

The Magazine for Users of Atari ST, STE, Falcon and TT Computers

Issue No. 54 June/July 1995

# Imagecopy 4

Jeremy Hughes's popular graphics utility Imagecopy has been upgraded to version 4. New features include popup menus with either left or right mouse button (the right button is used for a window that is not the top window of the screen), extra predefined sizes in the Page Size dialog, a replacement of the Quick Floyd random dither option by a 'Scatter' dither option, a more logical arrangement of the image menu with 'edit' and 'view' submenus, and much faster LZW decoding.

Undoubtedly the most important new feature is the Page Layout option. Previous versions of Imagecopy have allowed the user to print a set of pictures as a 'catalogue' or in a 'thumbnail' format, and the size of each picture printed in a single batch operation had to be the same. Moreover, the only kind of 'layout' that could be specified was in terms of general alignment left, centre, right, top or bottom. Now, with the new page layout option, you can re-size and reposition pictures as you need, using either the mouse or a special 'size and position' dialog.

The Page Layout feature offers important advantages over the standard print option of earlier releases:

\* you can see on screen, at different zoom levels, an approximation of what the printed

page will look like (though at the moment you only see the frames and titles, not the actual pictures)

% free movement and re-sizing of images (within the bounds set by your defined page margins, with or without original aspect ratio % multiple images of different sizes and formats can be juxtaposed and even superimposed (transparently)

\* 'text images' (created by Textstyle) can be included as headers, captions, etc.
\* page layouts can be saved and re-used

The page layout option now gives you the chance to enhance the graphics printouts included in your DTP layout - lay out the text as usual with your DTP package, work out where you want the pictures to go using empty frames, make a note of the size and position of these on each page, and then use Imagecopy's page layout to print the actual pictures over the original DTP text pages. This will give far better results than you can achieve with most DTP programs, especially with colour pictures.

Imagecopy 4 will be available from FaST Club late June '95 for £34.95 (or £39.95 for the CD version).

# X-Change

X-Change is a vector graphics conversion utility aimed at users who wish to import formats not supported by their own applications (Calamus, Avant Vector, Arabesque Pro, DA's Vector, Didot, PageStream, etc.). It also gives you the opportunity to export files created on an ST to be used on

other computer platforms (Macs and PCs) by converting your files to Adobe Illustrator EPS format (programs such as Corel Draw, Adobe Illustrator, PageMaker, etc., will accept this format).

X-Change is available from the FaST Club for £14.95.



# **Poker Faced**

Hollywood Hustler is a new 'live-action' poker game for all Atari machines (minimum RAM 1MB) including the Falcon. It is being billed as the first 'fully digitised' game on the ST/Amiga, the 'closest thing to interactive video seen on the ST'. It contains over a megabyte of interactive sampled speech and FX, original Hollywood locations, a colourful cast of actors with film and TV credits including The Rocky Horror Picture Show, The Beiderbeck Affair, Confessions of a Window Cleaner, etc., a specially developed artificial intelligence for authentic gameplay, and an adventure-style 'cinematic' introduction with three individual endings. The UK retail price is £24.95. Contact: Robin Keen, Desert Star Software, 120 Burden Road, Beverley, North Humberside HU17 9LH. Telephone: 01482 871210. Distribution in the States is being handled by Toad Computers, Inc.

# Spotlight

Organized by Gasteiner, the Spotlight '95 show looks set to be the showcase for a host of new software and hardware of interest to Atari users. On show will be two new Atari compatible computers: the C-Lab Falcon Mark 2 and GE-Soft's Eagle030, plus a collection of new software packages. Already promised for the show are Twist 3 and Papyrus 4 from HiSoft, plus Neon, a 3D rendering and animation package from Compo Software. HiSoft will be unveiling their new range of Squirrel hard disks and Gasteiner will have their hard disks and peripherals on show. Also due to attend Spotlight '95 are 16/32 and the editorial team from ST Format. Tickets for Spotlight '95 will cost £5 and the show takes place at the Hammersmith Novotel on June 10th and 11th. More details from Gasteiner on 0181-345-6000.

# **Second Thoughts**

Titan designs have announced that version 2.2 of their development tool, Thought!, is now available. New features include: a drag and drop clipboard, macro based text language, template editor, and output can now be sent to printer, screen, or a compiled disk file. The Falcon version of Thought now supports colour displays. Thought is available from Titan Designs (0121-693-6669) for £79.95.

Printed in the U.K.

Post Office: Non-deliverable copies should be returned to FaST Club, 7 Musters Road, West Bridgford, Nottingham NG2 7PP

# Mastering Papyrus

The Hypertext Personal Guide for Papyrus that offers quick referencing to all commands with concise screen summaries and tutorials, including tips and tricks.

Mastering Papyrus is ideal for both novice and advanced users alike. Novice users will find the simple stepby-step approach an easy way to lessen the learning curve, while advanced users will benefit from the referencing feature.

Each command is explained in detail with all of the necessary information given on how to use it correctly. Tips and tricks are offered throughout the guide to give you ideas on how to exploit each command to its fullest.

Mastering Papyrus comes with a 52 page printed manual (produced using Papyrus) packed with hints and tips on getting the best from Papyrus. On disk there are over 40 sample Papyrus documents for the tutorials given in the manual.



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you can use your computer in the way that YOU want to use it rather than in the way that it forces you to use it. Suppose that you want to use your ST as a fax machine. If a fax call comes in, you are still able to carry on using your word-processor and /or database and/or spreadsheet program. The fax is simply received in the background

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For the programmer, this provides endless possibilities. You can be running your program under development at the same time as editing the source code at the same time as re-compiling a later version. SMS2 is a wonderful environment to work in.

SMS2 comes on a plug-in cartridge for the ROM port of all the ST range and supports the high-res mono mode. There is no complex setting up or installation. You just plug it in, switch on and 9 seconds later you have an SMS2 system

which is ready to network without any expensive hardware add-on's. The system comes in PEROM form on the cartridge so if you want to change the startup configuration at all then it is simple to do so. This also means that any enhancements to SMS2 can be provided on disc without the need to return the SMS2 cartridge. It must be pointed out that SMS2 does not run GEM or TOS programs. It is a distinct and separate operating system which provides a powerful and yet flexible form of computing. There are already a number of commercial programs and a good range of PD software which is available now and is SMS2 compatible.

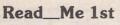
0 Mastering Papyrus Mord Processor Desk File Edit Test Style Special Ovrevel Zom Option Mastering Papyrus Word Processor Town Option Desk File Edit Text Style Special Object Zoom Option 0 \$ (R) Idd columns to master page -- Master Pages Additional Formfeed -- Print Midd columns to master page -- Master Pages Additional Formfeed -- Print Midd a decement to print queue list -- Print Midgust -- Paper Format Missign willipe andtre pages -- Master Pages Mfter printing -- Pager Format Mitgues -- Print Mill pages -- Master Attributes Msclin, RTF, 14P, STX, GDM, 106... -- Insert MSCI, RTF, 14P, STX, GDM, 106... -- Insert Global Description Action Line style... Fill pattern.. A B D E F M J J L H M D P R I J J X X Z Delete line Delete paragraph Delete word to left Delete word to right Orientation... Attributes... Exchange characters around cursor Exchange characters left of cursor Picture Size... Picture Window... Goto block start mark Goto block end mark Lowercase first letter of a Move to top of document Nove to bottom of document Put to back... Bring to front ALTERNATEJ-B ALTERNATEJ-K CALTERNATEJ-W Mark block start Mark block start Mark word forward Mark word backward Mark baracter backward Mark sentence forward Mark sentence forward Mark paragraph forward Mark paragraph backward 1 TERMATEJ-H IFTJ-LALTERMATEJ-H TERMATEJ-C IFTJ-CALTERMATEJ-C TERMATEJ-S IFTJ-LALTERMATEJ-B TERMATEJ-A IFTJ-CALTERMATEJ-A OK Here Hastering Papyrus Hord Processor Dest File Edit Text Style Special Object Zoom Options Features: □ Send online summary to printer for hardcopy reference. Runs alongside Papyrus. OK □ Resolution independent, supports ST, TT and under to position tabs, and thange manging, indext, inte spacing, justification, page number, and create and apply paragraph tags, the horizontal ruler must be displayed. Falcon resolutions, and third party video cards. Payment is paragraph based upod processor, and every reprint lick is treated superingly. This reast uput can an indicating elements to each paragraph independently. This also the upe of rultille rules, the rules (the end shown also the uper of rultille rules), the rules (the rule screens applied to each paragraph. If you have several screens in different attributes, the rules rules reflect para form avoit the para this Requires Hard Drive or HD floppy, and uses just 99K of RAM. wn at A collection of over forty example Papyrus documents and tutorial files. arition tab In the center of the ruler, four different tabs are shown -- left, center, right and decinal.
 Position the nouse pointer over the tab. Continued on next 52 page printed manual.





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## Contributions

The articles in ST Applications are written by users for users. Everyone reading this magazine will have something to contribute; even if you do not feel able to do a full-length review or article there is the Forum section for short hints, tips and questions. If you are interested in writing for ST Applications - regularly or irregularly - please write for a copy of our terms and conditions. We always do our best to reward quality work with appropriate remuneration.

### Advertising

There is a limited amount of space for commercial advertising in each issue of ST Applications. Contact Nicky Wilson on 0115-945 5250 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 27 for details.

#### **Subscription Rates**

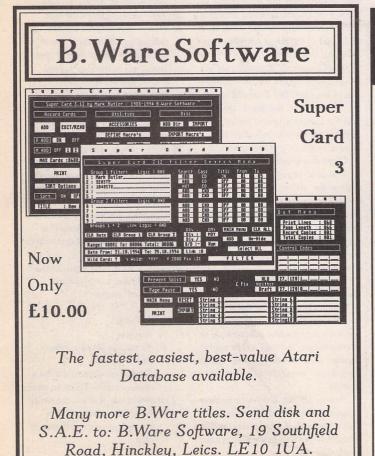
	UK	Europe	World
12 issues:	£15.00	£18.00	£23.00
6 issues:	£8.00	£10.00	N/A
3 issues:	£5.00	N/A	N/A
12 issues + 6 D/Mags:	£27.00	£31.00	£37.00

Subscription and Order form will be found on page 30.

### **Disk Mags**

These are bi-monthly compilations of the best PD software to come to our attention in the preceding couple of months - not magazines on disk. The next Disk Mag, DMG.47, will be dispatched along with this issue of ST Applications.

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ST Applications Issue 55

**Stop Press** 

Due to holiday commitments this is the June/July issue. Issue 55 - the August issue - will be printed on the 14th July and mailed to subscribers on Monday 17th July.

> **FaST Club** 7 Musters Road

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Although there are several new features in the latest version of Jeremy Hughes's graphics utility Imagecopy, there is no doubt that the most important of these is the Page Layout option, and it is on this that David Smith concentrates the bulk of this review.

The most recent versions of Imagecopy have included a catalogue printing feature allowing several pictures to be printed in one operation. The size of each picture had to be the same, and they could only be printed in columns with no layout options apart from general alignment — left, centre or right. The new Page Layout option in Imagecopy 4's File menu now allows you to position and resize the images as you require either by using the mouse or by typing in the x-y coordinates in a special dialog. The page may then be printed or saved for future use.

The Layout option therefore provides an alternative way of printing images to the standard 'print' option and has the following advantages:

- 1) a visual indication of how a page will appear when it's printed
- the ability to position and size images with the mouse
- the ability to juxtapose multiple images of different sizes
- the ability to save and re-use page layouts

The standard print option is still available for fast printouts or batch printing (cataloguing images). The standard print option also has the facility to add file names and headings, not currently possible with page layout but likely to be added to future versions.

Page Layout works in a similar way to standard publishing programs. You can mix text and images by using Textstyle to save text in image format. Conversely, you can use your usual DTP program to do the initial layout of text but add the images using Imagecopy this will give better results (especially with colour images) than most DTP programs. This can be done as follows: 1) Lay out a document in the usual way

with your DTP program, but use empty frames where you want your images to appear. You can always import the original picture files into these frames to get the aspect ratio correct first, and then, when the layout is complete, delete the files from the document (but not the frames).

- Write down the position and size of the empty image frames.
- Print the page from your DTP program.
- Create a page in Imagecopy which contains the images at their correct size and positions.
- 5) Feed the DTP-printed page back into your printer and print Imagecopy's Page Layout (with the relevant images) over it.

There is a slight complication to the last of these steps. If your printer is a 'line printer' (dot-matrix or inkjet printer) you will need to refeed the page to print horizontally adjacent images. The page layout in Imagecopy does not create a whole page in memory; rather, each picture is loaded and printed separately (for memory reasons) just as with the catalogue feature of the standard print option.

Another point worth bearing in mind for the initial DTP layout is the ratio of width to height of the pictures you are using. If you don't want to import the images into your DTP page, you can still ascertain the correct aspect ratio by viewing them with Imagecopy first and then pressing Escape to get the picture information. The number of horizontal and vertical pixels will give you the aspect ratio. Use this information when laying out the picture frames in your DTP package.

#### **Creating a Page**

The Layout option in the File menu creates a new page. A page window appears on screen and clicking over this with either the left or right mouse button (or pressing Escape) displays a popup menu with options for editing the page. Images are added by selecting 'Import', and these can then be moved and re-sized either by using the mouse in the traditional click and drag routine or by choosing 'Size etc.' from the popup menu that appears when you click over the image frame. This gives

you a dialog in which you can stipulate the exact x and y coordinates of the placing of the image and change the size either by entering new width and height measurements or by changing the Scale entry (a percentage of the original). When an image is re-sized by mouse drag or by keyboard entries in the Size dialog, the aspect ratio is preserved automatically. If you want to distort an image you can deselect 'Preserve aspect ratio' in this dialog and then change the shape to whatever you need. This distortion may then be preserved for future changes of size by selecting 'Preserve aspect ratio' again. If, however, this doesn't work out the way you expected and you decide to go back to the original aspect ratio, this is easily done by reverting the Scale entry to 100% x 100% and selecting 'Preserve aspect ration'. Any changes made now to the size of the image will again keep its original aspect ratio.

When images are imported they are always placed against the top left margins of the page, and if several images are imported at the same time by selecting a directory or list file (or using an enhanced file selector), they are initially stacked on top of each other.

Clicking over an image frame brings up a second popup menu containing options for sizing and adjusting the image. Images are at present only displayed as frames with the file names inside them, but future versions of Imagecopy (from 4.1 onwards) will have the option to display the actual pictures instead.

Images cannot be placed beyond the margins defined in the Page size dialog — if you try to move or re-size a picture into the margin area, Imagecopy will prevent this happening. It is possible to overlap images, but they will be superimposed on printout — i.e. they will be treated as 'transparent' rather than 'opaque'.

'Screen Display' in the Imagecopy Options menu now includes an entry for the visible width of your screen, used by Imagecopy to calculate the exact screen resolution for displaying pages at 'actual' size. This is not the same as the manufacturer screen size. A 14" Atari monitor typically has a visible screen width of eight inches, excluding the black borders.

#### The Page Menu

This is a popup menu which appears when you click over a page window or press Escape when a page window is the top window on screen. It provides options which are specific to that page, in contrast to the global options provided by Imagecopy's own drop-down menus. The options comprise:

- Page size if you alter the size and orientation of a page that already contains images, Imagecopy will adjust the size and position of those images to make them fit the new page size.
- Import loads an image from disk, initially placed top left and unscaled.
- 3) Tile tiles images on the page.
- 4) Print uses the print settings defined by the standard 'Printer' options, but 'page size' and 'print layout' are overridden by Page Layout options. As already mentioned, each image is printed separately, and horizontally adjacent images will necessitate a re-feed of the page.
- 5) Save saves a page file for future use, but without the actual image data, which would be wasteful of disk space. Imagecopy therefore expects to find images in the same directory as originally loaded from; if this is not the case, you will be allowed to relocate the images in the displayed file selector.
- View options for adjusting the zoom level at which a page is displayed on screen:
  - i) Full page
  - ii) Half size
  - iii) Actual size (same as printed page)
  - iv) Print size each printer dot is represented by a pixel on screen
  - v) Select size allows the choice of a custom display size in percentage terms of the actual size

#### The Frame Menu

The Frame popup menu appears when you click on an image frame in the page

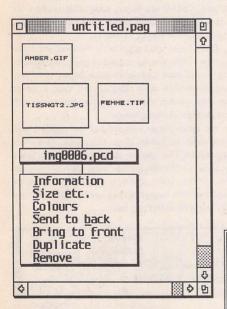


layout window, providing options that are specific to that frame:

- Information uses the same dialog
   as the 'image information' dialog in
   the image popup menu.
- Size and position allows you to position and size an image to an accuracy of 1/10th of a millimetre or 1/00th of an inch. It contains two drop-down menus:
  - i) Size gives various preset sizes: unscaled (each dot in the image is a printer dot on printout), original (if the image file contains resolution information; if not, Imagecopy assumes a resolution of 90dpi), and a choice of actual measurements.
  - ii) Align useful for centring images, etc.
- Colours allows you to adjust the colour settings for a particular image, e.g. brightness.
- Send to back and Bring to front these change the level hierarchy of superimposed images.
- Duplicate creates a duplicate copy of the image (useful for label printing).
- 6) Remove does just that!

#### Conclusion

This is certainly an exciting new feature in what is already a very heady brew. It is definitely going to help the production of certain pages of this magazine henceforth, especially with 'colour' grabs that Timeworks is so pathetically useless at converting to greyscales..... Highly recommended.



△ The page layout window with the image popup menu over "img0006.pcd".

The Image Information dialog for img0006.pcd.

 $\triangleright$   $\triangleright$  The Size and Position dialog for an image entered in the page layout window.

# The following features are new in Imagecopy 4.0

- Page layout option: multiple images can be arranged on a page using the mouse or by typing coordinates, and pages can be printed and/or saved for future use. Individual images can have their own colour settings, and can be freely moved and resized (as in a publishing program). This option can also be used to do colour DTP work by overprinting output from a monochrome publishing program, or you can use text images from Textstyle to create greetings cards or posters.
- Interactive screen catalogue option: this displays thumbnail miniatures of images which can be clicked on to view, print, or convert the original images.
- Imagecopy can be used by other programs to print images.
- The ability to load images with incorrect file extensions, and an option to rename these files with their correct extensions.
- Faster LZW decoding: GIF and LZW TIFF images load three times as fast as previously.
  - Faster random dithering: the default (Floyd-Steinberg) option is nearly three times as fast as previously.
- Faster colour mapping.
- Improved timesharing with other programs. Imagecopy's print routines detect when the printer buffer is full and allow other programs to use this time. More time is given to other programs by 'task priority' option.
- Ability to print PRN files.
- New (read-only) image formats: MTV Raytracer (.RAW or .MTV), TMS Enhanced Simplex (.ESM).
- Option to save interlaced GIF images.
- Option to select transparent colours in GIF and IFF images.
- Images can be copied from programs which change screen resolution.
- 'Scatter' dithering option.
- Option to change image resolution (dpi).
- The pop-up image menu contains a 'print' option which can be used to print the image as it is displayed on screen.
- There is an 'Auto select' video option for video cards that are not directly supported.
- Choice of thumbnail sizes.
- Pop-up menus can be displayed using the left or right mouse button.
- Clicking the right mouse button on a window title bar causes it to be moved behind other windows on screen.
- Improved monochrome print density option.
- Text and filenames can be printed with 'IMG file' output.
- 'Fix TOS arrow bug' option for scrolling accessory windows.
- Reset printer option in 'print layout' dialog.
- 'Normal' orientation option.
- Improved 'close windows' option.

# **Release Details**

Imagecopy 4 will be available at the end of June 1995.

Cost:	£34.95
	£39.95 for Imagecopy 4CD
Upgrades	
(return disk 1, plus CD disk if applicable)	
From Imagecopy 3.5:	£6.95
From Imagecopy 3.5CD to 4CD	£6.95
From Imagecopy 3.0:	£7.95
From Imagecopy 2:	£17.95
From Imagecopy 1.5:	£22.95
From Imagecopy 1:	£24.95
Textstyle is supplied free with Imagecopy 4	; add £5 to receive a copy of Textstyle with an
Imagecopy 4 upgrade.	

Format	: Photo CD
Compression	: Photo CD
Resolution	: 553 dpi
Width	: 768 pixels
	: 512 pixels
	: 16777216
Palette	: none
Image size	: 1179648 bytes
	: 4591616 butes

Size and position	OK
Size Align	Cancel
X pos : 1.00 cm Y pos : 11.20 cm Hidth : 6.50 cm Height : 4.33 cm Scale : 100 % x 100 %	
X2 pos : 7.50 cm Y2 pos : 15.53 cm	
Preserve aspect ratio	



#### **Reviewed by Matthew Townsend**

Magic Storybook was recently on the cover of the ST glossy, ST Format. It is for this reason that I have reviewed this somewhat aged program. It was not, as some people seem to think, just an excuse for a play.

Magic Storybook was written for kids of all ages, including computer journalists such as myself. It is an educational game that fails to fit into any of the usual categories of educational software. The program is probably best described as an electronic picture book creator and viewer.

#### **A Brief History**

Magic Storybook was originally produced in 1991 by a couple named Jayne and Richard Dunn. Being parents, the authors clearly knew exactly what they were doing when they created this wonder that has been thrilling kids for all these years. Back in 1992 a very big Australian kid called Rolf Harris (yup, the one with the wobble board) invited the authors to appear with their daughter on his Children's ITV program, Rolf's Cartoon Club. "It's terrific! It's great! It's a joy for children," he said.

The game was originally released on the Soft Stuff label and sold on shop shelves around the country for a firm but fair £29.95. It has now moved from the shops to the shareware scene and has seen a drastic drop in price, with registration being only £10. So, what's the catch?

Well, I am still trying to find one. This piece of software has certainly stood the test of time, and passed with flying colours. It was 1992 that it first blessed the front cover of ST Format, so I was pleasantly surprised to see a version back there on this year's March issue.

#### What's it Like?

Even as early as the colourful title screen it is plain to see that the graphics are great. Following the title screen a list of five stories appears. Only three are included with the unregistered version. The mouse is used to select a story, and is used throughout the program to select icons and functions.

My mouse pointer was now free to explore a picture editor. For a short while I played about creating little pictures for the story. Then I played about with the sound editor before using the script editor to rewrite the story. You see, the best way to learn to use a program like this is to sit down and play for a while, using the manual whenever you get stuck. Once you have conquered the original confusion of there being so many functions it is not long before you become proficient at creating storybooks. The manual, available upon registration, also includes a tutorial to help you on your way.

I would advise any parents or teachers out there to play with the program for a while before letting your kids near it. This is for two reasons. Firstly, it is not easy to help them use the program if you are as confused by it as they are. Secondly, once they get playing you may never be able to get near your Atari again.

#### The Stories

Magic Storybook really is magic. Not only can parents and teachers use it to create stories for children, but the children can create story books for themselves. This program even puts animation within the reach of children. There are two modes, 5+ and 8+, so that the more complex functions are restricted to older children.

Each page of a story includes colour-coded text. Text for each page of the five supplied stories is already supplied. Each words is coloured to show that it is a verb, noun, adjective or whatever. Upper and lower case lettering, and punctuation are all supported.

When in 5+ mode the text is shown one sentence at a time. This is an example of the kind of initiative that makes this program great, making the text easier for young kids to manage than it is in the larger blocks. Using the Story Screen it is easy to rewrite the text, consequently inventing whole new stories.

A list of words is supplied for children to choose from, which is easier than typing in each letter in turn and less mundane for the kids. This should encourage kids to try a little bit of writing. If they make mistakes all they need to do is press the Oops icon to delete the last word or clear all the words and start again fresh. A simple word processor is also supplied, for children who want to use their own words that are not in the list.

#### Pictures

Opposite the story on each page is an animated picture. Pictures can be edited using the Scene Screen. A still



Three stories are included with the ST Format version. Upon registering you will receive another two to play around with.

background can be selected and all sorts of sprites are available to go in the foreground. This is more than just a simple drawing game, because the sprites actually move when played, meaning that this is true animation - for kids.

There are also more complex functions to enable the placing of different objects behind one another. However, the default setting of sprites higher up the page going behind those nearer the bottom is perfectly satisfactory in most circumstances and gives a 3D effect.

#### Sound

Although pictures and text can be supplied by more traditional printed books, sound cannot. This is where computer storybooks are in a league of their own providing a kind of multimedia device for children. Each page can have its own list of 2bit sound samples which can be edited using the sound screen. There are even functions for playing samples backwards or as a sweep (forward and backwards).

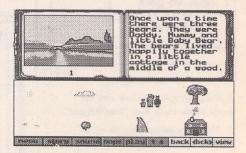
Unfortunately all the sound samples are of a somewhat mediocre quality. However, the authors have promised an 8bit version for registered users in the future if enough interest is expressed.

#### And Also...

Stories can be saved and loaded and there is even a whole host of printing functions. Stories can be printed as text (with or without the pictures) or as an outline for colouring in. Unfortunately printer support is pretty pathetic. Only 9 pin Epson compatible printers are supported, but you can always print files to disk and import them into graphics software.

Don't forget what is probably the most important function. Once you have created your masterpieces you can sit back and watch them before your very eyes. Remember, while children view them it should help their reading, whilst keeping them interested with sounds and animated graphics.

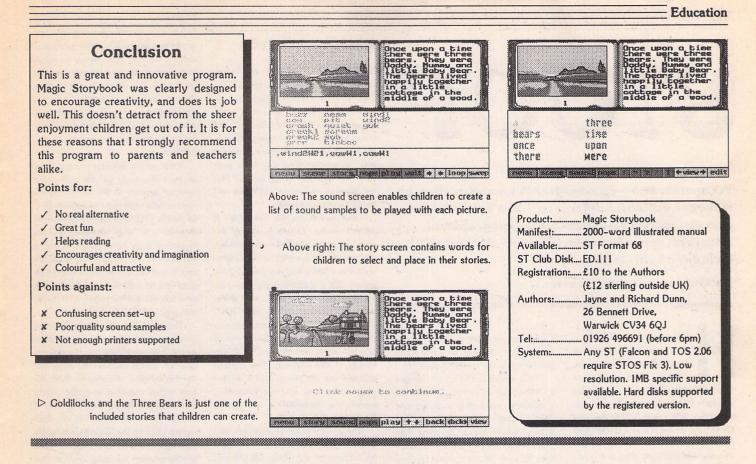
For those people who are just not satisfied with doing things by halves, Magic Storybook has a complete editor. This can be used to create new backgrounds or edit existing ones. Using the editor you can also edit the sprites, and their movements. There are even functions to grab sprites and backgrounds from files created using art packages.



Using the scene screen your children can place animated sprites on to one of a selection of backgrounds.



Even as early as the title screen you can witness Magic Storybook's great graphics.



#### Cal Assistant 3D Calc Plas - half price The latest version of CalAssistant Online Guide For Calamus Page Text View Extras Menu & Icon Functions 3D Calc is a true 3-dimensional spreadsheet with an integrated the Spar Systems Desk File N online help text editor and programming language, graphics and extended Reformat Docu (VIEN MENU) accessory for statistical functions. Yes Full Page Calamus has the Normal Selectable Size Double Pages Set Size 3 Dimensional - 13 Pages x 2048 rows x 256 columns. 'new look' electronic book interface that Full Screen LEXTRAS MENUJ Integrated text module with data export from the spreadsheet ha is now used in all KRKS HERUJ Help Messages Load Fonts Delete Auxiliary Lines Statistics Copy Type Selectable Set System Path Hiscellaneous Settings allowing formatted data output, mail-merge, label printing etc. Spar products. 1 Price: £19.95: 1 Integrated 3D-Calc programming language. upgrade from earlier versions: £2.50 ° OK Bar and line diagrams, pie chart, multiple bar and line graphs, (return master disk). stacked bar graphs, function graph etc. Enhanced statistical analysis including averages and distribu-Mastering AtariWorks tion parameters, scatter diagram with best fitting curve, regression and correlation. T-tests, Wilcoxon tests etc. Extended database functions. Reads ASCII and Lotus 1-2-3 files. The latest version of the Spar tariWorks Spreadsheet Minister -Systems online help accessory for AtariWorks now includes a Price: £12.45 help accessory for the 00 Version: 3.20 ..... The '55' folder on the master diskette has several AtariWorks Spreadsheet Requires1MB RAM 1 Module. Price: £29.95; upgrade on the LEFT or AIGHT arrow how to so to the Falcon Compatible 國會 (Spacebar) to show the cursor. The entry b window will show the cell data as you tupe functions! from earlier versions: £2.95 đ. Al.... Shows the cell location selected of them as a check mark (3). Click in ention to enter the data in cell, or press the factural bey. cell is hereiter 'K'. Click en incell beyen as chereiter 'K'. (return master disk). **FaST Club** PR NRY JUN JUL RUG SEP OKT NOU DEC **Musters Road** FaST Club West Bridgford Nottingham NG2 7PP 13 TOYAL 7 Musters Road 28460 6469 18991 West Bridgford Nottingham NG2 7PP



Yet another boot-up manager? Yes, another boot-up manager, but with a difference — this one is Falcon specific, features a knock-out colour graphical inter face, many features, is mouse-driven and includes a built-in file selector!

Val Gutzu gives a user's view.

ands up everyone with a hard drive. Anyone who is serious about using computers, for whatever purpose, has to admit that a hard drive is an essential purchase (if you haven't got one, just look at the falling prices). With this purchase your production rate is improved by leaps and bounds. However, the first essential for that hard drive is a bootup manager with which you can optimise the usage of all the ancilliaries you use. These 'managers' are the first thing that you use on turning on your computer and their efficiency/proficiency will dictate the productivity of your forthcoming working session. Is your boot-up manager easy to use, well thought out and visually pleasing? Does it make the most of the computer's attributes? If not read on.

Remembering back to when I bought my first Atari computer, some two years ago, I have to admit to being disappointed with the programs supplied and with the apparent lack of facilities.

Wow! Is this it? What a way to blow £300. Then I discovered Accessories, and then the disk and magazine purchases began. Soon I was overloaded with options. Enter Selector, the program which allowed you to choose which accessories were active at bootup time. Things were on the up!

A short time after I bought a hard drive and matters deteriorated, in one respect. With a plethora of programs, accessories, GDOS Assign.Sys files to contend with, I was in danger of information overload every time I booted up. This all sound familiar to you? I read about Superboot, but it sounded too complicated, with too many bells and whistles.

Enter Mouseboot, a less complicated (though still awkward for a learner) graphical mouse-driven interface with enough options for a minimalist like myself. Forget the 'bells and whistles' offered by Superboot – when I boot up I want to get there quick. No timewasting fancy pictures or sound samples for this boyo. This is it, I thought!

Time passed and I realised I needed a Falcon, yes needed. Deprivation symptoms were setting in. Result: one Falcon (I have a very understanding wife) — WOW. Serious playtime. Joy. Then despair, as I couldn't get Mouseboot to work on the Falcon. Forward one step, back two. In desperation I dug Superboot out of the 'unused' disks and steeled myself for a serious reading session.

Unnecessarily, as it happened. Experience, and the passage of time, meant that I didn't have many problems in getting Superboot to work. (Have you noticed that there is an acceptance timelag, as it were? Things that months ago seemed incredibly difficult no longer hold any fears for you.) Matters were on the up again. I still didn't like using it, though. After using Mouseboot the TOS-like use of cursor keys was awkward. Down one space, across one, two, three. Damn, press the across key once too often and the cursor goes off screen and reappears on the left-hand side. Start again. Again, sound familiar?

Daa, Daa. Fanfare. Enter Stoop, courtesy of Phil Hodgkins. Phil is a regular contributer to the Atari scene and, judging by this program, a programmer of no mean talents. Colin Fisher-McAllum of the FalconFacttFile told me about this new super-duper boot-up manager and how it had ousted his previous boot-up manager from his hard drive. It was Shareware and would I like to try it? Yes, I replied, not feeling very enthusiastic about acquainting myself with what was probably a clone of Superboot.

Enter STOOP (and the end of this long-winded preamble). Stoop runs on a Falcon with a VGA/SVGA\RGB monitor with a minimum resolution of 640\*480\*16 colours, 4Mb minimum recommended.

#### Installation VGA/SVGA

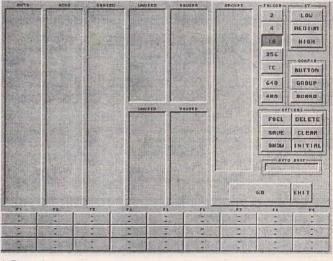
Set the NVRAM so that the Falcon boots up in Falcon High-Res (640\*480\*16 colours). Run the Install.prg program. This will copy Stoop.prg into the Auto folder and also create an empty folder called Stoop in the Auto folder. This is where Stoop will save its configuration file, with your saved set-ups, and where the INF files for different resolutions will reside and the GDOS Assign.sys files.

Double-click on the Stoop.prg. It doesn't matter about reordering the programs in the Auto folder beforehand, you can use the file selector in Stoop to do it. Once Stoop has run you are presented with a predominantly grey-coloured screen with a series of vertical recessed columns (named Auto, Accs, Unused, Groups) with a control panel to the right of the screen and three rows of nine buttons at the bottom of the screen (empty at the moment). The 'vertical columns' are the boards which display your active and inactive programs. accessories, Newdesk.Inf, Assign.Sys files and configuration files.

The control panel contains its own series of groups of buttons. These, and the buttons for the inbuilt file selector, all operate in a 3D fashion; click on one and it appears depressed, click again and it reverts to its former state. The first group is used to select the number of colours required and whether to maintain compatibility with the colour modes on the ST. The second group contains button, group and board. A further group contains Fsel (for file selector), save, show, delete, clear, initial and Auto boot. The bottom two entries are Go and Exit.

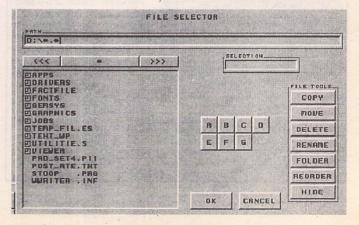
Click on File Selector (control panel on right of screen) and the built-in file selector appears in the middle of the screen. Select the Auto folder in drive C (if that is your boot-up drive), click on Reorder and drag Stoop.prg to the beginning of the list of programs. Stoop has to be run first to be of any use. Click on OK and you will be asked to confirm your actions. Reordering of the files will now take place (time to get rid of Autosort.prg).

Return to the main screen. Inactive, programs, accessories, etc., are shown in a grey 'box' with black text. To activate one, left mouse click on the entry and the background changes to blue, the text within changing to white. Pretty and visually effective too. The size of the boards can be altered as can their names. Click on the 'Boards' button and a dialogue box pops up in which you can specify whether one long board or two short ones should be used, the name of the board, the extension of an active/ inactive file and where the active file



 $\triangle$  Figure 1

Figure 2 ▽



should be copied to on boot-up, e.g. C:\.

These settings can then be saved to a button in the bottom three rows. Select 'Button', click on one of the 27 buttons at the bottom and a dialogue box appears requesting a name for the button: up to 16 characters may be entered. Click on OK and you are returned to the main Stoop screen. Select Save and your setup is saved to the preset button chosen and to a CFG file, ready to be used immediately.

These presets can be activated by clicking on them or by using a combination of Function, Control and Alternate keys. For setups involving different resolutions all that is necessary is to Save Desktop (whilst at the Desktop in your chosen resolution) and then copy the newly created Newdesk.Inf to the Stoop folder (in the Auto folder) and then renaming it to reflect the resolution, e.g. 16col.inf, 256col.inf, st\_high.inf, etc. These will then be shown in the Newdesk.Inf board and can be selected at will. Actually, with Stoop it is unnecessary to have an Inf file for each resolution, because Stoop can change it so that the required resolution will be displayed (it does not work fully with screen expanders such as Screenblaster, but it allows you to change the number of colours you want to use). All the user has to do is select the resolution they require by using the buttons at the top of the control panel - thing is I've got used to the systems employed by other 'managers', and old habits die hard.

To continue the boot-up process either click on one of your preset buttons or, if the highlighted setup is to your liking, click on the Go button. To view a particular preset click on the Show button. If you wish to alter the preset temporarily then make your selections and press Go. To save the altered preset, click on Save (obviously).

#### Groups

Stoop allows you to group programs, accessories, etc., together. As an example, when using Selectric you would always use Selectric.prg and Callslct.acc together. As a further example, in my setup I always use NVDI, Screenblaster and Screenblanker together. Hence this forms a group called (!) NVDI. To form a group clear the Stoop boards of all selections by using the Clear button. Then select, thus highlighting, Selectric.prg and Callslct.acc. Select Group and enter the name you wish to assign to your new group. This facility can be extended to group programs, accessories, inf files, configuration files and Assign.Sys files that you always use together.

#### **File Selector**

Stoop's inbuilt file selector has some basic, but extremely useful, features. As well as the previously mentioned reordering facility you can copy, move, delete, create folders, rename and even hide (only from Stoop's view!) any files in any folder in any partition. Slight omissions are the inability to lasso a group of files, and in order to edit paths or filenames it is necessary to delete part of them (backspace, backspace, reenter name, instead of being able to use the cursor or the cursor keys).

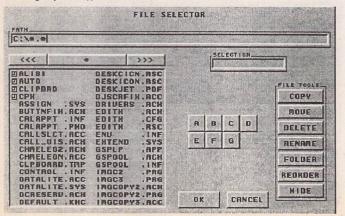
Why would I want to hide a file? If you ALWAYS have a program active in the Auto folder or always use a particular accessory then by hiding it you no longer have to worry about selecting it whilst within Stoop, it will always be selected, though not shown. This reduces the clutter on the boards. Use of the file selector allows you to 'unhide' the hidden file. The hidden file will still be shown in all other programs, selectors, desktop windows.

#### The Rest

Not enough room to display all your programs, accessories, etc.? Fear not. There are in fact 20 boards available but only five or ten, depending on your setup, can be shown. To access the board(s) underneath, right mouse click anywhere on the desired board.

Stoop can be run from the desktop should you have an in-session brainstorm and wish to alter some setups. Open the Auto folder, double click on Stoop, effect your changes, Save them, and then use the Exit button to return to the desktop. Another benefit in using Stoop is that you only have one autofolder program and one folder with the

Figure 3 ∇



Inf, Sys, etc., files and the Stoop.cfg. That's it! This alone represents a saving of hard drive space and the number of entries in the root directory compared to other boot-up managers.

If you wish to immediately boot up into a program click on the Auto-boot button. The file selector appears, choose the program, return to the Stoop screen and click on Go. Easy, innit? You can even pass parameters to the program that you are auto-booting in the registered version (if the program itself supports this feature).

Stoop provides control for up to 100,000 files, a slight amount of overkill, hence the 4MB requirement. However, Phil is producing a 1MB-compatible version for the undernourished. Also promised for the future are some enhancements — not bells & whistles, please. There are even more features within the program, but space dictates.

#### Conclusion

All in all, a very accomplished program that eases the initial task of configuring your working session and is aesthetically pleasing too. The impression is that the programmer has thought this one through very carefully and attempted to correct the faults of the other offerings... and succeeded. I have used this program for over a month, which in my case means many working sessions and countless boot-ups and reboots, and have not experienced a single hiccup or problem with incompatibility. The fee is £10. Is it worth it? My answer is a resounding YES.

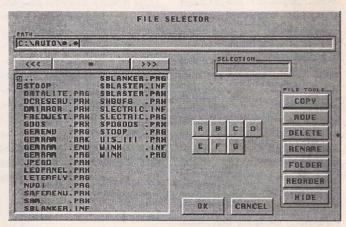
#### **Points for:**

- ✓ Ease of use
- Attractive graphical mouse-driven interface
- Inbuilt file selector and auto folder reordering
- ✓ Stability
- Economy in terms of disk space
- ✓ Price
- ✓ Lack of 'bells and whistles' (for me)

#### Points against:

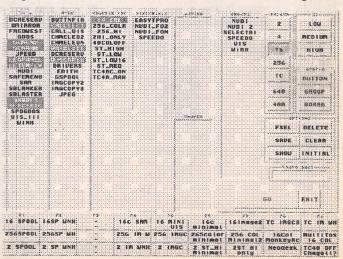
 Lack of 'bells and whistles' (for some)

STOOP is available from... Unregistered versions: FOG (the Falcon Owners Group), FloppyShop (disk F.4783), ST Club (NW.24, Various BBS's including Chameleon, Fortress and The Falcon's Realm. The registered version is only available direct from Phil Hodgkins, 106 Knighton Fields Road East, Leicester LE2 6DQ.



#### △ Figure 4





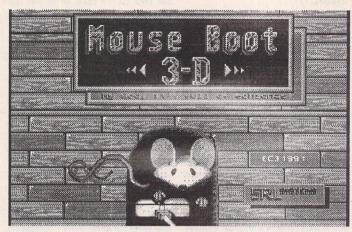
# Mouse Boot v3D.5E

### Introduction

I recently agguired this great little program from a PD library and was so impressed by it I thought I'd bring it to your attention in case you hadn't come across it before. It's called Mouse Boot and when put in your auto folder, positioned so that it's one of the first programs to load, it allows you to activate and de-activate auto folder programs, decide which accessories you want to load, which DESKTOP.INF file you want to use, and, if you use GDOS, which ASSIGN.SYS file to use all with the mouse!

#### **Easy Selection**

All the active choices are highlighted on the attractive selection screen (see photo 1) and to change a program selection you just click the left mouse button on it and then click on the Change button. The requested changes are then made and the boot up continues as normal. I was really surprised with how easy to use it was and it meant that with two clicks of the mouse button I could easily switch, say, between Teradesk running in medium res. to the standard desktop running in low! Mouse Boot also has a adjustable timeout, which can be bypassed by pressing the space bar. Mouse Boot will not time out, once you press the left mouse button, as it assumes you want to make some



changes. Pressing the right button, however, exits the program immediately. The timeout can be changed by clicking on the top bar of the selection screen.

#### Welcome Program

There is also a welcome program, which, if positioned before Mouse Boot in the auto folder will display a degas low or high res. picture and even play music (if the appropriate program and files are present)! I thought the low-res picture supplied with the program (see photo 2) was rather nice, so I used that. After a preset time the picture fades and Mouse Boot itself is loaded. The timeout can be overridden by pressing the left mouse button.

#### **Many Facilities**

This is the easiest (default) way to use Mouse Boot, but there are many other facilities. One of the most useful is the preset screen, (see photo 3), which you can use to store whole sets of selections in a single button. To store your current selection, you press the edit button from the selection screen to display the preset screen, then press the store button. Next you select which button you want to store the setup into. Finally you give the button a name and then press enter. To store another set of selections, simply change the currently displayed selection and repeat the process with another preset button. Up to 60 presets (3 banks of 20) can be stored.

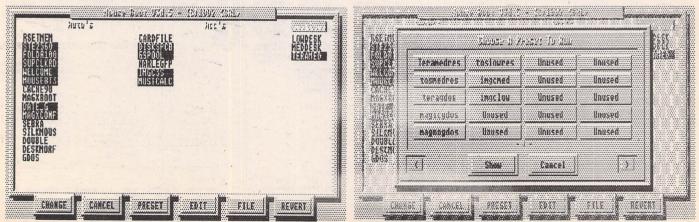
All the changes made above are in memory only, which means you must save the setup. To do this you press the File button and then the Save button. The first time you set up your presets, you will need to press the Preset button, followed by the preset of your choice. The program will then make the necessary changes and the bootup procedure will continue as normal. On subsequent loads, however, the preset screen is displayed automatically, so you can change your setup with one click of the mouse (if you want to, or hit the space bar if you don't).

#### Conclusions

As you can tell, I'm very pleased with Mouse Boot. I suppose I'd better try and get in touch with the author (he lives in Florida, I think), to see if he still wants registrations, as the version of the program I have is from 1992. The registered version also has the ability to run files of batch commands.

I have only two criticisms. The first is the limited length of the name you can give each preset button. It would have been better to have half as many buttons and make them longer, so that a more descriptive name can be given them. The second is that if the TOS version is 2.0 or above it copies the chosen desktop files to NEWDESK.INF instead of DESKTOP.INF. This is fine for TOS, but no good for use with MagiC (which uses MAGX.INF) or a replacement desktop such as Teradesk which uses DESK-TOP.CFG. Oh well!

All in all though, highly recommended.



Viruses



Viruses on the Atari? Do they really exist? Indeed they do... And the Ultimate Virus Killer (UVK) is probably the best known virus killer on the Atari platform. Carl Löfgren reviews the latest version, 6.3.

#### The Manual

First of all the sad news. UVK doesn't come with a printed manual. The good news is that the included textfiles are very large (over 230KBs) and cover everything you wanted to know plus some more. However, it must be said that a printed illustrated manual is much more easy to read and learn from than reading from a monitor.

One of the most interesting textfiles is the one that covers all known viruses. It goes through what they do, when they do it, if they can be immunized by UVK, if they're reset-proof and so on. Very interesting indeed! This file also covers all known anti-viruses.

If you own a printer, I would recommend printing the manual and the virus description. It's handy to have them around.

#### The Interface

For those who last saw UVK in v5 or even v6.1, be prepared to get surprised. Richard Karshmakers has thrown out the ugly FlyDials and replaced all dialogs with windows! This is really good news, as it gives the user the ability to multitask! It's not that funny to wait for UVK when it examines your hard disk. Now you can use your word processor while you let UVK do the work in the background! Brilliant!

Unfortunately, the size of the UVK interface is exactly the same as in previous versions. That's to say, it covers most of the screen. Most buttons are extremely large, and the screen size is always the same. I'm sure that if the programmer had concentrated more on the interface, he would probably been able to reduce the size of the windows by 50%.

#### The Program

I am not a fan of the UVK interface, but I do not have any complaints about the functionality of the program itself. It is a highly competent and well written program, and you can feel that it has been developed over many years.

UVK is divided into three different areas:

- 1) Search and destroy viruses
- 2) System status
- 3) Restore lost bootsectors

You can search for both link and bootsector viruses. When searching for link viruses you can let it examine whole partitions (unfortunately not all partitions). Great if you have a hard disk! System status tells you your machine's present status, and will show you all suspicious system vectors. Restore helps you to recover a lost bootsector if it was erased by a virus.

The review was done with v6.3, and it can recognize 83 bootsector viruses, 40 anti-viruses, five link viruses, and is capable of repairing 735 bootsectors!

UVK can run as a program (PRG), as an accessory (ACC) and even from a CLI (TTP)! While in TTP mode, it can't erase viruses, only report them.

Almost everywhere in the program you can find a help button, which will give you more detailed information about the thing you are currently doing. Perhaps not the best help system I have seen, but it works as you expect and it is good to have around.

#### The CPX

A much reduced form of UVK is included as a CPX for the Atari XControl (a must-have! If you don't have it, then get it!). This neat little utility boosts the performance of the UVK package. It is much more comfortable to call an accessory than starting UVK itself. It is limited to bootsectors only, and it is recommended to use the UVK in suspicious cases. With the CPX you can watch, check, write (such as immunizing) and save bootsectors. It also can do a SysCheck (system variables).

#### **The Competition**

VK Pro v0.1. Written in the UK. Very buggy and slow, but it could be an interesting program if it was developed further.

Virendetektor v3.1k. Shareware from Germany. Dated early '93. Is it still developed? Only available in German.

ST Virus Killer v3.84. Written by George Woodside in USA. This was one of the most used virus killers for many years, but today I would not advise anyone to use it. V3.84 was released in April 1991, and it cannot recognize those viruses that pretend to be PC bootsectors (such as the nasty Zorro-B virus). Poison! v2.50. By Delta Labs in Ger-

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This is whe

many. This program has been around since 1990. As with UVK, it is updated regularly, and it has the ability to inspect and analyse unknown data. Poison! is the only Virus Killer in the Atari market that has the ability to examine inside packed archives (such as Zip, LHarc, etc.) for viruses (brilliant for BBS:es). It is completely MultiTOS and MagiC compatible, works both as an accessory and as a program. It needs approximately 300KB of memory. From what I have seen, it seems to be the only serious alternative to UVK.

Unfortunately, Poison! is currently only available in German. If you are interested in more information you can contact Bernhard Artz at: Delta Labs, Brillerstr. 40, 42102 Wuppertal, Germany. Tel/Fax 0202-308307. It costs 59DM (about £25-30).

#### Conclusion

As I said before, you can feel that this program has been around for some years. It isn't a one-night-hack. The best thing about UVK is the fact that it is updated regularly.

UVK is a very cheap insurance for not getting your disks/files erased by some evil virus. It is sad that it does not have a printed manual, but I can understand that. A printed manual would probably get outdated very quickly and it would make the package more expensive. I have heard a rumour that Richard Karshmakers will release a UVK book.

I don't like the "Big-Is-Beautiful" interface, but it looks far more serious now when all dialogs are in windows.

But I didn't get UVK for watching it. It does what you want, it does it pretty well, and it is cheap.

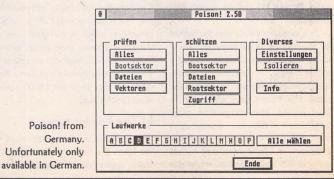
#### The good stuff:

- ✓ Cheap
- ✓ All dialogs in windows
- ✓ Works as program, accessory, and from a CLI
- ✓ CPX version included
- ✓ All dialogs drawn in windows

#### The not so very good stuff:

- × No printed manual
- X Not able to repair when run as a TTP

3 12.95 aST Club
aST Club
115-945-5250
T/STe/Mega
T/Mega
Te/TT/Falcon030



# Cheats Always Prosper

Welcome to what I hope is the first of a few articles which will involve a subject not covered in any great detail in ST Applications – GAMES! This won't be any ordinary article on games containing hints and tips, etc., but an article showing the methods used to break (or 'hack') into the inner workings of almost any game and write a subsequent 'trainer' for them. If requested, there will be a follow-up article which will be a little easier to follow as it will concern the alteration of the saved game files used by most strategy or role-playing games.

#### Requirements

To carry out the aims of this article you will require:

A rough working knowledge of 68000 (ie MOVE/SUB/ADD & BRA instructions)

Devpac v2 or v3 (I will be using v2) MONST2 or MONST3 (I will be using v2)

The source code on last month's FaST Club Disk Magazine (DM.46)

Multi Depacker v1.5/v2.0 (written by me!) or

Mega/New Depack by Mike Watson Some common sense... and a lot of perseverance.

You will also require a copy of ST Format Cover Disk 59, should you wish to practise on a documented example. The program you require is Pot Hole 2, a fairly typical example of a game written using 68000. I know this cover disk is fairly old, but it is the last copy of ST Format that I bought!

#### What are Trainers?

At one time or another, I daresay everyone reading this article has come across a pirated game. This article does not condone or glorify this act, but without the perseverance of the average game hacker, trainers would not exist. They have been around, as far as I know, since the Spectrum and Commodore 64 days. Back then, you were either required to type in a small loader program, or, depending on your knowledge of Z80 or 6502 assembly, you did them yourself! I am using the knowledge gained in creating these Atari ST trainers to hack ZX Spectrum programs using my 486 PC and the superb Z80 Emulator!

It is more than likely that the hacker (i.e. the remover of the protection associated with the game) has also added a trainer option — or options! These options would allow you to cheat at the game. The hacker may allow you to have infinite lives/energy/time or a combination of them all — depending on what they have found themselves. Some games I have seen have had as many as 30+ trainer options — and this

#### was on a Flight Simulation!

My solution is to explain how the hacker goes about looking for which part of the game to alter in order to 'train' it. You will be using 68000 assembly language in order to perform this task, but the majority of the code has already been written — by someone other than myself, as I doubt I would have attempted writing trainers if I hadn't been in possession of similar source code from which to learn the 'tricks of the trade'!

#### Two types of trainer...

There are two major kinds of trainers that you can write. One I will refer to as the 'bolt-on type' and the other as the 'loader-type'. I will now give a rough outline of each type.

#### a) The Bolt-on type

This involves presenting the user with the various options for the cheat, and then patching the program which has been stored at the end of your patch routine (using Devpacs' INCBIN command). This is the type I use most of the time because:

 i) It doesn't require a great deal of memory as an overhead. On average, your trainer mode adds approximately 1-2K on top of the original file. Once the user has made their choices, this overhead is overwritten by the program when it is relocated.

ii) It doesn't take up extra disk space as a separate executable trainer program does. Bolt-on type trainers are small, but as most of us know, an extra file on a disk is always going to take up a minimum of a cluster!

The only disadvantage is that you cannot use it on compiled GFA BASIC programs, which is no great loss as there aren't many good games written in GFA BASIC, with the exception of those by Dave Munsie and Terry King (although they both use 68000 extensions to achieve it).

#### b) The Loader type

This routine is used as a last resort by me when the bolt-on trainer is not a viable option (see GFA BASIC example) or when the resultant trainer mode causes program errors (i.e. bombs) to proliferate across the screen!

The file is a simple patch which loads in the original executable file, without running it, and then alters the appropriate code before running the game. This is performed in all legal GEMDOS codes, and takes up a few bytes. The text you display on screen will probably take up more memory than the loader!

There are several examples on the ST Format disk I mentioned as part of the requirements for this article. They are all by Martin Pugh and follow the general outline of the 'loader type', except his routines are slightly more polished than the ones I will be using!

Brief explanation of a game's inner workings:

Before we delve into the depths of this code belonging to Pot Hole 2, we need to know how the game uses the 'lives' given to you.

Generally speaking, when you lose a life in a game, your number of available lives has 1 subtracted from it. The theory we will use is that having played the game (you did have a quick play before you started?), we know how many lives you are given at the start. Some games give you 3, some 5, whilst others are extremely generous and give you 9! In this case, Pot Hole 2 gives us 4 lives.

With this information, we need to look for tell-tale signs of where the program stores this information. The game itself runs in a main loop, such as ... Therefore we can train the game in two ways.

a) set the initial value of 'lives' to a higher than normal number; or

b) ensure that the 'life decrease' NEVER happens. Sometimes we can replace the 1 with 0 (e.g. subtract 0 from 'lives' if killed) or where this is not possible owing to the SUBQ instruction, we change it to an ADDQ! In other words, you gain a life when you die!

We are going to use the second method, and we shall also be implementing a cheat to stop the oxygen level disappearing! For those of you who might think that all the gameplay for Pot Hole 2 will diminish, we have a solution! The trainer we will build allows for your own personal preference, that is, to cheat or not — the choice will be yours!

This means that when you have successfully understood the rudiments of this article, you should be able to implement your own trainers on other Public Domain games (or special versions as released on Cover Disks) and implement the appropriate choices. Not everyone wants to cheat at every game they come across, however hard they may be...

#### Ready? Let's train a game.

The first thing to do is prepare a working disk. I suggest you keep all the necessary source code, depackers and dis/ assembling utilities on a separate disk and have a work disk with the target game on, unless of course you own a hard-drive, which means you can keep

initialise	in the second
	play game 🔹
	test vars
	player dead?
	if false, continue with game
	if true, decrease lives by 1
	has counter reached 0 or less?
	if false, continue with game
	if true, then GAME OVER

everything inside a single partition/ folder.

The next task to perform after your disks/folders are set up is to depack the main executable file. You will notice that the working example, PotHole 2, has only one main file and an accompanying document file. This is one of the reasons I have picked this game as its target, the other being that is the latest one that I have done.

To depack the main file, you can run either my own Multi Depacker or the Mega/New Depack by Mike Watson. Both have been included as part of this article on the accompanying ST Club disk.

Click on the appropriate option to load in the main file ('POTHOLE2.PRG') in order to depack it. You will be told by whichever depacker that the packer used was Ice v2.40 by Axe. This is one of the more popular file packers in use, especially when you consider it is also one of the few that work with the Falcon. Once the file is depacked, save it out as 'POTHOLE2.WRK' to your work disk. '.WRK' is the extension I will use to denote working files.

#### Searching, searching...

Now, you must get MONST2 loaded, along with the program 'POT-HOLE2.WRK'. This is performed by loading up MONST2, and then typing in the name of the file you wish to play about with. If you accidentally press ESC, you can access the Load Executable option by pressing Control & L. DO NOT load in any program you want to train via the Binary Load option (pressing B) as the Program, Data, BSS and possible Symbol tables will not be allocated.

Once you have got POT-HOLE2.WRK loaded, the immediate thing you should look at is the 2nd window of MONST2. This is where all the 68000 instructions are displayed in assembly language. I've picked PotHole 2 for another reason, and that is because the author has left in all the debugging symbols when they assembled their final version that was sent to ST Format.

This makes the donkey-work of finding the internal game variables, such as lives, oxygen, etc., so much easier!

If you press L (on its own, no Control or Shift), you will be presented with page after page of symbols that were found by MONST2 when it loaded in and examined 'POTHOLE2.WRK'. They are sorted into length order, smallest first. If you press a key to access each page, you will come across the five letter symbols fairly quickly. Check each page of five-letter symbols for the magic one entitled 'lives'.

Pressing ESC will bring you back to the MONST2 main screen. Ensure you are in Window 2 (press TAB until your cursor highlights Window 2) and press G (for GOTO), enter L for Longword and now enter the text 'lives'.

After pressing Enter, there will be a screen update and MONST2 runs through the code of 'POTHOLE2.WRK' looking for any occurences of 'lives'. It does not look for any text contained within the program which spell out 'lives', but actual addresses (i.e. \$65432) which would normally appear in this window, were it not for the symbol table replacing certain addresses with English representations.

The first occurence it should find fairly quickly, but you will have to press the left arrow once. This aligns the assembly window (known as 'm2' from now on), so that the full instruction can be read and not half of the instruction which contained the address that 'lives' represents.

You should see the following code appear on the top line of 'm2':-

SUBQ.B #1, lives

This instruction simply means 'subtract 1 from the lives counter', which is a single byte in length. The other possibilities you may come across in other programs are:

SUB.B	#1,lives	
SUBQ.W	#1,lives	
SUB.W	#1,lives	
SUBQ.L	#1,lives	
SUB.L	#1,lives	

The last two examples are fairly rare, usually due to sloppy or lazy programming. If found, it could be that the game, for some reason, expects you to either start with (or have at one point in the game) anywhere in the region of 1 – 16777215 (\$FFFFF) lives – hence its rareness inside most 68000 coded games. Compiled languages (i.e. STOS & GFA BASIC) will allow this kind of coding, unless the respective compilers are told to force byte or word lengths on all or certain variables.

Notice the 'Q' present after the 'SUB'; this is the 'Q'uick version of the subtract statement. It takes up 1 word less in memory and is slightly harder to train!

#### Getting down to the nitty-gritty

To train POTHOLE2, we can choose from 3 methods. The simplest one, and the one used successfully most of the time, is where we change the subtraction into an addition. We will change the program to perform this instead:

ADDQ.B #1,lives

In other words, we are going to change the program so that when you die in the game, you will be given an extra life instead of losing the current one, and possibly resulting in the immortal words 'GAME OVER' being displayed on the screen.

The two other methods are: a) We alter the SUB instruction for a TST instruction. In most games the SUB has to happen before any TSTing is done. This fools the game into never taking any lives away, but merely checking the value of lives and then performing an action. In Pothole 2, the code would now look like:

TST.B lives

BMI game\_over

Test the lives counter and BRA if MINUS value to the game\_over routine. In other words, there is no subtraction performed at all. The lives will permenantly be set at 4 and will never get altered – unless you gain a life.

b) We alter the code order by jumping over the subtraction and subsequent checks made against the lives counter by adding a BRAnch instruction. The code will now look like this: have included a table with some of my previous trainer efforts over the years. If you get stuck when attempting a trainer on any of these particular games, then have a look at the table and see if you can find where you might be going wrong.

When you run out of PD games, have a go at one of the big boys. Whilst I am not trying to condone piracy or hacking, there is much pleasure to be gained from implementing the kind of trainer options you always wanted to be in some of the harder commercial games!

#### Completing the job

If you are interested in doing a permenant trainer for each game, as in an

 41140
 BRA 41148 ----- Jump to the following line, completely

 41144
 BMI game\_over | ignoring this piece of code!

 41148
 rest of game <-----</td>

#### On to the hacking...

Now, if you press TAB, the cursor moves to the hexadecimal/ASCII window (known as 'm3'). Once inside this window, we need to set the address to be exactly the same as the assembly window ('m2'). Press Alternate & A to get an input box asking you for an address (in hex or a label). Enter the word 'm2' and press Enter. The 'm3' window will now have the same address as the 'm2' window.

The first 2 hexadecimal numbers inside the 'm3' window should read as '5339' — if not, then you have done something wrong!

We are now going to alter a single byte to change the subtraction of 'lives' into an addition. Press Alternate & E, now type in the number 52 and then press ESCAPE. You should now have the number 5239 in 'm3' and in 'm2' there should be a slight alteration of the assembly code! And that's it, you have now trained the game!

If you are in low resolution when you loaded MONST2 & 'POT-HOLE2.WRK', you should be able to press Control & R to run the game and play to your heart's content for as long as you can stand it... that's the only drawback to implementing trainers for games — you will tire of them easily!

# Maybe the title of this article should be changed to:

#### Cheats Always Prosper, But Tire Easily Of Always Winning!

Now all you need to do is grab hold of some of your PD/Cover disks and practice a little more training. Try adding some of the features outlined above, such as oxygen depletion being removed and other such options.

You will notice in Figure 1 that I

executable file with the trainer bolted on the front, you will require to work out the offsets of the code you have altered. You will also require the source code, which is covered in the next section.

At the address where you found the lives decrement instruction, ensuring you are at the correct line, press Alternate & O. Now, type in the line m2-nc

The resultant number (given in hexadecimal and decimal) is the number of bytes from the start of the main program to where the lives decrement instruction is found. This offset is entered into the source code to allow the trainer to alter the code at the correct address.

The offset is found the same way for the bolt-on and loader types of trainer with one slight exception. Because of the nature of the trainer code, which is completely PC-relative, there is a limit on how much of the offset can be included in one line of code. I will try to include an example and the appropriate fix for this limitation as a part of the follow-up article. However, if you are fluent in 68000 assembler, you should be competant enough to add this feature yourself.

#### Finally, the assembly code!

For those of you who require to keep a copy of their PD games in its trainer+game form, you will need to edit the code using a file-editor so that the game is always trained OR you can use the piece of accompanying source code to allow you to choose whether you want the trainer mode(s) being used when you play the game, or for when you feel lucky, you can opt to play the game properly (and die properly as well!).

The source code has been enhanced and adapted from a packer front-end which was distributed with the Pompey Pirates Packer v1.9 by JPM. There may

#### Entertainment

be those few readers who may have heard of this group, but only those readers will know the noteriety of the group, whilst the rest can only assume... It was one of this group's members who made the infamous 30+ trainer options for a Flight Simulator!

The source code has been adapted to work from GENST2, so I will assume it will work from most assemblers which allow conditional assembly code and inclusion of data files at addresses. The conditional assembly used will allow various effects, including fading of text in/out, displaying text, forcing low resolution and much more. But don't play with these options, UNTIL you are sure that your first trainer works properly. Load up GENST2 and the source code. What the code does is allow you to display some text on the screen, whilst presenting the user with one or more options to alter the code of the game stored at the end of this little front-end. Once the user has chosen their trainer(s), the code for the game is altered according to the users selection of the included trainers and then physically moved to the start address where the front-end was loaded in memory — thus fooling the game into thinking you doubleclicked it as per usual from the desktop.

#### The source code in depth

The source code contains a number of features which have been coded using

conditional assembly statements found in Devpac 2. Please do not alter these until you are very sure that your trainer works. The options available are: Force Low resolution

Force Medium resolution

Fade Palette in/out for text displays in LOW resolution only

For those fluent in 68000 code, a brief explanation of the source code on Disk Mag DM.46.

a) The code will display the text on screen and present the user with the trainer options.

b) These options are acted upon immediately, by altering the original program code which is stored at the end of the trainer front-end.

# **FIGURE 1**

# **Try These Out For Yourself...**

Some of these may look a bit long-winded, but I have altered them so that they all alter on a byte or word basis; no longword alterations have been included. You might also notice that some of the alterations deviate a bit from my article. This is mainly due to the era in which they were 'designed' and my (still) limited 68000 was very much to blame. Why not improve on them yourselves?

As far as I am aware, all the programs I have listed below are (or were) public domain and shareware. If any licenceware titles appear in the list then I apologise for being so inconsiderate!

Title of Program	Cheat offers	Alteration required
Entombed	Infinite Lives	clr.b \$2b6(a0)
Grav 2	Infinite Lives	clr.w \$1bb8(a0)
the transition of the	Infinite Ammo	clr.w \$2794(a0)
	Infinite Fuel	clr.w \$28be(a0)
here so it is first to be	999 Credits	move.w #999,\$4b2(a0)
Classic Invaders	Infinite Ships	clr.w \$418(a0)
Rockfall	Infinite Lives	move.w <b>#</b> \$4e71,\$1dec(a0)
dates in the second second second	Infinite Lives	move.w #\$4e71,\$1dee(a0)
An I is statement (1200) o	Infinite Lives	move.w #\$4e71,\$1df0(a0)
Atax	Infinite Lives	move.w <b>#\$4e71,\$4632(a0)</b>
Liner understander site and	Infinite Lives	move.w #\$4e71,\$4634(a0)
en la mirra des clores d	Infinite Lives	move.w #\$4e71,\$4636(a0)
Violence	Infinite Lives	move.w #\$ffff,\$b54(a0)
Cybernetix	Infinite Lives #1	move.w <b>#</b> \$00ff,\$4324(a0)
meteric design of the	Infinite Bombs #1	move.w #\$00ff,\$432c(a0)
a artic transfer alter	Infinite Lives #2	move.w #\$00ff,\$4390(a0)
	Infinite Bombs #2	move.w <b>*</b> \$00ff,\$4398(a0)
Zap	Infinite Lives	move.w #\$5279,\$292(a5)
Wormhole 1	Infinite Lives	move.w #\$600c,\$14c8(a5)

c) The code will then relocate the original program to the start address which it was loaded, overwriting the trainer front-end.

d) Control is now handed back to the original program, with all, some or none of the trainer options already implemented for the player.

Here's one I prepared earlier:

If you have a look at my source code for this example ('POT+.S') on last month's ST Club Disk, you will notice that I have altered the code in a different way. This is not to say that ADDQ.B #1, etc., will not work, but I preferred to try another alteration method!

All I have done is use the BRA instruction to jump past the code that subtracts 1 from your lives count and also replace the redundant 'Game Over' checks with my own 'signature'! Everyone has an ego of some size, and my own preference is to place my 'signature' over redundant code!

You will also find the 'load and go' source on the disk which will show you how to perform the same task as the bolt-on trainer, but with the extra file being present on a disk. This source code is a lot smaller and is available on Disk Mag DM.46.

# Parting is such sweet sorrow

Unfortunately, I have no idea when I shall be able to write the remainder of the follow up to this article. This is due to several factors, including a few contract programming jobs on the IBM PC, job hunting and the fact that I rarely use my Atari at all these days. Shameful to admit, but it is true.

The follow up article, if requested by the readers, will be more accessible to those people who prefer to program in other higher level lanuguages.

It will contain source code in GFA BASIC as well as STOS. Unfortunately, I do not possess any modicum of talent in C, so you C programmers out there will have to convert one of the BASIC variants.

Hopefully, once I have finished designing and compiling this Emulator CD-ROM which has taken up so much of my spare time, I will blow the dust from the scribblings I have done so far and finish off this second part.

And remember folks ....

#### CHEATS ALWAYS PROSPER

- unless Lord Nolan's Committee finds you out!

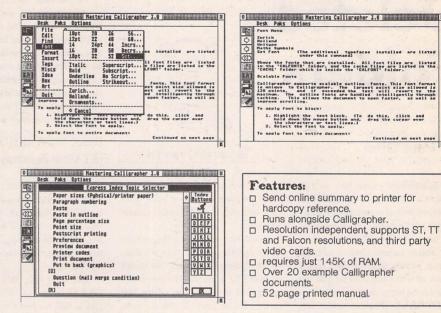
# Mastering Calligrapher

The Hypertext Personal Guide for Calligrapher that offers quick referencing to all commands with concise screen summaries and tutorials, including tips and tricks.

Mastering Calligrapher is ideal for both novice and advanced users alike. Novice users will find the simple step-by-step approach an easy way to lessen the learning curve, while advanced users will benefit from the referencing feature.

Each command is explained in detail with all of the necessary information given on how to use it correctly. Tips and tricks are offered throughout the guide to give you ideas on how to exploit each command to its fullest.

Just a few of the topics covered by Mastering Calligrapher are quick print, header, footer, define several clipboard buffers, page numbering, text alignment, drop capitals, and more.





# **Gemulator** 4

The latest additions to the feature list for version 4 of the Gemulator include:

- Improved drive access. You can now access all hard drives, removable drives, and CD ROM drives connected to your PC.

- Windows and DOS applications can be launched directly from the GEM desktop. This allows you to use the Atari NewDesk desktop in place of the Windows File Manager and Program manager. Upgrading to a PC has never been easier!

- The Gemulator interface has been simplified, doing away with the Gemul8r.Ini file, all settings are now made using Windows pop-up menus.

- Even better high resolution support. Because Gemulator 4 is a true Windows application it can make use of any Windows screen drivers installed. If you want a screen of 1600 x 1200 for your Atari software then the Gemulator delivers the goods.

- Using Windows drivers has improved the Gemulator support for modems, printers, sound and MIDI.

- There is a comprehensive new manual.

Requires an 8 MByte 486 or Pentium PC running Windows 95, or Windows 3.10 (or 3.11) with Win32s version 1.2 installed. Gemulator 4 is an STE emulator and so needs STE ROMs (TOS 1.06) or Mega STE ROMs (TOS 2.06).

Availability: June 1995.

Price: £125 (tbc)

FaST Club 7 Musters Road West Bridgford Nottingham NG2 7PP



7 Musters Road - Nottingham - NG2 7PP Tel: 0115-945-5250 - Fax: 0115-945-5305

#### Disk Management -

# Recovering Deleted Folders



# By Paul Dion

I have undeleted many files without problems over the years but recently I had a hard time at undeleting a folder. I had not tried it before. I was surprised that my undelete utilities refused to open deleted folders. I had to do it the old way, picking some of the wrecked clusters up with a sector editor, and so I decided to be better prepared next time. My ST's tool box should at least include one reliable solution to such a common problem as recovering a folder. After a lot of trials I ended up with a solution based on two small German utilities. At the same time I got a few new ideas about folder handling and how to optimize floppies.

#### **Basic facts about folders**

When creating a new folder, only one cluster is allocated, giving room for thirty files and subdirectories. There are also two hidden entries used by TOS. As each entry is 32 bytes long, this makes 32x32=1024 bytes, which is one cluster. Very large hard disk partitions may have larger clusters but normal cluster size is assumed here. When the number of entries reaches 31, 63, 95. new clusters are automatically allocated. Notice that unlike files, folder entries have no size. The only way for TOS to see how long a directory is is to look in the FAT. Deleting files will not de-allocate directory clusters. Deleted entries remain in the directory until they get over-written when new files are added. You cannot say that a folder containing fewer than thirty files has only one directory cluster unless you know exactly what has happened to the folder since it was created. Remember that there are programs which write work files and delete them again without telling you.

Undeleting folders is tricky as soon as the directory is larger than one cluster (more than 30 entries). The cluster chain in FAT is zeroed. The only information left is the number of the first cluster. No program is able to guess where a second directory cluster is located, because having deleted many files at the same time there are a lot of empty clusters in between the directory clusters. That is why most undelete programs refuse to recover folders.

However, as long as nothing new has been written to the disk, all data are still there and can be recovered. It is just a kind of puzzle. You can always do it provided you have some idea of the picture you want to re-assemble.

#### A first try with Diamond Edge 1.10

The first thing I did when I realised that I had no software to recover folders with was to phone my most experienced ST friends. One of them said I should try with Diamond Edge. Diamond Edge is a commercial package for managing SCSI hard disks. It was reviewed in ST Applications issue 31. It has an undelete function which can be used on floppies too. There is comprehensive on-line help, altogether a very comfortable user interface. You just click on Undelete and then you get advised to test the files afterwards. But if you try to undelete a longish folder, Diamond Edge will only recover the first directory cluster and ignore the rest. No cluster viewer is provided and no information is given about which cluster numbers you are working on.

On the other hand, Diamond Edge provides intelligent ways of making back-ups and keeping records of file validation data. If you use those regularly, recovery is no problem. However I do not trust myself at doing such special backups regularly. For this reason, and also because I wish to keep my software compact and simple, I looked for something smaller than Diamond Edge.

#### DISK WORKSHOP 3 (ST Club Fastcopy Pro)

DW is a multi-utility for repairing disks/ partitions and detecting viruses. Written by Martin Backschat, the author of Fastcopy Pro, it is the kind of utility I like. It just shows things as they are in large displays, and allows you to think for yourself.

DW takes only 35K of disk space (29 if you pack the PRG with Packice) plus a 10K readme file in German. It should be able to run on all TOS versions and configurations. Compared to the version following Fastcopy Pro 1.0c, the latest version (from Fastcopy Pro 1.2) lets you work on PC disks with one sector clusters. The problem with DW is that it was still in German on the disk I got from the ST Club. Maybe it was for this reason that no mention was made of it in Peter Crush's review of Fast Copy Pro 1.2 in ST Applications issue 49.

Although folder recovery is not mentioned in the doc, Disk Workshop provides all that you need for undeleting folders and files: Handy cluster viewing with Search. Assumed cluster chain can be changed before recovery, and file collisions or lost clusters can be easily tested after recovery.

## Step-by-step Directory Recovery

Boot DW:PRG and press Control-E to get the Directory Monitor. A window showing the current directory appears. Click on Laufwerk to change disk or change drive. Deleted items have a ? as first letter. Clicking on one will call the recovery dialog. Restitute the first name letter and press Return (Beginnen).

A box with an assumed cluster chain comes up — only one cluster if it is a deleted folder. Clicking on that cluster number opens the cluster monitor showing a whole cluster on screen. If all of the files you have to recover are there, just click on the right-hand button and Return to achieve folder recovery.

If not, there must be a second directory cluster. Go back to the recovery dialog (click on Nochmal) in order to tell DW that the folder has more than one cluster. To do this, change the file size (Grösse) from 0 to 2000. Click on Beginnen again. An assumed chain of 2 clusters appears. But the second cluster is just the first free cluster on the disk. It has normally nothing to do with your folder. Click on this second cluster number to get the cluster monitor. Click on 'ASCII Folge suchen' (search char.string) to run the search. Enter a correctly spelt file name as search string. Use a sigma (alt.229) as first character, and no extension. Having the right directory cluster on screen, click on Zurück. Confirm with Return that this new cluster should be used instead of the bad entry in the assumed chain. (When doing file recovery, you can also substitute all following entries.) The correct cluster numbers should appear on screen now. OK will run the recovery. Now you can open the folder and do file recovery with your favourite Undelete utility or with DW as described below.

Alternatively, if you have a utility such as FATMAP, repairing the FAT directly may in many cases prove to be a better approach than file recovery. As a matter of fact, only FAT and directories are affected when files/folders are deleted. Recovery is therefore first of all a question of repairing the FAT. Hurrying to recover the most important file would disturb the repair. Make disk copies of your patient if you intend to try different recovery approaches, and keep one copy untouched as a backup until recovery is successfully completed on one of the others.

### FATMAP 1.2

FATMAP is a recent German freeware utility. I got it directly from the author: Jens Brüggemann, Reuterdamm 122, D-30853 Langenhagen. Just in case



FATMAP was still not available in the UK, I have sent a copy to Joe Connor. Otherwise I hope this article will give British programmers ideas, resulting in even better software soon appearing on the Disk Mag.

FATMAP is a well-written GEM program which certainly should run on any ST or Falcon. Size is 48K or 31K with Pack-ice's help.

The purpose of FATMAP is to give detailed info about cluster allocation on hard disk partitions and floppies. You can get this info about one fragmented file or for a whole drive. File lists may be sorted in cluster order or in any possible way e.g. by folders, including file names, time and dates etc. A list of gaps is also available together with an option to fill gaps with a dummy file.

The situation when doing folder recovery is often that you have the choice between trying recovery or using some more or less obsolete backup files. In many cases, a backup disk where cluster allocation is approximately the same as on the disk you wish to undelete will be available. Having recovered the directory as above, you can see which files have changed size since the backup was made. By comparing directories and FAT listings it will often be possible to determine the exact cluster allocation of the deleted files.

Depending on how many deleted files you have to recover, the easiest approach might be to rebuild the FAT by making dummy changes to the backup disk until you get exactly the updated FAT. Repairing the sick disk is then achieved by copying the FAT on to the sick disk with a copy sectors utility. FAT2 is the working FAT. FAT1 is just a copy.

Note that on a hard disk partition the FAT could be edited directly because it is a 16-bit FAT which means that each FAT entry is a normal HEX word, for instance \$8001=384. On floppies each cluster number is reduced to 1½ bytes (12-bit) which makes the FAT unreadable for human beings. I wish Gary Kildall (the original author of TOS) had not invented that little 16/12 packing trick.

After FAT has been repaired the only thing left is to restore the first character of deleted folder and file names in directories with some sector editor. Which sectors to look for can be determined from the cluster numbers on the cluster chain list. Be careful to distinguish between old deleted files and freshly deleted files. Old deleted file entries must remain deleted.

Finally, run a FAT test. Test also the old backup disk in order to make sure that eventual FAT faults are not inherited from some earlier problems.

#### **DW's FAT TEST**

FAT Aufräumen is a simple check-only operation. Relax in spite of the German

dialogs and press OK all the time. A good disk gets the following message: 'FAT war in Ordnung' ('FAT was in good order'; you are going to learn some German when you use DW!).

The alert telling you about 'x clusters' is about lost clusters (also called floating clusters). Undeleting a folder as described above will sometimes leave one lost cluster. Just press OK to clear it.

The alert about a certain cluster number comes when more than one file uses the same cluster (File collision). Try to identify the files and redelete them after having taken a backup copy. Test the backups. One of the two files must be wrong.

FAT TEST is not only useful after a recovery. I have tested all my old floppies with it. Two or three had lost clusters. And I had one with file collisions. Such a disk must be repaired as soon as possible. The easiest way is to make a new disk. Not by disk copy but by copying one file at a time in order to reconstruct the FATs from scratch.

#### Recovery with no backup

In case no information at all is available about the cluster allocation of the deleted files, recovery is possible with DW if you have some knowledge of the content of the files. Begin step by step as described above for the directory. Having the list of assumed clusters for a file to recover, begin with viewing the last cluster. If it is OK and the assumed chain is unfragmented further examination should not be necessary. Don't worry about the viewer showing garbage at the end of the last cluster. It is normal unless file size is exactly a multiple of 1024.

If the last cluster is wrong, have a look at the first one. If that also is wrong, that file was an old deleted one. Don't attempt to recover it. If the first cluster is OK and the last one is wrong, wait with this recovery until all unfragmented files have been undeleted.

#### Notes about Disk

#### Workshop

The cluster monitor shows Freib (free) or Belegtb (used) when looking at any cluster. Only Freib clusters should be used for recovery, of course.

DW does not give a warning as it ought to when an old deleted file has the same first cluster address as a new deleted file.

The date of creation of deleted files should have been included in the directory display. The only current possibility is to look at the raw code in the cluster monitor. The raw code seen in each entry after the file name is Time(2), Date(2), first cluster(2), size(4). Looking at the third byte gives some idea of the date within the last 15 days.

With Disk Workshop a folder direc-

tory can be changed into a file: using the Ctrl.E menu, click on the folder and get the rename box. Deselect the 'SUBDIR' attribute and enter an appropriate file size: 1024 2048, 3072 .... and press Return. The directory is now available as a binary file that can be edited as usual. As long as the data are still a valid directory, setting the attribute back to SUBDIR will change the file to a folder again'. Notice that the '.' entry inside the folder includes the number of the first cluster. It must be changed if you have saved the folder file at a different place. When I wish to create a large capacity folder on a new floppy disk, I copy a 2048 bytes long file as first file. This file is an empty folder which originally was created at the very beginning of a disk (cluster no.2). Besides the '.' and '..' entries it is filled up with \$00. To get the folder is then just a question of changing the attribute and renaming. I use '.62' as extension as a reminder that TOS will not allocate noisy clusters to that folder as long as the number of entries is below 63.

#### **Other Related Tools**

#### Floppy optimizing with Kobold (ST Club disk DM.42)

Kobold was reviewed in ST Applications issue 45. The demo version on DM.42 is fully workable. KOBOLD is an intelligent file copier. When copying on to a new disk you get an unfragmented disk where all folder directory clusters are written at the beginning before any file. In case of Write errors, Kobold tells which file it is and just continues.

Copying a disk from one drive to the other with Kobold is almost as fast as a normal disk copy. Using Kobold regularly as disk copier gives two important benefits: 1) You get rid of 'noisy' folders. (A folder is noisy and slow when it has a directory cluster located far away from the FAT.) 2) Recovery is much easier when a disk is unfragmented or just recently fragmented.

On a single drive ST, Kobold should be used for copying to and from a ramdisk.

#### BFRD-Backup (ST Club disk DM.41)

Similar to Diamond Edge's MIRROR feature but much smaller in size, BFRD-BackUp is an AUTO utility systematically saving a copy of bootsector, FAT, and root directory each time you boot. It can do it for all drive/partitions in one go, or only some drives as you wish. BFRD can also be run from the desktop at regular intervals, and there is a restore utility with which the backup can be written back to the disk/partition it belongs to. FAT-Decode 3.01a (ST Club disk NW.12)

Shareware by Andrew Smith, FATdecode is a FAT editor that also runs as an ACC. Unfortunately, this version is unstable on my system (TOS 2.06). It bombs out when testing FATs longer than about 900 clusters. If it works for you, however, it can be used for small folder recovery although it does not provide cluster viewing. The FAT editor makes it possible to link clusters together in a chain. Decrypting cluster chains is also possible to some extent.

### EDIT PLUS (Demo on NW.19)

In this article I have assumed that readers are familiar with disk structure. If you are not, just examine some of your own work disks with Edit Plus. Scroll up and down along bootsector, FATs and directories as if it were a long Ascii text. Eight lines constitute one sector. It is almost like looking at a disk with a microscope. That's the natural way to learn how disks are organized. Compare what you see with a cluster list made with FATMAP.

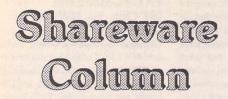
Edit Plus's predecessor Edhack2 can be used in the same way, although less continuously when the buffer has to swap sectors from the disk.

Note that there is no menu for loading sectors. You just use the Open file item and press return on the file selector with no file selected.

## Knife ST (Reviewed in STA Issue 9)

If I had not found D.W. and Fatmap, I would probably have based my folder recovery procedure on ST Knife, with some help from Edit Plus. But then I am afraid a step-by-step guide would have been much longer than the above, because, for example, ST Knife uses a separate TTP utility for undelete, and also because you can only see cluster chains for one file at a time. Therefore I would not like to have to recommend Knife ST for newcomers. Normal users cannot be expected to ever get a lot of practice with recovery. As a rule, recovery problems occur suddenly and dramatically. Would you be in the mood to read a manual or a long readme file then?

I also find my present solution is more complicated than it should be. I am still looking for better utilities in all the PD/shareware updates that I can get hands on. That's computer life. Software makers dream of larger and larger systems while users dream of something that is as easy to understand as a bicycle.



Joe Connor reviews Profile2, a comprehensive system analyser for all Atari models, and reports on the latest Shareware News...

Apologies once again if you missed this column. In case you hadn't noticed, Atari World was launched and I've been involved organising Reader disks and promoting Shareware!

Now that the initial frenzy has passed this column should become a regular feature once again.

The Atari shareware scene is particularly vibrant at the moment with new versions of nearly all the software I support planned for release over the next month or so. Here's a few advance details:

Freedom v1.12: ETA around two-three weeks, with some very exciting plans.

OCR v1.4: ETA within a couple of weeks, this should really be a v2 in my opinion. Certainly leaves Migraph OCR for dead!

**Everest:** New version with upgrade fee, due 'around Easter'.

Kandinsky: New version with upgrade fee, due 'around Easter'

GSZRZ v5.5: Apparently the German version is out already and so we can expect an update soonish.

ST-Guide continues to attract support and it's becoming unusual to find programs shipped without a hypertext file. A good example is Mark Baines *Profile 2* (opposite) which now includes ST-Guide format on-line help, which seems reason enough to take a closer look...

Version	Software	UK-Fee	Status
V1.73e	Kandinsky:	£15	Shareware
V1.10e	Selectric:	£13	Shareware
V1.22	Two-in-One:	£10	Shareware
V4.8	<b>GFA</b> Flydials	£13	Shareware
V3.4e	Everest:	£18	Shareware
V2.4i	Égale:	£10	Shareware
V5.4	6SZRZ:	£16	Shareware
V1.3c	OCR	£8-12	Freeware
V01.07.94	ST-Guide	£ 6+	Fairware
V3.51e	Idealist	£13	Shareware
V1.9e	Address	£15	Shareware
V23.18.94	STG Creator	£ 6+	Freeware
UL.41	Zorg	£12	Shareware
V1.23e	TurboBlanker	£ 6+	Freeware

□ PR	OFILE 2 Main Display
1 Hardware, TOS and Screen Deta	ails (also see Cookies Jar Details)
Machine type:	520/1040 ST or Mega ST computer
Central Processing Unit:	MC68000
Relative MC68000 CPU speed:	8 MHz
TOS version:	2.06
ROM date:	14 Nov 1991
GEMDDS version:	0.20 (0.32)
RES version:	3.20
ROM nationality:	Great Britain
BLITTER chip present:	No
Floating point processor:	None installed
Highest sound capability:	ST GI/Yamaha chip
Current Getrez() screen mode:	ST high monochrome resolution (see docs)
Current Getrez() screen mode:	Width: 640 Height: 400 Planes: 1
Current resolution:	Columns: 80 Rows: 25
TOS-mode screen size:	2
Number of predefined colours:	1
Palette size:	2

# **PROFILE 2**

Profile 2 is a complete 'System Analyser' which enables you to find out just about anything about your machine. Over the years the Atari platform has seen a variety of machines produced from the humble ST, through the Mega ST and STE, to the TT and finally the Falcon. Each of these models can be fitted with a bewildering range of 15 TOS versions, different GEMDOS and AES versions, different types and versions of GDOS, over 17 known different nationalities of ROM, blitter chips, screen resolutions and different amounts of RAM from 256Kb on the first STs to 14Mb on a Falcon. It's amazing that software from 1985 still runs on a Falcon. As you'd expect, this house of cards does come crashing down and Profile 2 is the single best tool available to help both users and developers figure out what's going on in the depths of your machine.

In fact running Profile on your machine is the ideal way to send a bug report to a developer. For people like me who enjoy hacking around with SYS and INF files, Profile helps get the best out of your system.

If all this talk of programmers, developers and hackers is putting you off, don't let it: you only have to get your hands dirty if you really want to.

On starting Profile 2, your system is analysed for a few seconds before the main information page appears reporting your machine type, CPU type and speed, TOS version, ROM date, GEMDOS and AES versions, etc. The Interface makes good use of all the latest GEM/TOS features but resists the temptation to use icons. All 39 (!) info pages can be accessed from drop down menus or using keyboard shortcuts. The ST-Guide format on-line help makes navigating around the various pages an enjoyable expedition.

The System Variables and Exception Vectors can also be analysed for XBRA and XNAM compliance which is particularly useful for developers. Jon Ellis' article in STA 11 gives a good account of the XBRA protocol. Profile 2 is an easy to use and comprehensive reporting program which is useful at every level from beginners all the way up.

It can be fun (yes, fun) to run you favourite programs using different configurations, with hard disk boot programs, accessories, auto programs, desktop replacements and hardware modifications, etc., and observe how they change the performance of your system. Everything reported by Profile can be saved to disk or printed out (registered version only).

Profile is still under active development by Mark Baines and so it's well worth registering to support his efforts and ensure Profile is on hand when you need it.

To register send a cheque to: Linhe Computing, Linhe, Shore Street, Inver by Tain, Ross-Shire, IV20 1SF. Or order disk NW.24 from the FaST club to try the latest Shareware version.

	File	Report		Options	Helo
About Profile 2 ^1	Close Top Window ^Es Cycle Windows ^Ta		F1 FZ	Re-Read Data ^	R   STG - Context Help
The Chameleon	Save	Disk Drives	Þ	XBRR Compliance ^	STG - Contents ^Help Simple △Help
Control Panel	Current Page Range of Pages 4	S ROM Cartridge S Serial Devices	F4 F5	Fonts	www.
The server and service built a	Whole Report	S Falcon	F6	Dialog Position ^	
Latin and S.S. Sameling	Current Page	AES P Multitasking System	F7	Save Options ^	
in the sector wheel will an elem	Range of Pages 4	P Important Addresses	F9	Load Options ^	
And shares and starting	Printer Init 4		F18 △F1	presente conservation and the second	
the distance of land well	Current Page	RES Shell Buffer	⊳	the set for part and the	
The same show of the	Range of Pages 4	C Control Panel/GDOS C AUTOS/ACCS/CPXs	ΔΔ	was selected and public	
A 19 EX SERVICE OF SECONDARY	Whole Report	C VBL Interrupts	∆F5	<ul> <li>and the test set of the set of</li></ul>	
	Quit	0 Environment	△F7	and the set of an and a set of	TOUT TOUT WA
A la france and		System Variables Exception Vectors	△ <b>F8</b>	and the second second	Profile's Menus

printout, but no other setting up is

I found Cardfile very easy to use.

There is one thing to remember

though. The data is held in memory

while the program is active, so you

have to remember to save it before rebooting or switching off! The

registration fee is \$15 (minimum), but if you intend registering, then it

would be worth trying to establish

whether Mr. Gill is still at the same

needed.

Conclusion

address, etc.

# Cardfile

Cardfile is a shareware address program written by Tyson Gill of Cleve-land, Ohio in 1989. It's completely MagiC compatible and works in ST medium or high resolution. It has one great advantage: there is a desk accessory version. This means that you can call up Cardfile whatever you're currently doing. The acces-sory has got the facility to 'transmit' the currently displayed card into a word processor or similar program. It also has the ability to dial telephone numbers (if you have a Hayes compatible Modem).

#### Compatible Data Format

The data is stored in a delimited format compatible with many mail merge programs, and files can be imported or exported quite easily. All information is displayed in a movable, resizable window. On the right is a menu bar, on the left is the card template. Once some cards have been added to the file, the current card is always displayed here. The main menu bar is displayed first and gives access to all the other functions. You

don't have to define any fields as the card template has a comprehensive set of entry fields.

#### **Editing & Sorting**

When editing a card, you can use the cursor keys to move between the fields or position the cursor with the mouse. As you move from field to field, its suggested contents are displayed at the top of the window (both in American terms and their English equivalents). However, you are free to use them as you see fit.

The data is automatically kept in alphabetical order according to the following fields: last name, first name, middle initial and company name. There is no sorting facility otherwise.

#### Record/file selection

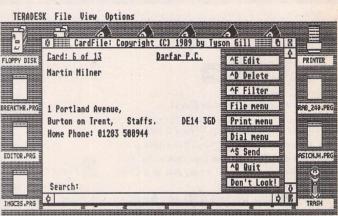
When not in edit mode, you can use the cursor keys to move through the file, or you can click the mouse on the window bar arrows. You can also enter a character string from the keyboard followed by RETURN, and the program will display the card whose last name field matches the specified string the nearest. Up to 2500 records can be stored.

▷ The Cardfile card template.

Cardfile can also be configured to open your database automatically when you start up the program. You shouldn't really need more than the one file, because the powerful filtering facility allows you to keep all your addresses in one place but print them separately when needed.

#### Reports

You can print address lists, telephone number lists, or simply an individual Name & Address (for an envelope or label). Empty fields are not printed, so making for neatness. There are also other options to adjust the final



SM124 — How to get the best picture from your SM124 monitor. Not for the faint (or weak!) hearted - high voltages involved!

SPEEDO - Fixing SpeedoGDOS (-4.2) for Kadinsky.

TOWER - Instructions on fitting

your ST into an IBM-style tower case.

VMEM - Virtual Memory utility from Germany.

XDEBUG S - X Debug screen driver for 640x480x2

DM.47 is a FaST Club Premier Disk (£1.25, £1 to subscribers).

File: INSTALL.RUF 65% 11:01:49am Displayer V1.1

# FaST Club Disk Magazine DM.47

## May 1995

ASCIIFIN - Provides both the ASCII code and the keyboard scan code for any key.

BABY\_BEN - displays the day of the week, date and time, in the top right hand corner of your monitor screen. Additionally, there is an optional screen saver, which will blank off your monitor after a few minutes if the keyboard or mouse have not been used.

CD EXAMINER - utility to do some low-level operations to a SCSI disk: start/stop motor, read sectors, read disk capacity info, get inquiry info (manufacturer's name, etc.), seek to a sector's cylinder (used to park heads), play audio tracks of a CD-DA, eject/insert a medium, and set output volume of a CD-ROM drive.

CHAR\_TAB - Character Table is a simple CPX program for the Atari XCONTROL panel accessory. It shows the current system font and allows any character to be clicked on and its value displayed.

**COMPARE** — Tools for stripping unwanted characters from lists and comparing lists.

DCMSTICK - Double Click utility that lets you use a joystick in place of the mouse.

DISPLAYER - an ASCII text viewing utility.

FATMAP - gives detailed information on cluster allocation on disks.

FPU68881 - how to fit a 68881

FPU chip into an ST

HDCNTRL - how to fit a 1.44MB floppy drive into an ST.

**INSCHAR** — an accessory to write a character to a program running at the time the DA is called as if it had been typed in at the keyboard.

**INSDATE** — As INSCHAR, except that it writes the date.

INV 099 - Invoice generator.

LOTTERY - Latest shareware Lottery Companion (v1.1b) package from Mark Butler.

METRICS — allows you to view the entire range of extended characters in Speedo fonts; requires SpeedoGDOS.

MOVIES12 - Screen saver.

MSB ANSI - Three GDOS bitmapped fonts that are equivalent to the three Atari system fonts and based on them, but include the ANSI characters suitable for comms on-line use and those using so-called IBM printer fonts in their word processor. Protext users will find them particularly useful.

**OVFIX** — The phantom typist TOS patch. Essential for very fast typists.

PF53 - Listings for the Programmers' Forum article in ST Applications issue 53.

RS232 - sets the flow control off and the baud rate to 19200 useful with Ghostlink.

The program VNEM.PRG changes\ed no vector. However instals\ed it a Cookie called VNEM, its value the start address the Service-Routine comprises\ed Dwner of the Shareware-program GEMIMI can (self) with the MUPFELKomwando COOKIE the available list display allow.

This word-by-word exchange from a German document, with some adjustments for German idiom, was made with an unregistered version of Ruftrade. 

Before the call of VMEM.PRG must sichergestellt is, that (self) a Cookiejar-list in the memory locates\ed. Normally is this list only first since TOS 1.6 available.

On the most simple copies\ed one VMEM.PRG in the AUTO-folder. After the Start of VMEM.PRG receive one a report, if the installation implemented become could or not. In the case that the installation not possible was, so lies this probable(ly) at the missing Cookiejar-list.

Invoice-in-a-Box v0.99 01994,	Graeme Rutt
No, 88881 To: Widgets Ltd Date 18/88/94 For: Lots of little things	
1 Swogit	£ 1.25 £ 3.50
3 Left handed Doggeradoo	
	£ .00
8	
Invoice Paid	Iotal £88117.88
	Print

RUFTRADE - Excellent German

to English translation package.

Lines: 3 - 26

Veränderte vectors:







Laurie Wedd - Forum STA 51

After my comments about CPXs a month or so back, here is a collection of fifty! I've added some docs. Hope they help. All tastes are catered for. One thing still on my wish-list - a ram disk in a CPX, MIKRAM-style.

I also got from Goodman's PD two programs which reckon to convert PRGs to CPXs - MAKECPX and CPXBUILD. I can't make either of them work. Has anyone used them and can give me an idiot's guide?

Finally, when loading CPXs I sometimes get a message "CPX is too large to load now. Reboot if you want to load it". But a reboot doesn't seem to make any difference. What's causing this? I'll be grateful for any tips.

Laurie Wedd



he Forum pages are a regular feature of ST Applications, enabling readers to exchange ideas and help each other out

with problems. Whilst we attempt to briefly answer questions here, if you have additional information or ideas please do submit them for publication. What you consider to be trivial information can often be of considerable use to other readers!

Please send your letters on disk if possible. Disks will be returned with a PD of the writer's choice. Longer submissions may appear as articles, in which case you will receive payment at our standard page-rate.

### Key:

The following codes are used for each Forum entry:

J Pringle - Forum STA 20: Author who first raised the subject, and in which issue.

Q Question

A Answer

General information or 'Input', advice, discussion, hints and tips, etc., with or without reference to previous Forum pieces.

Editorial reply

• Thanks for the disk of CPX modules; it is available as FaST Club PD disk NW.25.

# Calligrapher

#### John Higham - Forum STA 53

Q I have the same cover-disk/official version with not-quite-right manual as John Higham has. Although I have not met his problem with saving ASCII files, and as my printer is an ancient Epson FX80 I cannot comment on his BJ10sx's feeding extra sheets, but I have encountered another mystery quite recently. When operating in TEXT ONLY mode, the document will not print. It will, though, if I change to GRAPHIC TEXT mode.

TEXT ONLY used to allow the FX80 to print but without bold, underlining or  $\pounds$  signs (unless a hash was typed instead). Trying to change this state of affairs by entering FX80 codes in the SET TEXT PRINTER dialog did not work — in fact it created the present problem. Unfortunately, deleting the codes, intending to bring matters back to square one, did not work.

I have re-installed Calligrapher on to my hard disk but with no improvement; presumably doing this did not overwrite the corrupted existing file as I had hoped.

Can anybody suggest how things can be put right, please? Calligrapher with its excellent spell checker and thesaurus is very useful to me, but for much of what I do, using my primitive 9-pin printer's one and only system font is satisfactory and much faster than getting it to do a poor job with a graphic font. This is typed with Word Writer for convenience.

Phil Horton

# Proscore

Q I have managed to get Proscore v1.1 (Disk NW.19) up and running using the GDOS setup recommended (unlike the reviewer in STA.51). However, although I can load and print the example music file (very nice), I have found that any attempt to produce and edit a new piece simply produces an irrecoverable system crash, despite following the instructions to the letter.

My setup is a 1 Meg STE, running 'bare' (no other ACCs, etc.), using GDOS v1.1 and assocated fonts. I can only assume that the program is (ahem) incomplete, or that there are TOS or GDOS version problems (surely not!), or there is a hardware problem.

Keith Lye

ST Applications - Issue 54 - Page 20

 Possibly a problem with lack of memory; you'll be best served by contacting the author and checking if the registered users version suffers any of these problems.

### **Timeworks DTP**

Is there any chance of your being able to help me with some leading/line space problems?

I have Timeworks 2, and I use it to produce a monthly radio magazine. I have enclosed a sample copy and a master page for you to take a look at (I do all work at A4 and photo-reduce to A5). However, I want to tweak the magazine a bit now and make the subheads a bit larger. At present the bodytext is 12 on 14 Sans, and the subheads 14 on 14 Sans (with 14point space above). This means that the two columns line up neatly at the bottom of a page. However if I want to use a 20-point font (Sans) for the subhead, all my column alignments go astray! I have read and re-read your article in a previous STA, but obviously have missed something as no amount of experimenting has given me correctly aligned columns! Perhaps you would be so good as to give me a list of what settings I should use to get a nicely set page!

The bodytext will remain 12-point (always) — it is only the subhead font size I want to change (to 20point). Headlines are done in Textstyle, which is excellent for the job! A PC-owning friend was highly impressed by the program, and he has all the top PC programs to compare it to!

#### Mike Kerslake

• The reason your columns are lining up at present is because you are working in units of '14' for both body text and subheads. If your body text is to remain at 14 (12+2) then you should use a multiple of 14 for your subheads. A 20pt subhead will therefore need an extra 8 points to make it 2x14=28. This extra 8 should be entered in the Leading: that way you will get a little white space below the subhead as well as above it. Thus, you should stipulate a 20pt font with 28 points leading.

There is a problem with this arrangement, though. If your subhead appears at the top of a new column it will be pushed down, leaving an unsightly amount of white space above it (the bottom of the column will remain lined up, but not the top!). The way round this is to create two new paragraph styles, Subhead2, say, and a new one for the following paragraph. The subhead2 style should be 20 over 20 (i.e. a 20pt font with no extra leading and no space above) and the following paragraph will make up for 20 not being a multiple of 14 by having an extra 8 points entered in 'space above'. Call it something like bodyplus and base it on the usual 'no indent' body style you use after a subhead. Thus, your styles should now be:

Body text: 12 over 14 (12pt font with 14pt leading) Subhead: 20 over 28 (20pt font with 28pt leading) Subhead2: 20 over 20 (20pt font with 20pt leading) Normal no-indent body: 12 over 14 (as for body text)

Bodyplus: 12 over 14 (12pt font with 14pt leading) with 8 points space above

From this you should see that combinations of Subhead2 and Bodyplus now give a total of 42 points (20+14+8), a three-time multiple of your basic working line depth of 14. (DFS)



Batfax (FaST Club disk DM.45) seemed to be the answer to my prayers. Before registering, the program was installed on my STE (2 meg) and tested with my fax modem — a Supra Fax Modem Plus. Despite resetting the rate to 9600 the program refuses to send a fax, or even talk to my modem. It responds with the message "modem not responding".

Can any other reader help? The fax facility on the modem does work, since it operates with Faxmail on a PC compatible laptop.

Mark Juby

# ST Doormat

Q Inaccurate flippant nonsense isn't all ST Format is good at. The rump of my ST Review subscription, transferred willy nilly to ST Format, expired, and I was offered the chance to renew at £31. Joining from scratch using the form in the mag costs £30, and you get a spare mouse and mat — always useful to have.

Any chance of reviving your electronic access e.g. by an e-mail address?

#### Alan Price

Karen Levell has done an excellent job in bringing ST Format back from the brink of collapse. With the help of Frank Charlton and other freelancers ST Format is a readable magazine again and looks set to take on the challenge of Atari World. Just the sort of competition that Atari users need to revitalise the support for Atari computers!

You can contact us by email at stclub@cix.compulink.co.uk. Mail is recovered twice a week so stick to the telephone/mail for anything urgent!

## Feedback

#### Dr. John F. Reilly - Forum STA 53

I must respond to Dr John F Reilly's comments in issue 53 of STA. As I quickly scanned through the last Forum upon the magazine's arrival, I read the comments from Dr Reilly and honestly thought he was referring to ST Format. It was only on more careful reading some hours later that I realised that Dr Reilly was referring to STA.

Now STA may not have a glossy cover any more, and may look a bit dowdy compared to the full colour, and expensive, computer magazines down at the newsagents, but to describe it as 'tatty' is totally wrong. A 'tatty' magazine in my opinion is one that is badly laid out, poorly printed and full of poor and inaccurate writing. Not a description I would ever use to describe STA. It is well laid out, clearly printed and extremely well-written.

The contents of STA have no need to improve. Dr Reilly may not find anything of interest in the magazine, but I find much in every issue. Obviously some issues are not as interesting to me as they are to others, but on the whole I find at least 75% or more of an average magazine's contents to be of interest and use.

This leads me to ask the question: What does Dr Reilly use his Atari for?

Perhaps he could tell us all, then other readers could write some contributions to suit the good doctor, or Dr Reilly could even put together an article on what he does with his ST - this is a serious suggestion.

Programmers' Forum: I am not a programmer, and cannot say I find the programming pages of great interest - though any bits on fonts or printers I do find very interesting. But if it was not for the programmers, then we would not have the great programs we now have on the ST. Programmers developing for the ST need all the support they can get. If a few pages in STA every issue helps them improve their skills and solve problems, then they are more than welcome to them in my opinion.

Let us not forget that many of the good programs now available for the ST are shareware. Their authors do not have big software companies to advise and help them, they are on their own. A small percentage of space devoted to programming matters in STA every issue is worth it if we are to encourage programmers to stay with the ST (and Falcon!).

I find that the only thing I can agree with Dr Reilly on is the fact that the ST is a damm fine machine. As for running a hundred times faster, well I wouldn't be able to type fast enough to keep up!

Carry on the excellent work!

#### Mike Kerslake

PS: I am still hoping that there are some ST users in my area (Sheffield and environs) who might want to meet for a drink and a chat every now and then. If there are, give me a call on 0114 261 8940 at any reasonable time.

#### Two Wrinkles

Rex Boys - Forum STA 52

#### What a disappointment you are!

I was so proud of inventing a new word but you didn't cotton on and assumed it was a spelling mistake.

When the letter that you published at the end of the April batch left me, it was headed, "Two Wrinkles from a Geriataric".

That's right, geriATARIc.

It means an elderly Atari user. There are quite a lot of us, almost a niche market, in your sort of speak. I belong to a club for retired professional and business men; of 40 members, about 6 are dedicated computer users, though I am the only one with an ST.

What we need is an equipment set-up that puts the screen lower down where it can be viewed through the bottom lens of our trifocals. As time passes, the need for this will expand. Eventually, it will be on your wish list too, you know.

**Rex Boys** 

Sorry, but my incurable pedantry seems to have

have one, honest!). I grovel in a base attitude, I beat my breast, I murmur 'mea culpa, mea culpa' the while. Incidentally, I too wear varifocals and have no problem with the monitor at the same level as my eyes. But perhaps a bar-stool might help? (DFS)

got the better of my sense of humour (and yes, I do

### **Route Finder**

#### Graham Curtis - STA 52

With reference to the Route Finder review by Graham Curtis in Issue 52, April 1995, page 10: I have an unregistered copy of Route Finder version 2 and whilst I fully endorse Graham Curtis's review I disagree with his 'minuses' comment that the program has 'limited printer support (DeskJet support on the way)'. The enclosed route, Derby to Stow On The Wolds, is a print-out on a standard HP DeskJet using the program's PRINT command, which is contrary to Graham's statement. I cannot comment on the support for other printer types. Note that version 2 has a spelling error which shows Wood for Wold.

For anyone who has a need for such a program then the asking registration fee is a bargain.

**Ray Tufft** 

## NVDI vs SpeedoGDOS

Terry Dwyer – Forum STA 49 Malcolm Riley – Forum STA 50 Ian Braby – Forum STA 50 Laurie Wedd – Forum STA 51 Ina Braby – Forum STA 51 Mike Kerslake – Forum STA 51 Leslie W. Dewhurst – Forum STA 52 Colin Watson – Forum STA 52 Leslie W. Dewhurst – Forum STA 52

A Ian Braby and others who find keeping track of NVDI fonts a problem may find these PD programs helpful. SPD\_LIST makes a list of your installed fonts in ASCII, while GEMFVIEW and GENERAL GDOS show and name installed fonts. Also on the enclosed disk are two Speedo fonts which seem to be PD, though after past Forum comments about Bitstream I worry about this.

#### Laurie Wedd

 SPD\_LIST, GEMFVIEW and GENERAL GDOS are available on FaST Club disk FN.102. We've been sent a number of Speedo fonts that the sender assumed to be freely distributable, but all have had a ©Bitstream message in the font file and no accompanying text files to indicate the full status of the fonts. Comments/help most welcome if anyone knows the source of these (or any other freely distributable Speedo fonts).

#### Spectrum Format

Q I recently bought a copy of Spectrum 512, the graphics program. Having looked all over the manual I still cannot find any specifications of the Spectrum picture file format.

Can antone send me the specification of the SPU and SPC picture file formats? Thanks!

Aljo Wijnands

# Shareware Ripoffs

Last August I sent \$20 to MDS Development in the States to register a copy of the sector editor DiskMech. The Read-Me file promised updates and manuals, but despite writing again and asking the Post Office to trace the original registered letter, I have heard nothing from them.

Publishing a list of shareware products that are known to be no longer supported sounds like a good idea, although such a list is unlikely to be comprehensive. Listing supported products would be less helpful - the author may have had good intentions when last contacted, but it only takes a house move, new job, marriage, or other domestic upheaval to make the rewards of supporting a product seem unattractive.

Judging from the other contributions on this subject, the best idea is to write first with an International Reply Coupon, to find out if the program is still supported. Then, at least, when you do send money, there is a reasonable chance of getting something back. The list of "dead" products would at least save some wasted postage, and might influence the decision to buy in the first place.

Banks and post offices are remarkably unhelpful when it comes to sending small sums abroad, but I finally dragged it out of a counter clerk at Lloyds that the best way is to buy the currency and send it by registered post. Registration for overseas mail is surprisingly cheap, but the post office is under no obligation to compensate you, if loss is the fault of a foreign postal service. The required investigation takes several months and so you might question whether registration is worth it. Of course, it gives you no protection at all, if the guy at the other end just pockets the loot.

Shareware will only work properly if there is trust between users and authors and at the moment there is precious little on either side. Unfortunately, to do anything about it would put an administrative load on PD libraries that, at best, would put up costs, and at worst would send most of them out of business.

Phil Trory

Aries

Q I have had an Aries 2MB RAM expansion board sitting around my office from a Mega ST purchase some months ago but I've not got any fitting instructions. Can anyone help?

Simon Rush

## Calamus

Whilst considering myself still at the apprentice stage of computing, I thought, gathering from endless letters about their printers not printing the bottom of a page, that some readers would like to know that this is invariably down to the Printer Driver.

Recently I wrote to Alastair Craig of JCA (Europe), about this fault occuring on Calamus SL. He responded by next post and told me about a program within SL (in the Printgen folder), named, Cpdg.Prg that allowed the SL user to to reprogram their printer driver. With it you can change the format of page size and margins, as well as anything else you like for SL printer drivers. Also they may like to know that Calamus 1.09n and SL drivers are interchangable. You have to change the suffix. Maybe we could persuade Calamus to issue the program seperately for 1.09 users as it does not come with that.

Users of other programs obviously could not use CPDG, but at least they would know that the problem of their missing a bit off the bottom of the page is not the printer but the driver. Of course those who are clever enough can write their own prgs. I couldn't. Or other program writers could do the same as Calamus has done.

Nikky Baker

## Falcon Emulators

#### B Foster - Forum STA 52

As a follow-up to B Foster's question in STA 52 on the subject of emulators fitted on the Falcon, has anyone fitted a 286 PC emulator, and if so, how does it perform? Is it buggy, fast (or slow)? I only envisage using one or two PC specific programs. The person I spoke to in Compo could not offer any real pointers. Also, has anybody heard of a 486 board being developed for it, because I believe what is needed is the ability to use PC programs relatively easily? If it is a case of one or the other, the PC wins purely because of the mass of programs available. I see that Acorn are marketing a PC board now, even if a bit pricey, at about £380, 1 believe.

Ken Johnston

 At an advertised £199 Falcon Speed looks like an expensive way to run PC applications and as a 286 emulator it will perform slower than a real 286! If you only want to run simple DOS based applications then I suppose it should be up to the job.

If you have a SVGA monitor connected to your Falcon then it could be more cost effective to buy a secondhand bare-bones 286 or 386 system and connect it to your Falcon monitor!

A 486 PC emulator was planned for the Falcon but disappointing Falcon sales coupled with Atari completeley losing their 'power without the price' advantage seem to have put paid to this. Indeed, it makes a lot more sense to put Atari emulation into low cost hardware from Apple, IBM, etc! Sadly, no one has yet got as far as developing a Falcon emulator for the PC or the Mac.



I bought NVDI 2.5 at the Atari show here in Glasgow at the end of last year, and, as one says, My word! - or something like that. It really does make screen updates fly. But when installed on my STE 1.62, Write-On could not find its files. The file name came up on the header bar but the writing region stayed blank. I eventually found if I turned off NVDI.ACC and rebooted it righted itself. I also found that FastCopy 3 did not have any track fill-bars even though it still formatted, etc.

Any thoughts, technical people, because I'm unfortunately not one. I have found a reference to NVDI in the ST Review (of happy memories), series on Calligrapher in the same vein (I have to disable GDOS.PRG to run Calligrapher). So what is the answer? Do I have to accept the need to turn programs and accessories on and off all of the time? On another point, what does one do with two or three

prgs, which all want to be first in the Auto folder? I'm thinking of Pinhead, Gemram, etc.

Ken Johnston

NVDI has a number of compatibility problems check with System Solutions for support and details on the best ways around these problems. You can smooth the process of enabling and disabling Auto probrams and accessories using Superboot or Mouse Boot (reviewed in this isue of ST Applications).

Resolving conficts with Auto folder programs that need to run in a set order comes down to trial and error.

# NVDI 3.01

I I have experienced problems using NVDI 3.01 with the Canon BJ-10ex printer using the supplied BJ-10e printer drivers. When printing using these drivers, the characters "CJ" are printed at the top of the page. To get round this problem it is necessary to use the MAKEPRN program to edit the BJ-10e printer driver and remove the "ESC @" control sequence from the Start Page field. The "ESC @" control sequence is invalid for the BJ-10ex in BJ-130e emulation mode. By removing the "ESC @" control sequence the driver works correctly.

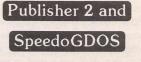
Simon Daw

# Shareware Column Has Joe's Shareware Column been scrapped? (on CIX)

A No, I completely missed the deadline working on stuff for Atari World! :-(

> Joe Connor (on CIX)

ajl



HD Smith - Forum STA 53 Peter Slegg - Forum STA 53

There is a program just about to be made available to generate Timeworks width files for Speedo files. It should sort out the problems that H D Smith and Peter Slegg talk about in Forum (53, p23) but I have no proper details at the moment (I'm just a beta tester) and I don't have the authority to say much about it.

I guess the program will appear on a FaST Club disk rsn.

#### Chris Lawley CIX #402

 As soon as we get a copy of the release version of this program it'll be on disk FN.102.

# Atari on the Net

Arundown on some of the Atari–related issues that have been discussed recently on the Internet.....

his is a monthly round-up of the discussions that have been happening on the Atari newsgroups, mailing lists, and World Wide Web (WWW) sites which are currently active on the Internet. Some months there is a lot of activity and rumours, others it is more silent, but whatever happens, you will normally hear it first "on the Net". It has to be pointed out that most of the points of view in this series are those of other people of the newsgroups who have contributed to a discussion; I have called such people "readers".

#### **Calling Atari Owners**

The idea of a giant Atari "conference" was brought up and discussed by a number of readers last month. Not really a conference in terms of sitting listening to some boring person talking about some boring subject that you don't care for, but more like a meeting, a "get together" for the Atari community; what's more, it would be a UK venue.

The Usenet news groups for the Atari are like a little family, always the same people talking about issues with the odd outsider joining in now and then, who eventually becomes another member of the regulars. The idea of the Atari Conference was a chance to meet up with these people and just spend a day talking to each other. You wouldn't find any stalls, there would not be HiSoft or Compo as a company selling you things, just your average everyday Atari enthusiasts spending a day together, from all over the UK. Just like the "good old days"!

But the UK is a big place and the venue for such an event was up for major discussion as you can imagine. The conclusion was to hold it somewhere in the Midlands, which would keep everyone happy. But where in the Midlands? Yet more problems and once that had been sorted out you still have to work out which building you are going to use. The best idea I heard was to hold such an event in a backroom of an existing Atari show. That way, it wouldn't matter where it was held (although most shows seem to be in the Midlands or London), as everyone would be there already.

Well, the debates keep going and I'll keep you posted if and when such an event does take place. One thing is for sure, it would be a great event.

#### **Too Many Falcons?**

News of the new Atari magazine, which will have reached the newsagents by the time you read this, was well received by the Atari Internet community who had been talking about such rumours for months. One of the biggest critisms about the current Atari magazine available is that there is too much Falcon coverage, or screenshots of reviews being taken on Falcons.

But shouldn't this be the case? One reader seemed to think so, stating that in the PC magazine world where screen shots are taken off the latest 486 or Pentium machines and not old 386's. With this example most people don't notice much difference, as a PC running Windows is a PC running Windows. It has always been the case, and in my mind correctly so, that if you are a computer magazine then you want to have the latest technology to review software on, otherwise noone will see the benefits of the latest computer and so won't upgrade. Disagreeing with this would be holding back the actual computer, so the same people who want new computers made will actually be damaging any advancements by not letting magazines give new technology coverage. Even with Atari now out of the computer business, you still have third party companies developing new TOS-based computers. Still, I must admit that

it's a bit disappointing when you see a review on a Falcon knowing full well that it won't look much like that on your high-res TOS 1.62 setup.

An interesting point from a reader was that maybe developers should use all the technology that each platform gave them, and so the need for a better computer was not necessary. Although not directly linked with the issue of too much Falcon coverage, it does raise a point that once upon a time you had Chess on a 1K ZX81. If you could get all of this in such a small and simple machine (basically a CPU, memory, and an I/O chip) why then do you have to put aside 50Meg odd for a word processor on the PC? Atari ST TOS runs very well indeed with 1Meg (4Meg being a luxury), while Windows on the PC likes 4/8Meg (with 16/32Meg being a luxury about to become a standard).

Let's hope that Atari World is the magazine which we have been waiting for, since all the others seemed to be merged into one (three magazines in one, and still hardly any pages, that's data compression for you!). I look forward to seeing it next week and following the topics raised afterwards.

#### The Ultimate Book

You've seen the software, now read the book. We all know Richard Karsmakers as the bloke behind the Ultimate Virus Killer, and now, according to the news section of the Atari WWW Home Page, he's written a book along the same lines called "The Ultimate Virus Killer Book". It looks as if we will soon be able to have all of Richard's knowledge in a book as well as on disk, so while you're busy giving your disk collection a virus check you can read about it at the same time.

The book covers topics such as what viruses can and can't do, a history of Atari, MSDOS, Apple and other viruses, a description of

## **Stephen Ticehurst**

each virus. It also includes a full and extended manual for the Ultimate Virus Killer software. The whole book adds up to 250 pages of virus knowhow by a bloke that has certainly seen the odd virus in his time.

I myself look forward to when it is released. I spent most of last weekend getting rid of a rather nasty virus that I must have caught off the University's network!

#### Good Boy

It looks like Rover's days of fetching the newspaper could soon be over, unless Rover happens to have an Internet account. Following the current Internet fashion, the Daily Telegraph can now be obtained online via WWW at http://www.telegraph.co.uk/. As well as all the front page news items, you can also view home news, city news, sport, even features and the Telegraph Gazette. Oh, and you can receive weather pictures and cartoons!

Another site in the States allows you to create your own newspaper — you choose what you would like and each day you can read your own personalised newspaper. You can even give it a name. Unfortunately it's USbased, so unless you really want to know the latest news from Washington, or how the weather will be in California it is not that interesting to us UK-based people.

The idea of the electronic newspaper has been around for a long time but has never really caught on. Maybe it is because most sane people like to relax on a comfortable chair and read the paper instead of booting up their PC, but that's a whole different issue.

If you have any comments, views, or details on interesting Internet sites that you think would be worth a mention, then feel free to email me at: s.ticehDurst@bton.ac.uk



**ST** Applications' regular programming column continues its mini-series exploring the 68030 memory management unit.

#### Introduction

In last month's edition of Programmers' Forum, the basic operation of the 68030 memory management unit (MMU) and its practical uses were introduced. Building on that foundation, this instalment will focus on the address translation table. Several of the terms and concepts used in the discussion below were defined last month, so it might be useful to refer back to that article if anything is unclear.

The detailed process of translating a logical address into a physical one is largely carried out using a lookup table. This lives in normal memory, where it can be inspected and altered by user programs. Under Falcon TOS 4.02, the system places the translation table at address \$0700, though programs can install new translation tables anywhere in memory.

The format of the address translation table is rather complicated as there are many options and possibilities. These are mostly regulated by the contents of the translation control (TC) register, whose operation will be described in detail next month. For the purpose of this article, only four of its nine fields will be mentioned — the TIA, TIB, TIC and TID fields (Figure 1).

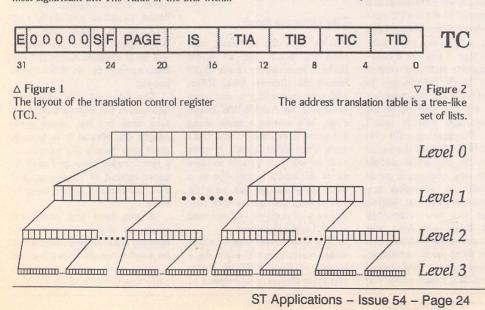
#### Table structure

The fundamental structure is a hierarchical tree (Figure 2), made up of up to four levels. To translate an address, it is first divided into up to four fields, A, B, C and D, starting from the most significant bit. The value of the bits within field A is interpreted as an index into the top level table (Level 0). Data retrieved from this table is then used as a pointer to find the appropriate table in the next level down (Level 1). The value of field B is used to index into this table, locating a pointer to a Level 2 table, indexed by field C. This process is repeated, until field D is used to index into a Level 3 table: the data read from this table gives the physical address to be used.

On each search, a limit on the allowable range of indexes can be imposed. This reduces the number of entries needed in a table, so saving space. Limiting is often used to dispense with entries covering addresses not used in a system. If index limiting is enabled for a table, then the index derived from the logical address is checked against the upper or lower limit. An index outside the allowed range causes the search operation to be aborted with a bus error.

To simplify things and keep the translation table size within reasonable limits, the MMU deals with memory in larger units than bytes or words. The bottom level entry in the table specifies the translation for a whole page of memory: a block of addresses spanning between 256 and 32768 bytes (8 to 15 bits of address space), depending on the MMU configuration.

As if this process were not confusing enough, there are lots of variations. First, fields A to D are not fixed sizes: each can be set to be between 0 and 15 bits wide, with a zero value indicating that a level is unused. This is done using the TIA, TIB etc fields of the TC register: for example, to make field A 5 bits wide, TIA is set to 5.



The MMU checks that the field sizes and the page size are consistent, and gives an error during configuration if not. To keep it happy, the total sizes of fields A to D, plus the number of bits of address space determined by the page size must come to exactly 32 (the size of an address). The field sizes determine the number of entries in each table: if field B is six bits wide, then there will be 64 entries in each level 1 table.

Secondly, table entries can be of two kinds: a table descriptor or a page descriptor. Table descriptors point to lower-level tables, in the manner described above. Page descriptors abort the search immediately, and give a physical address which forms the answer to the translation process. Ordinarily, all Level 3 table entries are page descriptors. However, page descriptors may also occur in upper-level tables, where their effect is to map a large span of logical addresses onto physical addresses in the same way. In terms of the tree structure, this is equivalent to lopping off a branch, saving memory by omitting repetitious and unnecessary low-level tables. This feature is used extensively in most translation tables, because it is unusual to need to map each memory page differently from its neighbours.

Finally, both table and page descriptors come in two flavours — long and short formats, occupying 16 and 32 bits respectively. Longformat descriptors are more flexible than shortformat ones, but the latter are entirely adequate for most purposes.

#### Table entry formats

Figure 3 shows the formats of the commonlyencountered translation table entries. Each entry is composed of several fields, whose meanings are listed in Box 1. The notes below provide further explanation about their role in individual cases:

• Short format table descriptor

The table address field provides the upper 28 bits of a pointer to a lower-level translation table - the lower four bits are taken to be 0, so each table must start on a 16-byte boundary. The DT field must have values of 2 or 3, and specifies the size of the entries in the lower-level table.

#### • Long format table descriptor

As for the short format table descriptor. The limit fields indicate index limits for the lower-level table.

Short format page descriptor

• Long format page descriptor

The page address provides the upper 24 bits of the physical address to form the translation result. If the page size is larger than 256 bytes, an appropriate number of least significant bits of this value are ignored. To form a complete translation result, simply add the page address to any bits of the logical address that have not been used for table indexing.

Finally, to speed up address translation, the 68030 maintains an on-chip cache of translation details for the last 22 descriptors accessed. Most of the time it can be ignored, but programs that alter the translation table must flush this cache before the new table will operate properly.

#### Example

An example may help to make sense of the complexities of translation tables. The task is to find the physical address that corresponds to the logical address EC253198. The TC register settings are such that the page size is 32768 bytes, and the table index fields A, B, C and D are 4, 4, 4 and 5 bits respectively. These settings are acceptable to the MMU because 4 + 4 + 4 + 5 + 15 (for 32K memory pages) = 32.

Figure 4 may help visualise the following process:

- Obtain the address of the start of the Level 0 table. The details of this process are covered in next month's article.
- Use the Table Index A (TIA) field of the TC register to determine the size of field A, and then take this number of bits from the address, starting at the most significant bit. In this example, TIA is 4, so the index value will be 14 (\$E the upper 4 bits of the logical address).
- Decode the fourteenth entry in the level 0 table. For this example, let it be a table descriptor, pointing to the start of another short-format table (which will therefore be a Level 1 table).
- Use the Table Index B field to get the size of field B, and then extract this from the logical address. In this case, the value is 12 (\$C).
- Decode the 12th short format entry in the level 1 table. Let it be a page descriptor with address value \$46000000.
- Since it is a page descriptor, the search is aborted, and the descriptor value is used to make the physical address: \$46000000 + the as-yet-unused bits from the logical address, making \$46253198, which is the final answer.

Finally a note of warning: several rarely used features of the MMU have been omitted from this discussion. These include the roles of the initial shift field, function codes and indirect table descriptors. For most normal purposes, these can be ignored, but for a full understanding of their use, see the Motorola documentation: MC68030 - Enhanced 32-bit Microprocessor User's Manual (MC68030UM/AD).

#### The bottom line

That's all for this edition of Programmers' Forum. Correspondence about issues raised in the column, hints on any subjects, or questions about programming problems should be sent to the address below. All contributions, no matter how simple or advanced, are most welcome. Please include your address on the letter, so I can get back to you if anything in your contribution is unclear. Email addresses are useful too.

One last point, about email. Whilst I am very happy to receive contributions by email, please include your real name in the message, as cryptic alphanumeric user identifiers are not terribly useful. Please send a disk or email if there are large chunks of text or ASCII source code: I have no time to retype lots of material. Naturally, disks will be returned if an SAE is included.

> Jon Ellis Programmers' Forum 29 Ashridge Drive Bricket Wood St Albans Hertfordshire AL2 3SR

> > Email:

jonellis@cix.compulink.co.uk

# Box 1 - Field meanings

The bit fields in Figure 3 have the following functions:

DT: Descriptor type. This field determines the function of a table entry. The values are:

- 0 The table entry is invalid, and the table search aborts with a bus error.
- 1 The table entry is a page descriptor.
- 2 The table entry is a short format table descriptor. 3 The table entry is a long format table descriptor.

U: When set, this bit indicates the the MMU has accessed a table entry. It is never cleared by the processor.

W: As a translation search progresses, the processor ORs together the W bits of each table entry encountered on the path to a physical address. If the resulting bit is set (ie one or more of the W bits along the way were set), then the physical address is write-protected, and any write access causes a bus error.

C: If set, this bit inhibits caching of the physical addresses associated with this page. It applies to both 68030 instruction and data caches.

LIMIT: These fields control index limiting. The L bit indicates whether the value in the LIMIT field is an upper (L clear) or lower (L set) limit for the table index. In either case, LIMIT is an unsigned 15-bit number. The limiting check is applied like this: if (L == UPPER && index <= LIMIT)

To disable limiting, a lower limit of 0 or an upper limit of \$7FFF is set.

M: This bit is set when a write operation is made to a logical address covered by the table entry. It is never reset by the 68030.

S: If set, this bit causes access to the logical addresses covered by the table entry to be confined to programs operating in supervisor mode.

UNUSED These bits are not used by the 68030 and may be given any value.

1

0 Where a bit is explicitly given a value, it should be written as this value whenever a table entry is being prepared.

# Box 2 - Practical Translation Tables

Tables 1 and 2 contain reports on two Falcon memory translation tables that illustrate the practical use of some of the features discussed in this article. The reports were produced by an early version of the program that accompanies this mini-series, which is built from Listings 1 and 2 from last month, and a C listing which will appear next month. The translation tables are decoded to show the address blocks that they map, together with the control flags that apply to indicate the table level.

Table 1 is a decoding of the default TOS MMU setup. It shows how the MMU is used by TOS to make addresses \$00xxxxx and \$FFxxxxx equivalent to each other. The reason for doing this is to resolve a confused state of affairs regarding the correct address for the memory-mapped hardware registers that live at the top of memory.

The problem arises from a feature of the 68000 address bus. Although the 68000 is programmed as though the address bus were 32 bits wide, in fact only the lower 24-bits are physically used to address memory. The upper 8 bits are simply ignored. As a result, addresses 00123456 and AB123456 (for example) will physically access the same byte of memory.

Early ST documentation was rather vague about the correct way to access memory-mapped hardware devices, such as the video shifter based at \$FF8200. Some programmers would use the address \$00FF8200 to access this chip, whereas others would use the address \$FFFF8200. On the ST, there is no practical difference, but on 68030-based machines, the two are completely different addresses, because the 68030 has a full 32-bit address bus. To maintain compatibility with programs written in both styles, TOS uses the MMU to map two blocks of logical addresses, \$00xxxxxx and \$FFxxxxxx onto the same block of physical addresses: \$00xxxxxx.

Table 1 also illustrates another facet of MMU use: using the MMU to control the way memory is accessed rather than altering its logical address. The logical addresses that are mapped to \$00Fxxxxx, the area that includes memory-mapped peripheral chip registers, have table entries with the cache inhibit bit set. This prevents the 68030 caching reads from peripheral chip registers, ensuring correct operation.

Table 2 is a decoding of the translation table installed by ROMSPEED - the program that copies TOS into RAM. It indicates that ROMSPEED has installed a copy of the TOS ROMS at address \$98000, and then mapped logical addresses \$00E00000-\$00EFFFFF to \$00098000-\$000197FFF. This block has then been write-protected by setting the WP bit in the page-descriptor block.

Programmers'	Forum			
63	48 40 34 32		¢ E O	2 5 2 1 0 0
L LIMIT	1 1 1 1 1 1 0 S 0 0 0 UW DT	Long format table	\$ E C	2 5 3 1 9 8
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31	4 0			
63	48 40 34 32		Field A Field B	Field C Field D Not used for table lookup
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TABLE ADD	DRESS (upper 28 bits) UW DT	Short format table descriptor		
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	and the second second second	Short format page	0	st commonly used translation table entries - see
PAGE ADDRES	SS (upper 24 bits) 0 C 0 MUW DT	descriptor		f the individual fields.
31	8 0			
MMU Translation Report	er		\$B0000000-\$BFFFFFFF -	> \$B0000000-\$BFFFFFFF (Cxxx)
Jon Ellis, 26 March				> \$C000000-\$CFFFFFFF (Cxxx) > \$D000000-\$DFFFFFFF (Cxxx)
Translation control:	Address translation enabled			> \$E0000000-\$EFFFFFF (CXXX)
	SRP disabled Page size: 32768 bytes		\$F0000000-\$FFFFFFF:	Level 1 table (16 short entries) at \$00000780
	Function code lookup disabled	A Garden and	No index limits	<pre>? -&gt; \$F0000000-\$F0FFFFFF (Cxxx)</pre>
	Initial shift: 0 bits Table index A: 4 bits	distant presented in the	\$F1000000-\$F1FFFFF	7 -> \$F1000000-\$F1FFFFFF (Cxxx)
	Table index B: 4 bits Table index C: 4 bits			? -> \$F2000000-\$F2FFFFFF (Cxxx) ? -> \$F3000000-\$F3FFFFFF (Cxxx)
	Table index C: 4 bits Table index D: 5 bits		\$F4000000-\$F4FFFFF	7 -> \$F4000000-\$F4FFFFFF (Cxxx)
Transparent reg 0:	Enabled			7 -> \$F5000000-\$F5FFFFFF (Cxxx) 7 -> \$F6000000-\$F6FFFFFF (Cxxx)
Transparone roy of	Function code: %xxx		\$F7000000-\$F7FFFFF	? -> \$F7000000-\$F7FFFFF (Cxxx)
	Transparent block start \$01000000 Transparent block end \$7FFFFFF		\$F9000000-\$F9FFFFF	7 -> \$F8000000-\$F8FFFFFF (Cxxx) 7 -> \$F9000000-\$F9FFFFFF (Cxxx)
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CPU root pointer	the states with a set in provide the	ne valer is never citta i	\$FF200000-\$FF2FF1	PFF -> \$00200000-\$002FFFFF (xMUx) FFF -> \$00300000-\$003FFFFF (xMUx)
			\$FF400000-\$FF4FF	PFF -> \$00400000-\$004FFFFF (xxxx)
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\$00400000-\$004F	FFFF -> \$00400000-\$004FFFFF (xxxx)	and all a state of the		1/-//
	FFFF -> \$00500000-\$005FFFFF (xxxx) FFFF -> \$00600000-\$006FFFFF (xxxx)	and the same of the second second	Unused SRP:	Limit word: \$10000000 Descriptor type: 0
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\$00C00000-\$00CF	FFFF -> \$00C00000-\$00CFFFFF (xxxx)	and he was a constant	Translation control:	Address translation enabled
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\$00F00000-\$00FF	FFFF -> \$00F00000-\$00FFFFFF (CMUx)	and the other states and		Page size: 32768 bytes Function code lookup disabled
	FF -> \$01000000-\$01FFFFFF (xxxx)	and an one reaches		Initial shift: 0 bits Table index A: 4 bits
	FF -> \$02000000-\$02FFFFFF (xxUx) FF -> \$03000000-\$03FFFFFF (xxxx)			Table index B: 4 bits
	FF -> \$04000000-\$04FFFFFF (xxUx) FF -> \$05000000-\$05FFFFFF (xxxx)			Table index C: 4 bits Table index D: 5 bits
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\$0B000000-\$0BFFFF	FF -> \$0B000000-\$0BFFFFFF (xxxx)	A STATE OF THE OWNER		Read/write accesses translated
	<pre>'FF -&gt; \$0C000000-\$0CFFFFFF (xxUx) 'FF -&gt; \$0D000000-\$0DFFFFFF (xxxx)</pre>	and a state of the		Caching enabled
\$0E000000-\$0EFFFF	FF -> \$0E000000-\$0EFFFFFF (xxUx)		Transparent reg 1:	Enabled Function code: %xxx
	'FF -> \$0F000000-\$0FFFFFFF (xxxx)	investigation and		Transparent block start \$80000000
	<pre>' -&gt; \$10000000-\$1FFFFFF (xxUx) ' -&gt; \$20000000-\$2FFFFFFF (xxUx)</pre>	enventri detti ini ma		Transparent block end \$FEFFFFF Read/write accesses translated
\$30000000-\$3FFFFFF	' -> \$30000000-\$3FFFFFFF (xxUx)			Caching disabled
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	<pre>? -&gt; \$60000000-\$6FFFFFF (xxUx) ? -&gt; \$70000000-\$7FFFFFFF (xxxx)</pre>			
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\$0020000-\$002FFFF -> \$0020000-\$002FFFFF (xMUx)	No index limits
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\$04000000-\$04FFFFFF -> \$04000000-\$04FFFFFF (xxxx)	No index limits
\$05000000-\$05FFFFFF -> \$05000000-\$05FFFFFF (xxxx)	\$FF000000-\$FF0FFFF -> \$00000000-\$000FFFFF (xMUx)
\$06000000-\$06FFFFFF -> \$06000000-\$06FFFFFF (xxxx)	<pre>\$FF100000-\$FF1FFFFF -&gt; \$00100000-\$001FFFFF (xMUx)</pre>
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\$08000000-\$08FFFFFF -> \$08000000-\$08FFFFFF (xxxx)	\$FF300000-\$FF3FFFFF -> \$00300000-\$003FFFFF (xMUx)
\$09000000-\$09FFFFFF -> \$09000000-\$09FFFFFF (xxxx)	\$FF400000-\$FF4FFFFF -> \$00400000-\$004FFFFF (xxxx)
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#### **For Sale**

Calamus S v2 £120 (cost £145 for upgrade). Will also supply additional fonts. FOC Korgoi, Roland DSO, Yamaha DX7 Voices available at bargain prices. (NB: original software, not copies!) Tel Robin 01522 752458 (eves). (55)

20 ST games for sale, all originals: dungeon Master and Chaos, Legend, Megalomania, Supremacy, Captive and more. All of them for £40 or sell separately. Call Paul on 0181 672 2597 eves. (57)

PageStream v2.2 + extra fonts, complete £70. DA's Vektor disks and manual in box £60. Timeworks v2.1 disks and manual in box £20. M. Harris 0171 239 8974 day time. (56)

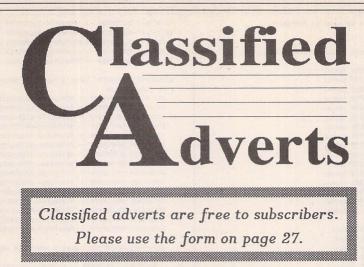
Protext 5.02 £25. Warp 9 £10. Plus games and utility software. Call Paul on 0181 672 2597 eves. (57)

Geerdes Wavestation Editor £45, PG Music Jazz Guitarist £18, Band-in-a-Box v4 £18, HiSoft Saved! £4, HiSoft Proflight £10, F19 Stealth Fighter £6, K-Graph 3 £6, K-Spread 3 £6, Starglider 2 £4. All prices include postage. Fred 01633 266647 after 6. (54)

Calamus SL and Assistant £120; Calamus 1.09N and 20 font disks £30; Signum 2 and STAD £10. All original with masters and manuals. Reading (01734) 886215. Also many PD disks. (54)

Atari SLM 804 laser printer for spares or repair £25. Tel: Dave on 01922 616358 after 6.30pm. (58)

4MB STE TOS 2.06, SM124 mono monitor, 52MB hard drive, 2nd floppy, scanner, monitor switch, Timeworks 2. Datamanager, Swiftcalc, Imagecopy 2, Textstyle, Speedo, Warp 9, UIS, View II, Diamond Edge, Diamond Back, Touch Up, Degas Elite, Fontkit Plus



and loads of PD disks - £500 the lot! Phone Steve on 01633 892749. (57)

STOS plus STOS Word and Gamemaker Manual £23\*; Lattice v5 £24\*; C-Breeze £8, Superbase Personal £10, Fast Basic v1.05 (disk) £12, Timeworks v1.12 and Users' Guide £19, Corporation £6, Starglider 2 £5, ST Internals £10, ST Tips and Tricks £5, ST Graphics and Sound £5, Ultimate Ripper Cartridge £12. Items marked \* plus £2 postage. Tel: 01277 226621. (55)

Timeworks 2.00a £30, Timeworks 1.12 £25, Proflight 1.22 £15, Monkey Island £8, SEUCK £5, Balance of Power 1990 £5. The Patrician £7, Pirates £7, Air Bucks £7. Phone Chris on 01452 863137. (55)

External 3.5" disk drive with power supply £24 inc. postage. Tel: 01738 637165. (55)

STFM with 4MB RAM, TOS 2.06, switcher, PC Speed, Cartridge Clock, 38400 Serial modem: £200. Minis 127MB hard drive £130. SM124 mono monitor £50. Golden Image hand scanner and Touch Up £40. Phone Paul on 01703 617711 (S'hampton). (54)

SM125 mono monitor £60, Supra 20MB HD £70; Lattice C v5.52 £25, X-Debug £10, Mag!X 2.0 £30, Multi-TOS £25, FTL Modula-2 Developer version £25, FTL Modula-2 standard version £20, NeoDesk 3 + CLI £15, MCC Assembler £10, MCC Pascal £10, Minix £20; Books: Atari Compendium £20, Abacus GEM Prog. Ref. Guide £5, Compute!'s Tech. Ref. Guide Vol 1, 2 & 3 £20. Tel 01253 592175. (54)

Falcon 030 4MB Ram 65Mb Hard Drive, improved Mouse, Atari SM146 High res B & W Monitor, some software. All in mint condition:- Offers please. Phone Trevor 01400 281720. (59)

GFA 3.6 Interpreter & Compiler + G Shell £40; GFA GUP £5; HiSoft £10; Wercs £5; Timeworks Publisher 2 £20; Megapaint 2.23 £30:- Phone Geoff on

conics, circles, perpendiculars, bisec-tors, etc. STACK is an arithmetic

01273-583020 (55) Calligrapher Gold £50; Hyperdraw £5;

Quantum Paint £5; Deluxe Paint ST £5; Cornerman £2; Plug-in Clock £2; or £60 the lot:- Phone Steve on 01633 892749 evenings. (56)

Arabesque Pro £60; That's Write 3 £60; Protext 6.5 £45; Convector Pro £45; Flexidump Plus 3 £25; MC68882 + chip set £50; 100ml Black Ink £12; Loads of Clipart and fonts in various format - bitmap, vector: TrueType, Typel, Calamus:- K Hornby, 33 Ingleton Drive, Lancaster LAA1 4RA. Tel: (01524) 381581. (56)

Laser Printer Atari SLM 804 - Good condition £90. Cleveland Area. Phone 01642-315921, (55)

GFA Compiler 3.6 & Interpreter 3.5 £10; Devpac 3.01 £10; Technical Reference Guide Vol 2 £10 & Vol 3 £10; Programming made Simple £5; First Steps in 68000 £5; Introducing Machine Mode £7. or all for £40. Tel 0116 2918502. (55)

Books for Sale: Arabus, Gem Programmers' Reference £5; Compute's ST Applications Guide Programming in C £5; GFA Basic & Assembler User + Disc £7; GFA Software Dev with GFA Basic 3 + Disc £7; K. Peel -Concise Programmers' Reference Guide £5. Phone 01703 617711 -Paul. (54)

Falcon Tos 4.04 4 Meg Ram 65 Meg HD, boxed and with protective cover. Protext 6, Prodata, Diamond Edge, Diamond Back 3, Joystick, U.V.K. v6, Xboot 3, 20 PD disks and many games £400, Phillips 8833 monitor £80, Panasonic 24-pin printer £80 both with dust covers:- Tel 0161-792-3370. (54)

Atari STFM Computer, 4 Mb RAM, 52 Mb HD, Internal and External 3.5" Floppy Drives, SM 125 Monitor,

If you would like to see your orware software featured in the ST Applications Authorware column please send us a review copy of the software and a rough outline of the advertising copy you would like to be printed.

### Morse Master

The complete morse trainer and simulator. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife KY12 9TA. Phone (0383) 729584 evenings for technical information.

#### Calamus Manual

113 pages including: Loading modules. Colours and fill patterns. Frame drawing. Text Styles includ-ing lists. Page layout. Single and dou-ble page spreads. Formatting and rulers. Importing text and graphics. Text flow between frames. Text flow around graphics. Rotating and arranging frames. Raster area and line frames. Master pages. Headers, footers and page numbering. Loading, saving and printing. Using PKS

Write. Raster generator module. Price: £8 including postage from David Waller, The Sandon School, Molrams Lane, Great Baddow, Chelmsford, Essex CM2 7AQ. Cheques/POs should be made out to "The Sandon School". The guide for Calamus 1.09 is still available!

#### STTrack

Use up to four light beams with your ST. Invaluable for Science National Curriculum AT4. F.J. Wallace, 9 High Elms Road, Hullbridge, Essex SS56HB.

#### Graph, Euclid and Stack

GRAPH can draw simple functions, implicit functions, parametric and polar functions and display the gra-dient functions of any of these. EUCLID enables you to draw any geometrical configuration including

calculator (HP type) for use with very large whole numbers. Michael Girling, Camel Quarry House, Wadebridge, Cornwall PL27 7HZ.

#### Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use. Large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

#### Sonix Sound Sampling

We will sample your sounds from tape to disk. Write to: The Lodge, Delly End, Hailey, Witney, Oxon OX85XD.

#### Educational Adventures

For ages 5-13.88% in ST Format.£12 each. 50p per disk for demo's. CVS, 18 Nelson Close, Teignmouth TQ13 9NH.Tel:(0626)779695.

#### SciSet

SciSet scientific font sets for Calamus. Dr. Graham McMaster, Retsum Computing Solutions, 12 High Street, Turriff, Aberdeenshire AB53 7DS; 088862328.

Morse/RTTY Transceive

Atari STE - Morse and RTTY transceive. Write: V. McClure, 43 Roman Way, Seaton, Devon EX12 2NT.

#### Learning a Language?

ACADEMIC SOFTWARE supply several budget foreign language disks to help you in your studies. Call 01296 82524 any time for a bro-chure. Or write to 78 Narbeth Drive, Aylesbury, Bucks. HP20 1NU. For demo, just send 4 first class stamps or SAE + disk.

#### Scanner Manager

A specialised database system for all scanner owners. Stuart Coates. 9 Links Road, Kibworth Beauchamp, Leicester LE8 OLD.

#### **Music Tutor Part 1**

Teaches you to read music. A. Graves, 81A Cambridge Road, Girton, Cambridge CB3 OPN.

#### **MultiCAD**

Vector-driven CAD/DTP program for the ST/STE. J.H.Taylor at: 12 West Drive, Cleadon, Sunderland, Tyne & Wear SR67SI.

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rder Form	AC.202 Photofile Demo #1	AM.137 Cartoons	AM.311 Outdoors #2	AM.602 Clipit #2	DM.43 September 94	EN.801 Adventures #1
o order, simpy mark	AC.204 Samantha Fox	AM.138 Cartoons	AM.312 Nautical	AM.603 ClipIt #3	DM.44 November 94	EN.802 Adventures #2
f the disks required:	AC.205 Samantha Fox	AM.139 Cartoons	AM.321 Greetings Cards 1	AM.604 Clipit #4	DM.45 January 95	EN.803 Adventures #3
EG.123 Description	AC.206 Gigabyte Show	AM.140 Office Art	AM.322 Greetings Cards 2	AM.605 ClipIt #5	DM.46 March 95	EN.804 Adventures #4
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