 graphics cards on color ST monitors. On monochrome monitors, AT-Speed emulates the Hercules and Olivetti monochrome graphics

cards as well as two-color CGA. Hercules, long the standard for monochrome graphics in the IBM world, is 720 pixels wide — larger than the ST's horizontal monochrome resolution of 640 pixels. Though AT-Speed displays as much of a Hercules screen as will fit on the ST's screen, you have to scroll around the image. However, AT-Speed supports a hardware modification to the ST known as HyperScreen. The HyperScreen

If you're tired of waiting for speedy IBM emulation, your wait is over.

modification increases the ST's screen area, enabling Hercules images to be displayed without being cut off.

If you are unwilling to modify your hardware any more than necessary, AT-Speed also emulates the Olivetti graphics card used on the AT&T 6000. This card has a resolution of 640 by 400 pixels, exactly the same as the ST's monochrome display. Most major PC applications, including Windows, GEM and WordPerfect, support the Olivetti card. The Atari mouse is also supported, as are the parallel and serial ports.

Weak Words

Documentation is the weakest feature of AT-Speed. The instructions are obviously a quick translation of a terse German manual. Though they contain the information necessary for an experienced PC user to install and run AT-Speed, I recommend purchasing a good book about DOS if you are new to the IBM-compatible universe.

Under MS-DOS 3.3 and higher, ST RAM above 1 megabyte appears as extended RAM. This kind of memory isn't useful to most DOS applications. Instead, extended memory must be turned into ex-

panded memory using an expanded memory manager such as EXTMEMS.SYS from SOFTBYTE. Making DOS work with more than 640K of RAM is a full-time occupation for many PC professionals. AT-Speed is no better or worse than any other 286-based system at this.

Meets My Needs

I purchased AT-Speed to run WordPerfect 5.1, which works fine. Microsoft's Flight Simulator also runs, complete with sound, but since it doesn't support the Olivetti graphics card I am forced to run it in either CGA two-color or the cut-off Hercules modes. The

only application I have crashed is the WordPerfect Office 3.0 Editor, which sometimes scrambles the screen. The application keeps running, however, and I have been able to save my work before restarting AT-Speed. Since I haven't seen this problem in any other program, it is probably caused by a bug in the editor program itself rather than AT-Speed.

Windows 3.0 runs on ST's equipped with AT-Speed. It supports extended memory directly (you'll need it), and has an Olivetti graphics driver that works with the ST's monochrome display. However, Windows eats up mounds of disk space, behaves sluggishly, is a nightmare to install, and is difficult to use — just like on a real AT.

Overall, AT-Speed fits my DOS-emulation needs well. It is quick, clean and compatible. It runs the DOS applications I want to run. Though there are faster DOS machines available, I couldn't have come close to buying one for twice what AT-Speed cost. If you're tired of waiting for speedy IBM emulation on your ST, your wait is over.

Gavin Doughtie is a frequent contributor to START.

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I/O BOARD

Programs on Disk!

I am a long-time 8-bit user, and member of two users groups in the San Francisco Bay Area, ABACUS and the San Leandro Computer Club. I've been a subscriber to ANTIC (and its disk) for many years. I heartily endorse ANTIC's decision to be incorporated into START, even though I have no immediate plans to become an ST user. By its action ANTIC can continue to serve the 8-bit community.

I will miss the ANTIC disks. I recommend that you start publishing a quarterly ANTIC disk, available separately. I feel that \$5 to \$10 per disk would be a reasonable amount to pay for this convenience.

Bob Scholar
El Cerrito, CA

We're working on just such a disk, and it should be ready by the time you read this. This first disk will contain all the 8-bit Atari programs from the October 1990 through March 1991 issues of

START. If there's enough room, we'll include some new Antic Music Processor (AMP) songs as well. The disk will be sold through Antic Software for \$9.95 plus \$1.50 shipping and handling. Call our order line at (800) 234-7001 to make your credit-card order.

ATR8000 Help Wanted

I am a "new" ATR8000 owner (I bought it secondhand a couple of months ago) and I would like to say I am really thrilled by the power it offers to Atari users. I am using it with two 360K drives. However, I have several questions about this CP/M machine from Atari.

Does anyone have a memory map for the ATR? Is there a way to start CP/M from DOS? I would like to load an 80-column emulator from DOS and then invoke CP/M. On a related topic, I have a BIT3 card with two cartridges (one left and one right) to enable 80-column terminal emulation with CP/M. I have no documentation for the BIT3 card. I can use 80 columns but only with

the carts. I believe that I should be able to have 80 columns with DOS, BASIC and any other programs that use the E: handler, but I cannot enable the card. I'm hoping some of your readers can help. They can write me at the address below.

Eric Anderson
20 Meadow Garden Lane
Dover, DE 19901-6524

Type-In Tip

Having been an Antic subscriber for many years, I was pleased to see that there will still be some support for the 8-bit machines. I am disappointed that the programs are no longer on disk, as my typing is somewhat limited. Fortunately, I have more time now that I have retired.

I would like to pass on a tip to make typing the data lines with all those numbers a bit easier. Prior to typing, I get a highlighting pen and highlight every other group of three digits. It sure saves a lot of searching for mistakes.

Edward C. Koziicki
Glen Mills, PA

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modifies DOS for you; it requires an 800XL or 65XE computer and Atari DOS 2.5.

Atari 8-bit owners have been using RAMdisks more extensively ever since the advent of the 130XE, and the RAMdisk provided for it with Atari DOS 2.5. I don't have a 130XE, but third-party firms have offered RAMdisk upgrades for all versions of the 8-bit Atari, up to 320K. However, since I operate on a shoestring budget, such an upgrade was out of the picture for me.

One day, as I was flipping through Ian Chadwick's book, *Mapping the Atari*, something in Appendix 12 caught my eye: the 800XL, 65XE and 130XE computers all have 24K of extra memory that has the same memory addresses as BASIC and the operating system. Of this RAM 2K is occupied by the GTIA, POKEY, PIA and ANTIC chips, but that still left 22K of RAM that could be used for a 176-sector RAMdisk.

This memory is normally inaccessible — to use it, the operating system must be shut off. (The computer would crash if you simply POKEd register \$D301, the memory

control, to turn on the extended RAM.) However, with a bit of assembly-language programming, I was able to modify DOS and set up a small but useful RAMdisk for users of the Atari 800XL and 65XE.

Getting Started

Make sure you have a freshly formatted disk with Atari DOS 2.5 on it. Ideally, you want a disk with only the DOS.SYS and DUP.SYS files on it. *Do not* use your master DOS 2.5 disk — the RAMdisk program modifies DOS and saves the modified version on the disk, and you will not be able to recover the old version if anything goes wrong.

Type in Listing 1, RAMDISK.BAS,

check it with TYPO II, and be sure to save a copy to disk before you RUN it. Also, put your fresh disk in Drive 1 just before you RUN the program. When you RUN the program, it will give you a prompt to make sure you want to continue. Press [RETURN] and the program will create the RAMDISK.COM file and save it on your disk. The program also POKEs in all the patches necessary to change DOS, and saves the modified DOS.SYS file on the disk.

Once the new files are on your disk, turn your computer off, put the disk with the modified DOS in drive 1, and turn the computer on again. A line onscreen notifies you that it is "Initializing D8: for 800XL/65XE." Then the BASIC prompt appears, and you're ready to go as usual — except that you now have a new drive D8:, your RAMdisk.

This RAMdisk is designed specifically for the 800XL or 65XE, to take advantage of that extra, unused memory. The RAMdisk Handler works on 130XE computers, but you would be better off using the larger ▶

BY DOUGLAS HUNT

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RAMDISK

RAMdisk that comes standard with DOS 2.5. The program might also work on a 1200XL, but this has not been tested. If you boot an Atari 400 or 800 with this disk, the program will not try to initialize the RAMdisk.

Using Your RAMdisk

Among other benefits, a RAMdisk makes getting to DOS from BASIC quicker and easier than ever. When the program formats the RAMdisk, it also copies DUPSYS onto it. By changing the value in memory location \$153F to \$38, the program tells the computer to load DUPSYS from the RAMdisk. Now, whenever you go to DOS from BASIC (just type DOS on an empty line below the READY prompt, and press [RETURN]) the DOS menu appears almost instantaneously — no more long waits for DOS to load from disk. If you use DOS option A to get a directory of D8:, you will see that the RAMdisk has one file, DUPSYS, and 125 free sectors left over.

To boot with the RAMdisk and an external cartridge in place, you must hold down [HELP] when you turn the computer on. The resulting RAMdisk will have only 103 free sectors, but won't interfere with the cartridge, as the larger RAMdisk would. To use the RAMdisk with programs that normally require you to turn the computer on while holding down [OPTION], you should now hold down both [OPTION] and [HELP]. Hold down both [CONTROL] and [HELP] while booting to disable the RAMdisk.

You can use your RAMdisk much like a regular disk drive, so much so they are sometimes called "virtual" drives. To save or load files from the RAMdisk, just be sure to use D8: as your drive designation. For example, when your word processor asks for a filename, use D8:MYFILE.TXT to save your file to the RAMdisk. Be-

cause the RAMdisk is actually part of the computer's memory, files load and save with amazing speed—but if you turn the computer off, you will lose any files on the RAMdisk.

If you have only one disk drive, having a RAMdisk can make copying files much easier. Just use DOS option C to copy them to the RAMdisk

A RAMdisk makes getting to DOS from BASIC quicker and easier than ever.

(D8:), then switch disks and copy the files to your new disk. Just keep in mind that you only have 167 sectors to work with, and that your RAMdisk is not a permanent form of storage. If you want to keep your files, make sure you have copies on a floppy before you power down.

Special Notes

The RAMdisk is not infallible, unfortunately, and files you want to keep should always be saved on floppies, just in case. Also, you will notice that the screen flashes wildly whenever you access the RAMdisk. This is normal, and nothing to worry about, but on rare occasions the machine may crash while trying to access a file, leaving the screen stuck in a crazy character set. If this happens, press [RESET]. If you were reading a file, try reading it again. If you were writing a file to the RAMdisk when the crash occurred, consider it lost, and don't try to do anything with it, or you're likely to crash even more permanently. Copy any other files

you want to save to floppy, and reformat the RAMdisk.

With the 130XE RAMdisk, DOS 2.5 expects a file called MEM.SAV to be in the RAMdisk if DUPSYS is loaded from the RAMdisk. (The MEM.SAV file saves the part of memory occupied by BASIC programs, so they won't be wiped out when you load

DUPSYS.) Because of possible problems concerning MEM.SAV, not to mention the amount of space the file takes up, the MEM.SAV routines have been completely disabled by the XL/XE RAMdisk Handler. Infrequently, you may get a warning that a DOS operation may invalidate a MEM.SAV file (which doesn't exist), and you should simply type [Y] at the prompt. If you want the MEM.SAV file on your RAMdisk, eliminate lines 240-350 from the BASIC program in Listing 1, and RUN the program as directed above. Now you can use DOS option N to put the MEM.SAV file on your RAMdisk.

Infrequently, you may get a warning that a DOS operation may invalidate a MEM.SAV file (which doesn't exist), and you should simply type [Y] at the prompt. If you want the MEM.SAV file on your RAMdisk, eliminate lines 240-350 from the BASIC program in Listing 1, and RUN the program as directed above. Now you can use DOS option N to put the MEM.SAV file on your RAMdisk.

How it Works

The extended RAM is in the 24K block, addresses A000-\$FFFF. The 2K area from \$D000-\$D7ff is occupied by the GTIA, POKEY, PIA and ANTIC chips, and has no auxiliary RAM substitute, leaving 22K of extended RAM. Memory location \$D301 controls which block of memory are active. Bit 0 of \$D301 controls the operating system, \$C000-\$FFFF, not including the 2K of chips. When bit 0 is set to one, the normal ROM OS is present, but when the bit is reset, the auxiliary RAM is "bank switched" in place of the operating system. Bit 1 controls the BASIC cartridge, \$A000-\$BFFF. When the bit is reset to zero, BASIC is active. When bit 1 is set to 1, BASIC is shut off.

For the 130XE RAMdisk, DOS 2.5 has a general sector read and write routine at address \$076C. Part of this routine checks for D8:, the RAMdisk. If D8: has been specified, then the ▶

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5404319552844595200 baud, 1080863910568918400 baud, 2161727821137836800 baud, 4323455642275673600 baud, 8646911284551347200 baud, 1729382256910274400 baud, 3458764513820548800 baud, 6917529027641097600 baud, 13835058055282195200 baud, 27670116110564390400 baud, 55340232221128780800 baud, 110680464442257561600 baud, 221360928884515123200 baud, 442721857769030246400 baud, 885443715538060492800 baud, 1770887431076120985600 baud, 3541774862152241971200 baud, 7083549724304483942400 baud, 14167099448608967884800 baud, 28334198897217935769600 baud, 56668397794435871539200 baud, 113336795588871751174400 baud, 226673591177743502348800 baud, 453347182355487004697600 baud, 906694364710974093395200 baud, 1813388729421948186790400 baud, 3626777458843896373580800 baud, 7253554917687792747161600 baud, 14507109235375585494332800 baud, 29014218470751170988665600 baud, 58028436941502341977331200 baud, 11605687388300468395462400 baud, 23211374776600936790924800 baud, 46422749553201873581849600 baud, 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2613367887580455111111111111491388878225600 baud, 522673577516091022222222222298277754451200 baud, 1045347155223218444444444444196555508902400 baud, 20906943104464368888888888883931111177804800 baud, 4181388620892873777777777777786222235609600 baud, 83627772417857475555555555555724444712121600 baud, 167255444837155495111111111111444882422422400 baud, 3345108976731109902222222222228897444444444800 baud, 6690217953462218181818181818177954888888889600 baud, 133804390692443636363636363635590977777779200 baud, 2676087813848872727272727272711181955555558400 baud, 5352175627697745454545454545423639111111116800 baud, 107043513555549090909090909094727822222233600 baud, 21408702711111981818181818181819455444444470400 baud, 428174054222237636363636363636391111111140800 baud, 85634810844447527272727272727278222222227200 baud, 17126961668888944444444444444444416400 baud, 3425392333777788888888888888888832800 baud, 6850784675555577777777777777777765600 baud, 137015693111111555555555555555555131200 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414104476679435808810133333333333337687251200 baud, 828208953358671617681013333333333331537502400 baud, 165641790671733533640533333333333333075004800 baud, 3312835813434670720266666666666662150009600 baud, 66256716268693414405333333333333333340019200 baud, 1325134253733868881013333333333333380038400 baud, 2650268507467737768101333333333333160076800 baud, 53005370149354753640533333333333333200153600 baud, 106010740298709507202666666666666400307200 baud, 212021480597419044053333333333333333800614400 baud, 4240429611948380881013333333333333316001228800 baud, 848085922389676176810133333333333332002457600 baud, 169617184477935235364053333333333334004915200 baud, 33923436895587047072026666666666668009830400 baud, 67846873791174144053333333333333333160019660800 baud, 13569374758234828810133333333333333320039321600 baud, 2713874951646965768101333333333333340078643200 baud, 54277499032939315364053333333333333800157286400 baud, 10855498065867862026666666666666661600314572800 baud, 217109961317357244053333333333333333200629145600 baud, 434219922634714881013333333333333334001258291200 baud, 8684398

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routine branches from \$0784 to \$1481, the RAMdisk sector read and write routine. The RAMdisk routine at \$1481 generates a memory address between \$4000 and \$7080 based on the sector number, and determines which of the four 16K RAM banks the sector will occupy. The routine transfers the \$80 bytes of data and returns.

To get DOS 2.5 to create my 22K RAMdisk, I wrote a machine-language program similar to the one at \$1481. However, the routine was a few bytes too long, and didn't fit at \$1481. So, I assembled the routine into the cassette buffer, at \$03FD-\$047E, instead. (This naturally caused problems with using cartridges, as discussed below.) I also changed the "JSR \$1481" (Jump to SubRoutine at position \$1481) at \$0784 to "JSR \$03FD" so the new routine would be accessed.

The routine checks to see if a directory sector (360-368) has been passed to the routine, and if one has, then the sector is lowered to the 171-179 range so the directory will fit in the 22K of extended RAM. The routine also ignores sectors 0 through 3 because sector 0 is non-existent on a floppy drive, and 1 through 3 are used only for boot information. Since you won't be booting from the RAMdisk, those four are given no space on the RAMdisk. When encountered, these sectors cause the routine to simply return to the main body of DOS without doing anything.

If a sector falls in the range from 4 through 179 the routine subtracts four from the sector number. (This is a strictly local change — the sector number passed to the routine is still intact at the exit.) Then a memory address is generated based on the modified sector number. The interrupts are turned off at \$D40E, auxillary memory is called up, and \$80 bytes are transferred. The ROM is bank-switched back in, and the

interrupts are restarted.

Initializing the RAMdisk

Because of the odd configuration of the RAMdisk, the DOS 2.5 disk-formatting commands weren't easily modified to format the RAMdisk on the 800XL and 65XE. I wrote my own routine at \$1481, the old 130XE RAMdisk sector read and write routine. The new formatting routine is too long to fit entirely at \$1481, and so continues at \$12CB, where the old bank-switching routine was located. At \$0B84, I patched in a call to \$1481. At \$1481, the overwritten code from \$0B84 is replaced, and then the routine checks to see if D8: is being accessed. If a floppy is being formatted, control is passed back to the normal format routine. If the RAMdisk is being formatted, the routine zeroes out the buffer and creates a bitmap for sectors 4-170 (167 free sectors). The routine writes this bitmap, and eight zeroed sectors for the directory.

In its usual mode, the RAMdisk has 167 free sectors and can be formatted using DOS option I. In this mode, however, it uses memory addresses \$A000-\$BFFF as its first 64 sectors. These addresses are also used when you boot with an external cartridge, or if you boot without BASIC. (If you boot holding down [OPTION], the OS shuts BASIC off and puts the display lists in this auxillary RAM block.) To avoid the inevitable conflict over memory, the second RAMdisk mode makes it impossible to access the first 64 sectors, leaving 103 free sectors. As mentioned above, just hold down [HELP] while booting to get the 103-sector RAMdisk. In this mode, the RAMdisk can be formatted by DOS option P. ■

Listing on page 89

Douglas Hunt is a student at Hopewell Valley Central High School, in Pennington, NJ.

Head 'Em Off!

Head For The Skies And Box In Your Opponent

BY LUCIUS KWOK

In this high-flying game for two players, you'll need fast reflexes and sharp strategy to successfully navigate the mazes — while trying to box in your opponent with your jet trails. This BASIC game works on all 8-bit Ataris with at least 48K memory. Two joysticks required.

In the not-too-distant future, aerial combat has become the latest craze. In this newest sport, pilots fly jets through elaborate mazes of force fields. As they fly, the jets produce trails of deadly exhaust, and to cross any trail means instant death. The pilot who survives longest wins, and to end the competition quickly pilots try to box in their opponents with their smoke trails — but one wrong turn can mean instant death.

Getting Started

Type in Listing 1, HEADOFF.BAS, check it with TYPO II, and SAVE a copy to disk before you RUN it.

When you first RUN Head 'Em Off, the title screen appears, with the maze level noted at the bottom. To change the level, press [SELECT]. You can select to fly in *all* seven of

the arenas, one per round, or pick a single arena by number. You can return to the title screen at any time during a game by pressing [START].

To play, plug in two joysticks and press [START]. The first maze appears, seen from overhead. The planes start flying immediately, leaving colored trails of smoke behind them, blue for player one, red for player two. Use your joystick to control the direction of the jet, being careful to avoid the maze walls, boundary lines and smoke trails. Crossing any of these obstacles, or making a 180-degree turn, causes a fatal crash.

The jet that crashes is highlighted, and the other flyer gets a point for the round. In a tie, a coin is tossed to see who wins the round. In any single arena, play continues until one

player gets seven points. If ALL arenas were chosen you play one round in

each arena. That is the ultimate challenge. Each maze requires a different strategy, in addition to quick reflexes. With the more complex mazes, like arena 3, the player who gets to the center first can usually trap the other. In open arenas, like arena 1, strategy becomes more significant as you try to trap your opponent while leaving yourself room to maneuver.

Now that you know how to play this game, it's time to head for the skies and Head 'Em Off! ■

Listing on page 92

Lucius Kwok is a student at Central High School in Philadelphia. In his free time, he likes to play handball or role-playing games. This is his first appearance in ANTIC.

TYPING SPECIAL ATARI CHARACTERS

The Atari Special Characters and the keys you must type in order to get them are shown below:

For [CONTROL] key combination, *bold down* [CONTROL] while pressing the next key. For inverse [CONTROL] [A] through [CONTROL] [Z], press the [] key—or [] on the 400/800—then *release* it before pressing the next key. (Press [] or [] again to turn off inverse.) For [ESC] key combinations, press [ESC] and then *release* it before pressing the next key.

Carefully study the chart above and pay close attention to differences between lookalike characters such as the slash key's [/] and the [CONTROL] [F] symbol [].

NORMAL VIDEO

FOR THIS	TYPE THIS	FOR THIS	TYPE THIS
[]	CTRL ,	[]	CTRL S
[]	CTRL A	[]	CTRL T
[]	CTRL B	[]	CTRL U
[]	CTRL C	[]	CTRL V
[]	CTRL D	[]	CTRL W
[]	CTRL E	[]	CTRL X
[]	CTRL F	[]	CTRL Y
[]	CTRL G	[]	CTRL Z
[]	CTRL H	[]	ESC ESC
[]	CTRL I	[]	ESC CTRL -
[]	CTRL J	[]	ESC CTRL =
[]	CTRL K	[]	ESC CTRL +
[]	CTRL L	[]	ESC CTRL *
[]	CTRL M	[]	CTRL .
[]	CTRL N	[]	CTRL ;
[]	CTRL O	[]	[] SHIFT =
[]	CTRL P	[]	ESC SHIFT CLEAR
[]	CTRL Q	[]	ESC DELETE
[]	CTRL R	[]	ESC TAB

INVERSE VIDEO

FOR THIS	TYPE THIS
[]	ESC SHIFT DELETE
[]	ESC SHIFT INSERT
[]	ESC CTRL TAB
[]	ESC SHIFT TAB
[]	[] CTRL .
[]	[] CTRL ;
[]	[] SHIFT =
[]	ESC CTRL 2
[]	ESC CTRL DELETE
[]	ESC CTRL INSERT

TYPO II AUTOMATIC PROOFREADER

TYPO II automatically proofreads *Antic's* type-in BASIC listings. Type in the listing below and SAVE a copy to disk or cassette. Now type GOTO 32000. At the prompt, type in a single program line **without the two-letter TYPO II code at the beginning**. Then press [RETURN].

Your line will reappear at the bottom of the screen. If the TYPO II code does not match the code in the magazine, then you've mistyped your line.

To call back a previously typed line, type [*], then the line number, then [RETURN]. When the completed line appears, press [RETURN] again. This is how TYPO II proofreads itself.

To LIST your program, press [BREAK] and type LIST. To return to TYPO II, type GOTO 32000. To remove TYPO II from your program, type LIST "D:FILENAME",0,31999, then [RETURN], then NEW, then ENTER "D:FILENAME", then [RETURN]. Now you can SAVE or LIST your program to disk or cassette.



Don't type the
TYPO II Codes!

```

NB 32000 REM TYPO II BY ANDY BARTON
UM 32010 REM VER. 1.0 FOR ANTIC MAGAZINE
NS 32020 CLR :DIM LINE$(120):CLOSE #2:CLD
SE #3
BN 32030 OPEN #2,4,0,"E":OPEN #3,5,0,"E"
YC 32040 ? "K":POSITION 11,1?"
EH 32050 TRAP 32040:POSITION 2,3:"Type
in a program line"
HS 32060 POSITION 1,4:" " :INPUT #2:LINE
$:IF LINE$="" THEN POSITION 2,4:LIST B
:GOTO 32060
XH 32070 IF LINE$(1,1)="" THEN B=VAL(LIN
E$(2,LEN(LINE$)):POSITION 2,4:LIST B:
GOTO 32060
TH 32080 POSITION 2,10:"CONT"
HF 32090 B=VAL(LINE$:POSITION 1,3:" " ;

```

```

NY 32100 POKE 842,13:STOP
CN 32110 POKE 842,12
ET 32120 ? "K":POSITION 11,1?"
CE 32130 C=0:ANS=C
DR 32140 POSITION 2,16:INPUT #3:LINE$:IF
LINE$="" THEN ? "LINE "B:" DELETED":G
OTO 32050
UV 32150 FOR D=1 TO LEN(LINE$):C=C+1:ANS=
ANS+CWASC(LINE$(D,D)):NEXT D
WJ 32160 CODE=INT(ANS/676)
JH 32170 CODE=ANS-(CODE*676)
EH 32180 HCODE=INT(CODE/26)
BH 32190 LCODE=CODE-(HCODE*26)+65
HB 32200 HCODE=HCODE<65
IE 32210 POSITION 0,16:" CHR$(HCODE):CHR
$(LCODE)
UG 32220 POSITION 2,13:"If CODE does no
t match press [ ] and edit line a
bove." :GOTO 32050

```


RAMDISK HANDLER

Add A RAMdisk To Your 800XL or 65XE

Article on page 82

LISTING 1

Don't type the
TYPO II Codes

```

WG 2 REM DBBATCH.BAS - RAMDISK MAKER
DN 4 REM BY DOUGLAS HUNT
ZF 6 REM C<1991, ANPIC PUBLISHING, INC.
LP 10 GRAPHICS 0
TP 20 ? "Insert a COPY of DOS 2.5 in driv
e 1.  PRESS [REVERSE] to continue"
OV 30 POKE 764,255
OA 40 IF PEEK(764)=12 THEN 90
SN 50 GOTO 40
KU 90 ? "Writing RAMDISK.COM"
YI 100 OPEN #1,8,0,"D1:RAMDISK.COM"
NJ 110 READ A:CK=CK+A:IF A<>-1 THEN PUT #
1,A:GOTO 110
LB 120 CLOSE #1
JD 125 IF CK<>46689 THEN 500
CZ 130 ? "Altering DOS FORMAT routines"
CK 135 B=5249:CK=0
EV 140 READ A:CK=CK+A:IF A<>-1 THEN POKE
B,A:B=B+1:GOTO 140
DF 145 IF CK<>9424 THEN 500
JT 150 B=4811:CK=0
JF 160 READ A:CK=CK+A:IF A<>-1 THEN POKE
B,A:B=B+1:GOTO 160
FE 165 IF CK<>3198 THEN 500
HK 170 B=2948:CK=0
WT 175 READ A:CK=CK+A:IF A<>-1 THEN POKE
B,A:B=B+1:GOTO 175
YE 180 IF CK<>2052 THEN 500
R 190 REM
EO 200 REM ALLOCATE DRIVES 1,2 AND 8
QP 210 REM
QE 220 POKE 1802,131:? "Allocating D1,2,8
:"
QT 230 REM
RT 240 REM MAKE DOS SKIP OVER MEM.SAV
MM 250 REM AND INTO DOS LOAD ROUTINES
QZ 260 REM
WX 270 POKE 5446,244:POKE 10,244:? "Alter
ing DOS command address"
RD 280 REM
ML 290 REM BUT MAKE IT INIT SCREEN FIRST
IZ 300 REM #1:F4: JSR #1976... CALL
JK 310 REM SCREEN INITIALIZATION.
SL 320 REM DOS LOAD STARTS AT #1F7.
WQ 330 REM
WU 340 POKE 6132,32:POKE 6133,118:POKE 61
34,25
QY 350 REM
NW 360 REM CHANGE JSR #1481 AT #0784
XF 370 REM TO JSR #03FD FOR NEW RAMDISK
RE 380 REM
GU 390 POKE 1924,32:POKE 1925,253:POKE 19
26,3:? "Altering RAMDISK I/O address"
TJ 400 ? "Writing DOS 2.5" : OPEN #1,8,0,"D
1:DOS.SYS":CLOSE #1
NH 410 ? : ? "DOS 2.5 Altered. RAMDISK.
COM written, DOS rewritten."
NX 420 END
QD 500 ? : ? "Error in DATA Statements,
Recheck." : END
TT 1000 REM RAMDISK.COM FILE...
ZG 1010 DATA 255,255,253,3,127,4
ZC 1020 DATA 8,173,11,3,240,26
E5 1030 DATA 201,2,176,18,173,10
WC 1040 DATA 3,201,104,144,11,201
RE 1050 DATA 113,176,7,105,67,141
UP 1060 DATA 10,3,208,4,40,160
DK 1070 DATA 139,96,173,10,3,201
TW 1080 DATA 180,176,245,201,4,144
TK 1090 DATA 82,233,4,74,170,169
OC 1100 DATA 0,106,168,138,24,105
RE 1110 DATA 160,201,208,146,3,24
BN 1120 DATA 105,8,133,51,132,50
EQ 1130 DATA 160,127,173,4,3,133
LH 1140 DATA 67,173,5,3,133,68
JX 1150 DATA 169,0,141,4,212,173
TG 1160 DATA 1,211,73,3,141,1
UP 1170 DATA 211,40,144,9,177,67
AK 1180 DATA 145,50,136,16,249,48
U5 1190 DATA 7,177,50,145,67,136
IL 1200 DATA 16,249,173,1,211,73
KE 1210 DATA 3,141,1,211,169,255
WG 1220 DATA 141,14,212,48,1,40
LG 1230 DATA 160,1,96,19,201,255
GX 1240 DATA 255,8,80,67,81,32
IR 1250 DATA 177,80,173,18,7,9
GS 1260 DATA 128,14,25,10,62,3,157
QT 1270 DATA 80,162,32,169,3,157
YA 1280 DATA 66,3,169,53,157,68
RK 1290 DATA 3,169,81,157,69,3
TQ 1300 DATA 169,4,157,74,3,169
KT 1310 DATA 0,157,75,3,32,86
IF 1320 DATA 228,16,4,32,158,80
YQ 1330 DATA 96,162,48,169,3,157
WB 1340 DATA 66,3,169,42,157,68
RA 1350 DATA 3,169,81,157,69,3
WA 1360 DATA 169,8,157,74,3,169
LL 1370 DATA 0,157,75,3,32,86
BS 1380 DATA 228,162,32,169,7,157
BT 1390 DATA 66,3,169,0,157,68
UQ 1400 DATA 3,169,96,157,69,3
TH 1410 DATA 169,6,157,72,3,169
JF 1420 DATA 20,157,73,3,32,86
IK 1430 DATA 228,16,4,32,156,80
MO 1440 DATA 96,162,48,169,11,157
RD 1450 DATA 66,3,169,0,157,68
VI 1460 DATA 3,169,96,157,69,3
TZ 1470 DATA 169,6,157,72,3,169
JX 1480 DATA 20,157,73,3,32,86
SM 1490 DATA 228,169,56,141,63,21
JU 1500 DATA 169,125,32,176,242,162
LP 1510 DATA 32,169,12,157,66,3
GV 1520 DATA 32,86,228,162,48,169
LK 1530 DATA 12,157,66,3,32,86
AG 1540 DATA 228,96,174,7,228,224
MG 1550 DATA 242,208,39,174,220,2
XU 1560 DATA 224,145,240,32,162,39
LW 1570 DATA 134,205,162,0,134,204
QJ 1580 DATA 189,3,81,32,176,242
WZ 1590 DATA 166,204,232,134,204,198
MD 1600 DATA 205,208,241,173,220,2
B5 1610 DATA 201,17,208,9,240,3
PU 1620 DATA 104,104,96,169,253,208
CS 1630 DATA 2,169,254,168,157
TZ 1640 DATA 66,3,169,64,157,68
RG 1650 DATA 3,169,81,157,69,3
PB 1660 DATA 169,0,157,74,3,157
UN 1670 DATA 75,3,32,86,228,96
QA 1680 DATA 125,29,29,29,29,32
ME 1690 DATA 32,73,145,10,157,186,185
SJ 1700 DATA 97,108,105,122,105,110
NJ 1710 DATA 103,32,68,56,58,32
NE 1720 DATA 102,111,114,32,56,48
AC 1730 DATA 48,88,76,47,54,53
RK 1740 DATA 88,69,32,68,56,58
IL 1750 DATA 68,85,80,46,8,89
FV 1760 DATA 83,155,14,49,56,68
ZK 1770 DATA 85,80,46,83,89,83
DJ 1780 DATA 155,68,56,58,155,224
UV 1790 DATA 2,225,2,0,80
EQ 1800 DATA -1
HT 1810 REM DOS PATCH AT #1481
WQ 1820 DATA 165,33,201,8,240,1
MB 1830 DATA 96,104,104,160,127,169
NP 1840 DATA 0,145,69,136,16,251
UQ 1850 DATA 200,162,2,145,69,160
SJ 1860 DATA 3,138,106,144,6,169
WI 1870 DATA 103,162,18,208,4,169
EZ 1880 DATA 167,162,10,145,69,136
FM 1890 DATA 136,145,69,138,168,169
DG 1900 DATA 15,145,69,169,255,200
IE 1910 DATA 145,69,192,31,144,249
IN 1920 DATA 169,224,14,6,9,160,104
JK 1930 DATA 169,1,56,32,108,7

```

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HU 1940 DATA 169,1,141,4,3,169
 JZ 1950 DATA 20,141,5,3,76,203
 BR 1960 DATA 18,0,0,14,10,7
 FU 1980 DATA -1
 JM 1990 REM DOS PATCH AT \$12CB
 UX 2000 DATA 169,7,141,15,19,169
 RN 2010 DATA 0,168,153,1,20,200
 ZD 2020 DATA 1,250,173,15,19,24
 MK 2030 DATA 105,105,168,169,1,56

HN 2040 DATA 32,108,7,206,15,19
 FM 2050 DATA 16,238,96,96,125,78
 EX 2060 DATA -1
 XN 2070 REM DOS PATCH AT \$08B4
 BE 2080 DATA 170,165,70,141,5,3
 CU 2090 DATA 165,69,141,4,3,32
 DM 2100 DATA 129,20,234,234,234,234
 EK 2110 DATA -1

HEAD 'EM OFF

Head For The Skies And Box In Your Opponent

Article on page 87

LISTING 1

Don't type the
 TYPO II Codes

```
EH 2 REM Head 'Em Off
ZF 3 REM by Lucius Kwok
AD 4 REM c©1991, ANTIC PUBLISHING, INC.
DA 5 W=1:GOTO 400
FD 10 GRAPHICS 5:POKE 710,12:POKE 709,68:
DE POKE 708,146:IF W? THEN W=1
AJ 20 ? #6:"M":COLOR 3:PLOT 0,0:DRAWTO 79
0,0:DRAWTO 79,40:DRAWTO 0,40:DRAWTO 0,0
00 30 RESTORE W*10+S90:READ L:FOR I=1 TO
L:L:READ X,Y,D
RN 40 PLOT X,Y:DRAWTO X+10*D,Y+9*(D-1)
MY 50 FOR S=14 TO 0 STEP -1:SOUND 0,20,8,
5:NEXT S:NEXT I
IN 60 OX1=11:OY1=39:OX2=69:OY2=1
LD 70 X1=11:Y1=39:X2=69:Y2=1:X3=0:X4=0:Y3
FR 80 Y4=1:COLL=0:POKE 752,1
JT 85 50=STICK(0):IF 50<15 THEN Y3=(50-13
)- (50-14):X3=(50-7)-(50-11)
SB 85 51=STICK(1):IF 51<15 THEN Y4=(51-13
)- (51-14):X4=(51-7)-(51-11)
TI 90 ? , "Head 'em off!": ? : ? "Blue"
, "Round", "Red":SOUND 0,13,10,4:50UND
1,13,8,4:POKE 77,0
RH 100 LOCATE X1+X3,Y1+Y3,Z1:LOCATE X2+X4
,Y2+Y4,Z2:IF Z1>0 OR Z2>0 OR X1=X2 AND
Y1=Y2 THEN COLL=1
DB 105 IF PEEK(53279)=6 THEN 400
WQ 110 IF COLL=1 THEN 300
MD 115 X1=X1+X3:Y1=Y1+Y3
PG 120 X2=X2+X4:Y2=Y2+Y4
HY 125 COLOR 1:PLOT OX1,OY1:COLOR 2:PLOT
OX2,OY2
CS 130 COLOR 3:PLOT X1,Y1:PLOT X2,Y2:OX1=
X1:OX2=X2:OY1=Y1:OY2=Y2
MT 140 ? "Red Wins" (Who wins round)?"
TH 150 50=STICK(0):IF (50-13)+(50-14)+(50
-7)+(50-11) THEN Y3=(50-13)-(50-14):X3
=(50-7)-(50-11)
QL 160 51=STICK(1):IF (51-13)+(51-14)+(51
-7)+(51-11) THEN Y4=(51-13)-(51-14):X4
=(51-7)-(51-11)
LU 170 GOTO 100
CF 290 REM
CG 299 REM
DG 300 SOUND 1,0,0,8:POKE 710,0:FOR I=15
TO 0 STEP -1:0.2:POKE 712,I:SOUND 0,60,8
,I:NEXT I
UJ 310 POKE 710,12:IF ALL THEN W=W+1
YJ 320 IF Z1 AND Z2 THEN 370
YB 330 IF Z1 THEN SC1=SC1+1:FOR S=1 TO 10
:FOR I=-15 TO 15:POKE 708,I+144:NEXT I
:NEXT S:POKE 708,146
340 IF Z2 THEN SC2=SC2+1:FOR S=1 TO 10
:FOR I=-15 TO 15:POKE 709,I+64:NEXT I:
NEXT S:POKE 709,68
IV 350 IF SC2>6 OR SC1>6 OR W? THEN 700
GY 360 COLL=0:RD=RD+1:GOTO 20
DY 370 ? "Red Wins" (Who wins round)?"
UK 380 GOSUB 500:I=1+1:IF AND(0)>0.5 THEN
? , "HEADS- Reds":SC1=SC1+1:GOTO 390
MX 385 ? , "TAILS- Blues":SC2=SC2+1
```

```
XX 390 FOR I=13 TO 0 STEP -0.05:SOUND 0,2
00,12:I:NEXT I:I=1+1:I=1+1:GOTO 350
ID 399 REM
TY 400 GRAPHICS 18:POKE 710,12:POKE 709,6
8:POKE 708,150:POKE 711,196:IF SC1>HI
THEN HI=SC1
BS 405 GOSUB 500:RD=1:IF SC2>HI THEN HI=5
C2
RK 410 POSITION 4,4:? #6:"
ZR 415 POSITION 4,5:? #6:"
CO 420 POSITION 0,0:? #6:" BLUE
ED:"POKE 77,0
VQ 425 POSITION 4,1:? #6:SC2:POSITION 15,
1:? #6:SC1
UL 430 POSITION 5,9:? #6:"arena "":IF
W? THEN ? #6:4:
IQ 440 POSITION 4,11:? #6:"
WL 450 ALL=0:IF W=8 THEN POSITION 14,9:?
#6:"ALL":ALL=1
DP 470 IF PEEK(53279)=5 THEN W=W+(W<0)+1:
GOSUB 500
ZD 480 IF PEEK(53279)=6 THEN 10
M2 490 SC1=0:SC2=0:GOTO 430
IR 500 SOUND 1,0,0,8:FOR I=15 TO 0 STEP -
1:SOUND 0,50,10,I:NEXT I:RETURN
DF 590 REM
LS 600 DATA 2,40,15,0,35,20,1
XJ 610 DATA 10,15,5,1,15,5,0,15,35,1,15,2
5,0,55,5,1,65,5,0,55,35,1,65,25,0,35,1
9,1,45,15,0
VE 620 DATA 14,15,10,1,25,10,1,35,10,1,45
,10,15,10,0,15,20,0,15,30,0,35,20,0,
35,30,1,45,30,1,55,30,1,65,20,0
GS 625 DATA 65,10,0,65,0,0
E5 630 FOR I=1,13,30,0,13,22,0,67,1,0,67,
8,0,13,22,1,57,18,1,1,18,1,4,18,1,13,1
8,1,57,22,1,68,22,1
FC 640 DATA 10,40,0,30,10,1,40,10,1,30,
30,1,40,30,1,40,30,0,10,20,1,10,20,0,7
0,10,0,60,20,1
ZR 650 DATA 10,40,0,35,9,1,45,8,0,35,8,
0,35,22,0,35,30,1,45,22,0,40,30,0,40,1
3,0,40,17,0
VM 660 DATA 4,40,0,40,10,0,40,20,0,40,3
0,0
NY 700 ? , "Game Over"
PR 710 IF SC1>6 THEN 810
MP 720 ? " The Blues have won !!"
RQ 730 RESTORE 790:FOR X=1 TO 7
SN 740 READ N1
NI 750 FOR I=14 TO 0 STEP -1,4
XB 760 SOUND 0,ABS(N1),10,1*(N1>0)
MA 780 NEXT I:NEXT X:I=1+1:GOTO 400
LL 790 DATA 121,96,121,81,121,0,121
M2 810 ? " The Reds take over !!"
RO 820 RESTORE 880:FOR X=1 TO 7
SM 830 READ N1
NK 840 FOR I=14 TO 0 STEP -1,4
XP 850 SOUND 0,ABS(N1),10,1*(N1>0)
YU 860 NEXT I:NEXT X:I=1+1
NF 870 GOTO 400
SH 880 DATA 243,0,243,0,243,204,243
```

BASIC Color Selector

By Bob Spiewak

Choosing the right colors for a screen for a BASIC program can be a real hassle. The usual approach is to RUN the program, and view the screen. Then, if the colors still need tweaking, you have to stop the program, assign new colors using SETCOLOR or POKE commands, and RUN the program again. And again, and again....

By adding the following routine to your program, you can adjust the colors while viewing your screen. Type it in and LIST a copy to disk. Then type NEW and LOAD your program. Make sure that you have no lines in your program numbered 25000 or above. Then ENTER this routine from disk, and it will be merged with your program.

Now you need to add a temporary statement to your program. Right after the program prints your screen, insert the statement GOSUB 25000. (You might want to put this on a separate line to make it easier to remove later.) Now when you RUN your program, it will draw the screen as usual, then go to the color selector routine.

Use the [ARROW] keys (without [CONTROL]) to adjust the hue and luminance while you watch the changes onscreen. To work with another color register, press the spacebar.

When you have the color combination you want, press [ESCAPE]. All the POKES you need will appear on the screen, with room for a line number at left. Add the line number you want and press [RETURN], and this new line will be added to your program. (Make sure you pick an appropriate point in the program to set the colors. Don't use the number of an existing line unless you want to replace it with this new information.)

Once you're done, be sure to remove the GOSUB 25000 statement, and the Color Selector routine, from your program.

```
PC 25000 REM POKECOLOR by Bob Spiewak
  25001 REM (c)1991, ANTIC PUBLISHING, I
  NC.
  ZK 25002 SBR=708;SBC=0;DIM SBY<5>
  ZY 25004 SBG=PEEK<87>;IF SBG>16 THEN SBG=
  SBG-16
  IB 25006 IF SBG=0 THEN SBFLAG=1;GOTO 2501
  0
  UV 25008 GRAPHICS 5 SBG+32
  UY 25010 POKE 752,1
  AY 25012 SBY=PEEK<764>;POKE 764,255
  AU 25014 IF SBY<33 THEN SBR=SBR+1;IF SBR>
  712 THEN SBR=708
  CU 25016 SBC=PEEK<5BR>
  JT 25018 IF SBY=14 THEN SBC=SBC+16
  LE 25020 IF SBY=15 THEN SBC=SBC-16
  OG 25022 IF SBY=7 THEN SBC=SBC-2
  LY 25024 IF SBY=6 THEN SBC=SBC+2
  PL 25026 IF SBC=-256 THEN SBC=SBC-256
  DL 25028 IF SBC=0 THEN SBC=256+5BC
  NJ 25030 POKE SBR,SBC
  YL 25032 IF SBY=28 THEN GOTO 25046
```

```
UN 25034 IF SBFLAG=1 THEN POSITION 2,22:G
  OTD 25038
  PH 25036 POKE 656,3;POKE 657,0
  NM 25038 SBRG=5BR-708
  UM 25040 PRINT "COLOR REGISTER ";SBREG;"
  POKE ";SBR;" VALUE ";SBC;" ";
  EQ 25042 FOR SBCount=1 TO 25:NEXT SBCount

BU 25044 GOTO 25012
KJ 25046 FOR SBL0P=708 TO 712
EM 25048 SBY<SBL0OP-708>=PEEK<SBL0OP>
XP 25050 NEXT SBL0OP
MR 25052 GRAPHICS 5
PN 25054 ? :? " Choose a line number t
  hat will"
KI 25056 ? " become part of your progr
  am and"
IR 25058 ? " will POKE the colors you
  selected"
DN 25060 ? " for your screen, AND TYPE
  IT IN"
PF 25062 ? " HERE, then press RETURN."

PD 25064 ? " ."
PN 25066 ? " ."
PX 25068 ? " ."
UU 25070 ? " ."
DR 25072 ? " ."
EB 25074 ? " ."
EL 25076 ? " ."
CL 25078 POSITION 8,13
JU 25080 FOR SBL0OP=708 TO 712
RQ 25082 ? "POKE ";SBL0OP;" ";SBY<SBL0OP-
  708>;
HY 25084 IF SBL0OP<>712 THEN ? " ";
ZF 25086 NEXT SBL0OP
AL 25088 END
```

Print POKES

By Jeffrey A. Summers, MD

When using a BASIC program, you may find yourself wanting a printout of your program's output. There's no problem if the program is designed to print your results, or you can at least redirect your output to "P:" instead of saving to a disk. However, if the program simply uses PRINT statements, you may be forced to rewrite large portions of the program to get that printout.

One shortcut you can take is to enter the statement POKE 838,202;POKE 839,254 before running the program. Make sure you type both POKES on one line (with no line number) as shown, and then press [RETURN].

The READY prompt should now appear on your printer, not on the screen. All output that would normally go through channel 0 (the usual screen editor channel) will now be directed to the printer. What you type will still appear on the screen, but the computer responds on the printer. Watching the printout instead of the screen, you can operate most programs and get the printouts you need. With programs that use special graphics, however, you're likely to get a lot of garbage from your printer, and maybe some unexpected form feeds and noisy noises.

To return to the regular onscreen mode, press [RESET] or enter

POKE 838,175;POKE 839,242

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