Price: £2.50

ST APPLICATIONS

The Magazine for Users of Atari ST, STE, Falcon and TT Computers — *Issue No. 39, March 1994*

THIS MONTH

Reviews

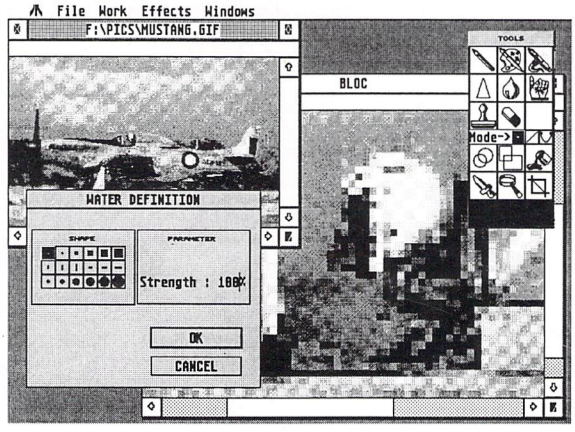
Articles

Regulars

Migraph OCR

Whereas word processing may be regarded as the art of converting computer text files into printed text, the reverse process, optical character recognition, is the science of converting the already printed word into manageable computer files. Jon Ellis reviews Migraph's OCR system in this month's issue.

Studio Photo



Nial Grimes looks at Compo's Studio Photo, wondering if it is the final word in ST image processing. He finds it has an excellent interface, good support for a wide range of picture formats and easy to use affects, achieving 90% of what the majority of users would ever need.

Fontkit Plus V4.1

The latest version of Jeremy Hughes's Fontkit Plus is now available. It has fixed a number of bugs in the earlier version, and the Import and Export options have been more widely implemented - HP DeskJet 500 fonts may now be read and written. David Smith outlines the main features of version 4.1.

TABBY

In some parts of the country a 'moggie' is not a cat but a mouse... There is no such confusion with the name Tabby, though: it's certainly no rodent. If you need a finer touch with arts and font design packages, it could be that a graphics tablet is just what you want. Enter the eponymous feline.....

APPLICATIONS FALCON

- Falcon News
- Falcon Forum

Plus:

Graham Curtis uses the ST Club SCSI cable to connect his hard disk to both ST and Falcon...

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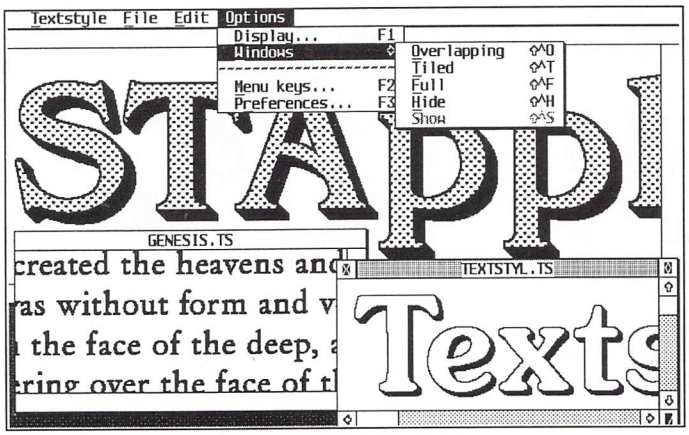
Textstyle

Text styler for Atari ST/TT/Falcon computers



Launch price: £14.95
From 1/2/94: RRP £19.95
Written by Jeremy Hughes

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- ❒ Create headlines and logos from GEM fonts or Calamus fonts.
- ❒ Import ASCII text containing up to 200 characters, or edit text within Textstyle.
- ❒ Text size and resolution can be adjusted freely.
- ❒ Font sizes can be selected in tenths of a point from 1.0 to 999.9 points (13 inches).
- ❒ Text styles include bold, light, italic, underline, outline, shadow, and pattern.
- ❒ Text styles can be configured to adjust bold increase, outline width, shadow offset, italic angle, text and shadow patterns etc. The angle of italicized text can be adjusted in 1-degree steps from 1 to 45 degrees (GEM skewing is fixed at 27 degrees). Patterns include 43 predefined patterns and 2 user-configurable halftone screens.
- ❒ Leading can be adjusted in 1-point sizes. Word and letter spacing can be adjusted in 1-pixel increments.
- ❒ Text can be left-aligned, centred, right-aligned, and justified.
- ❒ Styled text can be saved in Textstyle format (for reuse at a later date), or exported in IMG or TIFF format. Exported image files can be loaded into other programs or printed from Imagecopy.
- ❒ Advanced user interface including hierarchical menus, multi-key and user-configurable single-key shortcuts, pop-up menus, mouse-positioned alerts etc.

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CREDITS

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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.

Geneva and NeoDesk 4

Compo are pleased to announce that Gribnif's multi-tasking software, Geneva, is now available in the UK. NeoDesk 4 is due to ship in The States during March, with a UK release pencilled in for the end of April and a price tag of £59. Geneva includes patches to update the current version of NeoDesk to v3.04, so there's no need to hold back ordering Geneva until NeoDesk 4 is ready. When NeoDesk 4 does become available, Compo will be offering a bundling deal with Geneva and NeoDesk 4 at a special price. Existing NeoDesk users will be able to upgrade to v4 when it's ready. Pricing details for the package deal and upgrades from earlier versions of NeoDesk will be announced in due course. Please note that although NeoDesk is recommended for use with Geneva, the system can be run on its own with applications being launched from Geneva's built-in task manager.

The Jaguar Fiasco

A number of rumours, allegations and counter allegations were circulating about the Atari Jaguar in the aftermath of Atari's aim to get the first shipment into the shops for Christmas. Some reports suggested Atari failed to deliver, others said that a handful of Jaguars went on sale on Christmas Eve. Atari denied both, saying that a consignment did go on sale in December but not as late as Christmas Eve.

There was also some confusion over numbers, with Atari remaining as tight-lipped as usual. The initial consignment was expected to be in the region of 1000 units but again rumours were flying about wildly. When I asked the Atari Press Office about a report that only 180 arrived in time for Christmas, their only comment was that 'it seems a bit low'.

I dug deaper and found out the truth from elsewhere. No more than 300 units arrived before Christmas and were divided equally between Virgin, HMV and Thornley Distribution. Now that's 300 units for the entire country, with no more than a handful going to each store! The queue of back orders meant that not a single Jaguar made it on to the shelves and an unspecified number of orders remain unfulfilled. No indication has been given as to when the next stocks are expected. They had not arrived as we went to print for this issue.

All these claims and counter claims have come about as a result of misinformation from Atari. They are not prepared to come clean and tell the press what's going on, so rumours abound. In most cases, the rumours are more damaging than the truth. When the Falcon was released, I thought that not even Atari could fail to capitalise on a computer with such impressive specifications. I was obviously wrong as the price is too high compared to the competition and the machine has not been adequately promoted. It is already being pushed into the background with the release of the Jaguar and unless Atari have a major change of heart, it is unlikely that the Falcon will ever become a mass market machine. Talking about the Jaguar, Atari's Peter Walker told me that supplies would be coming in 'on a regular basis from now on, leading to wider distribution in the first quarter'. Doesn't that sound reminiscent of what Atari said about the Falcon just over a year ago?

Professional Fonts At Under 60p Each

Advanced Graphics Ltd have just released three typepacks of professional quality fonts at amazingly low prices. Each pack costs £15 or you can have all three packs for £35. The recommended price for each pack is £219 and the above offer is for a limited period only. The fonts are rather varied and number sixty in total, grouped under the headings Classic Pack, Kursive Pack and Headline Pack.

AGL are about to release another 400 fonts to bring their total collection up to 800. These fonts have taken two years to develop and a full catalogue of them will be available in the near future. More special offers are expected from AGL later in the year. All fonts are available in either Calamus or PostScript Type 1 formats. If you are ordering any of the promotional packs, call 0942 498174 and ask for the limited edition offer. Further details from Advanced Graphics Ltd, 14 Lyefield Avenue, Wigan, Greater Manchester WN1 3UL; Tel/Fax/Modem: 0942 498174.

Read_Me 1st

Subscription Expired? If you received this copy of *ST Applications* through the post, check the first line of your address label carefully: if it reads **STA39**, then your subscription has expired with this issue; if the information line reads "Complimentary Copy" you have been sent a free evaluation copy of *ST Applications*. Either way you must take out a new subscription in order to receive further issues.

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Advertising

There is a limited amount of space for commercial advertising in each issue of *ST Applications*. Contact Nicky Wilson on 0602-455250 for further details and to request a media-pack. Subscribers can place free classified advertisements - see page 57 for details.

Subscription Rates

United Kingdom:
12-issues : £24.00
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Air Mail to	Europe	World
12 issues :	£27.00	£37.00
12 issues + 6 D/Mags :	£40.00	£48.00

Subscription and Order form will be found on page 57.

Overseas Distribution

Distribution overseas is dealt with via our agents:

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Canadian office: Tel: 519 539 0200; Fax: 519 539 9725.

Contact us for details of your nearest *ST Applications* stockist.

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, DM.40, will be dispatched a week or so after issue 40 of ST Applications is sent out.

Atari Shows Lend A Helping Hand

On 10th January, the Newcastle Evening Chronicle ran a story about a woman who had her computer equipment stolen. Karen Atkinson, a former session musician, is currently undergoing treatment for cancer and was due to recommence a course in music at about the time her equipment was stolen. She said, "I'm due back at college and can't go back without the equipment so I would have to cancel the course for a year and start again." The organisers of the Atari Shows got together and provided Karen with a 2.5 Meg ST and a new monitor. She also got a new copy of Cubase 3 from Harman and a few other bits and pieces. Everything put together was worth about £1000. When she was presented with the new equipment, Karen said, "I felt really down after what happened but this puts a bit of faith back in people."

CGS Latest

CGS Computerbild are about to launch DA's Vector Professional at a cost of £249. This latest upgrade features a number of improvements and additions to the current version, including a complete revamp of its animation capabilities. You can make a camera follow a vector path, allowing the vector to be viewed from different angles and a variety of 'lenses' can be applied to the camera. These can take the form of different coloured lenses or even other pictures, from which the vector graphic shows through. A dithered filter can be set to anything from 0% to 100% to give a mosaic type effect and pictures can be rotated at any angle in real time. White can now be selected as the transparent colour and the multi copy function has been improved to the extent that you can now have the picture changing from copy to the next as it follows the vector path. Morphing of vector objects is supported and vectorisation now handles IMG files as well as half-tones.

DA's Picture is almost ready for release. The program itself is finished and the manual is currently being translated into English. The author of DA's Picture has spent nine years working with image processing and was also responsible for Retouché Professional. The program is an image processing package which takes its origins from Photoshop on the PC and Mac. It employs a method known as tiling whereby the screen is made up from 'tiles' and only the relevant tiles need to be redrawn when the picture is edited, rather than the entire screen, making screen updates much faster than in many similar programs.

Standard tools in DA's Picture include pencil, charcoal, paint, rubber and restore. You can cut and paste between as many windows as your system supports (up to 20 if you have the Shareware program WinX installed). The 'stamp' tool allows graphics to be miniaturised so that they may be stamped over other pictures. An example of this would be when you want your company logo stamped on to the screens you create. DA's Picture has virtual memory support built in, allowing your hard drive to page in and out memory overspill as required. The program employs the use of 8-bit masking and can use any tool to create the mask. DA's Picture will be available in a few weeks at a cost of £149.

Both products are compatible with the entire range of Atari computers. For further details contact:

CGS Computerbild
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S39R	2 x phono plugs 2m	£ 3.95
S39S	15 way HD D socket (NEC multisync 3D) 2m	£ 5.95
S39T	6 pin DIN plug and phono plug (C= 1024S) 2m	£ 6.95
S39U	5 x BNC plug (NEC 5 or 5FG) 2m	£ 7.95
S39W	19 way D socket and 2 x phono (C= 1084SD)	£ 5.95
S39X	19 way D socket and 2 x phono (C= 1084SPI)	£ 5.95
Software		
S39Y	Astronomy Lab (RRP £24.95)	£ 7.95
S39Z	Molgraph 2 (RRP £24.95)	£ 7.95

All these offers must expire on 28th March 1994
Look out for more Subscriber Specials in issue 40

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News In Brief

Calamus Specials

JCA Europe Ltd are running a number of special offers on their Calamus range of Desktop Publishing software from now until 30th April 1994. Calamus 1.09n costs £89 (down £10), Calamus S v2 drops to £299 (from £335), Calamus SL sees a reduction of £76 to £499 and Outline Art v3 goes down from £245 to £199. As an extra incentive, customers sending in any DTP master disk with their order can claim an additional £10 off Calamus v1.09n or £50 off Calamus S or SL during the promotion. Contact JCA Europe Ltd, 30a School Road, Tilehurst, Reading, Berkshire RG3 5AN; Tel: 0734 452416; Fax: 0734 451239.

New Age Raid

It now transpires that the raid by the Mechanical Copyright Protection Society on New Age PDL was a less serious matter than was at first thought. The MCPS were somewhat inexperienced with computers and had to be shown how to use the catalogue by the proprietor! The result was that New Age were asked to withdraw a handful of disks from their catalogue and the matter is now closed as far as the MCPS are concerned.

As regards our last news article which stated that New Age were given the option of paying royalties or closing down, this requires a little explanation. The question of royalties was raised and Caroline Price, proprietor of New Age, checked up the matter with the Performing Rights Society. They advised that it was illegal to sample recordings and distribute these, and so they must be withdrawn. However, royalties were not appropriate as they could not be charged on illegally distributed material. Miss Price would like to point out that there was never any question of New Age PDL being closed down - only the police and not MCPS have the power to do that. As a result of the incident, New Age have withdrawn all sampled sound demos as well as a number of picture disks (including the Madonna disk mentioned in our article) which were not subject to the investigation.

The All Micro Show

The Spring All Micro Show, Electronics Fair and Radio Rally is to be held on 16th April 1994 at Bingley Hall, Staffordshire County Showground (three miles from junction 14 of the M6) from 10am to 4pm. The event brings together computer users, amateur radio enthusiasts and electronics buffs under one roof and is in its sixth year. I have no information as to who will be exhibiting at the above event, but London Atari Computer Enthusiasts (L.A.C.E.), Page 6 Publishing and Goodman International are Atari based companies who have exhibited there in the past. There is a bus shuttle service from Stafford Rail Station. The event will be signposted by the AA and there's plenty of free parking.

Greater Compatibility From Germany

The Digital Arts team, currently the biggest Atari-based development team in Germany, are cooperating with a number of smaller outfits (including the InShape team) in order to achieve greater compatibility between graphics packages. The end result should be that the output from one package may be loaded directly into another.

Dates Confirmed

The organisers of the Atari Shows have recently announced two more events at new locations. The Newcastle show will be held on Saturday 16th April at Eldon Leisure in central Newcastle. Visitors are advised to go by Metro as there are no car parking facilities at the venue. The Glasgow event will take place on the following day at the Central Hotel in Glasgow. Both shows will run from 10am to 5pm and admission costs £3.00, or £1.50 after 2 pm.

It's Not Shareware!

It has come to my attention that v3.0 of the Speed of Light GIF viewer which has found its way into Public Domain libraries and onto Bulletin Boards is a pirate copy. This version was not released to the public by the author and he requests that anyone distributing it should withdraw it immediately. The latest shareware release is v2.5.

HiSoft On The ST

HiSoft have just released three new packages which are compatible with the entire range of Atari computers. The long awaited *Atari Works* is finally available in the UK. It is an integrated word processor, database and spreadsheet which allows data to be transferred freely between the three modules. The word processor allows graphics to be imported and has a built-in spell checker and thesaurus. Basic drawing tools are also available for use. The spreadsheet supports data entry as text, fixed or floating point currency or percentages and the results may be displayed as text or in graphic format using line graphs or pie charts. The database is very flexible, with the ability to create as many data fields as required and position them using the mouse. All the usual sort, search and find options are present as well as an import facility for data from other databases. Atari Works is fully compatible with SpeedoGDOS and costs £99.95 as a stand alone package or £129.95 bundled with SpeedoGDOS.

Papyrus is a document processor, combining the ease of use of a word processor with the power of Desktop Publishing. As well as all the usual word processing features, Papyrus supports different paragraph styles, a flexible zoom system, micro letter spacing and the import of GEM vector objects. Tables of contents are automatically created, as are indexes, and text can be made to flow around objects. Papyrus should be on release as you read this. It is fully compatible with SpeedoGDOS and is available as a stand-alone package at £129 or bundled with SpeedoGDOS for £159.

Harlekin 3 was released a few weeks ago. This latest upgrade to the multi-purpose accessory has a number of enhancements which include high density disk support, a communications module which can be controlled by means of a script file, multiple file editors and much more. The entire program runs in windows and uses moveable dialog boxes. Harlekin 3 costs £59.95 but users of Harlekin 2 can upgrade by returning their master disk along with the £19.95 upgrade fee.

For details on any of the above, contact *HiSoft*, The Old School, Greenfield, Bedford MK45 5DE; Tel: 0525 718181; Fax: 0525 713716.

Pixart v2.0

Development of PixArt version 2 is being completed and the English version should be available at the end of March. New features include:

- ✓ Nineteen dither routines to convert pictures into lower resolutions
- ✓ Colour printing on HP 500/550C printers
- ✓ Posters up to A0 on A4 printers, using a tiling technique
- ✓ Three different colour options in True Colour and High Colour modes: RGB, Y/C and HLS
- ✓ Dialogue boxes now have optional 3D look
- ✓ Support for GDPS scanners and graphic tablets - optional

The upgrade will be free and registered users will get a copy of PixArt v2 as soon as the translation is complete.

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PIPER

After a long period of being nobodies in the States, Atari managed to gain the most awards ever presented for a new product at the CES show in Las Vegas.

The Jaguar pulled in the awards of "Best New Game System", "Best New Hardware System" and "1993 Technical Achievement of the Year". Not only that, but it also gained an award for "1993's Best Print Ad" (no, really, this is still Atari we're talking about), whilst the new Jaguar software title, Tempest 2000, was voted as "Best Game of the Show". The game that comes packaged with the Jaguar, Cybermorph, even achieved the rather phenomenal score in Die-Hard GameFan of 99%. Things are definitely looking up. So much so, in fact, that the Atari Press Office has been asked NOT to do any promotion at the moment since they don't want to overkill before the machine arrives.

As was promised, there were some deliveries to England prior to Christmas, but not in the sort of quantity that was expected. One thousand machines arrived on these shores, and they'd all been sold before they passed customs. There is, apparently, a problem with third-party suppliers actually doing the supplying, particularly of the 64-bit chips required. They did manage to shift 27,000 Jaguars in the States before December 31st, which doesn't sound like that great a figure over such a huge country until you take into account the fact that they only launched and distributed it in New York and San Francisco, and got rid of 20,000 machines in the first three weeks of its launch. The nationwide rollout isn't due until later in the year, and Atari UK are keeping to their original release date of March 15th, when they're expecting to have sufficient Jaguars coming in to be able to actually see one on the shelves. Until then, there will be a reluctant trickle coming in unannounced.

Also unannounced at CES was the CD add-on for the Jaguar. That is not now expected until later in the year, and Atari have even offered the rather plausible reason that they don't want to rush into the CD-Video market until someone has figured out a way of getting more than just seventy minutes of film on a disc. In connection with this, they have been investigating the Nimbus method which allows two and a quarter hours, but nothing has yet been decided.

If you do want to see the Jaguar in action, it's due to be featured on GamesMaster in February with Cybermorph as the final contest. Rumour has it that the winners were fighting over who could take a Jaguar home instead of a nasty old Mega Drive or SNES.

Because of the upsurge of interest in the company after the Jaguar's launch, Atari are feeling decidedly chirpier. The ST, they now say with conviction, will continue to be produced, and there even appears to be a brightening in the fortunes of the Falcon, due largely to the release of Cubase Audio, a sequencer/sampling package which the musical cognoscenti have decided is very good and wouldn't it be nice to have a machine to play it on. Admittedly, there's not a sudden flood of purchases, but it is picking up.

An Excellent OMEn?

What I personally believe may be the most exciting software release of 1994 has just been announced. It is called *OMEn* and is produced by a company called Esquimalt Digital in Canada. OMEn stands for *Open Multitasking Environment* and will run on the ST/E, TT, Falcon, Amiga and Apple Macintosh. An IBM PC version will also be available but this requires a separate 680xx emulation card. The software also runs on the DEC Alpha, Pentium and Power PC under 68000 emulation.

OMEn was developed on an ST and the ST version is currently the most fully featured. All other incarnations are ports of the ST version. It offers a true preemptive multi-tasking environment which has been designed to run on any ST, subject of course to memory requirements. The system is graphically based and the user has access to all commands and features even when running multiple applications. It is closely based on UNIX X-Windows but is only a fraction of the size of UNIX.

OMEn is modular in construction and can easily be configured to any hardware or software protocol, existing or new. Full support for disk drives, printers, networks, displays, input devices, file systems, GPIB devices, MIDI and multi-media is built in.

The Atari version is finished and the documentation is currently being prepared. It takes advantage of the hardware scrolling built into the STE and TT and fully exploits the specific hardware of the different models in Atari's range. Digitised sound is supported on all models! All standard disk formats are supported as well as extended formats up to 900k. All Falcon video modes will be supported in the final release. The package is expected to be available towards the middle of the year. All versions of OMEn except the PC version (because it requires additional hardware) will be distributed as Shareware. I will bring you more details on OMEn as I get them.

Ultimate Virus Killer v6

Richard Karsmakers' *Ultimate Virus Killer* has reached v6.0. The user interface has been completely redesigned and this version is fully compatible with all Ataris from the ST to the Falcon. It can recognise and destroy 73 bootsector viruses, 5 link viruses and 40 Anti-Viruses. The 'Restore Bootsector' option now allows 710 bootsectors from games and demos to be repaired. In addition, 1486 custom bootsectors and 137 special bootsector applications are recognised, to help prevent you from mistaking a safe bootsector for a virus.

The major breakthrough is UVK's ability to deal effectively with the Beilstein Virus. This nasty piece of work was discovered in the middle of last year and can exist in 650,000 different mutations. Each of its guises looks completely different but behaves in an identical manner. It is the only known virus to work on both the ST and the PC, disguising itself as a legitimate MS-DOS bootsector as formatted by TOS 1.4 upwards on the Atari or MS-DOS itself on the PC.

The Beilstein Virus is a bootsector virus which has 12 destruction routines built into it. These include wiping the boot partition of your hard drive, corrupting screen and printer output, deleting specific files when you load them, and resetting your ST. The virus works by buffering the original bootsector so that the disk is read by most virus killers as being virus free. Even versions of UVK prior to v5.9 are fooled into thinking that the disk is virus free!

The Ultimate Virus Killer is available now for £12.99. If you have an earlier version of UVK, you can upgrade by sending £6.49 and your original master disk. Alternatively, you can purchase a 12-month subscription to UVK for £21.99. This ensures that you are automatically sent the latest versions of UVK as soon as they are released, for a period of twelve months. Contact:

Douglas Communications,
PO Box 119, Stockport,
Cheshire SK2 6HW;
Tel:/Fax: 061 456 9587.

Flash, Bang, Wallop – What a Picture!

Is Studio Photo the final word when it comes to ST image processing? Nial Grimes takes a look...

ST owners have many things to thank the Falcon for. Not only has it provided a small glimmer of hope for the future of the Atari market, but it's at least partly responsible for the sheer explosion in image processing software that has taken place over the past few months.

Whereas the majority of these new players are designed to run exclusively on the Falcon, Compo's Studio Photo is happy to make the most of whatever machine it finds itself running on. Let's see whether the specifications match up to the £79 price tag...

A GEM of an Interface

Aside from the lousy copy-protection scheme (see the boxout for all of the gory details) Studio Photo is a dream to set up and run. The whole installation procedure is taken care of by a custom written program which copies all of the necessary files to the partition of your choice. What's that? - No hard disk? Well that's not a problem either -believe it or not, the whole shebang comes on one solitary double sided disk and is perfectly happy to run from floppy. Mind you, storing any number of large image files could prove to be more of a problem.

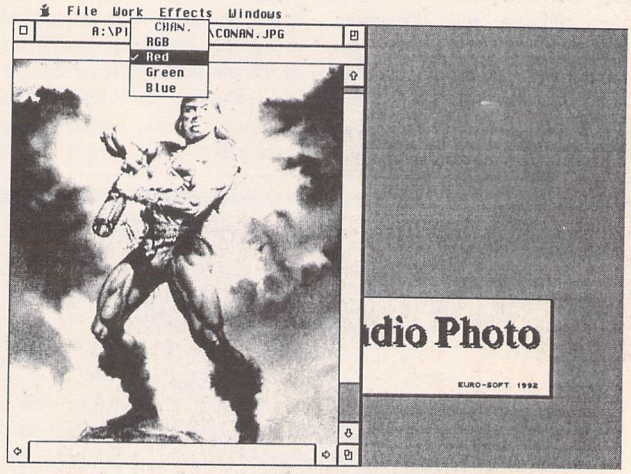
In terms of interface, Studio Photo is a strictly GEM affair. All of the effects are available from drop down menus, and sub-menus are used liberally to keep things clutter free. Without wanting to devalue the rest of the package in any way, the interface can be considered Studio Photo's strongest point. It's easy to use, displays some lovely 3D bits on the Falcon and behaves beautifully under MultiTOS. To top it all, just about every operation has a keyboard shortcut - it's almost sublime!

Two versions of the program are supplied - one for 68000 machines and another for the '030s. A wide range of file formats are supported by both versions, including TIFF, JPEG, GIF, Degas, IFF, PCX and several more besides. In terms of speed, all of of the routines are quite good, although the TIFF falls short of the complete standard, refusing to load LZW images. Photo CD import is also available on '030 machines.

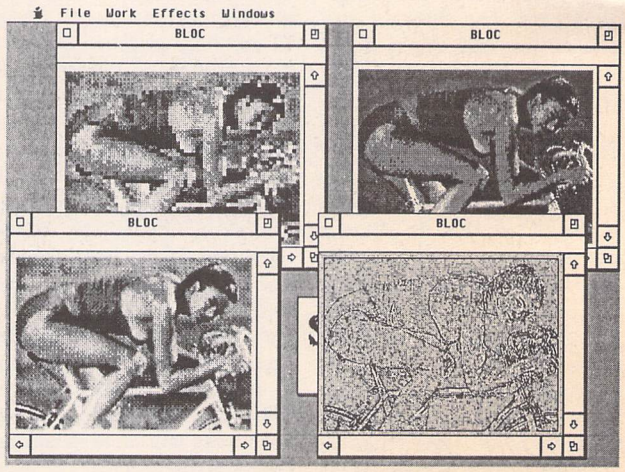
Image Is Everything

One nice thing about Studio Photo is that you don't have to have a monster of a system to make it work properly. Each picture is stored as a 24-bit image in memory and dithered as it is displayed on screen. This leads to rather slow screen updates, but keeps the memory overheads relatively low and allows you to work with highly colourful images even in mono. Because a fixed colour palette is used, all windows appear correctly on screen - i.e. there's no unsightly colour switching - and even the desktop remains untainted when working in 256 colours or more.

Studio Photo is based wholly around RGB and you can work with all three combined or each individually. Single channels can be blurred, brightened or even removed altogether. In this mode, a greyscale palette is used, which makes it far easier to see the outcome of an effect, especially when you are working in sixteen colours. The ability to split



△ When working with individual RGB channels the display switches to greyscale - a big improvement in 16 colours.



△ The effects menu allows everything from simple lightening, darkening or blurring, to more complex mathematical convolutions such as Laplacien, Sobel and Kirsh.

pictures also comes in handy when working with highly compressed JPEGs, which saturate strong colours like nobody's business. If red is overdone, you can jump into the red channel, lighten it up a bit and return triumphant with a vastly improved picture – or at least that's the theory.

The major image processing tools are to be found crammed into the 'Effects' menu. All of the old favourites are here including blur, lessen, contrast, brighten, darken – you get the idea. In keeping with the easy to use air of the program, each effect has three preset levels – weak, medium and strong. These are available the instant an effect is chosen, or if you prefer you can take the 'custom' route and define a level of power between 1 and 100%.

If you delve a little bit deeper into the effects menu, you will find the Convolutions entry. This presents a cascade of sub-menus each offering a number of more complex mathematical filters – Laplacien, Sobel, Kirsh and several others besides. Anti-aliasing, smoothing and sharpening can also be applied through the convolutions menu.

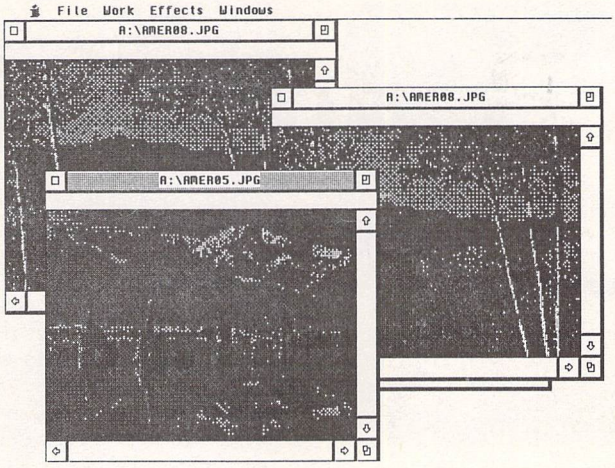
The built-in effects are by no means the end of the story either – more can be loaded as and when you need them through external modules. A total of four are supplied with the package itself and presumably more will become available at a later date. No programming details are provided, so it looks very much like you're at the mercy of the authors on this one.

All of the effects are very lively. Lightening, darkening or contrasting a 640x480 image takes under five seconds on a Falcon and most of the convolutions are completed in well under a minute. A progress bar is displayed on screen as each effect is created, so at least you can tell when you're in for a long wait.

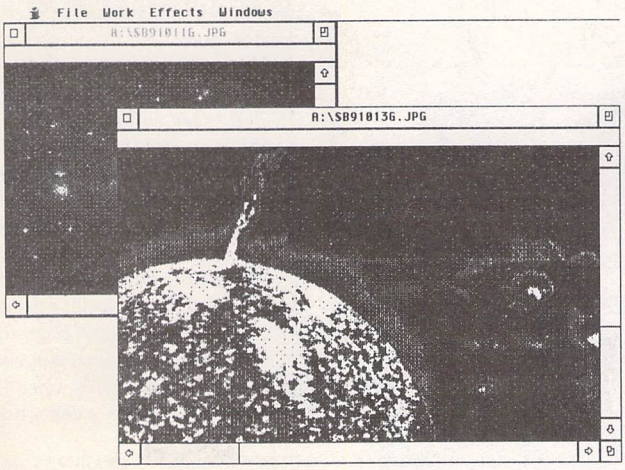
The fiddliest part of the program is the filter. It's used to remap the colours of a whole picture by means of a control line. Adjusting the brightness and contrast is easy, but getting the bézier curve to behave in the way you want is a real struggle. Individual points can can be moved, but it's just not as straightforward to use as GEM-View's 'point' system. To make matters worse there's no undo button, so it's a case of copying the picture to a block before you start or taking a risk...

Despite its rather weedy size, the manual covers most of the effects quite well. A few example pictures (in the manual that is) certainly wouldn't go amiss, but at least there's not too much jargon. The introductory section leads nicely through the basics of colour perception and sets a good background for working with the package. It even goes into a little bit of detail on subtractive primaries, despite the fact that the package itself only deals with RGB (that's not a criticism, by the way).

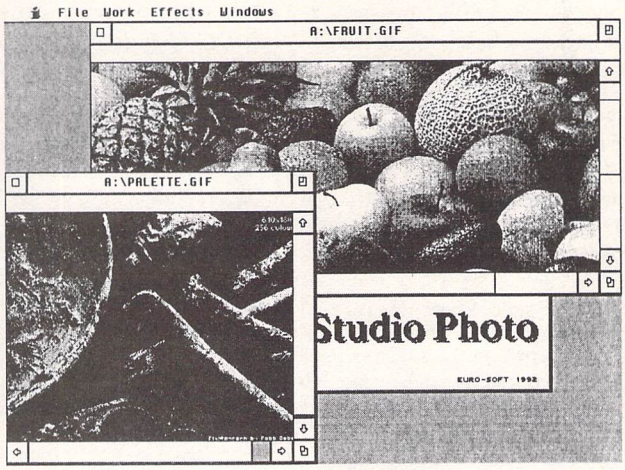
As mentioned earlier, Studio Photo is MultiTOS friendly, although it's not multitasking in the true sense of the word because the progress box is modal (i.e. not in a window). This leads to a situation where you're waiting for a spherize operation with a half a dozen other programs in the



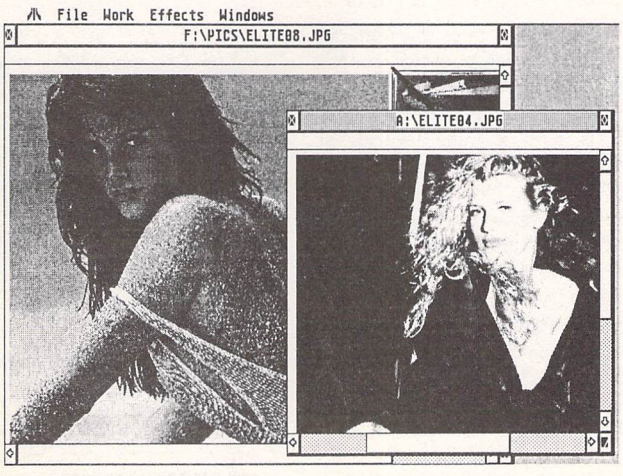
△ The standard of dithering in mono is quite poor, but at least it gives you a basic idea of what's going on.



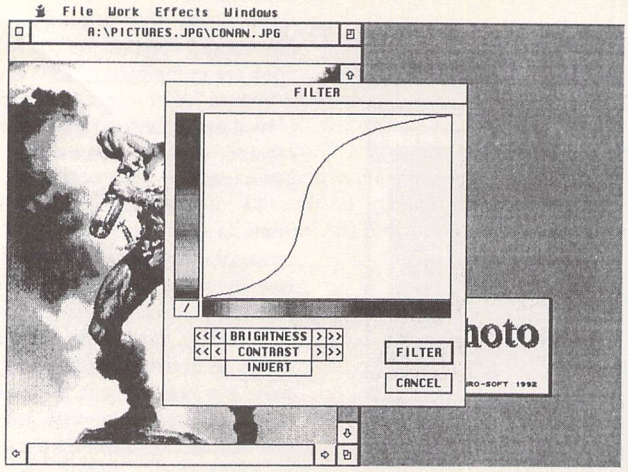
△ Sixteen colours is not a huge improvement, but at least it is possible to see the results of image processing effects by working with individual RGB channels.



△ The whole operation becomes much more classy in 256 colours. With careful use of the zoom facilities, retouching becomes a real possibility.



△ For retouching and subtle image processing, you can't beat True Colour. The screen updates are much improved in this mode too, thanks to the lack of dithering.



△ The ratio between colours used in an image can be adjusted through the filter dialogue. The bézier curve may look pretty, but it's quite awkward to use.

background and there's absolutely nothing you can do to get at them. On the other hand, spherize is the only one that's likely to cause real grief - a 640x480 picture takes about half an hour on a Falcon.

By far the biggest oversight is the lack of any masking facilities. You can squeeze your way around the problem by working with a block and pasting it back into the original picture - a process which Studio Photo makes devilishly easy - but of course, this is limited to rectangular objects. In actual fact, if you weren't forced to use the tool for this purpose, the block handling facilities are pretty good. Each section that is cut from an image can be given its own window, removed altogether or copied.

Having experimented with a number of image processing packages over the past few months, there are one or two features I miss from Studio Photo. A count colours option is the main bugbear, but it would also be nice to see some comprehensive conversion options. In fact, if conversion between different colour depths is a priority, GEM-View 3 is a much more attractive proposition altogether. Nevertheless, Studio Photo is an extremely competent image processor. Masking and an undo facility are the only serious flaws, but how does it measure up in the retouching department? Let's take a look...

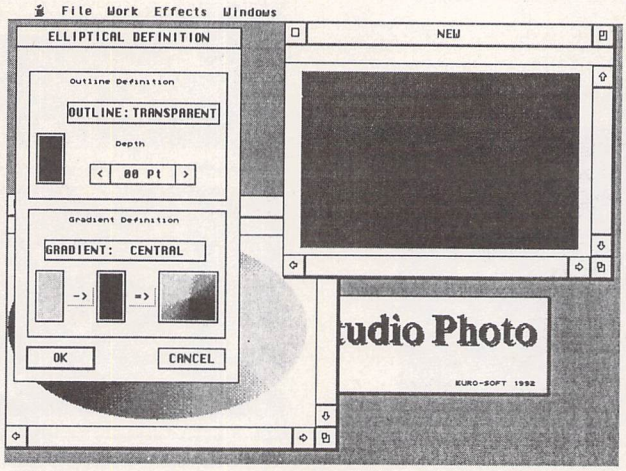
A Touch of Luck

All of the drawing tools are available from a pop-up control panel. The left button selects a tool while the right button adjusts it - it's as simple as that. In terms of retouching, the tools are remarkably good when you consider the price of the package. You can smudge, sharpen, stamp or erase pixels with a huge degree of accuracy. By default, all are set to 100% which can lead to some rather unexpected results, but with careful adjustment it's possible to come up with almost any effect.

The editing tools follow the standard pattern. There's a pencil, airbrush, paintbrush and 'bucket'. All are adjustable in shape and strength and most can be applied in a blanket manner or by 'hue', which maintains the brightness of the original image. The exception is the paint bucket, which works by tolerance. Each tool has three modes of operation - point, line or bézier; the latter two work by running an operation along a user-defined path.

Classy colour fades are also to be found on the Studio Photo menu. Quite where these fit into an image processing package is a mystery, but considering that the only other packages capable of turning out decent fades cost a small fortune, I'm sure most people will be willing to tolerate its presence!

While the image processing tools are very usable in sixteen colours - or even mono with a sufficiently large push - I can't really imagine retouching in anything less than 256. The extra colour really is essential to maintain control over the finished product. Even with this amount of colour on screen, you find yourself zooming in to get a better view of each individual pixel. And what a zoom it is! - It provides nine levels of magnification and reduction ranging from 1/16th to x16. All of the settings are instantly available from a pop-up menu or can be stepped through individually, by using 'zoom in' and 'zoom out' - the plus and minus keys.



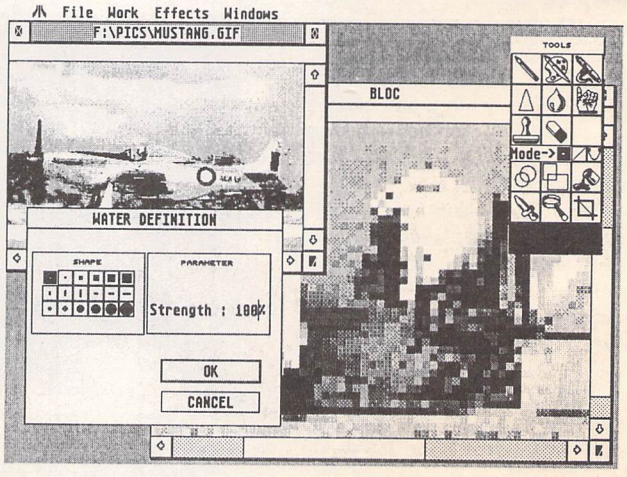
△ Square or elliptical graded fills are a piece of cake with Studio Photo. Once again the results are stored in memory as 24-bit colour - yep, up to 16 million colours!

On the Falcon

Although Studio Photo runs admirably well on an ST, once you've used it on the Falcon there really is no turning back. It runs in any - and I mean any - screen resolution and looks particularly nice in True Colour thanks to the complete lack of dithering. The screen updates are quite sedate in 256 colours, but as discussed earlier this leads to admirably low memory requirements, even when running in True Colour.

Retouching in particular becomes a much more attractive proposition in True Colour, because you can see exactly what you are getting. While it can be difficult to see subtle effects when working in a dithered screen mode, True Colour is crystal clear at all times and the screen updates are incredibly quick in this mode. The Falcon's dislike for True Colour can lead to some rather weird aspect ratios in the standard resolutions, but if you've got Blow-Up or ScreenBlaster you're laughing. I won't say that NVDI is essential, but it is a huge bonus when working in colour.

In line with the Photo CD support, included in the price is a MultiTOS 'XFS' CD driver. Apart from providing TLA fanatics with enough material for six months' conversation, this small file allows your Falcon or TT to be linked directly to a SCSI CD-ROM drive.



△ The retouching palette can be reached with a prod of the right mouse button. Each of the eight tools is adjustable in shape, size, strength and effect.

In fact, it's suggested in the manual that this works exclusively with '030 machines, but at least one person on the CIX bulletin board has managed to use it with an ST. Perhaps the best option is to give Compo a ring to find out exactly what's needed.

Slightly more useful than a CD-ROM driver is the Brainstorm decoder, which makes JPEG loading times extraordinarily quick. To give you some idea, a 640x480 image which takes well over a minute to decompress using the internal routines, is processed and displayed in under thirty seconds using the DSP! The decoder slots neatly into your AUTO folder, takes only 12K of memory and, in over a month of constant use, hasn't caused any conflicts whatsoever on my machine. Studio Photo's insistence on asking whether you would like to use the internal or external routines every time a JPEG picture is loaded is annoying, but maybe it's just me. Perhaps some people genuinely enjoy a protracted wait just for the hell of it? Incidentally, GEMView 3 can also make use of the DSP decoder if you have it installed.

Conclusion

Studio Photo is not the most powerful image processing package available - it's not meant to be - but it happily accomplishes 90% of what 90% of users will ever need. I find myself using it in preference to Repro CD when the task in hand falls within its capabilities, simply because it's so accessible.

My copy is an extremely early version - number 16 off the production line to be precise - and it does contain a few minor bugs. None of them is serious enough to make me stop using the package and Compo assure me that they are being fixed as they are reported. To give you an example, the zoom-reduction settings sometimes redraw the screen incorrectly - not life-threatening, just annoying.

In the Atari market £79 is quite a lot to pay for a piece of software, but Studio Photo is definitely worth it. Remember, you are not only getting a very competent image processor, but also the Brainstorm JPEG decoder and Mint CD-ROM drivers. Unlike most other image processors it works perfectly with 4 meg of memory and even on a standard ST. Mind you, working in anything less than 256 colours is a bit like painting and decorating in the dark - possible, but not very easy.

The bottom line is: If you own a Falcon and can stand the lack of masking, Studio Photo comes highly recommended. If you're running an ST it's still fun to work with, but somehow not quite as exciting (then again - maybe I'm spoilt!).

Summary

Points For:

- ✓ Wonderful interface
- ✓ Resolution independent
- ✓ Good range of file formats supported
- ✓ Easy to use effects

Points Against:

- ✘ No masking
- ✘ Slow screen updates
- ✘ Poor quality dithering

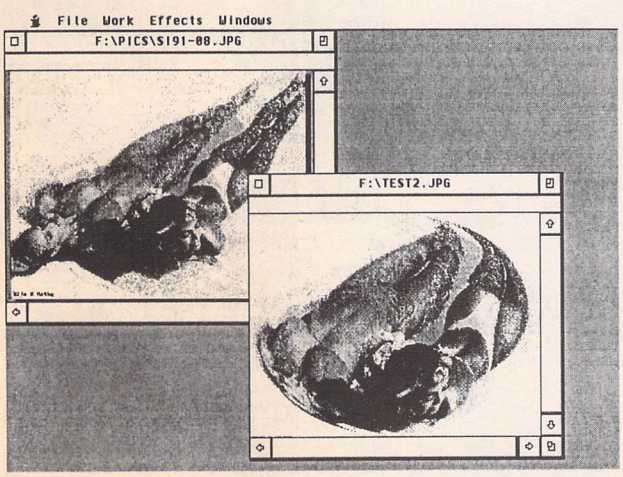
The Protection Racket

I don't want to taint the review of an extremely nice package with needless criticisms, but Studio Photo's copy protection scheme cannot go unmentioned. Unlike any normal software package, the disk cannot be backed and instead you are expected to put up with an install/uninstall system.

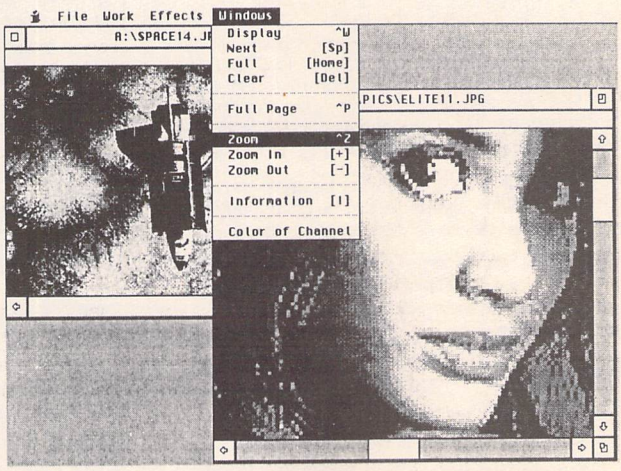
Basically this means that you get two credits per copy. Each time the package is transferred to your hard drive, a credit is removed from the master disk and it can only be restored by uninstalling the package with the supplied utility. In theory this system works extremely well, but in practice it simply fails to account for common occurrences such as disk crashes or simple accidents - are you going really going to remember to deinstall this one program in a year's time when you reorganise your hard drive?!

I wholeheartedly disagree with software piracy. If people want to program my name into a piece of software, encrypt it with a password or even tattoo the registration number on my forehead - I really don't care. But you can't help feeling that it's the legitimate customer that is being penalised by Studio Photo's system.

Product:.....Studio Photo
Version:.....1.0
Publisher:.....Euro-Soft
Distributor:.....Compo
Tel:.....0480-891819
Fax:.....0480-890787
Price:.....£79
Manifest:.....48-page ring-bound manual and 1 double-sided disk.
System:.....Atari ST, TT or Falcon with at least 1MB of memory (2MB recommended).



△ Most of the effects are very quick, but spherize is the exception - the effect is quite remarkable, but so is the amount of time you are kept in suspense!



△ The nine zoom levels are easily negotiated with plus and minus keys. In fact, almost all of the program can be keyboard controlled if that tickles your fancy.

Mortimer

Your very own computerised butler!

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- Magnifier: integrated screen magnifier.
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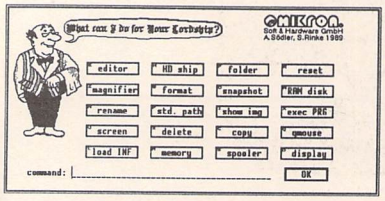
- Display: displays time and date.
- Keyboard macros: you can assign any text(s), sentences and function keys to keys or key combinations. For instance, [Alternate]-[S] might produce "Dear Sir,".
- Virus guard: Mortimer will protect your disks from boot sector viruses, and will detect link viruses when they try and spread to your files.
- Mortimer is memory resident and available at all times from within all programs. When installed, Mortimer reserves just 64K of RAM - all Mortimer functions are linked to a sophisticated memory manager.
- Mortimer version 1 is compatible with all TOS versions up to 1.62. The MegaSTE, TT and Falcon version - Mortimer DeLuxe - will be available December.
- Supplied with a very comprehensive 82-page printed manual.



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PixArt

A feature packed true colour pixel painting program that supports all ST, TT and Falcon screen resolutions.

Features:

PixArt has very creative block manipulation facilities that will be of great use to DTP users. Block functions include rotation, mirroring, slanting, distortion, projection onto grids; it's astonishing what is possible, and the speed at which it is all done is breathtaking.

Draw any way you choose: brushes and nibs, pencils and crayons, all can be used easily and give clear results.

Graffiti artists come into their own with the spraycan tool. Radius and intensity are easily changed, as are the colour and fill pattern.

You can zoom in or out of the picture and still use all drawing tools.

The PixArt magnifying glass allows you to view all of a large picture in a window, and even here you can still use the drawing tools.

Supports resolutions from 320x200 to 32000x 32000 pixels, monochrome to True Colour.

Picture file formats supported include: IFF, TIF, Degas, ESM, PCX, PIX, IMG, NEO, TGA, BIG (DRAW), PIC, and LBM.

Direct scanner support via GDPS driver system, and graphic tablet support via the Crazy Bits driver system. These drivers are provided with many kinds of scanner/tablet, or they can be ordered independently if necessary.

Comes with printer drivers for 9-pin and 24-pin dot-matrix, Atari SLM, HP LaserJet, and DeskJet 500C/550C (colour).

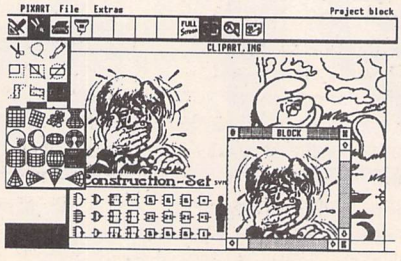
PixArt works with all known graphic cards, including True Colour cards that allow you to work with photo-quality pictures.

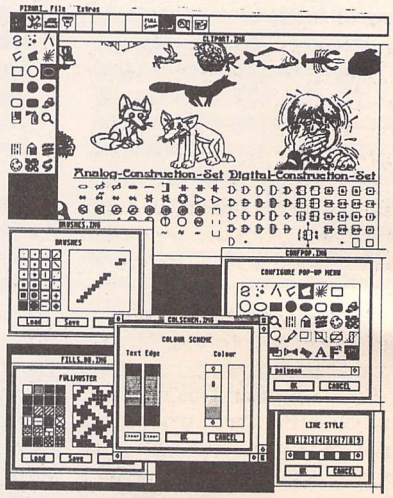
Compatible with TOS versions 1.2 through to MultiTOS. Fully Falcon compatible. 1MB RAM required. Large pictures need more memory. PixArt also uses TT-RAM.

Price: £34.95, Available: Now

PixArt IC: For compatibility with colour dot-matrix printers PixArt is available bundled with Imagecopy 2. Price: £49.95.

PixArt T: Bundled with Textstyle, which allows PixArt to incorporate text generated from Calamus fonts. Price: £44.95





PixArt is ideal for creating invitations, greetings cards, awards and certificates, report covers, labels, tickets, tokens, menus, posters, brochures, price tickets, letter-headings, logos, door signs, and more. The possibilities are only limited by your imagination!

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COMPANY PROFILE

CGS Computerbild

CGS ComputerBild is just one element of Copycare Business Services which Ray Cross runs with the help of his wife Alison. I visited them at their home which has become their temporary headquarters since they moved from their offices in Croydon. They will, however, be moving yet again in a few weeks' time back into offices.

Ray Cross about to demonstrate "DA's Vektor"

Ray is best known for bringing into the UK one of the best image retouching packages that can be bought for the Atari platform. He is also responsible for bringing in the only real alternative to Calamus in the DTP market, Didot Professional, in both its colour and monochrome varieties.

Ray as with all the other interviewees in this series is incredibly enthusiastic about the Atari market and the software that he has in his current catalogue. With much doom and gloom in the air at the moment it was a refreshing change to hear Ray talk with such confidence. We began by looking back at his early days before Atari appeared in his life.

Beginnings

Ray began in Birmingham, serving an apprenticeship with GEC where he was involved with turbine generators. At the end of his apprenticeship he and the other twenty people who had been trained were told that they would be the first group who would not be guaranteed a job at the end of their training; Birmingham in the early '80's was going through a semi-recession before it hit the rest of the country.

Ray knew that if he went for any job in Birmingham he would have twenty other people also chasing that job as they had exactly the same training he had. He therefore decided that he would try his luck in London.

He got a job doing more or less what he was trained for, working for a company called Small Electric Motors. He did realise, though, that this was not what his personality was suited to. The firm he was with didn't allow him to grow. He realised that he wanted to get out and talk to people.

Ray then moved to a company that sold fork lift trucks and thence to Canon, the photocopier people. There he got involved with field repairs. At about that time Canon were getting ready to introduce their first computer: one of the first PC XT's.

Ray had been working doing field repairs of photocopiers but also made sure that he was also trained in the repair of typewriters. This was a smart move on his part as soon afterwards Canon brought out their first typewriter. It therefore seemed a natural progression to computers. He also got involved with the sales side of the computer section as the sales people were having trouble selling these new machines.

Ray was then poached by another company who offered him an incredible amount of money and a BMW. This was in fact a Canon dealership, Mayflower Business Systems. The company was young and staffed by people who were only a year or so older than Ray.

He then said to himself, if these guys can run their own business I'm sure I can. So this was the first time that Ray had any ideas of starting his own business, this was the turning point for him.

However, Ray didn't quite know what he should start the business in. His first idea was to stay with the things that he knew. He therefore began Copycare Business Services around 1987. After a while, however, Ray saw that he was doing more or less what everyone else was in his field. He wanted to do something unique if he could.

Atari

Ray visited a few computer shows. At one he came across an Atari running Signum which was available from Mike Dale of Signa. He decided to investigate this a little further. He asked himself if anyone was going to buy Atari. He thought that as he goes into offices all day and doesn't see Atari machines on people's desks they couldn't be selling. He eventually decided that this could be an area he could work in. He had seen the quality of the software in the shape of Signum and thought that he could push these machines into the market himself. He found that the quality software was coming from Germany, and so off he went to one of the shows over there.

He discovered that the largest one was the Cebit show. He went with two purposes: he was still heavily involved with the PC market but he also wanted to see what other software was available for the Atari machine. He can remember going into Hall 7 and being amazed as it had this huge Atari stand in it.

Mike Dale was also talking about a new programme that he was bringing over called Calamus which would be a professional quality DTP package for the Atari machine.

He told me that he knew that at that time there were no programmes available for photo-retouching. There were programmes around, the Mac having Digital Darkroom at that time. He saw Retouché and knew that this was the programme to begin with. Mike Dale at that time even tried to put Ray off at one point. So Ray got hold of the first version of Retouché to test the market with. This was in 1989/90.

He then got hold of some Atari kit in the shape of a 4Mb Mega ST with SLM 804 laser printer. He also had the Hawk 200 scanner which he still has. Retouché sold very well. Ray feels that the timing was right. There was a buzz in the air and of course people had the cash to be able to buy this hardware and software.

3K ComputerBild

Also at about that time people were thinking of producing add-ons for Calamus. Ray's first add-on was Didot LineArt. This was from 3K ComputerBild. They were called 3K as the company consisted of: Machias Kurwig, Günter Kreidl and his brother Wolfgang Kreidl, the three K's.

Günter was responsible for a lot of the font technology in Calamus. The way Calamus came about was that they used a lot of freelance programmers who didn't get paid. This explains why there was an explosion of companies after Calamus was released. This also explains why many of the dialogue boxes and icons are identical in Calamus and Didot LineArt.

At this time there was also an explosion in the graphics side of computing. Ray was finding himself in the position where he was being asked to get hold of some very expenseive hardware.

He told me that in 1989 when the boom was in full force in the German market, more Epson scanners were being sold by 3K in the Atari market than were sold by Epson themselves in the PC and Mac markets as a whole!

Ray was then in the position where people wanted graphic cards and large colour monitors which at that time would have cost you well over £2,500. This however meant that you could get into photo retouching for about £5,000. This may sound expensive but compared to a similar Mac system the Atari set-up was not only cheaper but much faster at that time.

In Germany everyone was waiting for Calamus SL to appear. It was promised time and time again but it didn't appear. 3K therefore decided to go it alone and produce their own page layout package. Ray at this time was also still running his office equipment company which took up about sixty percent of his time, with the rest being devoted to the Atari market.

This was also a turning point for Ray as he at that time only had the one Atari programme in the shape of Retouché Professional. With the arrival of 3K in the DTP field he could now sell a complete solution.

Also Ray has always had the philosophy that it is better to deal with one company than with a lot of smaller ones. He therefore decided to commit himself to deal solely with 3K.

I asked Ray if he had any input with 3K and their decision to enter the page layout market. Ray told me:

"My view has always been that competition is healthy, because it brings the best out in people. I also thought it was odd that there was only one photo retouching programme on the market. But a little later Trade It came along and released Repro Studio.

"But as far as publishing was concerned there was only one programme, that being Calamus. There was at that time nothing to rival Calamus as nobody had outline font technology, wysiwyg screen display and vector file formats in the shape of Calamus's CVG format. 3K also noticed that the publishing market in Germany was shrinking.

"The situation when Didot Professional came out was as follows: people wanted to be able to RIP directly to typesetters. This is what Calamus offered with their interface. People also wanted to be able to typeset in colour. At this time Quark Express was getting better, and so was PageMaker. People were saying that we have nothing to rival these things.

"Calamus SL was always being promised. The magazine Cicero was always giving you glimpses of it, but never actually saying that it existed. The users of Calamus were saying, look we have committed ourselves to you and we cannot colour separate as the guys down the road can with Quark.

"At this time you found that the Atari market revolved around DMC. The other companies in the market added value to Calamus. 3K at that time said to themselves, what if we have a problem with DMC? All that DMC would have to do would be to change a file format slightly and we have lost our market.

"3K therefore decided that they must have a safeguard against this and they wrote a publishing programme of their own. There was in fact friction already starting between the two companies."

At this time Ray still only had the photo-retouching programmes. He was selling Calamus as any dealer was allowed to do, but he felt that he had no control over the product itself. As Ray explained:

"At this time 3K took on Didot LineArt which at that moment was just a font editor. This was from a Swiss programmer who had his own company. Again this added value to Calamus. What 3K decided to do was buy this company and take over Didot LineArt.

"They had decided that they were going to do a publishing programme. But they only had six months in which to write it as there was an Atari show in Düsseldorf that year. This was great for us as we knew that in six months we would have a publishing programme.

"They knew that the only way that they could produce a publishing programme was to use something that they had already got. They therefore took the font editor and made it into a publishing programme."

DMC v 3K ComputerBild

He went on:

"When DMC heard about this they severed links completely. They were worried as they previously had the one and only publishing programme in Germany on the Atari platform. They were also very worried as it was programmed by the same person who was instrumental in the development of Calamus.

"So they had six months. Obviously, while they were developing, they had no revenue coming in. DMC then changed their file format slightly so they could not import a lot of their stuff into the later versions of it. Markus Jürgens, who is a very good programmer, used to have to hack into Calamus so that they could get our file formats to work within it. This had to happen so that they could make revenue while they developed their publishing programme.

"This of course had no bearing on me in this country. I couldn't give a hoot. I was however involved with 3K from day one, so I was happy that I knew what was happening over there.

"3K then said that they were going to be different from DMC in that they were going to sell complete systems. They therefore decided to set-up the 3K ComputerBild System Houses. These were dealers who sold everything from the typesetters to the software. They then had a complete system and were competing head-to-head with DMC.

"They also made their own links with Linotronic, and they made their own contact with Epson as they were the biggest sellers of scanners, so they had the hardware support. One of the most important things we tried to do from the start even with Didot LineArt was to give it common file formats. This we saw as being very important indeed. Also with Didot Professional, PostScript output was important because of the link with Linotonic.

"This kit would cost about £30,000 for the complete system. I thought to myself, who is going to pay £30,000 in this country? It never really happened in this country because of Atari. I cannot remember Atari advertising the Mega STe adequately for instance, or the TT, either of which was needed for this type of set-up.

"What Atari did in Germany was they took on a guy to handle their marketing. He was responsible for setting up the dealer channels and the Atari publishing houses. In Germany they had a choice as far as publishing programmes were concerned.

"Here in the UK I knew that people would not be buying both programmes as we see happening in the Mac market. Here you will probably see both Quark and PageMaker being used side by side. The Atari market was still a very hobbyist orientated market. So these people are not going to spend that type of money on two programmes.

"I knew this from day one. I don't care what the press are saying, this is the best programme. I believe in the concept. I was a person who had used Calamus for over four years at that time. I knew the programme inside out. I saw Didot and I liked the idea of it."

I asked Ray what it was like in the German DTP market at that time, when 3K had Didot and their dealer channels set-up.

"You had the DMC dealers which were called the Profi Centres and the Didot people had the ComputerBild Houses. It was like having two rival football teams. They had those that believed in Calamus and those that believed in Didot and 3K.

"You have to appreciate that 3K started from nothing, from nowhere. All of a sudden they were second in the German market. They had written their own publishing programme which no one has done since. They developed their own technology to do publishing, colour separation, RIPing to typesetters, and developed it in a much shorter time than DMC had.

"The developers were only four people: Günter Kreidl, Markus Jürgens, Peter Egger and Jochen Riekhof. Jochen was also responsible for Retouché and Retouché Professional, with Markus's help. Peter Egger was responsible for Didot LineArt and Didot Professional and also DA Vektor again with Markus's help.

"Günter was responsible for the concepts. He is a guy who will have a great idea which he will put on paper and which other people will programme for him. For instance, he developed the idea of bi-passing the RIP and outputting your files directly to the imagesetter; the theory behind this was developed by Günter.

"He also developed the idea of having a screening chip. As you know, before you can send a page to a typesetter it has to be broken down into dots. Calamus uses software to achieve this, whereas Günter developed the idea of using a chip, to hardware-encode the chip to do this task, making the whole thing much quicker.

"Since then this idea has been taken up by Adobe who now have a chip called the Pixel Burn which they put in their RIP's. When you think that this was developed by Günter back in the late '80's for an Atari it's unbelievable!

"Günter Kreidl and the team had

stunning ideas. I have a system upstairs with a screening chip in it. Markus Jürgens at that time hadn't developed a complete application. His background was that of a games player. He was always involved with speed. It had to be fast to be good.

"So anything that needed fast routines was done by him. So they finally had a situation where they had the processor doing part of the page, and the screening chip working and a maths co-processor also working on the page."

The other players

"So we came to the the situation where the market was buzzing and everything was happening. Everyone was making money in the German market. We were saying to ourselves over here in the UK that we are only known as a one-product company, that being Retouché. The best selling programme in the publishing market was Calamus. But there was also Timeworks and PageStream.

"What was important for me was to put over that we had a programme now that could rival Calamus. We didn't want the programme to be compared to PageStream or Timeworks. The Germans didn't have this problem as they considered those two programmes a joke.

"We were very happy when we did let copies of Didot Professional out to reviewers as they straight away began to compare the programme with Calamus which is what we wanted. We were seen as number two, not number one but number two, which was exactly where I wanted to be. That way I didn't have to fight against PageStream and Timeworks as well.

"We did have some significant advantages over Calamus at that time. The biggest one I think was its ability to take in Type 1 PostScript fonts. Calamus uses its own format and fonts that were sold by DMC were horrendously expensive, whereas we had a programme that could use Type 1 PD fonts or professional Type 1 fonts, and use Calamus fonts. So anyone who was a user of Calamus who changed over wasn't left out.

"One problem we have always had is with the manual. It has never been as good as it should be. That problem arose as at that time 3K had partners in England who were us and also partners in America who were Goldleaf. The manual was written in German but by the time the manual came out the programme had evolved by a few versions so the manual was out of date.

"The Americans said they would do the manual from scratch. It sounded a good idea but the Americans knew nothing about outline font technology. And they also knew nothing about the way the programmes actually worked. By the time they had written the manual we found ourselves in the same situation where the programme had evolved again, so their manual was out of date.

"So we had Didot Professional as well as Retouché Professional and we were also for a time still selling Didot LineArt, but not for long as this was incorporated into Didot Professional. We also had Didot Professional Colour Design so we had both the black and white and colour programmes. We did and still are doing very well with those programmes.

"In fact after the demise of Mike Dale of Signa this has made my business very sucessful. This didn't come as much of a surprise as Mike was trying to do a lot all at once, spending a great deal on advertising, etc.

"We were very fortunate. We had a linotype machine and everything. We had links with Linotype to the extent that we were able to get hold of a typesetting machine and developer for nothing, as we had convinced them what we were about. We did in fact sell a couple of machines, and I think we are the only company who has sold a Linotron machine in this market."

Changing markets

"The market has changed and is changing all of the time. The PC's were coming apace, Macintosh was also coming. The programmes on those machines were getting better. Quark and PageMaker were getting better. The publishing market seemed to be saturated.

"You get to a point when you have sold as many as you are going to sell. When we release a piece of software we can say that we will sell a hundred, say, in two months. Then we have the people who buy later, so it drops down to say fifty in two months, and so on.

"This is the same in Germany. When DMC released SL for instance they knew that, say, twenty thousand people would upgrade straight away. But there was a problem. The German market was declining so they had to look for other platforms. This is why we have seen DMC writing Calamus for Windows NT.

"This has also happened with 3K. This was partly also due to the Americans in the shape of Goldleaf. They managed to get something like seven machines out of the Next Corporation to use for development, so 3K began to develop their products for the Next range of machines.

"The developers at 3K were unhappy about the decision to move to another market and so they decided that they wanted to go their own separate way. This is what eventually crashed 3K ComputerBild. But then Next decided that they no longer wanted to be involved with hardware. The developers at this time had gone and had named themselves Digital Arts.

"3K wanted them back but on their own terms. This didn't come about. So we had Digital Arts on their own. I don't know what has happened to 3K but I think the guy that ran it was from a wealthy background so he may well have just left the market.

"There were some legal problems with who actually owned the code. This has now been resolved in that the programmes have gone back to Digital Arts on the condition that they change the products' names. Hence the programmes are going to be called DA Layout and DA Repro.

"The important thing is that the developers have more freedom. The first product that they developed was DA Vektor, which to my mind is the best programme on the ST or TT or Falcon. I am not just saying that because I sell it, I am saying that because I really do believe in it.

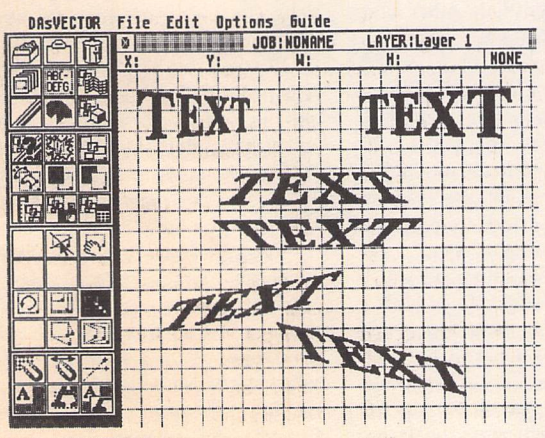
"When I first saw it I thought to myself, where is this programme going to fit? But now I can see the complete direction after using it. It is an important statement of belief in the market. It is important also because Digital Arts still believe in the Atari market itself. They are now the biggest developers with five people programming for them."

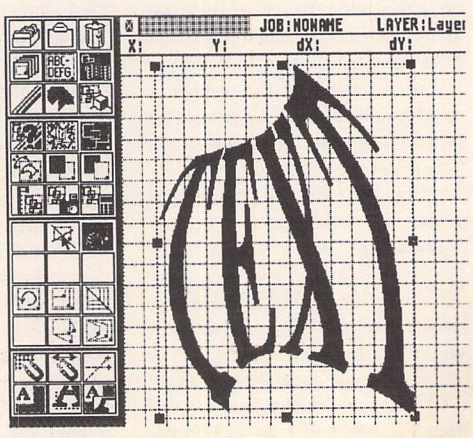
As a lead on from this I asked Ray about the move to other platforms. DMC are writing Calamus for Windows NT. I asked Ray if he and Digital Arts have any plans of their own to move into other platforms.

I said that it could be very worrying for an Atari user to see the company that they have brought software from move to another platform, in that it may become the case that the new platform then becomes more important to them and they neglect the Atari.

"We have looked at which direction Digital Arts should go. I proposed that they should look at the Acorn market. Also at this time they have been looking at the development of DA Picture which follows in the footsteps of Retouché Professional. So DA Picture will be developed simultaneously for the Atari and Acorn machines. It will also be the first time that a German developer has written for the Acorn machine."

This brought us up to date with CGS as they stand today. Ray is however moving into other markets apart from publishing. With the release of DigiTape for the Falcon, CGS have moved into the music market in a big way. I asked Ray if he breathed a huge sigh of relief when Atari did finally release the Falcon, as the market needed a shot in the arm to revitalise it.





Falcon

"I realised a long time before Atari stopped the TT and the other machines that Atari had to cut its staff and cut its product line. I looked at the market and realised what was happening. From the time I started discounting PC's I realised that the hardware manufacturing industry was going through a collapse.

"It is too expensive for a company to have a product line that consists of two or three very different machines. The TT, Mega STe and the Falcon are all completely different from each other. In a sense Atari made the right decision in that they cut their product line, they cut their staff, they did it earlier than later. IBM for instance are doing this really after the horse has bolted. Apple are in the same situation. They have sacked their chairman!

"At the time I wasn't very happy, but after sitting down and having a serious think, I thought they had made the right decision. What it means to me is that Atari are still prepared to make ruthless decisions which is good. This means that Atari have still got their head. It also means that Atari can grow, because once you have been there it's easier to get there again."

I asked Ray about the Falcon as a piece of hardware and if he thought Atari had got it right. As it stands at the moment it offers the musicians a new machine in that they have straight to hard disk recording. For the next largest market in the shape of the DTP field, the machine does not offer anything extra.

"Look at it this way. The Falcon has so much technology in that it allows you to bring a lot of very different areas together. Digital Arts intend for instance to release a package called DA Video System.

"This will be a complete video suite. Using a Falcon you can digitise pictures, you can add music, you can animate and render everything together. This can all then be sent directly to a video recorder. What I am saying to you is that this could not have been done with a TT or if it could, it would have been a very expensive solution. The Falcon has a lot of the hardware built in and has allowed a lot of companies to move on if they want to.

"The Atari market and the developers behind it have always been those that have made the ground braking types of software. This is the history of Atari. If you look at the Virtual Reality industry, the people working in that area started out in the research labs at Atari in America. Atari's history has always been of innovation and development. The Falcon has made people want to start and develop something new."

Staying with the innovation subject I asked Ray if he thought the Falcon was a huge leap forward in technology. The new software for the machine is coming out very quickly indeed and people are learning what to do with the new hardware, especially the DSP chip. I asked Ray if he thought we needed a piece of software that unlocks the power of the Falcon and shows the man in the street what it can do.

"The Falcon is a huge leap forward. It is also important for software to evolve. Also, if the software is evolving so is the company that produces it. This is very important as you then know that they have a future.

"Looking at the market again one thing that is forgotten is that people have had their Atari machines for years and years in a lot of cases. And the users want software that is as good as say Quark or Illustrator to work on their old machines without adding anything extra to their machines. They think that they can buy a machine now and it will last them a lifetime.

"This is also one of Atari's major problems in that they have not educated their own customers. As you can imagine if people are not changing their machines, the developers say to themselves that there is no point in developing new software for the DSP for instance, as the market isn't big enough."

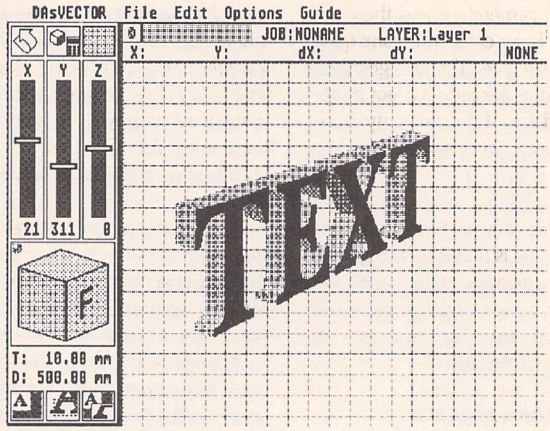
"The Falcon is a fantastic machine. Or, let's get this right, the concept is fantastic. The machine may have a few things about it that I don't like but at the end of the day Atari have to make money. It's just like me, I have to make money to live.

"One thing that is interesting about Atari is the fact that the management has stayed the same for years and years. In all the other companies there is a very fast turnover in management. I will tell you a story if you like. I was recently in America on holiday. We decided to go and find Atari as we were near Silicon Valley.

"We got there and I could see Apple and IBM but couldn't see Atari. I didn't have the address or anything as it was all at home. So I went into the Apple building and asked them if they could tell me where Atari were.

"They said that they thought they had gone out of business. So they suggested that we look in the phone book. Anyway I'm in the Apple building and the guy's looking through the phone book and he says that Atari aren't in there. So he then suggested that they use their equivalent of directory enquiries. Anyway, he finally got the number and dialed it. They took ages to pick up the phone.

"In the end we decided that it was too far from where we were as they were at the other end of Sunnyvale. Also while we were there we obviously went into a few computer stores but not surprisingly didn't see any Atari machines. But their market is so small compared to ours."



Previous page and above:

Some of the effects possible with DA's Vektor.

Jaguar

As we were talking about the market and Atari's place in it, I asked Ray what he thought of the move by Atari to enter the console market with the Jaguar.

"As far as the Jaguar is concerned it's a fantastic move, because entertainment is the biggest market. The best market to be in today is the entertainment market, because you can guarantee that the market is going to last for years."

I then asked Ray the question that I had asked all the other interviewees in this series about the bad image that Atari has and if in fact this is justified. I put it to Ray that Atari have got themselves into a position where they are expected to produce a machine that is all things to all people and users expect Atari to push the machine in all areas at once.

I put it to Ray that this was in fact not Atari's mandate at all. It is up to the developers and people such as Ray to decide if the market is there and then to bring software in. It is not up to Atari to market the machines to the degree where they are doing the job that should fall to the developers and software companies in the Atari market itself.

"I agree with that up to a point. As I see it their mandate is to develop a machine which they think they are going to sell a lot of. They look at the market and say there is a market for a machine that can do XYZ. We will develop the machine. I believe it is our duty to actually add value to that machine. The machine on its own will never sell regardless of how powerful it is. The value that is added sells the machine.

"A perfect example is the Silicon Graphics workstations. On their own people wouldn't buy them. But the value is added to the machine by the programmes that are written for it. Their use in Jurassic Park added value and allowed the company to continue.

"At the end of the day they have to show a positive figure on their balance sheets. They have a perceived market. They have an idea of how many they can sell. So they say, we have a market that looks like this. But they know that they cannot spend a great deal on the marketing as they will not make the return they need to stay in business. Which is the right way of thinking.

"So they also say to themselves: let's make some kind of return on the machines and then think about advertising. But also don't forget that Atari are still here. There are a lot of companies that are going bust, but Atari is still here.

"I do agree that Atari's hardware support isn't as good as it should be, but from a user's point of view they should be happy that Atari are still in business. There are many people who have brought machines only to see the company go out of business. I'm not going to bash Atari. We

have been through the worst recession I can remember and they are still here. They cut to the bone quite early to survive. I'm not going to slag off Atari because it is not beneficial, and it will not help my business one iota. Atari are doing what they see as their best so I am living with that.

"At this time what customers need to know is that they are getting value for money. In our case we started as a high-end company selling things such as scanners at £1,200 and software that costs over £500. Now we are having to take the lower ground as the market has changed.

"It is important that we change in relationship to the market. This is what we are trying to do as a company. That is why when DA Vektor came out it was at an astounding price of £149. We fought long and hard with Germany about prices. We were able to get Didot and Retouché down to £299 as we said we would sell it as a team. So we developed the idea of the Dream Team. My only claim to fame is that I developed that slogan."

The Press

I wanted to ask Ray about the Atari press. They have a great deal of clout when it comes to instilling in the users a positive or negative attitude towards Atari. I asked Ray if he thought the Atari magazines had been a help or a hinderence for the market as a whole and especially with the Falcon.

"The success or failure of a machine is down to the people who buy the machine and people like yourself who write about it. I think that some of the magazines are terrible in what they say about Atari. They have got a lot to answer for. Whatever they say can have an adverse affect on all the Atari companies in the market, which then makes the market decline.

"Also in the past we have not had the best software reviewers we could have had. That has changed now. At the end of the day the first look at a piece of software is what you guys write. When they slag off a piece of software this can have a very bad effect on the market. I know that they have to give an honest appraisal of the programme but there is a limit. So the magazines I think do not realise the power and the axe that they have."

I than asked Ray if he had any firm plans for the future of CGS.

"We did have the idea of moving into a shop front, but I decided against that. I really think I would like to be in the position much as I am today. I don't want to be a huge company because you can get lost. I want a small company where I relate to the people who work with me.

"I want to be in the position where I am now, where I know all of the software and can answer questions about them. Also Alison knows the software as we both use the programmes on a day-to-day basis. I do not intend to have a huge product line. I have a selected product line."

With that we ended the interview. Ray had a great deal to say about his company and about the philosophy behind it. Ray has a very positive view of Atari and their future, and his part in it. CGS are now moving into new areas such as rendering and digital recording. These should be just as successful for Ray as his publishing software has been, as he knows his market and brings his enthusiasm with him with each new release.

CGS ComputerBild are:

Ray Cross - Owner/manager.
Alison Cross - Second in command.
Rob Endersby - Software beta testing. Animations Support and also helps with exhibitions.
Rob Perry - General support and exhibitions.

They can be contacted at:

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SW16 4TU

PLEASE NOTE: Check this address with CGS as at the time of writing they were looking for new offices. This address may well have changed.

Tel:.....(081) 679-7307
Fax:.....(081) 764-7898

Reading the Writing: Migraph OCR

Word-processing is the art of turning computer files into printed text. Jon Ellis has been looking at the reverse process: optical character recognition (OCR).

Introduction

OCR, or optical character recognition, is not a particularly novel idea, having been around for decades. What is comparatively new though, is the progression of OCR software onto personal computers that are powerful enough to cope with the task. Together with a vastly increased performance in character recognition technology, this has widened the popularity of the technique.

The fundamental problem in OCR is recognising a shape on the scanned image page as a particular character. This is the kind of task at which the human visual system is extremely good, but with which computers struggle. Consider Figure 1: all of the characters are capital 'A's, but they are made up of vastly different patterns of ink on the page. What is it that gives each image its 'A-ness', and how could this be expressed as a computer algorithm?

In the beginning, OCR packages solved the problem by rigidly prescribing one or two fonts that could be recognised. Characters had to be printed in the correct font, at the right size and positioned correctly on the page. Any deviation from these requirements caused recognition to fail. These restrictions were due to the comparison technique which involved processing the character as a bitmap, and comparing the pattern of black and white pixels with a stored image of each character in turn.

A more advanced approach is to adopt the vector technique as used to produce scalable fonts, like those provided by SpeedoGDOS. Each character is defined not by bitmap, but by lines and curves, which allows more tolerant processing of size and orientation of the printed text. Also, since the mathematical description of each character is reasonably compact, an OCR package can cope with several fonts at once.

Layered on top of these two fundamental approaches to character recognition are various optimisations to improve performance. Many OCR packages can be trained on a font by the user. The software simply takes an unknown shape, either as a bitmap or as a vector definition, and asks the user which character it represents. This information is then stored for the next time the shape is encountered.

A more advanced optimisation involves the use of language features to assist recognition. For example, in native English words, the letter 'Q' is almost always followed by 'U'. Therefore, 'U' is a good guess for an unknown shape that immediately follows a 'Q'. Similarly, the knowledge that a full stop is often followed by a capital letter may also be of use.

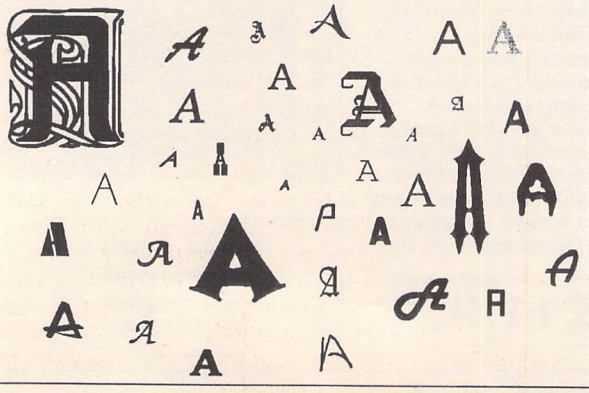
What of the future? A major direction for OCR development is towards the improvement of systems for handwriting recognition. One avenue that is being explored for this purpose involves the use of neural networks (see Box 1 for more details). This is not the only approach though, as more sophisticated language-based rules are also becoming more widely used.

Despite these advances and however the technology evolves, it still has a long way to go before it can match the human visual system. As an example, look at Figure 2. To most humans there is the strong impression of a white capital 'A' standing in front of several black shapes. The 'A' is generated by the production of **illusory contours** in the human visual processing system, an effect that any OCR system would be hard-pushed to duplicate. Most OCR software will simply see the collection of black shapes, and no letter at all, which is hardly surprising as it is not really there.

Migraph OCR

Moving away from the theoretical side of OCR, how does Migraph OCR measure up? Migraph OCR is by no means the first outing of OCR on the ST. A variety of packages, usually marketed by scanner manufacturers, have appeared over the years. These have often been of somewhat dubious utility, with poor recognition efficiency.

What is different about Migraph OCR is that it employs many of the features found on serious OCR packages. First and foremost, it is a vector-based recognition system. It also uses both training and language features to assist recognition. Migraph OCR is provided with linguistic databases for English, German, Dutch and French. The package is pretrained for 21 fairly



◁ Figure 1

Capital 'A's from a variety of Postscript fonts. Each has something that tells us it's an A, but what is it?

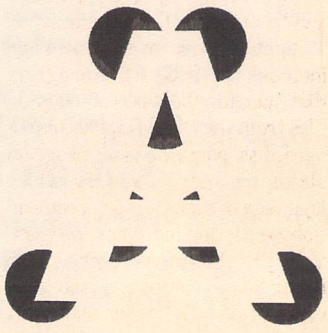


Figure 2 ▷

The phenomenon of illusory contours. The visual processing part of the brain links up the lines suggested by the edges of the black shapes to produce an A.

Box 1: Neural Networks

Digressing somewhat from the technology embodied in Migraph OCR, one of the more popular jargon phrases in some OCR circles is **neural network**. Neural networks are one of the emerging technologies of artificial intelligence. Neural nets use arrays of units whose properties are likened to a highly simplified model of the way that some neurons (the nerve cells that make up the brain and spinal cord) work. They are not computer models of the human brain, though they seem to share certain properties and organising principles.

In one of the more basic flavours of neural network, each unit receives input information from many other units, and decides its output behaviour from the aggregate of its inputs. The relative contribution of each input to the determination of the output (termed the **weight** of the input) is variable. Large numbers of these units are connected together to form a network.

Before it can do anything useful, the network must be trained. The net is fed a series of inputs together with the desired outputs in such a way that inputs that tend to make a unit contribute to the 'right' answer are strengthened, and those that tend to contribute to a 'wrong' answer are rendered less influential. As the training progresses, the net produces more and more accurate answers.

When the training is over, input fed to the network will result in correct output without any external intervention. An interesting property of a trained network, particularly for pattern-recognition applications like OCR, is its tolerance to noise. A degraded or partially malformed image can often be correctly recognised.

This is a fundamentally different way of approaching the character recognition problem, as the network requires no description of how to discriminate between characters. The programmer does not need to provide mathematical rules that, for example, define what an 'A' looks like - the network evolves its own rules during training. These rules are expressed in terms of the pattern of connection weights.

However, there is no simple way to backtrack from the connection weights to derive insight into how text should be recognised. The information that describes how to recognise a letter 'A' is not stored in any single neuron or connection, but rather **distributed** over the whole network. Likewise, the information pertaining to the other recognisable characters is also distributed. As a consequence, individual connection weights are not meaningful on their own: the pattern recognition is an **emergent** or **network** property, derived from the activity of the whole net.

Neural networks are not the answer to all recognition problems, but their application in OCR forms a fascinating example of how techniques derived from artificial intelligence research can be applied to realworld problems.

simple fonts at sizes ranging from 10 to 18 points. Popular fonts on this list include Bookman, Times, Courier and Helvetica.

Owing to the processing overheads of OCR, the package requires a reasonable amount of memory (at least 2 megabytes), and a hard disk. Installation is straightforward, as the package includes an INSTALL program that handles the task of copying files from the three floppies onto a hard disk partition. The program allows the user to specify which language dictionaries are required - obviously the more languages involved, the more disk space required. A basic English-only configuration occupies about 1.1 megabytes. One minor niggle in the installation process was that the program does not like NVDI v2.50, and crashes with a bus error.

Obviously, to make use of an OCR package a scanner is required to acquire the images to be processed. This can be done in two ways. First, and most generally, images can be scanned by external software, saved, and then imported into OCR for processing. Migraph OCR supports only the GEM IMG and TIFF file formats. Since these are amongst the more widely used ST bit image formats, this is not a severe restriction, particularly as there are many PD graphic file format converters.

Secondly, the image can be scanned directly into the OCR package. This is only possible with hardware that the software knows about. Compatible units include Migraph's own hand scanner and PS400 wand. During scanning, the incoming data is shown directly on the screen, which is very useful for adjusting the scan contrast in real time.

Although direct scanning would probably be the method of choice for convenience, there is a major snag. Using the Migraph hand scanner (see Box 2 for a brief review) direct scanning is not possible on the Falcon. All data read from the scanner is scrambled in such a way as to make it unusable (Figure 3). The effect is ameliorated a little by switching the Falcon to 8 MHz and turning caching off, suggesting that the 68030 and extra speed of the Falcon are disturbing timing loops in the software. Until this disastrous bug is sorted out, Falcon owners will have to resort to the indirect method of obtaining data.

Migraph OCR comes in two flavours: the full version and OCR Junior. The only difference between the packages is that the Junior version does not support the loading of IMG files for processing. As a consequence, all scans for conversion have to be performed within the program. Since writing a routine to load IMG files is a trivial task compared with the complex programming involved in OCR, the division between the two packages seems rather odd. The cynical observer might suggest that this is a stratagem of the Migraph marketing department designed to encourage sales of

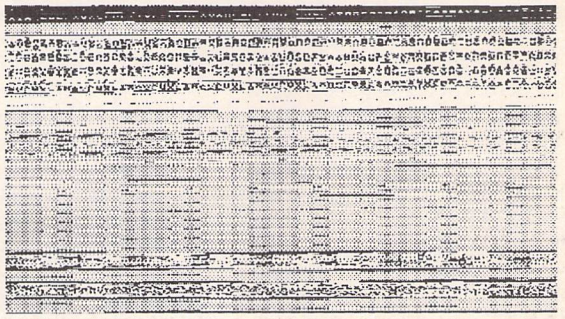


Figure 3 ▷ Migraph OCR cannot directly scan data on a Falcon. This is the file produced by scanning a page of text!

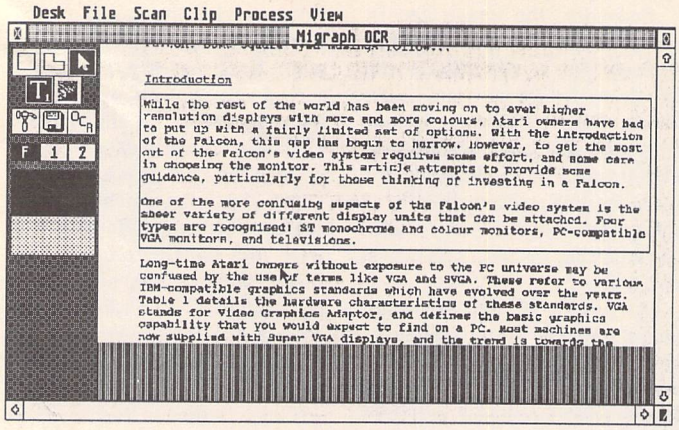
Box 2: Migraph Hand Scanner

The hardware used in this review was the Migraph Hand Scanner, which from one supplier at least comes bundled with Migraph OCR. Apart from the 105mm scanning handset itself, the package consists of a cartridge which presumably houses the electronics, and a small power supply unit. Setting up is easy, as none of the leads can physically be inserted into the wrong sockets. Once the kit is assembled, plugged into the ST cartridge port and powered up, it is ready to scan. There may be problems using the scanner with tower-cased STs, as the plastic housing of the cartridge may foul the cartridge port cut-out.

The scanner is capable of scanning at 100, 200, 300 or 400 dpi, as selected by a switch on the side of the handset. Another switch allows optimisation of the scanned data depending on the nature of the printed material. Three grades of dithering are supported for halftone photographs, along with a single line art mode. This latter setting is that required for text.

A thumbwheel provides fine control over the contrast of the scan, and is thoughtfully positioned on the side of the unit. This allows the correct contrast to be arrived at while moving the scanner in a practice scan. To complete the list of controls, there is the usual button that is pressed during a scan to transfer data. An LED on top of the handset is illuminated when the electronics are ready to receive data, and goes out at the end of a scan or if the unit is being moved too rapidly.

The Migraph scanner is comfortable to use. The handset has a solid feeling missing from some of the cheaper alternatives, yet moves smoothly and easily over the paper. A particularly welcome feature is the clear window that reveals the part of the image adjacent to the diode array, allowing easy alignment of the scanner. All in all, a competent hand scanner.



△ Figure 4

A passage of text is selected for processing by the OCR system by enclosing it in a clip box. Several of these boxes can be placed on a page.

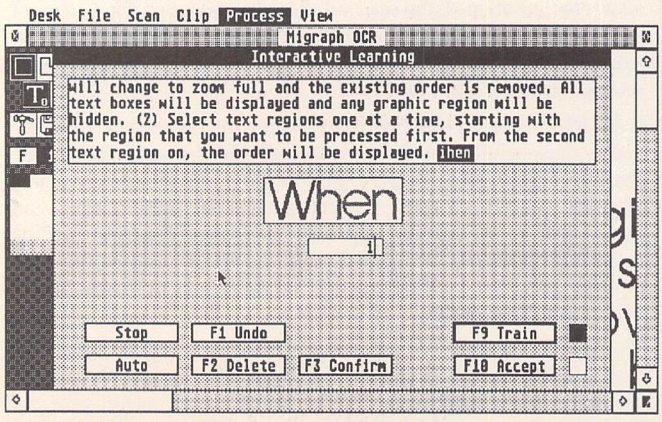
compatible (ie Migraph) scanners. If you think you will ever want to process images from other sources, forget OCR Junior.

Once an image has been scanned, it is displayed in a window on the screen at one of three magnifications. A small selection of tools allow the image to be inverted, rotated or flipped in various directions. Areas of the image can be selected by rubber-banding with the mouse, and then saved to disk as IMG files. There is no opportunity to edit the image at the pixel level, for example to remove lines caused by creases in the paper.

To begin the character recognition process, one or more text areas are selected with the mouse (Figure 4) and then the OCR menu option invoked. What happens next depends on the program options selected. In fully automatic mode, the text area is processed without user intervention, and the results written to a previously nominated file.

One of Migraph OCR's most interesting features is its ability to be trained on a new font. This is done using the "Interactive Learning" mode, in which the program processes the image, and if it finds a symbol it cannot understand, the symbol is displayed in a dialogue box, along with a suggested interpretation, and the user asked for confirmation or correction (Figure 5). The space for user input allows several characters to be entered, so enabling the program to handle kerned character pairs. As more and more text is processed, the program learns, and the frequency of user consultation decreases.

The knowledge gained by the program in the interactive learning process is stored in a dictionary file. The more specific a dictionary is for a task, the better the program's performance. For processing of long documents, it is recommended that a new dictionary is created, and then filled by coaching the program on the first 20% or so of the text, before engaging the automatic processing mode.



△ Figure 5

In the interactive learning mode, Migraph OCR will consult the user about symbols it does not recognise.

Documentation

The package is accompanied by a printed A5 booklet of some eighty pages. The documentation covers both Amiga and Atari versions of the program, which at times makes for confusing reading. All of the screen grabs are taken from the Amiga.

Starting with installation instructions, the manual provides some background information on OCR, followed by a quick-start tutorial. This is an excellent approach, as it allows new users to quickly gain a flavour of the package before reading the documentation thoroughly. Even better, a pre-scanned demo file is included on the disk, so those unskilled in the art of scanning can explore the OCR system. The tutorial adopts a step-by-step approach, beginning with the acquisition of the scan, and leading up to the processing of the text image.

Succeeding chapters offer much sound advice on how best to scan documents to minimise problems during the OCR process. A particular worry when using hand scanners for OCR is the difficulty of obtaining a straight scan. Images where the text slopes across the scanning area can cause difficulties for the software. The documentation discusses this issue at length, and makes some sensible suggestions; such as using a scanning tray.

Procedures for scanning large and multi-column documents are also described and illustrated with clear and meaningful diagrams. The closing chapters of the manual document each of the various menu and icon functions in turn, providing a useful reference guide.

As is so common with software documentation, the indexing is less than perfect, and so there is often a fair amount of browsing to be done before the right passage can be found. A README file on disk supplements the manual by listing changes that have been made to the program over the last few versions. Several of these changes affect the drop-down menus, so it is worth printing off the README to use in conjunction with the manual.

Performance

The package is tolerable to use, though the on-screen presentation is nowhere near as slick as that of some recent, particularly German, software. Features can be activated from the menu bar or from a rather unimaginative icon tablet. Migraph OCR is written by some of the same programming team that produced EasyDraw, and it shows in the clunky, late-eighties design of the interface. Since Migraph licensed in the complex OCR part of the program, they should have had the programming time to produce a more polished program.

```
While the rest of the world has been moving on to ever higher
resolution displays with more and more colours, Atari owners have had
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out of the Falcon's video system requires some effort, and some care
in choosing the monitor. This article attempts to provide some
guidance, particularly for those thinking of investing in a Falcon.

One of the more confusing aspects of the Falcon's video system is the
sheer variety of different display units that can be attached. Four
types are recognised: ST monochrome and colour monitors, PC-compatible
VGA monitors, and televisions.
```

△ Figure 6 ▽

A sample image scanned with the Migraph hand scanner (above), and then processed automatically by the OCR package. The resulting text file (below) shows the general accuracy of the process, and the areas of difficulty such as spacing and punctuation.

```
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```

The performance of the program was explored in two ways. First, some basic scans were made using text printed in one of the typefaces that Migraph OCR is pretrained on. Figure 6 shows an extract from one of the test documents after scanning, together with the text file produced by the program without any further training or operator assistance.

In general, the character recognition is excellent, with only occasional minor errors involving easily-confused symbols such as 'l' and '1', 'w' and 'W' and so on. Punctuation is frequently referred to the user during interactive learning. Spacing seems to be particularly awkward for the program to pick out. There is a control option that allows the user to specify if the font is fixed or proportionally spaced, and this can help a little.

Secondly, to remove the contribution of the particular scanner used for the review, some image files were prepared on Didot Professional. These files contained 300 dpi images of the same passage of text in a variety of fonts, including some that the program was not pre-trained on (Figure 7). This approach models the ideal of text printed by a perfect printer, and scanned by a perfect scanner.

The results from these tests showed that the package coped best with simple fonts. The Helvetica Bold text caused only 18 referrals to the user in Interactive learning mode, with many of these requiring simple confirmation of a correct guess. In contrast, over 40 referrals were generated by the New Century Schoolbook Italic passage, many of these requiring correction. In some fonts the discrimination between capitals and lower case letters was poor: once again New Century Schoolbook was the greatest problem, with all lower case 'h' being translated to capital 'H', without reference to the user.

One type of image that did cause problems was one where the lines of text were fairly closely spaced. In places where the ascender of one character touched the descender of a character on the line above, Migraph OCR insisted on considering the two characters as a single symbol (Figure 8). The program offers no way of getting around this problem - perhaps the only answer is to edit the image in an art package to separate the two characters.

In general though, Migraph OCR's performance is surprisingly accurate. Not only that, once trained the package moves along at a fairly smart rate. On a Falcon, a passage of 12-point Helvetica Bold was processed at about 440 words per minute (650 words in 90 seconds), with few errors.

Sorting Text Regions (pages 31–33)
After testing several cases with the Horizontal and Vertical methods shown in the manual, we found that not all possible cases would be automatically handled. Instead, you will graphically select the order in which you want the text regions to be processed.

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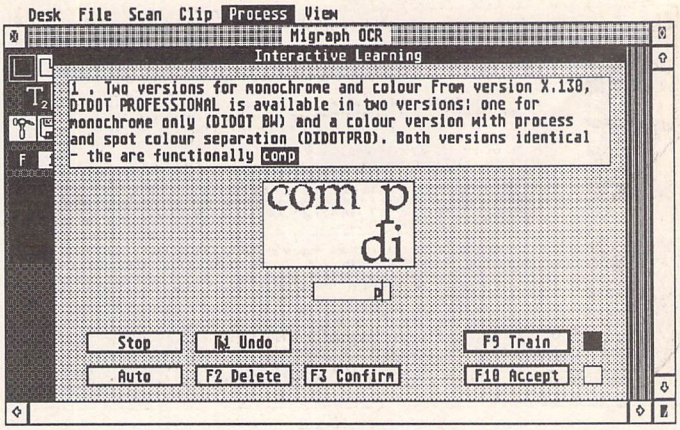
△ Figure 7

The image files used to assess the performance of the package on a variety of fonts. From top to bottom, the fonts are: Avant Garde, Bodoni, New Century Schoolbook Italic, Helvetica Bold.



△ Figure 8

Images where one line of text runs into another cause particular difficulties for Migraph OCR. The package offers no solution to this problem.

Conclusions

Do you really need OCR? Well, probably not, as documents can always be typed into a word-processor by hand. Having said that, there cannot be many writers who have not wished at least once for something to take on the drudgery of copy typing. As part of a bundle together with a Migraph hand scanner, Migraph OCR is an excellent introduction to this field.

However, one does wonder how many users will fiddle with it a little, and then put it to one side when the novelty wears off. This would be a shame, as underneath the rather dusty interface is a serious piece of software. Like all serious packages, it requires investment of time to get the most out of it.

Also, further financial investment may be required. To use Migraph OCR for anything other than occasional text entry, a flatbed A4 scanner seems essential: either that or the patience of Job to stitch together strips of hand-scanned image. In addition, some other IMG-handling art program may be needed to manipulate images, as the lack of editing facilities within Migraph OCR is an annoying omission.

To sum up, Migraph OCR probably cannot be beaten on the ST for sheer text crunching power. The character recognition is acceptably quick, learns rapidly, and copes well with traditionally awkward OCR tasks such as semi-cursive italic fonts. It is an impressive piece of algorithm engineering, let down somewhat by a poor interface and compatibility problems.

Points For:
- ✓ Intelligent and flexible character recognition.
- ✓ Learning facility.

Points Against:
- ✘ Direct scanning does not work on the Falcon.
- ✘ Dated GEM interface.
- ✘ No scope for editing scanned image.

Product:.....Migraph OCR
Version:.....1.24
Publisher:.....Migraph Inc
UK Supplier:.....Gasteiner
Tel:.....081 - 365 1151
Price:.....£49.95
Manifest:.....3 single-sided disks, 80 + iv page manual.
Minimum system:.....2Mb ST and hard disk
Test systems:.....4Mb 1040STF TOS 1.4, hard disk, monochrome display; 4Mb Falcon TOS 4.02, hard disk, monochrome display

Fontkit Plus

V4.1

David Smith takes a peep at the latest upgrade to Jeremy Hughes's Fontkit Plus, now at v4.1.

FKP has been upgraded to version 4.1. A good number of bugs in the earlier version 4 have been corrected (see box 1), and the 'spacing' option in the Size menu has been expanded to three different combinations of cell columns and offsets (see facing page). The HP import and export options include DeskJet 500 fonts, and the Signum import and export feature will now read and write Spanish and Swedish fonts with the correct keyboard mapping.

If you are using FKP on a TT the 16x32 system font will be loaded if you type SYS4.FNT in the file selector. SYS1.FNT loads the 6x6 system font, SYS2.FNT the 8x8 system font and SYS3.FNT the 8x16 system font; SYS1.FNT and SYS3.FNT are thus reversed in comparison with earlier versions.

The 'System information' dialog now distinguishes between FSM GDOS and Speedo GDOS.

One or two changes have also been made to the accessory programs *Fontswitch* and *Fontprint*. The 24-pin version of the latter has been upgraded to work with That's Write – previous versions were confused by a control code sent by some That's Write printer drivers. Esc\' codes are now intercepted to give better justification of lines containing negative offsets. *'Fastprint'* works with the Falcon.

Fontswitch now has the following implementations:

- ✓ Background printing has improved detection of the printer's inability to accept any more characters;
- ✓ It is faster than before;
- ✓ The 'direct print' mode works with Falcon030 computers;
- ✓ Version 4.1 can download DeskJet 500 fonts;
- ✓ The 'screen fonts' utility works with Falcon030 computers.

BUGS

A number of bugs have been fixed. These include:

- ✓ A problem in the way the 'print font' option worked with the 9-pin version of Fontprint.
- ✓ A bug which caused dialogs with pattern buttons to crash under MultiTOS.
- ✓ A memory-allocation problem which could occur with block operations.
- ✓ A bug which prevented large fonts from being scaled correctly.
- ✓ A problem with metafile fonts.
- ✓ An error in the way the 'font information' dialog reported 'Max cell + offsets'.

Import and Export Options

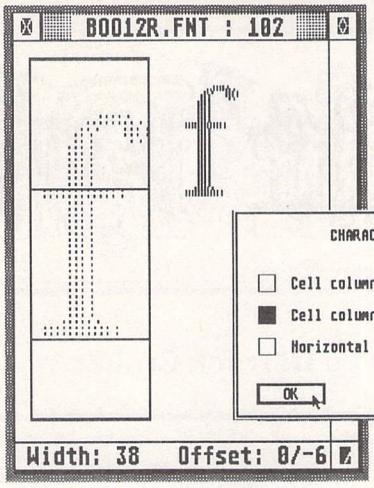
Hp2gem and Gem2hp can read and write DeskJet 500 fonts. These can be used with any DeskJet 500 (510, 550) printer which has an additional RAM cartridge. In contrast to earlier types of DeskJet font, DeskJet 500 fonts may contain negative offsets which allow characters such as 'j' and 'f' to be spaced correctly. See facing page for information on how to generate matching screen fonts (to use with That's Write etc.) for printer fonts which contain negative offsets. DeskJet 500 printers can also use DeskJet and DeskJet Plus fonts, but DeskJet (Plus) printers cannot use DeskJet 500 fonts.

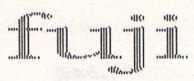
Sig2gem and Gem2sig can read and write Spanish and Swedish fonts with the correct keyboard mapping.

Cal2gem calculates cell widths with greater accuracy.

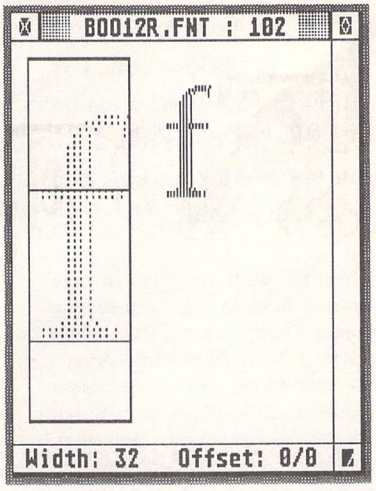
Spacing

The 'spacing' option (in the Size menu) now contains three options. Characters can be spaced with cell columns and negative offsets, cell columns and no offsets, or with horizontal offsets. If you select 'cell columns and negative offsets', positive horizontal offsets will be converted into blank columns and negative offsets will be retained. 'Cell columns and no offsets' also converts positive offsets into blank columns, but negative offsets are dealt with by removing cell columns, along with any character data which is in those columns. One reason for doing this is to create a screen font which matches a (non-GEM) printer font containing negative offsets. If you simply remove the horizontal offset table (as is necessary for most GEM-font programs), screen characters which lose their negative offsets will be too wide for the corresponding printer characters. Selecting 'cell columns and no offsets' ensures that screen characters are the correct width. There is a global equivalent of this option in the 'size font' submenu.

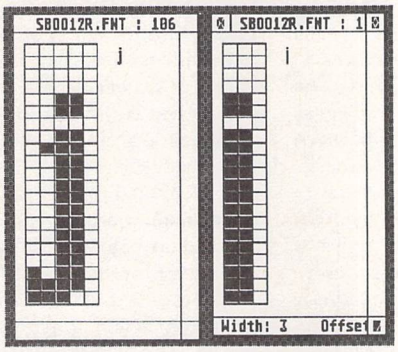




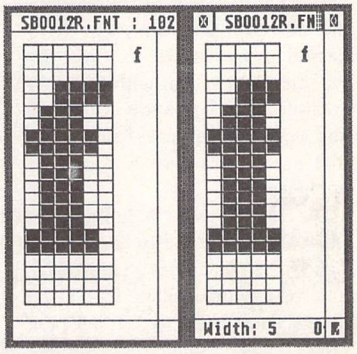
Left: 'f' with righthand negative offset



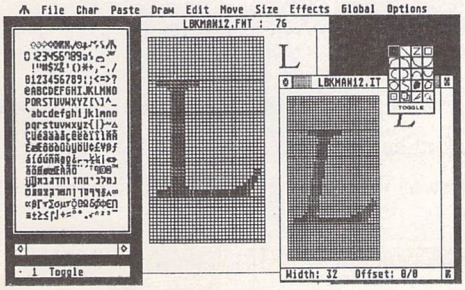
Right: offset removed



The character on the left of each pair is scaled from a printer font with offsets; the one on the right from a font with offsets removed; the narrower cell width is the correct one for use in That's Write.



Fontkit Plus 4.1



Price: £24.95
Upgrade from version 4.0:
Return master disk No. 1 (only)
plus upgrade fee of £3.95

Supplementary Disk

The Fontkit Plus Supplementary Disk contains text files which were omitted from the printed, along with fonts, drivers, and text files which could not be fitted onto the main program disks. Additional contributions such as new drivers or text files are always welcome.

appendix.e - Information and source code for using ST screen fonts or GEM fonts in your own programs.
cyrillic - Cyrillic fonts and tables.
djfonts - 24-point Bookman Deskjet 500 font.
gfa - GFA Basic code for displaying fonts.
gst - Detailed information on the GST font format
pdrivers - Fontswitch printer drivers
protext - Protext drivers and information files
twrite - Screen fonts and pseudo-fonts for Deskjet 500 and Epson 24-pin printers
gemfonts - GEM fonts
info - Information files

Cost £1.25

FaST Club
7 Musters Road
West Bridgford
Nottingham
NG2 7PP

Fontpac Plus
Newsletter Setter

A set of GEM bit-map fonts for 300dpi printers and hi-res screens, designed for use in reports, CV's, adverts, newsletters and magazines.

There are five typefaces comprising nearly sixty fonts in all, with point sizes ranging from seven to twenty-eight. Included are:

- three 'classic-style' typefaces (Century, Castleton Roman and Souvenir), each with its own 'true italic' version and two of them with a 'Gothic' (sans serif) variation
- an elegant 'calligraphic' typeface (Derwent, based on the 'Foundational' hand) that will add a touch of distinctiion to subheads, headings and boxouts
- an 8-point monospaced font useful for listings and tables
- five alternative Swiss fonts
- an alternative 12-point Bullets font

The smaller point sizes of Castleton, Souvenir and Derwent have all the European accented characters implemented as well as 'f ligatures', M-dash, N-dash and Maths symbols.

All the fonts have been used in the ST Club magazine '*ST Applications*'. Used in conjunction with a DTP package such as Timeworks Publisher or Easy Text Pro and a text manipulation package such as Textstyle, they will help you produce documents with a distinctly professional look for a very modest outlay.

Price: £14.95 from the ST Club

Tabby!

Review by Derryck Croker

Let's face it, graphics tablets for Atari's range of computers are about as rare as, well, hen's teeth.

Chasing your mouse to the nearest hole in the wainscoting comes Tabby – a graphics tablet for your Atari. Its PC antecedents are well to the fore as its basket mentions a Windows driver, but fearless programmer Jonathan Lawrence has stepped into the ring and, armed with nothing more than an auto folder or 'run-from-the-desktop program', has harnessed this creature to even the Falcon. Couple that with a simple and quick configuration accessory and you have a sure-fire winner that surely deserves a round of applause.

As far as using a tablet goes (the carton actually describes Tabby as a cursor controller), much depends on how deeply the mouse habit has bitten. It isn't the tablet but the simulation of double and right clicks that initially requires a little dexterity.

Where Tabby scores very highly is in graphics programs. It's natural to draw with a pen or pencil, and the stylus mimics that nicely. The absolute positioning means that there is a direct relationship between tablet and screen, with obvious benefit for tracing; one that Degas won't aspire to, alas: its low-level access to the mouse driver means that you will only get the standard relative positioning. So what makes Tabby purr?

A Cat's Tail

With a maximum active area of 28 by 96 millimetres or 2048 by 1536 pixels, Tabby plugs into the serial port, set by the driver to 9600 baud, 8 data bits, 1 stop bit and no parity. The tethered stylus uses capacitive coupling between it and the tablet to describe its position, so there is no danger to stray disks wandering nearby. Earth return from the stylus is through a metal strip, conveniently under the forefinger when the stylus is held like a pencil. No danger to life or limb, though: Tabby has a meagre appetite that is gratified by 4mA at 5 volts sucked from the serial port.

An active range of up to around half a centimetre means that some care when using the mouse is needed, keep the stylus clear so as to avoid false cursor positioning. A cut-down 35mm film canister stuck to the tablet can be used as a cage.

The stylus itself has a knuckle jointed section near the end, light pressure on which activates a built-in switch which emulates the left mouse button. Right and double clicks are added via the keyboard: examine the figures for further information. It would probably be no problem to add a couple of switches to the side for a more natural "hands off" approach – again see the figures for a suitable circuit. My favourite way of using Tabby is to place it on a small board resting on my lap, and the board would make an ideal place for these two switches. An old mouse lead would make an ideal connection, otherwise a 9 pin D plug would suffice, but beware that there isn't enough room for the plug covers when plugged in beneath the keyboard.

A Better Mousetrap

With the addition of a lift-up plastic film atop, Tabby's ringside act could have been extended to an icon selector. With a suitably labelled sheet slid under, navigating a way through programmes like TouchUp could have been eased. On the other paw though, others using a Calamus-like hierarchical icon structure would prove impossible to be tamed in such a manner.

Tabby, then, is a very welcome arrival on the Atari scene.

So, in the red corner:

- ✓ easy to install
- ✓ the configuration accessory is Chameleon-friendly
- ✓ totally OverScan friendly
- ✓ ideal for art packages
- ✓ hooks with Mousetricks 2
- ✓ can be used with mouse-driven boot configuration programs such as Xboot

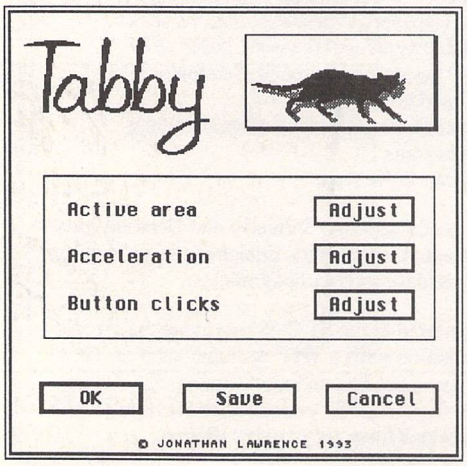
and in the blue:

- ✘ it's easier to grasp a mouse for quick cursor positioning
- ✘ it's a little small for comfortable hand-held handling (more a kitten than a tabby!)
- ✘ the stylus is a little too thick to make an ideal tracing tool
- ✘ modem users will have to unplug Tabby and disable the driver program
- ✘ keyboard operation of right and double clicks can be a little clumsy

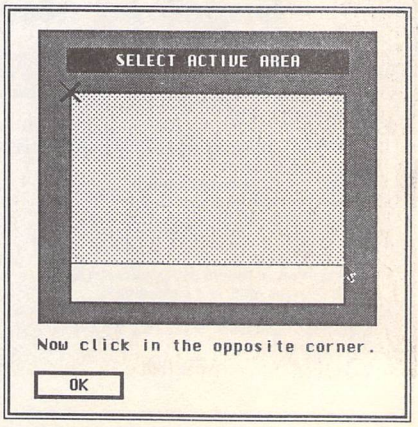
But whilst we are discussing pointer pilots, does anyone remember that it is also possible to use the keyboard to control that cursor? Sometimes it is worth reading the manuals!

Briefly then, not only is Tabby "stoatally" brilliant, it's also "weaselly" the best thing on the Atari scene since sliced bread!

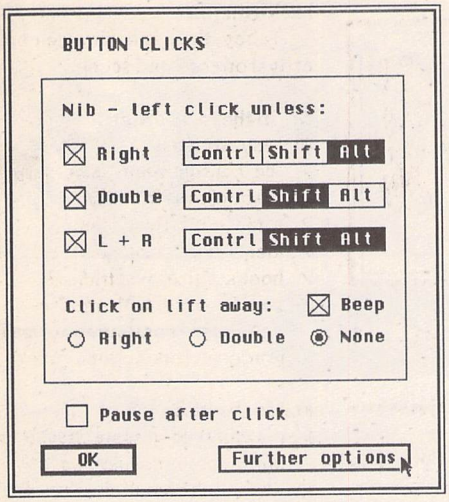
Product:	Tabby graphics tablet
Supplier:	CGS Computerbild 231 Northborough Road London SW16 4TU
Tel:	081 679 7307
Price:	£49.95



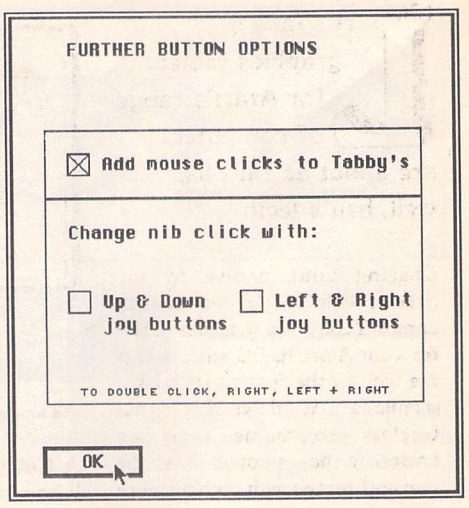
◁ Fig 1: Tabby's configuration accessory will save the settings from subsequent dialogues back to the driver program via the file selector. Meanwhile, Mouse Tricks 2 users get to configure directly via a key-press combination without recourse to this accessory.



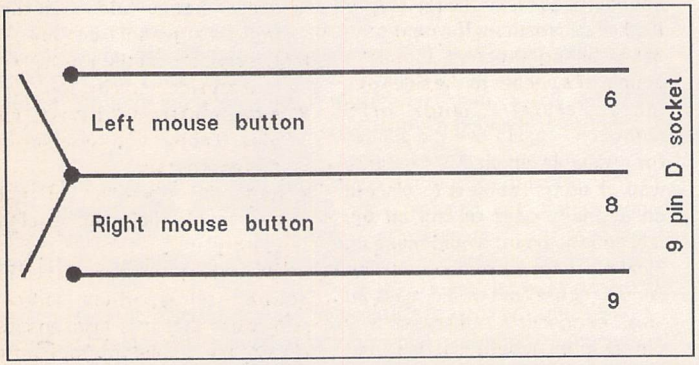
▷ Fig 2: A click in opposite corners of the tablet sets the tablet's active area in relation to the screen. Choosing a small area means that cursor movement is greatly magnified. Clicking in two extreme corners with a standard ST hi-res screen results in a strip of around an inch of "inactive" tablet at the bottom, once the software has scaled the selected area to fit the current resolution. OverScan users can expect that inactive strip to be more than halved.



◁ Fig 3: Keyboard operation of double and right-clicking arguably takes away some of the intuitive operation of Tabby. Nonetheless, there is a fair choice of key combinations to be used with a single Tabby click (and of course you can always press twice on the stylus for a double-click.) It's also possible to have a right or double-click produced automatically when you lift the stylus beyond active range.



▷ Fig 4: The ability to add mouse button clicks may further ease matters when the tablet and mouse are placed to each side of the keyboard. And just in case any key combinations interfere with applications, a joystick can also be used to change a Tabby click's meaning.



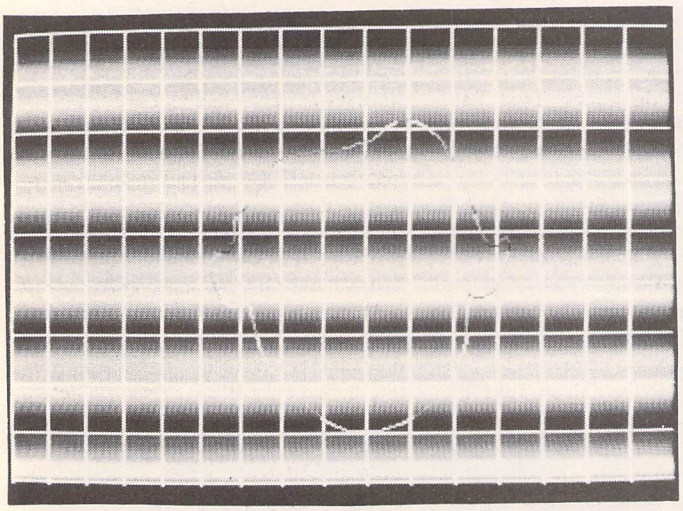
◁ Fig 5: This "bare bones" diagram will give fingertip control of mouse button clicks as suggested in the main text. Switches are up to you, but should be 'push to make, release to break' types to avoid obvious problems! Maplin's catalogue, from WH Smith, has a variety of types. The connection lead can be miniature 3 core mains wire, or a surplus mouse lead from a moribund mouse can be used, with the obvious advantage that it already has a suitable connector. Check the lead for continuity first: dead mice can sometimes be the result of broken conductors, especially where the lead is flexed when the mouse is used. You could even remove its ball and use its switches. With some electronics you could extend this system to provide automatic changeover to avoid the need to replug when you want to revert to the mouse.

Grafix Arts

Paul Keller

TECHNIQUE – Advanced Palettes

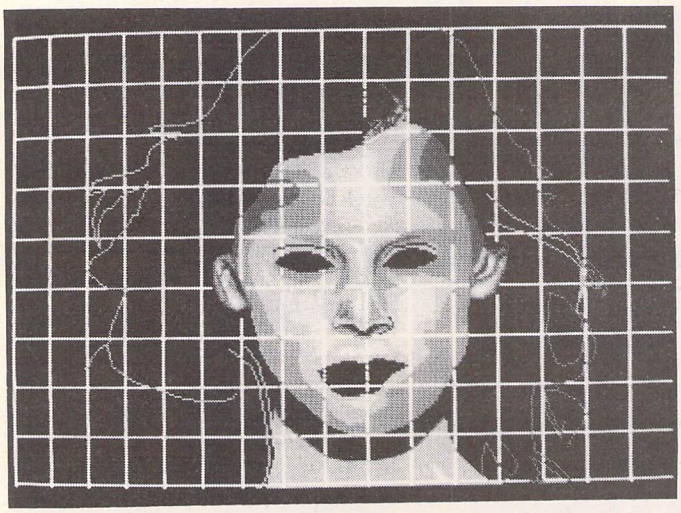
We have covered extended palettes before, and this article is really a continuation of the theme. If you have worked for any length of time with extended palette programmes you will have found that each has its strengths and weaknesses. Take Spectrum 512. Although this programme boasts 512 colours on the screen all at once, it does not take into account the extra colours offered by the STE, i.e. 4096.



Another drawback is that only 40 colours per horizontal line can be used as a maximum, owing to restrictions of hardware. Some dots on certain lines have their colours changed automatically when you go past the 40 colour line barrier. It is on this point that I find Spectrum 512 so infuriating: imagine having a rogue pixel show up in the middle of one of your detailed pictures.

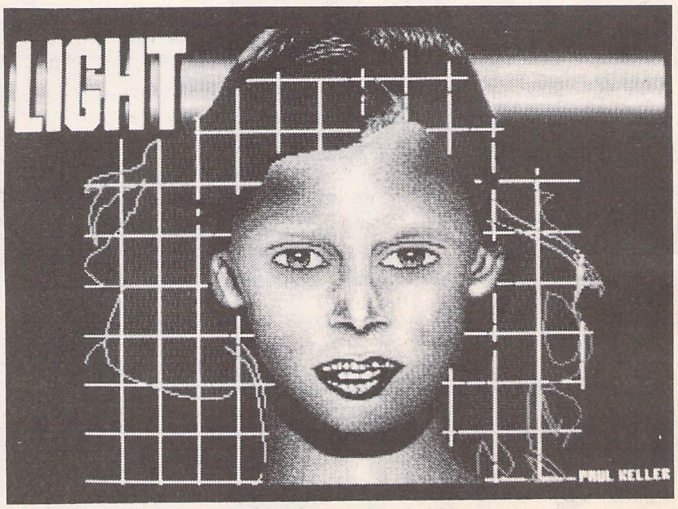
(1) This sort of thing does not occur with 'Canvas', and here the added bonus is that you can use your STE palette of 4096 colours. The drawbacks with Canvas are that you cannot view 'FUL' colour mode while working and that you can only achieve a maximum of 16 colours per horizontal line.

Vertically the story is different - you can place a different colour on every horizontal line, allowing you to have a 200 colour line background for example. Creating any picture with this sort of detail is easy enough, if not a little time consuming the first time you come to select all the palettes needed for creation. You have to use the SET HBL command some 50 times, but use of the co-ordinates helps you achieve this. Pen and paper might be useful at this point to make a note of the co-ordinates used as you move down or up.



(2) Once you have set your HBL's save this as a separate picture file. You can now use this file as a template for any future HBL work requiring all the available palettes.

It is taken for granted that you have selected your main palette for your work and that you have set aside four colours for colour integration between palettes. Using the Copy command, you can copy your first palette to the other 49 in use. It is critical to set aside four colours for advanced work owing to there being four lines to each colour boundary. These colours will act as a bridging gap. In this picture showing face highlights and skin tone these colours have been carried throughout most of the palettes. Colours which form the same basis throughout your work are also essential to keeping a look of uniformity and continuity.



(3) In this next picture we can see the use of the combined effects. The rainbow of light above is used with the hair contours, making the image stand out more, as well as being very colourful. The white text has its colour carried throughout the palette range and also helps break up the uniformity or regimentation which can be caused with overuse of colour banding.

Use of the airbrush was made in this picture around the face contours and this worked by spraying a slightly darker colour over each of the shaded contour boundaries. Both the eyes and mouth take advantage of the four spare colours for colour banding purposes. In this case the blues of the eyes have been layered, darkest from top and lightest to bottom. A similar technique has been used with the teeth, although here greys have been used instead of blues.

FALCON

APPLICATIONS

CGS On The Falcon

Falcon owners may be interested to know that CGS are offering two bundling deals with the *Screen Eye* real time True Colour digitiser. The first consists of DA's Picture and Screen Eye and will cost approximately £299. The second is as above but with DA's Vector Professional and comes in at £499.

A reasonably new release from CGS is *InShape*, a comprehensive modelling and raytracing program for the TT and Falcon. InShape is unique in that it is the first such program to be designed from scratch, rather than following on where Cyberscape left off. The result is that it uses 'real' raytracing as opposed to constructing a picture line by line. Your raytracings may be printed out or saved to disk in TIFF format. The resulting TIFFs can then be used as the basis of your 3D modelling. InShape is available now at a cost of £149. InShape requires a maths coprocessor. CGS can supply one with InShape for a combined price of £199.

Work has already begun on *InShape II* which will have amongst its new features the ability to import Calamus CVG vector objects and convert them to 3D vector drawings for modelling.

For details on any of the above, contact *CGS Computerbild*, 231 Northborough Road, Norbury, London SW16 4TU; Tel: 081 679 7307.

HiSoft On The Falcon

Devpac DSP is the latest addition to the highly successful Devpac series of programming tools. It is a full featured DSP 56001 editor, assembler and debugger. Devpac DSP can be run from the Devpac 3 shell, allowing it to be used as part of an integrated programming environment. However, it must be stated that Devpac DSP is a stand alone package in its own right and may be used on its own if so desired. The package costs £59.95 or £69.95 along with Motorola's book on DSP programming.

VideoMaster Falcon is the latest update to Microdeal's Video Master ST package. Improvements include digitising at 25 frames per second using 64 grey levels and still grabs at a resolution of 640x480 in True Colour. VideoMaster Falcon's sound support has been extended to 16-bit stereo. The package is available for £99.95 including True Paint. The *ColourMaster RGB* splitter (required for colour grabs) costs £69.95 on its own but a bundling deal offers VideoMaster Falcon and True Paint along with ColourMaster (called *VideoMaster RGB Falcon*) is available for £139.

Clarity Falcon, the followup to Replay 16, is a direct to hard disk sample editor and drum beat package. It includes extra hardware which plugs into the cartridge port to allow high quality sampling at CD and DAT frequencies and line-level stereo signals to be connected directly to the Falcon. All filtering is done through the DSP for speed. Clarity Falcon is available now for £99.95.

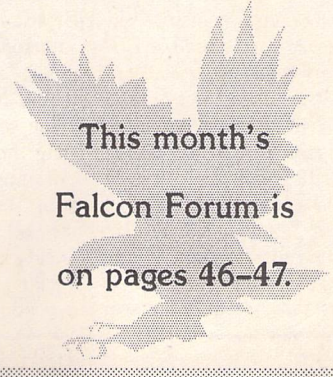
True Image is an image processing package which can convert bitmapped graphics to RGB or greyscale images. Like DA's vector, it is based on Photoshop on the Mac and PC. It includes a full range of filters which may be applied to entire pictures or selected sections of them. True Image is expected to cost £59.95 and should be available as you read this.

Check out the main ST news section for details of three more HiSoft packages which are Falcon compatible. For details on any of the above, contact *HiSoft*, The Old School, Greenfield, Bedford MK45 5DE; Tel: 0525 718181; Fax: 0525 713716.

Falcon News

Brainstorm's JPEG Decoder On Public Release

The ultra fast JPEG decoder and viewer by *Brainstorm* of Atari France was released to the public on 26th January 1994. Up until now, it was only available to software developers for a fee. For those who do not already know about JPEG, it is a highly compacted picture format, developed for transferring high quality images across networks. The format was developed by the Joint Photographic Experts Group and has been in common usage over the past year or two. It is a 'lossy' format in the respect that it stores a close approximation of the image rather than an exact copy. The results of JPEGing a picture, especially a True Colour one, are indistinguishable to the human eye. However, repeated JPEGing of a picture results in severe degradation of quality. For this reason, you should only JPEG a finished picture rather than one which is still being edited. JPEG compression takes an average 350-400k picture to under 20K and a 2 Meg picture down to under 100k. The only problem with JPEGs to date is that they ages to load and decompress. This is where Brainstorm's software scores. A typical JPEG which would take up to 2 minutes to load and display, takes about 10-12 seconds (including colour reducing if necessary) with the Brainstorm decoder installed. The decoder itself is just 10K long and is placed in an Auto folder. Once installed, the supplied ACC will load and display (colour reducing if necessary) a JPEG in seconds. The ACC is included merely as an example of how to call the decoder from your own programs. Unfortunately there's no source code and the doc file is rather sparse. Brainstorm's JPEG decoder and viewer is available on bulletin boards and from PD libraries.


This month's Falcon Forum is on pages 46-47.

ST Club SCSI Cable

Review and Possibilities – Graham Curtis

For the first time, it seems that Atari got something right. Instead of going it alone, they have included not only a standard SCSI 2 interface in the Falcon but a standard SCSI 2 connector on the back as well. Unfortunately, we in the ST part of the world have been so used to coping with oddball interfaces and connectors that a reversion to 'industry standards' comes as a bit of a shock! Thinking back, the ST wasn't too bad. Two of the connectors, serial and parallel, were borrowed from the best selling PC. The aberrations only set in when we came to video and DMA connectors.

A lot of effort was expended by ST-friendly companies intent on metamorphosing the ST DMA interface into the widely-used SCSI standard. Just as they got it well sorted, Atari succumbed and provided us with the real thing. As ST users upgrade, there will be many who have just made the investment in a hard drive, only to find that it will not plug into their new Falcon. For purchasers of new hard drives the situation is painless, as they are all pretty well universal by virtue of the manufacturers putting the DMA to SCSI connector outside the main box where they don't need to drill holes for cables or mounting brackets.

But what about us loyal ST'ers who have a pile of kit that they would like to use with both machines? As Piper mentioned in STA36, the ST Club have come to the rescue by offering, at £24.95, a clever cable designed to make the transition from ST to Falcon as painless as possible. The cable is very neatly made and carries one of those lovely 50-pin SCSI 2 connectors on the computer end. At the drive end the cable is connected to a 50 way IDC 'ribbon cable' connector which will plug straight into the SCSI mechanism. The drive end of the cable is a work of art because a ribbon type connector has been mated to a multicore cable. This is a difficult job very well done, but it does look a little bit like one of my own creations as the SCSI end is without any form of shroud for the connector.

To connect your old drive to the Falcon, take the lid off your drive box, whip the 50-way ribbon connector from the SCSI drive and replace it with the new cable. Because you have a cable with a plug on each end, there is no simple way of getting the cable out of the hard drive box. (Leaving the lid off scores zero points.) As a second consideration, what if you want to keep the ST and use the drive on both machines? I for one have no intention of getting rid of my son's 1040STF or my Mega STE for the time being. Santa treated me to a Falcon with 65Mb hard drive, but I am going to keep my ST drive as a means of communicating between all three computers and keeping a backup. To this end I have come up with a way of using the ST Club cable in parallel with the standard drive interface so that I can have any of my machines connected to the 'backup' drive. The drive I am going to work on is one I made up myself, so I have no qualms about tampering with it. If the drive you are about to play with is your sole supply of data, back it up, NOW!

At this stage, when dealing with Atari hard drive matters, I would usually mention the dreaded problem of drive parity settings, and ramble on about where to find the parity jumper and what to do with it. These problems are caused by the fact that some host adapters support drives with parity and some don't. Some hard drives allow you to disable parity and some don't.

For Falcon owners there is very good news. Forget all the parity nonsense. Atari have done us proud and fitted a proper SCSI interface which, as with that immensely popular beast, the TT, can handle 'difficult' drives where parity cannot be disabled. This really is excellent news, as it means that virtually any SCSI mechanism, providing it is in working order, can be connected to the Falcon030.

Hardware Matters

Once the novelty of having the cable sprouting out of a semi-covered hard drive box has worn off we can get down to tidying the whole job up. Two jobs are needed to make a universal Falcon/ST drive with the ST Club cable. Only the first one is essential, if you're intending to ditch the ST straight away.

Falcon-Only Drive

Tidying up the cable arrangement involves us in a little bit of metalwork. Most ST drives come in sheet steel boxes so it is not a big job, really. Firstly, using anti-static precautions,

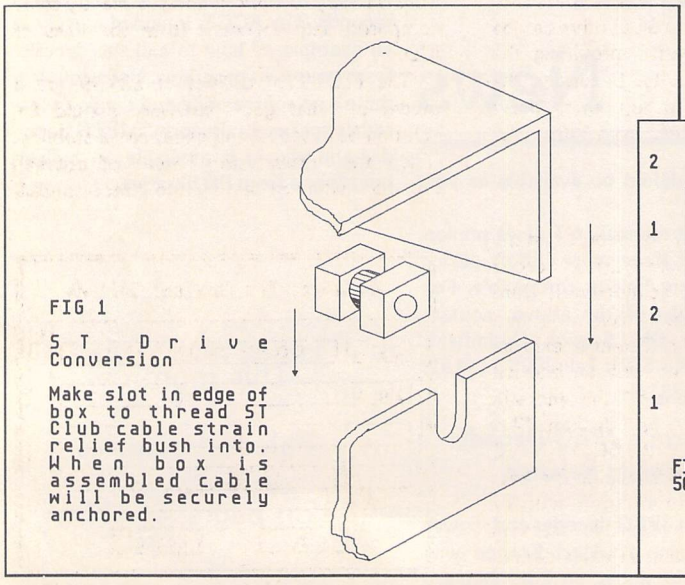


FIG 1

S T D r i v e Conversion

Make slot in edge of box to thread ST Club cable strain relief bush into. When box is assembled cable will be securely anchored.

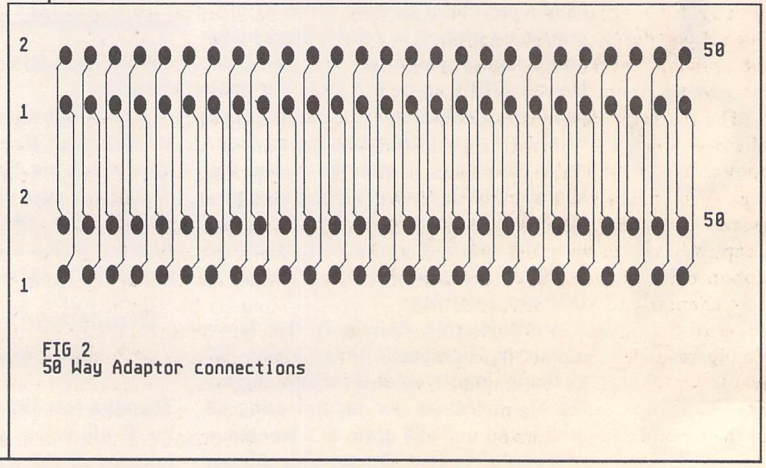
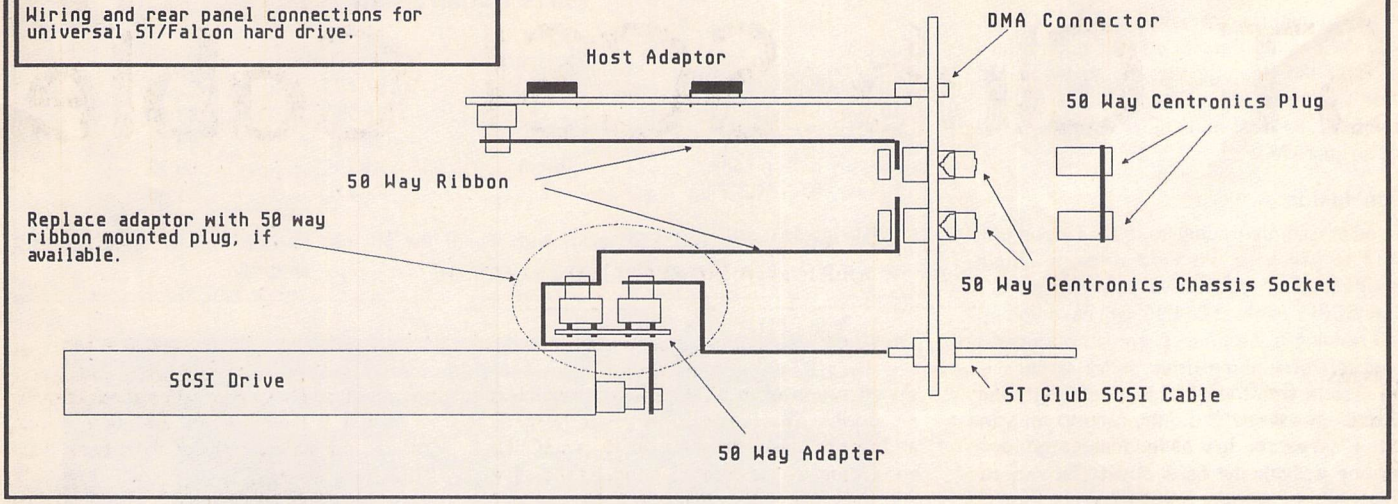


FIG 2
50 Way Adaptor connections

Figure 3

Wiring and rear panel connections for universal ST/Falcon hard drive.



remove the SCSI mechanism and host adaptor from the box. Having decided how much cable is needed between the box and drive unit, find a convenient edge in the metalwork.

The ST Club cable has a strain-relief bush thoughtfully placed at the drive end, so if this can be located in a slot cut in one edge of the hard drive box, you will end up with a good professional-looking job without having to remove connectors from the end of the cable. Figure 1 gives an idea of what is required. After any filing or drilling, make sure that you have cleaned the box of all sharp edges and swarf. SCSI disk drives do not take kindly to being fed on iron filings.

If you are not going to use the ST again (your data is on the hard drive anyway isn't it?) you can leave the host adaptor out of the box when you reassemble. Put an advert in ST Applications and sell it with the rest of the ST kit.

The Universal ST/Falcon Drive

There are two ways of creating an ST/Falcon universal drive. The first is the way adopted by the professional suppliers and was detailed in my last DIY article in STA36. The SCSI mechanism is hooked up to a rear panel-mounted 50-way 'Centronics' style connector. This makes an extremely tidy job as the drive can be connected up either with a SCSI 2 to Centronics cable for the Falcon, or using ICD's link SCSI-DMA converter. This method involves unnecessary expense if you already have a host adaptor in your box. Even if you did buy a Link adapter, you have the problem that the Link is one of the interfaces that does not like drives with parity.

The following design is rather more complicated than the normal one described above, but at the end of the sweat and toil stage you should have a universal drive and money in the bank. The method I am going to adopt means that we must split the 50-way ribbon cable between SCSI mechanism and host adaptor and take both ends to the rear panel of the drive. For ST use the ends will simply be bridged with a 50-way ribbon and two Centronics plugs to complete the circuit. For Falcon use, the bridge must be removed, or the terminating resistors on the host adaptor board will render the drive unreadable.

We need to adapt the existing ribbon cable from host adaptor to drive so that it will accept the end of the ST Club cable. The standard SCSI connector is the 50-way socket as supplied with the SCSI 2 cable so we need a 50-way ribbon mounted plug so that we can tee-off the 50-way cable. The 50-way plug can be obtained from RS Components or Farnell Electronics but not, unfortunately, from the likes of Maplin. If you are unable to purchase from the two suppliers mentioned above, it is possible, with a little patience, to make up a 'SCSI gender changer' using two PCB-mounting plugs, and a short piece of circuit board. (My projects always end up with a fiddly wiring job, don't they?)

The wiring arrangement for the adaptor is shown in Figure 2. Once complete and tested, the adaptor can be attached to an additional ribbon socket mounted on the 50 way cable. Figure 3 illustrates the wiring arrangement for the modified drive. Before connecting anything up, make sure that pin 1 of each plug goes to pin 1 on all the others.

So there we have it: a universal ST/Falcon hard drive using the ST Club cable, some Fourth Form metalwork and a handful of connectors. The arrangement I have shown has a couple of advantages over the Link way of doing things. Firstly, any SCSI drive can be used, with or without parity, providing the host adapter supports parity. Secondly, the Centronics connectors can be used to 'daisy chain' other SCSI devices, from either the Falcon or ST interface.

Operation

It goes without saying that you should test the Falcon with your intended drive before beginning any of the modification work. Care should also be taken when deciding if and how you will boot the different machines from the drive. If supplied with an internal drive, the Falcon will boot off this and will store its boot information and desktop files there. The ST will boot off the SCSI drive. If only the one SCSI drive is available for both machines, some experimentation will be required to arrive at a sensible working arrangement. Do not commit valuable data to the system until you are sure you have got it right!

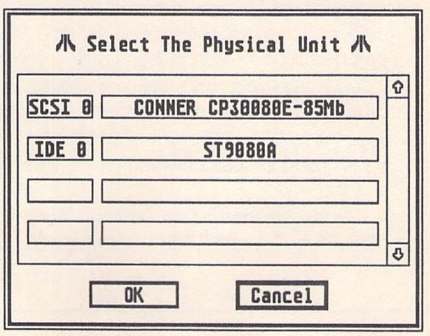
DIY Drive Update

With the availability of the ST Club SCSI cable it is possible to buy a diskless Falcon and build quite a cheap hard drive for it. Compared with the costs shown in my article in STA 36, a Falcon drive using the ST Club cable can be made rather cheaper than my estimate. The ST Club cable is not only cheaper than a standard SCSI 2 to Centronics 50-Way cable (by £15) but it also does away with £5 worth of other cable and connectors (and the complicated hole drilling). By making do with the Atari disk utilities instead of buying the excellent ICD version, another £40 can be saved. It should be possible, therefore, to build a 100Mb Falcon SCSI drive for less than £200, by shopping around for a cheap second hand SCSI unit. For a new drive unit, any of the slimline Conner or Quantum drives will do.

Software

The Atari hard drive utilities are happy to recognize SCSI drives with or without parity set. They do, however, require that the first SCSI unit is set to ID 0. Whilst the Atari software is happy to work, it doesn't exactly shine compared with software from the likes of ICD.

The ICD 'Pro' utilities at £39.99 are a model of what good software should be, offering both speed and exceptional stability. (They are written using Pascal, of course!) For those who are heavily into direct-to-disk



recording, the ICD software is a must. One word of warning though: my original 'Pro' utilities, bought a year ago, would not work with the Falcon. Despite many Falcon references in the Readme file, the software just wasn't going to play. ICDboot is now at version 6.4.2, so if yours is older than this, send for an upgrade.

Conclusion

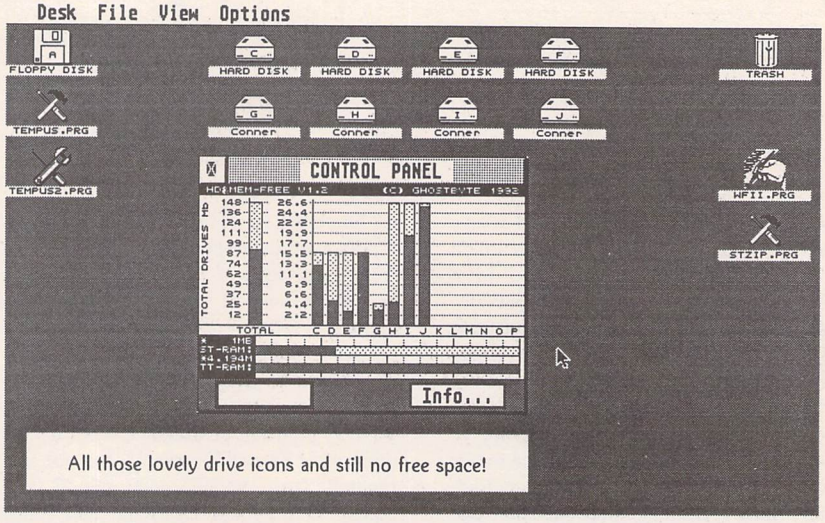
If you are simply trading up to the Falcon and want to use your old hard drive, a simple modification to your drive box, and the ST Club SCSI 2 cable at £24.95, will have you up and running in no time. There is no longer a need to worry about drive parity settings; if the system won't work, this is no longer the most likely excuse. If money is tight, you can save £100 on the cost of the Falcon by buying one without the hard drive. The sale of your old host adaptor will easily pay for the cable.

If, like me, you want to be able to keep a couple of machines on the go, it is possible to use the same hard drive between two or more machines as a transfer device or backup unit. The sorting of the parity problem means that the potential source of second hand drives has increased dramatically. Get Micro Mart, or go to auctions for the best SCSI drive bargains. Buy yourself a SCSI 2 cable, and watch your Falcon fly!

Parts Requirement

Item	No. Reqd.	Order Code	Price
50-way IDC Socket	4	FA40T	£2.25
50-way Centronics Socket	2	JB58N	£3.50
50-way Centronics Plug	2	JB56L	£3.25
50-way ribbon cable	30cm	XR79L	£0.72
50-way IDC PCB Plug*	2	FA41U	£1.86

* The two 50-way ICD PCB plugs and one of the 50-way sockets can be discarded in favour of a single 50-way free plug if you can get one - price about £6.



All those lovely drive icons and still no free space!

Imagecopy 2

Image utility for Atari ST/TT/Falcon computers

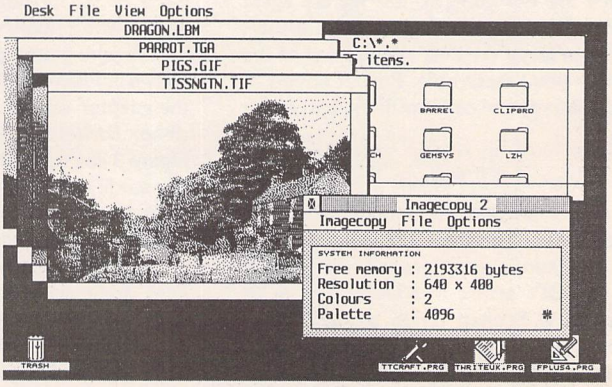
Copy images from screen in any ST/TT/Falcon video mode. Images can be copied by pressing Alt-Help, and a flexible rubber-banding system allows images to be selected with a fine degree of accuracy.

Display images in any ST/TT/Falcon video mode. Colour-mapping and dithering is used to display images in video modes which contain fewer colours. Several images may be displayed simultaneously in GEM-window or full-screen display modes.

Print images and screen dumps in black and white or colour on a wide range of printers, including 9-pin and 24-pin dot-matrix printers, Bubblejet printers, Deskjet, and Laserjet printers. Imagecopy 2 offers print-scaling, variable-sized halftones (up to 16x16) for realistic colour depth, and comprehensive colour controls, and is able to print images containing up to sixteen million different colours (24-bit true-colour). Print-colour options include: monochrome, CMY colour, CMYK colour, CMY separation, and CMYK separation. Colour separation modes can be used to print full-colour images on a monochrome printer.

Convert images between different formats (see next paragraph).

Extensive range of image formats: Imagecopy reads the following formats: TIFF, Targa, IMG, extended IMG, DEGAS,



Neochrome, Art Director, Tiny, GIF, Spectrum, IFF/Deluxe Paint, Windows bitmap, OS/2 bitmap, PC Paintbrush (PCX), and Macpaint. Images can be saved in the following formats: TIFF, Targa, extended IMG, DEGAS, and RSC. TIFF support includes baseline TIFF apart from Huffman compression (uncommon), common extensions such as LZW compression, and the ability to read non-standard TIFF images produced by ST programs such as Retouche. The ability to print TIFF files allows Imagecopy 2 to be used as a print program with True Paint.

User-friendly GEM interface, including window menu bar, pop-up menus, colour sliders. Can be used as an accessory or stand-alone program.

Price - £19.95
Upgrades: from Imagecopy v1 - £10.00; from Imagecopy Colour - £5.00.
Return master disk only.

FaST Club
7 Musters Road
West Bridgford
Nottingham
NG2 7PP

Using GFA Basic

Tim Finch

Sniffle! This is the sixth and last episode of the GFA tutorial. This month we look at ASCII in more detail and the logical operators OR, AND, NOT and XOR.

ASCII stands for American Standard Code For Information Interchange. It's a universal standard code (yes, there are a few...) for representing alphanumeric characters. The code starts at 0 and stops at 127. Each number in the range represents a character. 32 is a space, 48 is the character '1', 65 is the capital 'A', 97 is the lower case 'a' and so on. Tap in program 6_1 which prints out the total table on screen. The only command that should be new to you is **CHR$()**. This command takes the number in the brackets and prints that number's ASCII character. The ASCII table is also printed in the back of the GFA manual. The great thing about ASCII is that if you save a word processing file to a floppy disk in ASCII any other program that reads ASCII will understand it. The READ_ME files often found on floppy disks are simply ASCII files.

We can determine the ASCII value of a character by using the **ASC()** command. The program 6_2 shows the example of entering a line of input and then displays each character's ASCII code. The **MID$()** command is used to access each character of input. **LEN()** initially tells us the number of characters input.

For part of your home work this month see if you can write a program that lets you input any line of text and then prints two lines out, the first saying which ASCII code was the lowest of all tapped in and which was the highest. This can all be done with commands you've looked at over the six issues, but keener rookie-coders may like to look up **MAX()** and **MIN()** in the GFA V3 manual and see how this smartens up the ability to do this. My solutions - one without using MAX and MIN and one with - are on the disk mag.

I now want to have a look at binary manipulation. This whole topic is routed in binary, or Base 2. All computers work on base 2 at an electronic level, and so it is very important to have an understanding of it. In base 2 we only use the numbers 1 and 0 to represent every decimal number we commonly use. Imagine the column headings as in Fig 1. You can see the example there which shows the binary equivalent of normal decimal numbers. Computers use the **byte** as the smallest quantity of storage space in their memory. A byte is simply 8 columns worth of binary, ie up to and including the 128 heading. So, the highest number storable in a byte is 255, as 256 would mean a 1 in the 256 column, taking the binary number into 9 columns to represent it. Mark Baine's Beginners' Forum, Issue 37, covered number bases in depth so that's all I'm saying at this point on Binary. I suggest you read that article to understand HEX as well, as this is an immensly useful numberbase in computer circles.

We can get GFA to do some maths on these binary numbers using the commands **AND, OR, NOT** and **XOR**. See Fig 2. This shows a simple AND operation. AND is not to be confused with Adding!! We have two byte length numbers one under the other. When we AND them, we look at each column of the binary numbers separately. If we look at the two digits in a column, we ask the question "Is the top AND the bottom one the digit '1'?" If they are, the answer in that column below the line is also a 1. If either of the two digits are 0 then the answer is 0. You can then see the answer for each column in the example - which adds proof to the fact this is nothing to do with ADDing!! Fig 3 is similar for the **OR** command. In this example we ask the question 'Is the top digit OR the bottom digit a 1'? If so the answer is 1 else the answer is a 0. Again you can see how the answer in Fig 3 is arrived at.

The **NOT** statement is slightly different. You only have one number after a NOT statement. The idea is that you go along the line of that binary number and swap the digits. If that digit is a 1, swap it to 0. If the digit in question is a 0 then swap it to 1. Thus in Fig 4, the example shows a number and the result of **NOT** the number (!!). You could amaze your untechnical friends by asking 'What is NOT 37?', and then, after their confusion, say '218!' at which point you'll probably find they mostly walk away.... (I dread to think what these suggestions are giving away about the author of this series... My girlfriend has had enough already!)

If you think **NOT** is weird, you haven't seen anything yet! **XOR** is a shortened way of saying Exclusive-OR. This has slightly different rules attached. The question you ask is 'If both the digits are the same, the answer is 0. If they are different the answer is 1. On first glance XOR may appear interesting but useless. I tell you now - a lot of games graphics and many general computer processes would be lost without such a function. The beauty of XOR is its abiltiy to 'toggle' numbers. In Fig 5 we have an XOR example. Under this is a second example where the answer of the first is XOR'd with the second line from the original. Lo and behold, the answer to the second example is the top line of the first. Thus by XORing a number continually with the same value the answer will toggle between just two answers. A lot of simple encoding algorithms (design approaches) use an XOR based design where a piece of ASCII text, say, is converted into its ASCII number equivalents, XOR'd in some way and turned

128	64	32	16	8	4	2	1	
1	0	0	1	1	0	1	1	in binary is 155 decimal

To convert, add the column headings together which have a 1 under them

FIGURE 1 : BINARY HEADINGS

128	64	32	16	8	4	2	1		
1	0	0	1	1	0	1	1		(155)
1	1	0	0	0	1	1	1	AND	(199)
1	0	0	0	0	0	1	1		(131)

If each column has a 1 then the answer in that column is also a 1. Otherwise it is a 0

FIGURE 2 : AND Operations

128	64	32	16	8	4	2	1		
1	0	0	1	1	0	1	1		(155)
1	1	0	0	0	1	1	1	OR	(199)
1	1	0	1	1	1	1	1		(223)

If a column has a 1 in it then the answer in that column is also a 1. Otherwise it is a 0

FIGURE 3 : OR Operations

NOT	1	0	0	1	1	0	1	1	(155)
IS	0	1	1	0	0	1	0	0	(100)

To convert swap all 1s for 0s and 0s for 1 in each column

FIGURE 4 : NOT Operations

	128	64	32	16	8	4	2	1		
(a)	1	0	0	1	1	0	1	1		(155)
	1	1	0	0	0	1	1	1	XOR	(199)
	0	1	0	1	1	1	0	0		(92)
(b)	0	1	0	1	1	1	0	0		(92)
	1	1	0	0	0	1	1	1	XOR	(199)
	1	0	0	1	1	0	1	1		(155)

If the two numbers in a column differ then the answer is 1, otherwise a 0.

FIGURE 5 : XOR Operations

back into an ASCII string. The resulting ASCII string will look very different. However, run that string through exactly the same process and it will return to the original! XORing in graphic work is also useful as binary numbers in video RAM often represent the colours used on screen. By XORing a particular binary number in the Video RAM you effectively change a colour to another one. Doing it again returns it to the previous colour. With some clever code a picture can then be made to animate across a background. This is by no means the only graphic technique but is a good starting point in learning how to draw semi-animated graphics.

You've probably guessed the final homework I'm setting! Write a program that lets you input a string, convert it to ASCII by putting each character's ASCII number into a numerical array, then XOR each element of that array with the number 15 (which in a byte's worth of binary is 00001111). Put each answer back in the same array element. Then convert the array back into a string and print the result. Then after printing the result, put the array back through the same procedure and print the end result once again. In Fig 6 I've put some examples on how to use various commands that you will need. Some Hints: You will need to use a PROCEDURE to do the XOR conversion. This is because your program will need to call it twice to do the whole job I've requested. I've done my own solution which again is on the disk mag.

Well, that's It! I've hardly scratched the surface of GFA V3 over these six issues. If you want to proceed, try and get the books I mentioned in Episode 4. The GFA V3 manual is a valuable source of info itself, if you had GFA from the well known magazine's Cover Disk some months back. I've programmed in GFA V3 since 1988 and I still use the manual all the time. If I ever get the go ahead for future articles on GFA Basic then I'd like to cover disk access and basic GEM stuff. This will happen if you write in and ask.... I'm happy to cover any topics that aren't clear, perhaps because I've assumed advanced knowledge by the reader - sorry if so!

As a closing note I've been using V3.5E GFA Basic on my Falcon for the last six months. You MUST be in two-colour mode with 640x400 or 640x480 resolution only. Any other mode causes the editor bad grief (try it, Falcon owners..). I have managed to run GFA Basic in the colour modes by pressing ESC as soon as it loads and doing everything from the OK> prompt. This is good for testing programs in these colour resolutions.

So far, I've only discovered the LPRINT command fails to operate (on my Falcon TOS 4.01). To get round this you have to use the OUT 0,xxx command to send each ASCII number out the printer port. I'm presently working on two commercial programs (using GFA Basic) which need to be MultiTOS and Falcon happy. In the process I've unearthed a few stumbling blocks of GFA V3 that arise on the Falcon. However, with John Lawerence (of the ST Club's Mouse Tricks and Multiprint fame) it looks as if some of these problems will be overcome with some specially written assembler we are planning. If we succeed then we will release the routines and guidelines, either as PD or commercial releases, depending on how good they are. So, despite GFA giving up on GFA V4 for the Falcon (at present anyway) there may be some hope for Falcon GFA programmers, and for ST GFA programmers who want Falcon/MultiTOS compatibility. We'll keep you informed through ST Applications. Happy Coding in GFA Basic. For any specific/daunting problems you have, you may contact me via ST Club's head office. Au revoir.

Figure 6

Examples of GFA commands you will need for the homework:

1. Setting an ASCII code value into a numeric array element. The ASCII code for the character in ch$ is put into the 'position'th element of the array 'arrayname'.

```
arrayname(position)=ASC(ch$)
```

2. Taking a value from an array element, Exclusive ORing it by the value in 'number' and putting the answer back where it came from.

```
arrayname(position)=arrayname(position) XOR number
```

3. Taking a value from an array element, converting it to an ASCII character and putting it onto the end of an existing string variable. The + sign on the thrid line indicates the contents of char$ is appended to the end of the contents of streng$. The whole 'concatenation' is then put back into streng$

```
number=arrayname(position)
char$=chr$(number)
streng$=streng$+char$
```

```
'
' Program 6_1
'
' Prints out the ASCII table
'
' You cannot print codes 0 - 31
'
CLS
FOR lupe=32 TO 120 STEP 8        !lupe starts at 32. Increases by 8 each time
  '                               the NEXT lupe command is encountered
  '
  FOR lupe2=0 TO 7               !lupes2 loops from 0 to 7 inclusive each time
    '
    tarb=lupe2*10                !tarb is 10 times the value of lupe2
    code=lupe2+lupe              !code is the addition of lupe & lupe2. This
    '                             gives the correct code number for the CHR$()
    '                             command below
    '
    PRINT TAB(tarb);code;" is ";CHR$(code);     !print 'tarb' spaces from the
    '                                            left of screen, the code and
    '                                            the character in ASCII.
    '
  NEXT lupe2
NEXT lupe
'
~INP(2)                          !waits for any key to be pressed
EDIT                             !returns to the Editing screen

'
' Program 6_2
'
' Print each entered character's ASCII code
'
'
CLS
PRINT "Please type in your sentence. It can include letters, numbers & symbols"
'
LINE INPUT tex$                  !allows user to input some text. Commas allowed
'                                 because we have used LINE INPUT instead of
'                                 INPUT which will not accept commas.
'
PRINT                            !leaves a blank line
'
tarb=0                           !sets tarb to 0 (not really necessary in this
'                                 program. But it makes the situation clear)
'
lenth=LEN(tex$)                  !the count of actual characters entered is put
'                                 into the variable 'lenth'
'
FOR lupe=1 TO lenth              !we set up a FOR loop over each character
  '
  char$=MID$(tex$,lupe,1)        !MID$ supplies '1' character starting at
  '                               position 'lupe' from the 'tex$' and puts that
  '                               character into char$. (what do you think a 2
  '                               would do where the one is?)
  '
  code=ASC(char$)                !The ASCII code number for the character in
  '                               char$ is put into the 'code' variable
  '
  PRINT TAB(tarb);char$;" is ";code;     !we print char$ and code, tarb spaces
  '                                       from the left of the screen
  '
  ADD tarb,10                            !tarb is increased by 10.
  '
  tarb=tarb MOD 80               !The number before MOD is not allowed to be or
  '                               go over the number after it. Thus if tarb was
  '                               85, then the MOD will chop off '80'. The
  '                               answer 5 is put is put back into tarb. There
  '                               is more to it, but this explanation suffices
  '                               for now.
  '
  '                               There are only 80 spaces across the screen.
  '                               Printing at a TAB over 80 is therefore silly.
  '
NEXT lupe                        !repeat the FOR loop until all characters
'                                 entered are catered for
'
~INP(2)                          !wait for a key
EDIT                             !return to the editor
```

PD and Shareware Update

Version 14.2 ~ March 1994

Premier Range Disks

Disks in this update with two-letter prefixes cost £1.25 each (£1.00 to subscribers).

AM.970: CVG Clip Art

Three collections of vector clip art in CVG format ready to load into Calamus. Includes lots of borders and small clips.

DM.38: ST Club Disk Mag for November 1993:

AUTORAIS - makes active the GEM window under the mouse pointer.

COPYDESK - copies DESKTOP.INF files from the root directory of drive C to the folder where SuperBoot looks for .INF files.

DCNOALRT - automatically acknowledges tiresome confirmation alert boxes.

DESKDRVR - Desktop Port Driver - a BIOS Support Utility for Atari ST, TT and Falcon Computers.

DUPFIND - Duplicate file finder.

EDITLINE - Replacement for the GEMDOS $0A (cconrs) call.

FALCADAP - Details on making a multi-sync adapter/switcher for the Falcon030.

FONTRIX2 - latest version of this screen font utility.

GFA_PT3 and **GFA_PT4** - Source files for the GFA Basic tutorials in ST Applications issues 36 and 37.

LETEMFLY - With Let 'em Fly! in your AUTO-Folder, many normal GEM dialogues learn to fly like Julian Reschke's FlyDials (e.g. in Gemini). Furthermore, these dialogues can be handled by using the shortcuts.

MINIVIEW - Tiny text file viewer.

MULTICOP - for rapid duplication of floppy disks.

PROFILE - latest version of this utility that reports the profile of your system.

PROTEXT - Concluding part of the 'printing tickets from Protext' debate in ST Applications Forum pages.

P_FORUM - Programmers' Forum listings for ST Applications issues 35, 36, and 37.

RDD3 - Version 3 of the document displayer all others are judges against.

ROBUGS13 - Intelligent strategy game.

ROMSUB - Fortran source of a program to return the value of a Roman number.

ROUTINES - Collection of Basic routines.

SEARCHER - File searcher.

S_SAVER3 - Screen saver listings to go with the article in ST Applications issue 37.

TCACHE60 - Disk cache.

TOSSED - Decyphers GEM error message numbers.

T_TERM2 - comms terminal package.

DM.39: ST Club Disk Mag for January 1994:

1STVIEW - ACC file viewer that will handle text (ASCII and 1st Word), pictures files (IMG, IFF and GEM), resource files, and music files (SAM and SND).

BUBBLE - Mouse pointer finder for LCD and big screens.

CLOCK+ - Analog or digital desktop clock, versions for TOS and MultiTOS.

GEM BENCH3 - version 3 of this comprehensive benchmarking package.

GD_FLAG - This program provides an easy and convenient method of editing program headers.

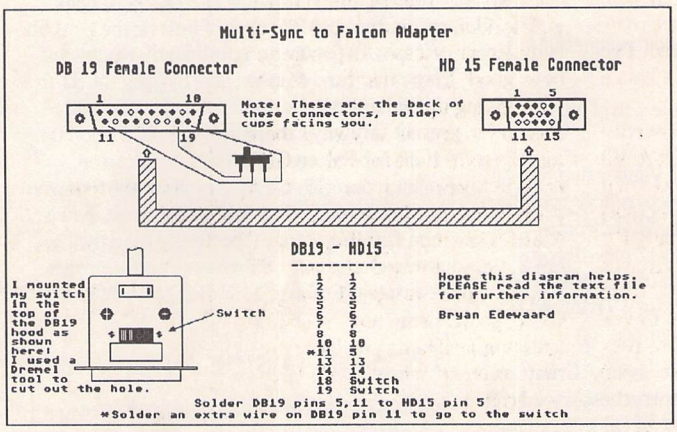
LED PANEL - Puts a set of mock LEDs top right of the screen to indicate drive accesses.

LEONARD - Replaces the system bombs with ...

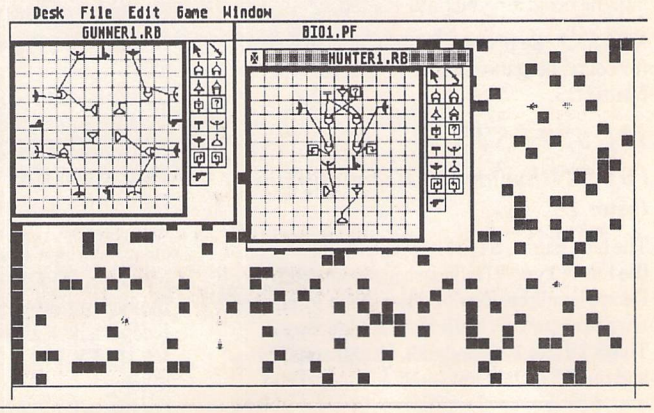
LHARCBAT - Nice 'n' easy tool for turning folders of files into LZH archive files.

NOSEY II - Searches a collection of text files for key words.

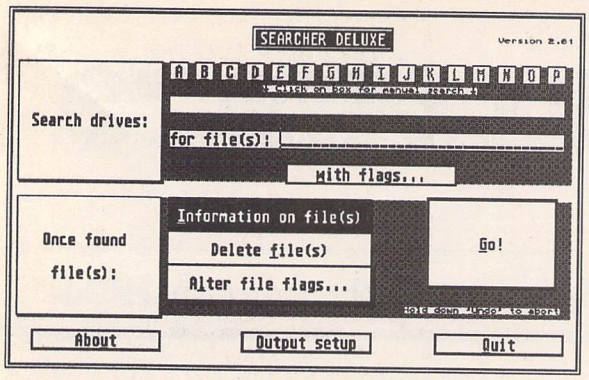
PFORUM39 - source files for the Programmers' Forum column in ST Applications issue 39.



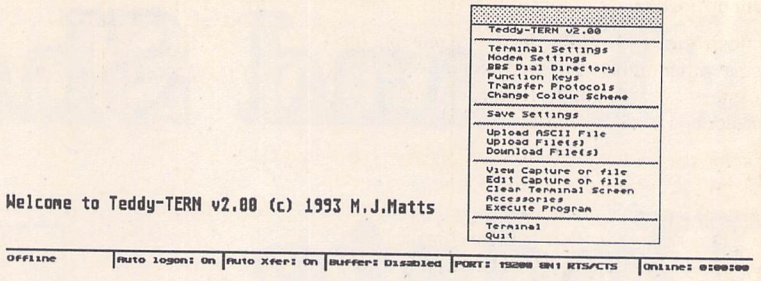
◁ Multisynch adaptor/switcher for the Falcon030, on DM.38.



▷ Robugs, an intelligent strategy game on DM.38.

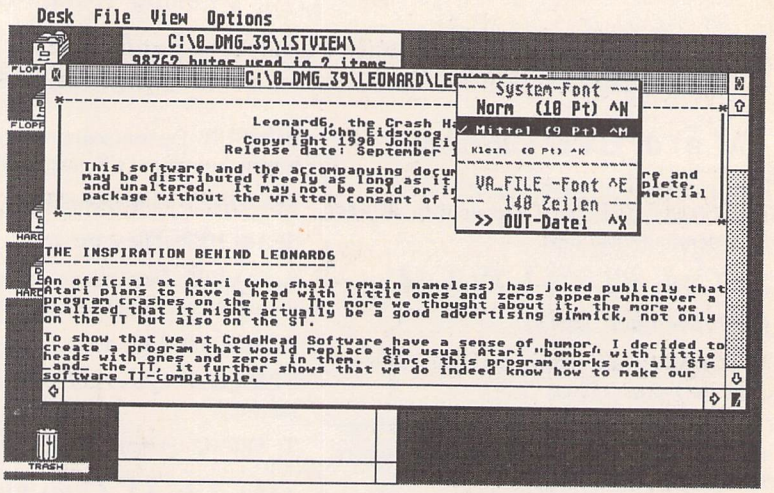


△ A file searcher on DM.38.



△ T_Term2, a comms terminal package on DM.38.

▷ 1STVIEW, an accessory file viewer on DM.39 that handles text, picture files, resource files and music files.



PICSW1 - Picture file viewer and printer. Many new input formats have been added, as well as a new 'Adjustments' control panel, windowed displays, and much-enhanced printing support for Epson 9-pin, 24-pin and HP LaserJet compatibles.

POPIMENU - Program selection menu, with music.

RUBRIKS - screen saver.

RUNECAST - And now for something completely different: this programme will show you three traditional rune rows and an extended set of runes. You can use it to learn the traditional order of the rows and the meanings of each rune.

SELECTRIC - All singing, all dancing file selector.

SHBUF - increases allowable size of NEW-DESK.INF files.

SUPRVIEW - Desktop file viewer that handles up to 9 files in memory at once, replays sample files (STE support), displays NEOchrome, Deags(Elite) and Spectrum 512 pics, decompacts Pack-Ice v2.4 packed files, displays ST fonts (A1/A2) files, support for 1ST Word & Protext WP files, and much more.

UNI_TEXT - Text macro accessory. Create an ascii list of text strings and this accessory will let you search it and then insert the selected string into the program you have loaded.

XTASK1_2 - provides a graphical front end for controlling the running of processes under MultiTOS.

IN.537: STEN

(ST ENthusiasts) Disk magazine issue 15.

The last issue of STEN in which (in the words of the Editor) you'll find: personal columns by Dave Henniker, Ron Walker, John Weller and Dwane O'Dwyer; reviews of Imagecopy 2, That's Write 2, Grandad 2, Calligrapher Lite and the ICD 'The Link' interface; Atari and Technology News; two views of computing in the Eighties; the Quest for a Mono Monitor; short pieces on the Data Protection Act and Computer Wares; how interlacing works; an overview of the different versions of TOS; Colin Maunton's review of STEN #14; book reviews; a bumper crop of letters; the Graphix Area with psychedelia unbound - reviews of Kozmik 4 and Ripples, plus Linking the ST to a VCR; an interview with God, the first of the great O/S programmers; readers' Who The Hells; a born-again Christian looking for martyrdom; a hardware mod for the Sampsyn sound sampler; Zac Bishrey on comet debris and climatic change ('Nemesis' - read this!); innuendo, gossip, controversy and weirdness. You can't say that STEN didn't go out with a Bang!

IN.558: INSIDE INFO No 66.

Reviews: **GENEVA** - Multitasking software for all STs. **SQUISH2** - A newer and better version of SQUISH. **STACY** - A hands on review of the Portable STACY. **GEMULATOR** - specifications of this ST emulator board for IBMs. *Articles:* **WHAT IS SHAREWARE** - Read this and you will know. **ACCESSORIES** - What they are and how to use them. **WHAT'S PD** - What Public Domain is and your rights to use it. Plus, in the SOFTWARE FOLDER: **7UP_ENGL.PRG** - One of the best Text Reader/Editor programmes. **AEO214.TXT** - The latest Atari Explorer on-line magazine **TM_SHEET.PRG** - Keep track of all your employees' times. **VKILLER.PRG** - George Woodside's Virus killer.

IN.559: INSIDE INFO No 67

Reviews: **WARP9** - The newest Warp9 and still getting better. **PRISM**

PAINT 2 - The latest version of Prism Paint. **BOOKS** - The Atari Compendium Book. **LEMMINGS** - Everyone is raving about this game. **GENEVA** - The best Multitasking software yet. **DISKMAG** - Yet another disk mag but Commerical. Articles: **FILE EXTENSIONS** - Find out what they all mean. **A STORY. FONTS** - Fonts Fonts Fonts everywhere. **GLENDALE** - What happened at the Glendale show. **JAGUAR** - What's happening with the Jaguar. **ATARI NEWS** - All the news about Atari. **MUSIC** - What's happening on the Music side. **RPG ROUNDUP** - A article on Role Playing. **ANOTHER STORY** - Another story about the Atari. **VIDEO** - video capture board. **VIRUS ALERT** - A virus has been found. And in the Software folder: **AMPDEMO2** - Demo of music software. **SUBGAME** - A little game for the game players.

IN.504: "ST NEWS"

Volume 8 Issue 2

The Encyclopaedia Polska Rzeczpospolita! A feature article on everything you would want to know about Poland and the Polish ST scene.

Adventure Solutions: Space Quest IV, Manhunter, Hero's Quest, Time and Magic, Maniac Mansion, and more!

New Disk Magazine Encyclopaedia! - Disk Magazine roundup

Travel Reports! - from the USA and Norway.

Falcon Software Compatibility List!

Falcon Survey Results - including opinions by some rather highly esteemed people, as well as an interview with a high official at Atari France and a poll organised in France...

Various Software (P)Reviews: Stone Age, Archive Programs Compared, Llamazap (Jeff Minter's first Falcon game), The Froggies Over The Fence Megademo, The Chaos Engine, Squish II, Lemmings 2 - The Tribes, and more!

PR.305: Programming Tools #5

A56 - Assembler for the falcons DSP 56001 chip, C Source code and a collection of DSP source listings included in this archive.

DSP - Wide range of DSP Source codes.

SPEEDO - Bitstream source codes for using SpeedoGDOS, plus some PD fonts.

Budgie Licenceware

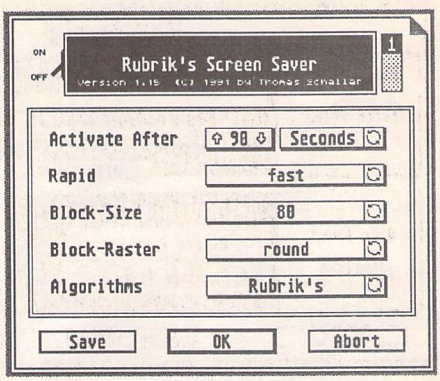
These disks cost £2.75 each.

GBU.121:

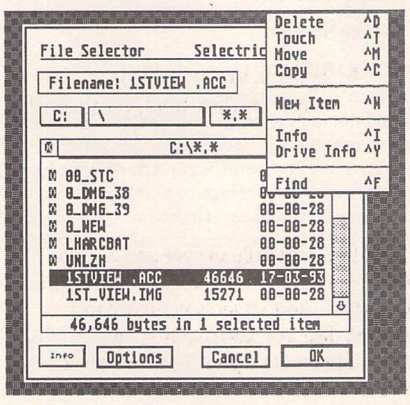
SUPER SCRAMBLE by Paul Dowers: It's your job to fly the cobra through 6 levels of the planet's defences, and to finally destroy the evil one himself. If anyone remembers SCRAMBLE in thearcades then they should recognize this game instantly. (1MB:C)

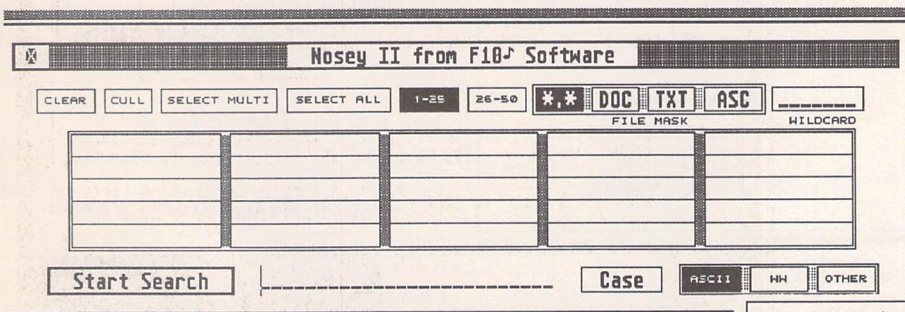
GBU.122:

WORLD CUP by Paul Sharples. A mouse-driven football manager game in which you have to get one of the four teams to the World Cup and win it. (C)

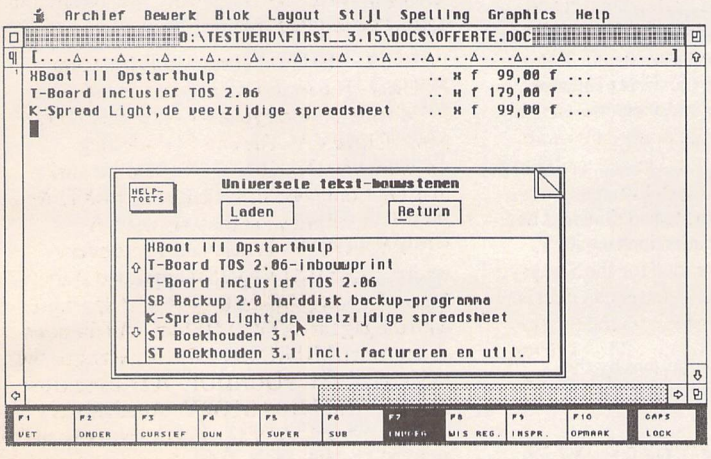


△ The RUBRIKS screen saver on DM.39.





△ NOSEY II on DM.39 - searches a collection of text files for key words.



△ UNI_TEXT on DM.39 - a text macro accessory that allows you to imbed a string of text chosen from a previously created list into your WP document.

KEY

(M) Runs in high Resolution only.

(C) Runs in Medium or Low Resolution Colour only.

(1Meg) Needs at least one megabyte of RAM.

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Disks cost £1.00 each to subscribers

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- ☐ DM.39: Disk Mag for January 1994:
- ☐ IN.537: STEN issue 15.
- ☐ IN.558: INSIDE INFO No 66.
- ☐ IN.559: INSIDE INFO No 67
- ☐ IN.504: ST NEWS" Volume 8 Issue 2
- ☐ PR.305: Programming Tools #5

Budgie Licenseware
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- ☐ GBU.121: SUPER SCRAMBLE
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The Tempest

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The Rape of Lucrece
Venus and Adonis
The Lover's Complaint, and other poems

Going On-Line

Mark Baines

The Internet – What is it?

So, what is the Internet? This isn't an easy question to answer because no two people fully agree on a definition. It can be seen as a set of hardware and the links between them – a physical entity. It can also be described as a set of agreed protocols and the software controlling the network. Perhaps it is the electronic traffic, the postings, messages, EMail, reports, etc., that are generated by the people using it. Maybe it is just a set of shared attitudes about interconnecting and communications, an ideology.

E. Krol and E. Hoffman in an Internet Draft, March 1993, define it as:

- A network of networks based on the TCP/IP protocols;
- A community of people who use and develop those networks;
- A collection of resources that can be reached from those networks.

However, the first of these, a network of networks using the TCP/IP protocols has ceased to be accurate over the past five or more years. Increasingly, non-UNIX and non-IP-based networks saw the advantages of the Internet and developed methods for connecting their own protocol networks to the Internet. Such networks include Bitnet and the DECnets. These methods or connections are called Gateways and essentially have the role of translating one set of protocols into another so that the two networks can be joined together and messages transferred between them, apparently seamless to the user. There are gateways that enable FidoNet users to send EMail to someone on the Internet. So is FidoNet part of the Internet?

This is also difficult to answer. Generally, there are four things that you can do on the Internet – EMail; conferences or newsgroups where discussions take place; file transfers (FTP) and remote computing (Telnet). Some networks which are gated to the Internet do have full access to all these features whereas something like FidoNet only has partial access – you can transfer EMail, receive and read the Usenet Newsgroups but you can't download files from a remote site on the other side of the world nor connect to another computer and run one of their programs remotely. One of the reasons why some networks don't have full access is that they use the UUCP techniques (see Issue 37) where the access isn't 'live' but the systems are polled briefly and disconnected from after packets are swapped. Obviously, under these circumstances, a user can't access another computer in the US live and have a look around.

So, these networks are partly in the Internet and partly not. But maybe one of the criteria for being in the Internet is not concerned with the physical links and processes available to you, but is one of attitude. As Krol and Hoffman suggest, you are part of the Internet if, in your heart, you want to be. If you consciously devise and support barriers – whether software, hardware, protocol standards – that makes access to the Internet difficult then perhaps you really don't want to be there.

Who Runs the Internet?

There is no president or director. No one person or even council of persons govern the Internet. No one or no thing is in charge. Each individual network on the Internet will likely have some governing body as they are run by various organizations or companies but as a whole entity, the Internet is anarchic.

The Internet Society (ISOC) is a voluntary membership group that "promotes global information exchange through Internet technology" and has a council that is responsible for some technical matters and in guiding the Internet into the future. This group is the Internet Architecture Board (IAB) which decides if standards are needed, what they should be and release them to others. Ordinary users can express their opinions in meetings of the Internet Engineering Task Force (IETF). These voluntary meetings are regular and deal with short term technical and operational problems. Working groups are set up which formulate documentation or reports which can be passed on to the IAB for ratification as a compulsory standard or accepted as a voluntary measure.

Who Pays?

Again, no one pays for the Internet as a whole. Individual networks or users don't have to pay fees to a global body to take part. But, of course, individual host systems or local networks have to be paid for because of the expense of maintaining such a system. A private user may have to pay some company (like CIX or Demon) to access their computers which are connected to the Internet, but many individuals access the Internet through their work for free. A college has to pay for their equipment and system administrators salaries, telecommunication charges etc and so they have to obtain funding for that from sponsorship, government funding and charges for individual departments or individuals who access it.

However, much of all this doesn't concern the average user who just wants to EMail a friend or colleague, get the odd file and join some discussion groups. And nor should it, just as we aren't concerned about how a letter makes its way from your postbox to someone in Australia or a phone call to the US. These 'messages' work their way through many systems, owned by many companies, yet you only pay the one 'carrier' and they look after the rest.

The Future

The Internet is expanding very quickly. The number of hosts from January 1992 to January 1993 increased by 80.6% to 1,313,000. By now there should be over two million hosts and probably 20 million users and there appears to be no sign of this rate of growth decreasing. Over 60 nations have full access to the Internet and again this is increasing. This is certainly a global network just as the phone or mail service are.

The International Standards Organization (ISO) have now finished their set of protocol standards to replace TCP/IP known as the ISO/OSI (Open Systems Interconnect) although there will be much resistance to this for some years yet as TCP/IP is still considered to perform better and is less complex. However, government agencies will undoubtedly place pressure on the network to have an 'official' standard and I suspect OSI will win in the end especially as new non-US networks develop.

EMail:

Internet:
msbaines@cix.compulink.co.uk
FidoNet: 2:259/29.10@fidonet.org
NeST: 90:105/5@nest.ftn
TurboNet: 100:106/0.10@turbonet.ftn

Beginners' Forum

Mark Baines

Viruses

Every so often, the media will feature some horror story concerning viruses and their potential threat to civilisation as we know it! Whilst most of this is hype designed to sell newspapers written by ill-informed and irresponsible journalists it would be wrong of me to adopt a completely complacent attitude here and tell you that you don't really have to worry about viruses.

After all, I've been in close contact with various types of computers for many years and have never seen a virus let alone been infected by one. Also, although I've known of others who have been infected I know of no-one who was certain that they lost data because of a virus. (I'll no doubt be inundated with EMail to tell me otherwise now!)

I attribute my lack of infection to certain techniques which I'll discuss at the end, but I'll start by describing what a virus is.

What is a virus?

A biological virus is the simplest type of organism only active within its host and which infects cells causing them to make viral DNA and hence more viruses. The host cell is eventually destroyed as it fills up with viruses which burst out of the cell to infect others. It is therefore a lethal (to the host cell) parasite and in many cases can lie dormant before causing symptoms of an infection.

A computer virus is not a living entity, despite the impression given by some journalists. A computer virus is simply a small program written in machine code and which usually exists in the boot sector of a floppy disk (see Issue 29 for a description of the structure of a disk). The boot sector is 512 bytes long and is the first sector on Track 0 of side A - in other words, it is the first part of the disk that a floppy disk drive accesses. If bytes 510 and 511 contain the value $1234 then the boot sector is executable, that is, any program instructions at byte 30 are automatically run without intervention from the user. Bytes 0 and 1 can contain a branch instruction to a program at any other byte address. There is enough room for a 480 byte program between bytes 30 and 509. This might not seem like a lot but it is enough to tell TOS to run another program on the disk such as a game or part of the operating system, which is what the boot sector was intended for originally.

So, the boot sector is intended to be an area of disk that can contain an automatic program loader. But, with skilful programming those 480 bytes can be made to accommodate any small program - time and date savers, turn disk verify off, bypass hard disk, I've even seen a mono screen emulator installed as a boot sector program! However, it fascinates some people to write programs with the primary function of copying themselves to any other disk that occupies the drive. They load into memory and wait for a disk access and then check to see if the disk already contains a virus program in the boot sector. If it doesn't it copies itself there thus infecting it and in this manner the computer program mimics a biological virus.

But it usually doesn't end there. Like a biological virus the computer version can also cause nuisance or damage along the way. The common "Ghost" or "Mouse" virus inverts the mouse Y directions so that the mouse doesn't travel in the direction you want. Annoying and not damaging, but if the disk it has just infected is a games disk or similar with a valid executable boot sector, then it will be replaced by the virus and therefore not work any more - your game refuses to boot up! These people being what they are, most virus writers extend the effect of the virus by having more lethal secondary functions - it apparently demonstrates their programming prowess! Some viruses, such as the "ACA" virus (Anti Copyright Association of Sweden) will destroy Track 0 of the disk which makes the disk completely unusable and all data on it lost.

Some viruses start out being pretty 'harmless' but can become corrupted within the memory of a computer and copy themselves imperfectly to a disk. This mimics a genetic mutation in a biological virus. Because the program is so small, a one byte mutation may have drastic results. The "Signum/BPL Virus B" started out as an ordinary "Signum/BPL Virus A" which is the most widely spread of all ST viruses and which apparently doesn't do anything. However, "Signum/BPL Virus B" corrupts the BPB on Track 0, Sector 1 thus making the disk unreadable. There are several 'mutated' viruses in existence.

It is because of this that I don't consider any virus to be 'harmless', not even self-replicating anti-viruses which I'll mention in a moment. Any program that copies itself to my disks without my say-so is harmful and should be treated as such. The long-term effects of so-called 'harmless' or 'fun' viruses are not known with certainty and the possible mutation effects are to be guarded against at all costs. Don't tolerate any virus or self-replicating program on your disks.

Types of viruses

Essentially there are three types of viruses - Boot Sector Viruses, Link Viruses and Anti-Viruses. Boot Sector viruses are the most common, the easiest to write and the easiest to detect simply because you know where to look. On the ST there are about 60, some of which are mutations of existing ones. Most are lethal, destroying data or a disk's structure which amounts to the same thing. Although loss of data on a floppy disk can be disastrous, consider the loss of data on a 32Mb hard disk partition, for instance. Fortunately, of these 60 boot sector viruses only three can work on hard disks. The "C'T" virus featured in a German magazine with a listing (!) deletes the FAT on floppy or hard disks and the "DJA" virus locks up the system thus losing any work in the memory.

Link viruses are worse. They merge themselves onto a .PRG file and get executed whenever that program is run. They copy themselves onto other program files and often wait for a particular event to occur before being triggered into action - a logic time bomb! This triggering event can be almost anything, although a popular one is the system date, hence the frequent Friday the 13th panics in large computer departments around the world every year.

There are only five known link viruses on the ST, one of the reasons being that the ST operating system is in ROM. On the PC where the operating system is loaded in from disk every time it is switched on, an obvious program for a link virus to attach to is one of the operating system files, such as COMMAND.COM. As DOS are the most commonly copied programs between computers in the world, these link viruses can quickly spread.

Anti-viruses work just like a virus but are written to prevent infection or warn you of a possible virus on a disk. They occupy the boot sector just like a virus and prevent most viruses from copying themselves there by looking like it is already infected. Some will display a message when you boot up telling you that your floppy disk is OK, others watch every disk being accessed and if it is executable they warn you by flashing the screen or beeping. Being executable doesn't make a disk infected but is a good sign and a reason to be wary and check.

Some anti-viruses copy themselves onto other disks you place in the drive and this I find unacceptable, especially for a new user who might not be aware of the possible dangers here. If using an anti-virus (and I do on all my boot up floppies) make sure it is a non-cloning anti-virus. That way, YOU choose which disks are affected. Learning to take control of YOUR system and not rely on others is the most important step you can make in learning about computers and getting the best from your investment.

Protection

Don't ever assume that it will never happen to you. It hasn't happened to me so far, but that doesn't mean that I can relax. Take careful and simple measures to protect yourself.

1. Write protect disks. A virus CANNOT infect a disk that is write protected. Do this to all disks that won't have anything written to them, all master disks, backups of data, copies of files downloaded from bulletin boards, PD disks...

2. Make backups of all your software, especially commercial software. Use these disks to install the software onto hard disks or to work from on a floppy based system. Make sure that all master disks are write protected before you copy them.

3. Backup all your data files, including configuration files regularly.

4. Check all new disks you obtain - from whatever source - with a Virus Killer or Immunizer program. No one will feel insulted by admitting to them that you checked their disk before using it. Some of the best companies and magazines have unwittingly distributed viruses. See box.

5. Use an anti-virus program on your floppies where possible. Choose one that doesn't copy itself. All Virus Killer programs will do this for you.

6. If you suspect that you may be infected then switch off the computer. DO NOT just reset as many viruses are resetproof and remain in memory. Viruses cannot exist in a computer that is switched off. Wait for at least 10 seconds and switch back on without a disk in the drive. This will take a while but you will have a clean system. Then check all your disks with a Virus Killer.

7. Load all auto-loading programs into a system that has just been switched on. Don't stick these disks into a computer you have been using for a while and reset. Any virus in memory won't then destroy your disk.

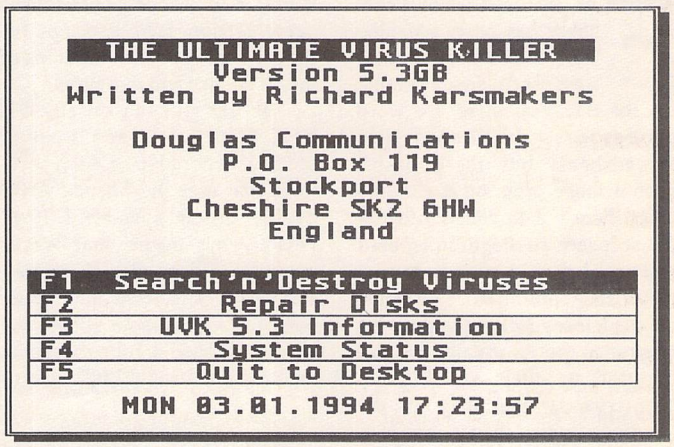
8. Report any disk infections to the supplier of the disk.

9. Discourage the spread of illegally copied programs. This is THE biggest source of viruses.

10. Educate others to adopt safe habits.

Virus Killers

There are several commercial and shareware virus killers including the German Sagrotan (PDE.25, shareware), Professional Virus Killer from the Floppyshop (v3.0 should now be available and is commercial) and George Woodside's Virus Killer (UT.141, PD). The best by far is version 6 of Richard Karsmakers' Ultimate Virus Killer as this is frequently updated as new viruses emerge. This is sold by the ST Club for £12.95 and recognizes all known boot sector and link viruses. You can immunize your disks against infection, install an anti-virus and repair damaged boot sectors, especially the boot sectors on games and demo disks as it knows over 700 legitimate boot sectors. Do yourself a favour and get it now!



△ UVK's System Status Screen

Send me a letter or EMail with ideas for future articles. Thank you for the letters received so far. Although I can't promise to respond to all personal queries, I'll do my best if an SAE is enclosed. You will also find me on CIX and the NeST, TurboNet and FidoNet BBS networks where this magazine is supported.

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STA support in N.ST.MISC echo
FidoNet: 2:259/29.10
STA support in ATARIST echo
TurboNet: 100:106/0.10
STA support in T_ATARIS echo

DESKTOP DISCUSSIONS

One for All

Atari Works, Atari's integrated software package, is finally available in the UK. Was it worth the wait? William Hern investigates.

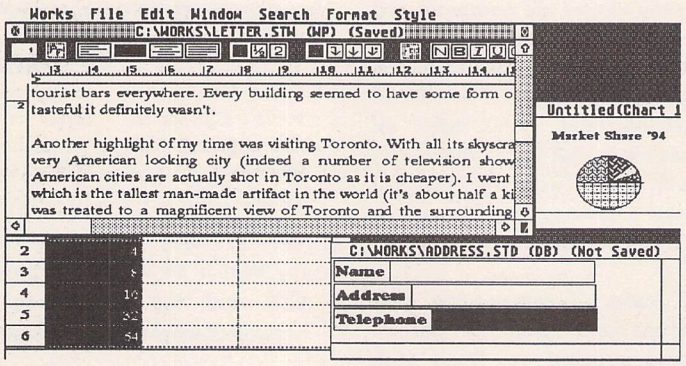
For the past eight years there has been a gaping hole in the range of business software available for the ST. Yes, there are word processors, databases and spreadsheets but there hasn't been a single program that combines them - a so called integrated software package. Integrated software has sold extremely well on other machines because although these jack-of-all-trades programs aren't usually as full featured as their stand-alone counterparts, they have all the functionality that the average user requires. They also cost considerably less than the combined price of buying all the more specialist software separately.

I have long wished that there were such a program for the ST (see my September '92 column). I was delighted when I heard during 1992 that just such a piece of software was in development at Atari. Unfortunately waiting for the product turned out to be a frustrating process. After a series of delays (during which it went through a number of name changes), Atari Works was released in the US at the start of '93 and became part of the software bundled with each hard drive equipped Falcon.

Atari UK however was rather less taken with the software, declaring it to be too buggy to be released in Britain, and so for months the software was unavailable on this side of the Atlantic. Requests from myself for a review copy to verify these claims were ignored. Eventually I lost patience and ordered a copy from America.

Just after receiving the software I learned that HiSoft had been allowed to distribute the software in the UK. The version to be sold in the UK - which hopefully will be available by the time you read this - should be identical to the version I review here (version 1.207) except for the inclusion of British versions of the dictionary and thesaurus.

Works will run on any ST, STE, TT or Falcon and is one of the new generation of Atari software that uses the SpeedoGDOS device driver system. Unfortunately this means that Works demands a hard disk (I suppose you could run Works and SpeedoGDOS off a large RAM disk but you'd need a four megabyte machine and it would still be very tedious). Works itself is about half a megabyte long so it needs at least a megabyte machine.



Works includes word processor, database and spreadsheet modules. Anyone who has used Microsoft Works on the PC or Mac will immediately feel at home as the programmer of Atari Works has closely copied its look and feel.

Critical to any piece of integrated software is the quality of the word processor as it is the module that the majority of people will use the most. Works' word processor is a fairly standard WYSIWYG affair and has all the usual facilities that you would expect, including text cut and paste, import of graphics (.GEM and .IMG formats), and configurable headers and footers. I was a little disappointed to see that there was no word count facility. The software was a little sluggish to use on an 8 MHz ST but was still very usable. Not surprisingly, performance on a Falcon was much better.

The database follows the flat file approach. The user begins by creating the fields of the database and can then create individual records. Viewing records can either be done individually or by report, in which fields from multiple records can be collated. Searching was reasonably fast, as was moving between records. All records are stored in RAM so you can only have as large a database as you have memory.

The spreadsheet has most of the features that you would expect from a program of this ilk. Cells can contain either numbers, text or a mathematical function. The spreadsheet can also plot basic two dimensional charts from the data either as pie charts or bar graphs. The program sometimes made some strange choices in numbering an axis but I was able to correct this manually.

A key feature of any integrated application is the ease of moving data between modules and Works scores highly in this respect. However it is quite a memory intensive operation so users of smaller machines may find that they are not able to import charts from the spreadsheet into the word processor.

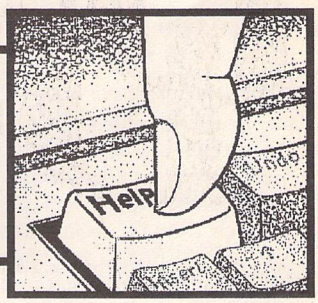
As for stability, I used Works for about a month before writing this column and the software never crashed once. I did encounter font problems when using Works on a Falcon equipped with Gribnif's Geneva but it is difficult to know which application was to blame. In any case, a fix is now available.

I was rather disappointed with the data import/export facilities. For the word processor you are limited to either straight ASCII or the more flexible Rich Text Format, which although common on Mac/PC word processors is not supported by many ST products. It would have been nice to have had the ability to read in documents stored in other native ST formats. The options for the database and the spreadsheet were little better - surely the spreadsheet should at least be able to read 1-2-3 files?

Apart from the limited support for foreign file formats, the weakest part of the package is the manual. While it listed all the functions, it didn't really explain any of them and there are not nearly enough diagrams. For those familiar with computer software this is probably acceptable, but it is nowhere near good enough for novices.

These complaints are all relatively minor and should be corrected in version 2. What you get in Atari Works is a capable word processor, database and spreadsheet which are tightly integrated, making the sharing of data easy. For casual home users it's the only business package they will ever need.

FORUM



Boot Sectors

A J Kennedy – Forum STA 38

I A small word of caution for AJK, solving one problem can often lead to the creation of another. There are programs around that treat the root directory size as a BYTE value instead of the WORD value it should be. Using a value of $100 will cause a crash if it runs up against one of these programs and may be why the Olympia uses $FF in the first place. If the Olympia doesn't just assume 16 root sectors, it may be worth gaining access to the files as described and then copying the disk to one with a more usual configuration. There really shouldn't be any need for 256 items in the root directory these days.

Whether the ST's inability to deal with values that are not multiples of 16 is a bug or not depends on your point of view. Really, it is just one more manifestation of the Atari 'almost' philosophy. I often wonder if this is because Atari didn't quite understand what they were supposed to be doing or if it is just slack coding. It can't be justified on the grounds of space saving since the corrections only require a handful of extra bytes. This is the same team that gave you 5 sector FATs (one sector per cluster) instead of 3 sector FATs (two sectors per cluster), got confused over logical and physical, so that the system can't write to the last two clusters, and made a complete mess of handling the attribute byte.

Having said all this though, there is nothing wrong as such with the Atari system. It is perfectly consistent within itself, you will only run into odd problems using disks that have not been written or formatted to the Atari standard. The insistence on multiples of 16 makes a lot of sense really, the root directory can only be allocated in complete sectors so there is no point in using any other values. There is a case to be made for allocating an odd number of sectors only (steps of 32 entries starting at 16) since the disk structure is such that a sector will just be wasted if an even number is used (on a double-sided drive anyway). My own preference is to use 48 entries. If you require more files than this on the disk it is much better to make use of the sub directory system since this will allocate as much or as little space as needed, creating blocks of 32 entries as required via the FAT chain.

John Phillips

The 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

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

● Editorial reply

Opus Problems

Derek Smith – Forum STA 38

A As a regular Opus user, I have not experienced the charting problems reported by Derek Smith. Although most of my charts are line graphs, the enclosed file BATOKA.OPS includes on chart 4 a bar chart made from the same data as chart 1. As far as I can tell, all the label, legend and title functions are OK but the best way for Derek to check it out is to actually load it and inspect the various settings as saved. I have also included my ASSIGN.SYS file in which only the Swiss font has actually been used. It is set up for normal GDOS 1.1 but the file seems to work with NVDI just as well.

One possibility is that Derek has not used the chart switcher at the top of the 'charts' menu in the spreadsheet before defining the dependent and independent ranges.

On the question of printing £ signs in the spreadsheet, the relevant key seems not to be bound in and it therefore cannot be done in the normal way. However, all is not lost:

The following paragraph is extracted from OPUS.DOC and shows how the £ sign may be displayed and printed. Simply go to the ALt N dialogue box and select 'format strings', then type '£', click 'add', select the range which needs the £ prefix and away you go!

"The Format Strings option allows you to specify a string that will be output on all numeric or formula cells possessing that attribute. For example, you could specify a format string "Part #", and any cell having that as part of its number format would be displayed as "Part #xxx", where xxx is its value. You can use the reverse apostrophe ' (the key to the left of Backspace) to specify the value position within the format string; the default is to append the value to the end of the string. In order to create a new format string, click on the Edit field, and then type in the string. When you're done, click on Add. The string will appear in the scrollable list. To make the string part of a cell's format, click on the string within the scrollable list and also on the Format Strings title before exiting the dialog. To deselect a string, click anywhere inside the dialog (except on an object), and to remove it from the cell format, also click on the Format Strings title before exiting the dialog."

One slightly annoying feature is Opus's insistence on arranging the vertical bars in the same order that they appear in the spreadsheet whereas it would be useful if they could be displayed in ascending numerical order like the line graphs. In other words, it treats these values as labels.

Finally, an appeal to shareware cognescenti for information as to whether and at what address a registered version of Opus may be obtained. A couple of years ago I sent $20 cash to the address given in the document files but had no reply. The lack of import/export facilities in the unregistered version is quite a handicap in a work environment. The other programme I wish to register is ELFBOOT. This is a terrific boon (better than Superboot?) but is again partly crippled. I am

reluctant to send money off to a possibly superseded address. Perhaps Joe Connor would consider including ELFBOOT and OPUS in his initiative?

David Teal

A The solution I have adopted to the problem of not being able to print out a pound (£) sign with Opus may be of interest.

I use screen and printer fonts which I have modified with Fontkit and download with Fontswitch. Load the desired font into Fontkit (I use CLEARFACE for the screen and BOOKMAN for the printer), and select the pound character. Then save it as ASCII 36, and this replaces the font's dollar character with its pound character. Now, whenever the dollar key is pressed on the keyboard, a pound sign is typed. Very usefully also, the default DOLLAR? in the Number Format Selector now gives a pound sign. The modified printer font thus prints out a pound sign. Just remember to hit the '$' key instead of the '£' key.

Certain GEM fonts have been modified in a similar manner and used just with Opus for printing out the graphs. The reason for this is again, if the DOLLAR box is ticked in the Values Settings, pound signs are appended to the graphs instead of dollar signs. Unfortunately(?) I can no longer print a dollar sign - not that I ever want to! If necessary, the fonts could be further modified so that another "never used in a spreadsheet" key prints the dollar.

Keith Powell

Mouse Problems

Huw Williams - Forum STA 35
Paul Kelly - Forum STA 37
A J Kennedy - Forum STA 38
George E Hogg - Forum STA 38

A I purchased an Alfa Data Omni Mouse and mat (not Neoprene) which from new would run across to the side of the screen. It did this on my Falcon and an STE, making a problem with the computer unlikely.

I suspect the answer lies in the way that Atari computers read the mouse. Mice that are Amiga/Atari compatible (such as the Omni Mouse) have a switch as the computers work differently. My mouse works OK on an Amiga, so perhaps Atari's are just more fussy.

Andee Graves

Optical Mice

I I've had one of these for a couple of years now and apart from one drawback they are far superior in use to any mechanical one I've ever seen. The one I have is badged 'Golden Image', and the first thing you notice is how much lighter it is, together with very positive button action. This makes it easy to use and still maintain a nicely relaxed hand, very Zen. Even awkward manoeuvres such as lifting it up and putting it down whilst keeping the button pressed are no trouble. Gummed up works and slipping balls are a thing of the past. (I think that's what I mean.) The mouse has a third (middle) button which seems a bit odd to start with, but you soon get used to ignoring it and there is no difference in practice to a two button one. I've never had a look to see if it is wired for use in Atari mode. I don't know of any software that could use it anyway. On the other hand it does provide an instant spare if one of the other two needs to be replaced.

The drawback is that an optical mouse needs a special mat to operate. This has to have a surface pattern that can be interpreted by the mouse to detect movement - in practice this is just an appropriate half-tone mask made up of regularly spaced black dots. The one originally supplied by Datel was complete rubbish, made of hard rubber and laminated with gnat's wing gauge clingfilm; it curled up like a BR sandwich and fell apart within two months. I've got hold of one since from Gasteiner, which looks really naff but has stayed perfectly flat and shows little sign of wear. Anyone with access to a laser printer and a heat seal machine could turn them out as required with no trouble at all, though.

Absolutely fascinated by George E Hogg's explanation of mouse mat mechanics.

John Phillips

SuperBoot

Alan Kennedy - Forum STA 36
Geoff Wilson - Forum STA 37

Q Geoff Wilson's solution in Forum STA37 is fine for those whose hardware uses DESKTOP.INF files, but it doesn't help those of us with NEWDESK.INF.

However, the following extract from ZNET9314.TXT on DMG.35 could well provide the answer:

"CPYINF_26 is COPY_INF v.2.60 by Jeffrey Wisniewski (dated April 1, 1993). This program is for all of you who use any of several boot-up type programs (such as SuperBoot, X-Boot or Desk Manager, among others). After you change your desktop and save it you would normally have to move that DESKTOP.INF or NEWDESK.INF file to the appropriate directory and rename it appropriately. This program will do that for you automatically."

So who's got a copy of CPYINF_26 for me? Call 0764 655392. Thanks.

John Bratby

Fans

I A comment after reading 'Noiseless Falcon' Issue 37, Falcon Forum, page 29.

A cooling fan is really bad news on a home computer. I tamed the fan on my PC with a Thermistor wired into the positive power lead to the fan - simply cut the red lead, connect the thermistor and bend the legs so that the thermistor head is in the air flow. Now the noisiest part of the computer is the hard disk, not the fan!

Assuming the fan in the Falcon is similar, a suitable thermistor is type TH-7 from Radio Spares (phone 0536 204555), stock no. 151108 for a pack of five, price around £1.80. These are ‹1 ohm when hot, 25ohm when cold. Possibly even two in series would be a good solution.

Francis Cooke

Seeing the Right Picture?

Jon Ellis - STA 38

I I would query Jon Ellis' Table 1: PC Graphics Standards. Although PC details obviously aren't fundamental to an Atari, accuracy becomes more important as comparisons are made.

VGA is actually an IBM standard and has a maximum resolution of 640x480 at 16 colours.

SVGA (Super VGA) is a generic term for anything better than VGA and came about as different manufacturers developed a multiplicity of different resolutions for applications such as CAD and DTP. SVGA now appears to have certain preferred standard resolutions, possibly suggested by VESA, the industry body primarily involved in attempting to standardise video resolutions. I would agree that 800x600x256 is SVGA but so is 1024x768x256, 1280x1024x256 and even 1280x1024x16M; even according to IBM which has had to embrace these de facto standards in its operating system products.

I'm not familiar with the term XVGA although I am aware of XGA which is another IBM standard which I believe encompasses both hardware adaptor specifications and video resolutions as do most IBM video standards.

The combined definitions of VGA and SVGA (which I believe to be reasonably accurate) are why Atari justifiably claims that the Falcon generates SVGA video as standard, simply because of the 256 or higher colours rather than any greater resolution. The confusion over PC video terminology to which the article refers resulted in Atari receiving a certain amount of criticism regarding this claim. Confusion over the definition of True Colour was another area where criticism was arguably unwarranted IMHO.

Where I would criticise Atari is in providing no support for the higher resolutions which the Falcon hardware is capable of and in not having a satisfactory explanation for this. Jon wonders why the Falcon doesn't support better video as standard. Regrettably the Atari explanation I heard was that users could blow up video monitors using unsuitable video modes and that Atari didn't want to be responsible for this. If this is such a big problem I wonder why those millions of PC users who suffer the same potential problem aren't complaining about monitor destruction in their droves. Sorry Atari, when you're trailing behind in certain ways you should be able to learn from what has gone before. Using a VGA or SVGA monitor was a good decision that

was almost negated by the lack of support for the generation of 'current' video resolutions.

As a final point I can't help but notice that any potential for monitor damage is largely due to the 'flexibility' of the Falcon video hardware. The PC with its small set of common video modes ties in very well with the small set of common video signal timings that monitor manufacturers design for. What a lucky coincidence - does anybody really need 800x592, I wonder? Wouldn't 800x600 probably do?

Steve
CIX #612

I'll stand corrected by Steve on VGA - it's a while since I had to deal with this, and memory is such a transitory thing 8-). The details for SVGA represent the minimum you would expect from anything called SVGA. XVGA is a proposed standard at one of the higher resolutions now occupying SVGA-space.

Jon Ellis
CIX #626

STEN

Dave Mooney and John Weller had, over the 15 issues of the STEN diskzine, built it up to be a force to be reckoned with in the field of writing for the ST world, with a strong contributer list, from all aspects of ST'ing.

Life however has to go on. We all of us do what we do with our ST's for fun in the main, and when family and job demands come on strong something has to go.

John Weller and I have had long discussions over the pro's and cons of continuing STEN, but have regretfully decided that as our computing time was limited, and running a full disczine would take all our time, the other projects would come to a full stop.

But then a certain regret set in: we both felt we needed to communicate via disk with other Atarians, in an informal way.

So the concept of Atarian-Pro Act(ive) came about.

I am prepared to act as a post box for an Atari Users' Portfolio.

The whole object of this is that it is not a Magazine in the fully edited sense. Those of you with a DIY fix to tell, or a problem to solve, a program to Beta test, whatever aspect of Atari computing you wish to talk to someone about, then send it to me, on disk with your return address and postage.

Once a month during the first week, I will dump all submissions on disk using the STEN shell under various headings, and ship them out again. I will keep it going as long as you keep sending. I emphasize the non-edited aspect. If you cannot spell - we will all know.

John Ash
62 Fleet Road
Dartford
Kent
DA2 6JF

Fontswitch

Can any one help with a config problem?

I use Fontswitch with Protext which gives the best output I can afford on a 9-pin dot-matrix printer. Trouble is, try as I may I can't get it to print the £ sign.

I've fiddled with the config and printer driver but no luck. I would appreciate comments from anyone using the same set up.

Adrian
CIX #602

A You need to load the fonts you are using into Fontkit and see where the '£' character is. If it isn't ASCII 156 then move it there. Also just check in the Protext "Choose Character" menu item that it is also present in the right place. Then load up the PPD file and look what the printer driver does to the '£' char, probably in a rc line.

Mark Baines
CIX #603

A Hmmm... I haven't used Fontswitch much, but assuming you've downloaded the printer font (accounts for DIP switches) and edited the Protext Driver to ensure that it doesn't reset before printing the only things I can think of are whether the character appears in the screen font but not in the printer font (or is in a different position?) or if the printer is restricted in the number of characters it can download.

It's most likely the latter. You can check in appendix C of the Fontkit 3 or 4 manual to see what restrictions apply; some can accept as few as 6 draft characters, others up to 128 NLQ.

If that's the problem you need to switch to Fontprint to emulate an Epson's downloading capabilities and enable the full character set in NLQ.

Sid Celery
CIX #605

Calamus Driver

Q I have a copy of Calamus 1.09 and a Star FR-10 Multifont printer connected to an Atari 1040 STE with 1.62 TOS. My problem is that if I use the supplied FX-85 printer driver, the programme puts out two sheets of paper, each time, one with the desired print and one extra, the second page is then printed on the third page.

Using the Brother printer driver a better result is achieved. The page is put out about half an inch longer than it should be.

Can anyone suggest a solution? JCA haven't got a suitable driver.

W A Booth

Calamus to TrueType

Q Can anybody suggest the best route for converting Calamus fonts to TrueType? Although there are over 1000 TrueType fonts in Shareware I still find I am missing one or two favourites from my Calamus collection.

Cheers, I have been using a PC with Windows for 15 months now but I still love the ST and your magazine.

Francis Cooke

Colour WP and DTP

Q I would like to design and print my own coloured greetings card. I have an Atari 1040STE and a Citizen Swift 240C colour printer. What software do I need?

Mrs Smart

Q Are there any DTP or WP Packages which allow the Printing of text in colour on an HP 550C Deskjet?

D Green

● DTP and WP packages have yet to really catch up with the popularity of colour printers. PageStream (£169), Didot and Calamus SL (£499) can print to most colour printers - a little expensive for doing your own greetings cards.

Projects that involve just a little text are probably best done using a paint package, using Imagecopy 2 to handle the printing. Text can be generated using the font system built into your paint package, or you can use Text-style to generate both large and small point-point size text from Calamus and GEM fonts. Try to use a paint package that allows pictures to be larger than the screen - this will allow you to create your pages so that they will be printed out at the resolution of your printer rather than that of your screen. Suitable paint packages include Prism Paint, PixArt, True Paint and HyperPaint.

We know of at least one colour page layout package that is being written to get the best out of dot-matrix and inkjet printers; watch this space...

There are no wordprocessing packages that give a WYSIWYG support for colour printers. But any wordprocessor that allows editing of its printer driver can be cajoled to support printing multi-colour documents in some manner. Experiment!

Upgrades

I am writing because I feel that my recent ST upgrade experience may be of interest to others who may be contemplating such a move.

My ST is an FM of 1987 vintage. In previous years it has been upgraded to 2.5Mb RAM and fitted with a Turbo 25 accelerator. However, last November I decided to upgrade to 4Mb and a High Density drive as well. This is mainly to accommodate the ever increasing Pagestream DTP files, especially when taking Postscript files to a bureau. A second reason is the transfer of large graphic files with friends who use the PC or Mac.

Just a matter of ordering the hardware and arranging it to be fitted at the same time. Simple job, I thought. NOT SO!!! The hard part came about when I was given several disks of GIF files to check out. Eight out of ten disks absolutely refused to load, move, copy, or even delete files properly.

The "Data on disk may be damaged..." dialogue was becoming almost second nature. After a lot of testing and checking, the conclusion was that the disks, files, and new hardware was mostly fine. Eventually it was narrowed down to the TOS 1.2 in my FM. There'd be no real problems with HD disks used exclusively by the ST itself. However, the fun and games would start when trying to access HD disks from a PC. More confusingly, the MS-DOS version in use when formatting the disk also came into play. It transpired that disks formatted from PCs with DOS 5/6 would somehow lead to problems.

Fortunately more testing revealed that EOS, TOS 2, and TOS 4 had little or no trouble with HD disks. In effect it seems that the TOS versions without BUILT-IN support for HD drives will cause problems. Therefore either EOS or TOS 2.06 will need to be fitted to my FM. I opted for TOS 2.06 (and all its lovely little bugs too, as I was to find out).

Eagle-eyed readers may notice a hidden cloud to the above solution - the Turbo 25 accelerator. All the available TOS 2.06 upgrades I'd seen cannot co-exist with a T25 in a standard (unmodified) ST case - not enough space underneath the keyboard. Luckily the same people who fitted my upgrades were about to market a TOS 2.06 upgrade that is accelerator friendly.

So now my 4Mb STFM has both TOS 1.2 and TOS 2.06, a HD drive, and a T25 all living together under the same vanilla coloured Sunnyvale roof. Alas, like all bad Aussie soaps (most unfortunately), that wasn't the end of the story. At first the supplied T_BOARD.PRG would not join in with the fun I was having and completely refused to boot up the new TOS. The ACC version helped, but with a very poor 10% rate of success. Adding insult to injury, I could no longer soft reset my ST. A total power down is now needed. Quite a pain on a multi hard drive system.

Again someone came to my rescue; namely Floppyshop's Steve Delaney (aka ST Applications News Editor). A phone call to him resulted in a program going by the name of CALL_TOS (Floppyshop: UTL.3539). This tiny Auto folder program manages to boot up TOS 2 with 100% perfection everytime.

The only remaining problems now are that my FMC II clock cartridge refuses to boot from hard drive (perhaps just a dead battery), no soft resets, and the fact that my TOS will not acknowledge GEMRAM, SHBUF, and WINX (though they seem to run). It's possible that GEMRAM is the one that it's having trouble with, since the latter two need the former installed before they can be run. Thus, my NEWDESK.INF cannot exceed 4K. Minnows compared to my earlier problems (though I wouldn't mind some suggestions/solutions).

I'd like to end by extending my gratitude to Steve Delaney for his efforts in testing different TOS versions as well as the endless source of invaluable information/advice. Finally, thanks also to The Upgrade Shop for their perseverance and efforts.

E Y M Cheng

Psion/ST File Exchange

Q For a year now my Psion Series 3 has been a constant companion and, my employer not being inclined to furnish me with a PC, it serves that function during working hours, being used extensively for memos, minutes, and spreadsheets as well as acting as organiser and data source. All this of course requires periodic backing-up and it is at this stage that the Psion concept ceases to appear so attractive. Why? A 1Mb storage pack costs around £200! This then has been the spur to acquire a serial link and 'Uniterm' to enable transfer between the Psion and my trusty ST. My first attempt at transfer, a HP printer driver, from the Psion PC disk (in the ST) into the Psion was entirely successful. However, try as I might, I cannot pursuade information to flow the other way. Keyboard to screen; yes, in both directions, but files to the ST? Not a byte!

Suggestions anyone?

Incidentally, a colleague has used the 'Link' to transfer a complex spreadsheet into Lotus on a PC with total success. All the cell formulae and contents went over and the spreadsheet ran perfectly without any tweaking. Most impressive.

Mike Playle

Spectre GCR-Keyboard

Q I have a problem with the Claris Works program for the Mac which I want to run with my Spectre GCR on an STFM with 4 Meg Ram and a hard drive. The keyboard layout of the Mac is different from the ST and this hasn't caused any problems before.

However, in Claris Works, and in particular the database element, one is required to use double inverted commas for most applications. When I use Shift-2, all I get is a @, and Shift-' also produces @. Can anyone supply me with a simple solution?

R Chiswell

Is my SM124 knackered?

Q I have an Atari SM124 mono monitor that I have been using with my 1988 STFM for about five years. Of late, even with the brightness and contrast turned full up, what should be 'white' is 'light grey'. White text on a black screen is an indistinct smear, and black on white leaves dark smudges trailing from the right of the text to the screen's right edge. Also, when the monitor is turned on, the picture rolls vertically for several minutes before settling. Does anybody recognise these problems? Are they easily remedied, or should I discard my old monitor and buy a new one?

Patrick Middleton

Publisher 2

Q Inspired by the article 'SpeedoGDOS the Arrival' in issue 34 (October 1993), I purchased same from HiSoft. It arrived. I then spent a considerable time trying to make the program work with Timeworks. I tried every alternative suggested in the manual but to no avail. Each time I tried to run Timeworks Publisher, I received the message "font handling error" followed by "Error reading width table, screen.wid".

I contacted HiSoft by phone today, and they admitted that there is a problem running the two programs together and that Fontwid version 2.00 is required. They also stated that GST were issuing a revised version of Timeworks to cope with this problem in October. And so I phoned GST. They said, 'Yes, but it will not be available until early next year.'

I re-read the article in ST Applications and quote from the fourth paragraph under the heading 'Third-Party-Support': "....it (Timeworks Publisher) currently uses GDOS and will therefore have immediate access to most Speedo features." Under the circumstances I have related above, how can this be true?

One further quote from the same article: "Timeworks is perhaps the most popular program which may benefit from Speedo". I thought that I must be the only person to have wasted £40 on a useless program until I happened to find Geoff Nadden's article in the Forum of Issue No 35 in which he states that he had the Fontwid 2.00 version available and was able to correct his installation.

I consider that I have had a very raw deal over this and request that you advise me as to how I may obtain and adapt the program to accommodate the required Fontwid 2.00.

T Goss

● Our first reply to this letter read "GST are now supplying Fontwid.Prg v2.00 on request to registered users of Publisher 2, phone for details." But when our stooge phoned for details he was told that it was impossible to run Publisher 2 with SpeedoGDOS, end of story, no discussion.

We can't offer users copies of the Fontwid 2.00 program as it is copyright, but GST are hardly likely to argue if you find a friendly Publisher 2 user with the right version of Fontwid and will let you borrow their master disk for a minute of two! Maybe try a classified ad in STA if you don't know of any contact points local to you.

It's not now certain when (if?) GST will be launching a Speedo version of Publisher. Maybe the upgraded version will just be a copy of fontwid 2.00? Such is life in Atariland.

Universal Item Selector

Q Timeworks (version 2) has been locking

up on me recently with a total freeze being experienced as soon as UIS was asked to Open or Save. The problem seemed to first appear with the introduction of Mortimer but did not go away with this removal. However removing UIS immediately effected a cure. Replacement of either of these now causes boot-up problems (I use Mouseboot) or return to the 'freeze'. I miss UIS. Is there an answer?

Mike Playle

● Disable the UIS Vanishing Act feature to stop UIS from grabbing the screen before it appears and then blitting it back when it is closed. Vanishing Act is on when the words "Universal Item Selector III" in the Configuration Screen are in normal video (black on white); click on this text once to change it to reverse video (white on black) and turn the feature off. This setting is saved when you save your UIS configuration.

As you are already using Mouse Boot it is worth having two copies of UIS (UIS_IIIP.PRG and UIS_III.PRG, say), one configured for use with the Publisher 2 and the other for use with other applications.

R.I.P.

It is with great sadness that the deaths are announced of the Abacus 'ST Internals' and 'GEM Programmer's Reference'. These two faithful companions have at last passed beyond the veil and lie in the golden light that bathes that big book shelf in the sky. Despite being hopelessly out of date and muddled in presentation they have served me well over the years. And so, after a moment's silence, it is time to take up Scott Saunders' "The Atari Compendium" (TAC) and see what it has to offer.

TAC is certainly up to date and all the function calls up to TOS 4.00 are shown, so it covers the ST, TT and Falcon, including Mint, Speedo and DSP - there is even a section on CPX's. It's a real treat to have everything together in the one book at last. The ST needed this years ago. It is very much a reference book though, and there is little in the way of tutorial or notes on implementation. You will already need to be familiar with ST programming to find its full value, and it is very expensive. This is the first edition and there are plenty of errors in the book, but these look as if they are mainly type setting and grammatical in nature and are reasonably easy to decipher. They shouldn't lead to a loss of confidence in the rest of the work. So far I've spotted very little that I know is incorrect, and considering the mass of material it is quite an achievement. The v_opnwk() section is in a mess of course, but this almost seems to be traditional in any reference.

John Phillips

● There will be a full review of *"The Atari Compendium"* in the next issue of ST Applications.

GFA Draft

Q I have managed to produce some quite professional looking results with GFA which I acquired as a 'give away' and duly registered to obtain the manual. Problems here are:

- ✘ Line thickness. I cannot build a library of preset line thicknesses. It will allow only one thickness at a time which can be very laborious.
- ✘ The GFADRAFT/DFX conversion bombs out on loading. DFX/GFADRAFT conversion generates a file of impressive size but I cannot find the resulting drawing on the screen when it is loaded into GFADRAFT.
- ✘ The METAFILE conversion just seems to do nothing. A diagram of what files should be where and a typical assign.sys file in the manual would have been useful here.

My letter to GFA on these topics is so far unanswered. TOS version is 1.4. Am I alone on these?

Mike Playle

No Grins

Q I have tried to register my support with both Grin Graphics & Cooper Clip Art after getting disks from you. No reply. Can anyone help, as I would like more of their work?

Ian Price

Indents

I David Smith in STA37 p.16 "Timeworks Tips" asks about paragraph indents. The use of an indent is in fact logical; if the reader can see it is a new paragraph ie. after a heading, subhead, blank line, etc., then there is no need for an indent and it is therefore not used. In solid text the indent is used to enable the reader to see the start of a paragraph. Typography exists to enable easy and sensible reading. This approach should solve the answer to most questions of layout.

Murray Hughes

Lost Disk Codes

I Thank you for the new catalogue. The layout is clearer although I find it a little confusing to know which disks I have already under an old catalogue number; for example, how much of the old UTI.146, 208 and 256 are on UT.180 and 190? The listings seem to suggest that the disks have been changed so that some programmes are on the new disks whilst others are not. I notice that this is made clear under the ART heading where I have the old SSM numbered disks but perhaps it is too much to ask for old numbers to be included throughout the catalogue.

Herbert Spencer

● Much too much to ask for. The old catalogue had become so cluttered that a fresh start was essential if we were to get a tight and comprehensive collection of PD and Shareware disks compiled. It was simple to carry forward references to the old disk codes for picture disks because nearly all of these were well themed in the older catalogues; utility and application disks were a lot less easy to sort out. Trying to carry forward the old disk code for each item on all new disks would have been nigh on impossible.

3D Calc and an LQ

Q A specific problem that I seek help to solve is that of persuading the output from my spreadsheet (3D-Calc) to print on my new(ish) 24-pin Epson LQ-500 compatible. Until now I have happily been running the spreadsheet on my STE and printing the graphs from it on an Epson LX400 9-pin printer. The 24-pin prints but with its line spacing apparently reduced to about a millimeter!

In the not too distant future I hope to upgrade to an Inkjet, either Epson or Hewlett-Packard, so I need to think ahead to yet another compatibility problem.

Russell Davis

Copyright Clips

Q I am very interested in Star Trek and would like to know if you have any Star Trek Clip-Art available to use with Timeworks, and also if you have any other Star Trek material other than the old "Wipe out the Klingons in every sector of the 8x8 grid" game.

J Snelling

● All Star Trek material is copyrighted and the copyright holders have weighed in heavily on many trivial breaches of this copyright.

VAT

Q I should not have to pay your VAT. Think about it.

Hjalti Gislason
Iceland

● True, orders exported out of the EEC may have VAT deducted at source. But the cost of completing paperwork required for proof of posting and customs exceeds the savings in VAT on orders of under £120. Sorry, Customs and Excise used to be a lot more flexible in what they would accept as being proof that goods had been exported. When you've run up a 50 billion pound overdraft every penny counts.

Falcon Forum is on the next two pages, 46-47.

Falcon Forum

Falcon Compatibility

Hartley Patterson – FF STA 33
Colin Fisher-McAllum – FF STA 33
Graham Hinton – FF STA 34
Phil Hodgkins – FF STA 34
Brian Mulhall – FF STA 36
Graham Hinton – FF STA 36
Ofir Gal – FF STA 37
Jonathan White – FF STA 37
Phil Hodgkins – FF STA 37
Graham Hinton – FF STA 38

Obviously Graham Hinton is an unhappy user and programmer and while many of the points he makes are true and valid, the overall impression one gets from reading his letters isn't!

Graham says that software houses do not notify their users about software upgrades. This is true, in fact maybe that's something that STA could dedicate a page to. Nevertheless, if a program does not work on the Falcon, all one needs to do is phone the distributor. If there is a newer version that does work, I am sure the distributor would let him know. He also includes Connect 1.62 in his list. I therefore assume he has a modem. Updates of Connect are freely available from most BBSs and ftp sites in the UK and around the world. Cubase is also on his list, but I can't see why. It worked perfectly from day one on my Falcon. Creator was never good as far as compatibility goes, so no surprises there.

The tone of his letter is questionable. Remarks such as "Calamus doesn't like MultiTOS, but what does?" are misleading. 'Connect' for one likes MultiTOS. Knife ST is under the 'definitely don't work' heading, but it definitely does work. After writing my first letter, I realised, as Graham points out, that it has problems with floppy disks, but that's not what his letter implied.

Indeed, MultiTOS v1.04 is terribly slow, but I should think that as a registered Atari developer he would have access to later versions which fix most of the problems he talks about including a massive improvement in speed. His point about timing (MIDI) is a problem which Atari choose to ignore. Beta versions of MultiTOS are available to developers on CIX. If Graham sends me a few disks, I'll be happy to mail him the latest developer versions and documentation.

The AES has been improved on the Falcon – there are definitely no 'more bugs than ever'! There are fewer bugs. I program on the Falcon and I find the AES is now more forgiving. Problems only show in older versions of TOS. MultiTOS handles redraws just fine. Some programs make shortcuts in their redraw code: if you just respond correctly to AES redraw messages, redraws work perfectly. I follow the AES guidelines in my programs and had no complaints so far.

DFormat v2.2 works on my Falcon with HD disks. As far as BIOS support, just use the same old XBIOS floprd(), flopwr() and flopfmt(), they work here. I just tried! I don't see how the controller chip affects this. Graham also claims that Atari will not provide the information. Well, it's been available since 1985. He is correct about HD detection, but this only applies to non-formatted disks. Once a disk is formatted the info is available via the BIOS.

The audio clicks on a reset are a major problem as Graham indicates in his letter. Maybe someone with his knowledge of hardware and software can come up with a solution. Going by his Audio Calculator program he is perfectly capable of contributing.

Jonathan White's accusations are perfectly valid, you are unfair. As for DSP programming, why not try HiSoft's DevPac DSP? I'm sure it will do the job. A friend of mine has just upgraded his Mac with an 040 processor, only to find that many of his favourite programs and utilities do not work at all. This is the system that's famous for 100% compatibility, where developers have to pay large sums of money for this information.

OK, MultiTOS is not perfect, but it's not as bad as Graham implies. In fact, he now has a choice – there are Geneva, SMS2 and soon Mag!x. I have tried Mag!x and Geneva, and both are very fast – Mag!x is in fact faster than TOS. Steinberg are now attempting to make Cubase Mag!x compatible. MIDI input is handled via an interrupt, so timing is not an issue. All multi-tasking operating systems slow the machine down, the only exception I know of being Mag!x.

I am perfectly happy with my Falcon. Yes, things could be improved, but not if too many users and developers read Graham's letters. Windows or System 7 are not perfect either, so what?

I use my Falcon for programming, direct-to-disc audio, writing, fax, and comms. My wife now uses the wonderful DA's Picture for her photography work. I have invested in a 14MB upgrade, a decent SVGA monitor, a 512MB hard disk and a CDROM. The only problem is that we (my wife and I) now fight over who gets to use the Falcon.

Ofir CIX #608

(Grame, Steve, Daron, Iain, etc... HELP)

›(Grame, Steve, Daron, Iain, etc... HELP)

Sure thing, I'm happy to... Mr Hinton's messages in the Falcon Forum have been an object of mirth for me since day one. The sad fact though is that they may be putting people off buying what is a damn excellent machine.

Upon buying my Falcon (which I got for a very nice price as I already had 4MBs of SIMMs) I found that I had very, very little compatibility problems at all. In fact, apart from three programs all of my main applications worked correctly (Connect, Devpac 3, Lattice C, Wercs, Calamus, Cixcomm/read, Outline Art, Everest, Gemview, Csculpt, Arabesque Pro, Avant Vector, Superbase Pro, Genus Typework and some more). The three I had problems with were That's Write, Protext and STraight Fax – and the problem with *all* three was simply that I hadn't upgraded sufficiently. In the case of Protext, all I needed was a change of .01 on the version number.

Like Ofir, I like to program and have been doing so for 7 years now, in 680x0 assembler code. I'd like to echo his sentiments to say that TOS 4.04 is a joy to use, contains far fewer bugs than any other TOS I've used and the only problems I've had are in writing 'clean' code which doesn't work on lower TOS versions because of their own bugs.

My overall impression of my new purchase is that I've bought a hugely upgraded ST – which runs faster, has brilliant graphics capabilities and an amazing sound sub-system. From a user's standpoint everything runs faster, looks better and works well. From a programmer's standpoint, all I can say is... give the programmers a chance to find their way around all of the new sub-systems and wait for some seriously heavy-duty products to become available. I know of several projects already underway which would make your toes curl.

Graeme CIX 609

I can only add that I concur fully with Ofir's comments.

Whilst it cannot be denied that the current release of MTOS is more than a little sluggish in response, it can be tuned in various ways to be much smoother in operation. As for compatability, I actually use MTOS to run programs which I have never been able to use since I upgraded to a MSTe. Programs which wouldn't run under TOS2.06 now work again under MTOS. The new version currently with developers is much faster and if the current level of compatability is retained, I will be more than happy.

As for general Falcon compatability goes, I have 400Mb of HD space full of PD and applications and found only one application, VIP Professional, and a sprinkling of PD programs, that failed on the Falcon.

I bought my Falcon for three main reasons. Firstly more speed. To be honest, I was initially slightly disappointed to find it only a little faster than my Mega STe was. Some things do seem to run much faster though which I assume is caused by the 030 being faster with some instructions than others. Secondly, I wanted a higher resolution and more colour. With BlowUp030 I can have over 1400x1000 on my multisync. I settle for 928x640x16 which is a good compromise of refresh rate and usable screen area. With MTOS you really need a lot more screen area. Certainly, with Lattice C, it's much better to be able to run the integrated environment whilst

having a Tcsh window open for utility and another directory window open for running what I'm developing. I can also unpack any archives I need whilst getting on with coding. I also wanted more colour. I can get Truecolor in 800x592 which is enough for me and even higher in 256 colour which is a must for editing/viewing GIFs. Finally, I wanted access to the newer hardware. The DSP is great for JPEGs and some software uses it to great effect for graphic transformations and such. The improved audio subsystem is good too. Direct to HD sampling with high quality is very nice and opens up new areas of software that other platforms can only dream of.

In summary, I paid £900 for my Falcon as an upgrade to my MSTe. It has given me everything I expected and more. I have no regrets. I will probably buy a PC to provide a system for putting Unix on to allow me to take work home but I will still keep the Falcon and all the excellent software I use on it.

The only caveat is that if you don't add NVDI and an SVGA/multisync monitor with Blowup or Screenblaster, you will be doing yourself a serious injustice.

Iain CIX 610

I May I make a further comment to this debate....

...I don't know where Mr Hinton lives, comms-wise, but if he were on cix he would find a thriving community of Atari users and every one of his problems would have been sorted out a long time ago.

Graeme CIX #611

I I concur with every word in the previous three messages. I bought my Falcon with some trepidation, but I was soon amazed at the high level of compatibility, and the sheer delight of such a flexible machine. I suspect that Graham Hinton is in a minority of one.

Eric CIX #613

I Seconded wholeheartedly! I have found only one program which is 100% incompatible that I used to use on my old system, and that is Tempus II, and even that works in compatible modes. My Falcon gets used for coding, graphics, sound processing, word processing, dtp, comms, faxing, just about everything, and I'm as happy as a pig in shit over it. I have had to upgrade a few packages to the latest versions, but I do that in any case long term.

Daron CIX #614

I Thanks for all that, Ofir, and the others. I've had the urge to respond in a similar manner following letters in previous issues, haven't got issue 38 yet.

I am also very pleased with the Falcon.

The high level of compatibility with ST programs, including some games, surprised me. But for me the winner is the quantity, quality and value of the Falcon enhanced software. After all, the Falcon is still a new machine.

›Graham says that software houses do not notify their users about software upgrades.

I received a letter re. Harlekin 3, and other offers, from HiSoft this morning. I would have been more impressed if they had included data on their othep new products though, eg. DevpacDSP, or Papyrus.

›The audio clicks on a reset are a major problem as Graham indicates in his letter.

Forgot about those, I removed the internal speaker ages ago.

Barry CIX #615

I I was glad to see your message Ofir, because it's a lot calmer and more reasoned than the one I was thinking of giving. Quite frankly, I thought Graham Hinton's letter was full of errors. He complains that old, out-of-date versions of software don't work on the Falcon. What nonsense. If a program doesn't work, as you rightly say, you phone the supplier and get one that does, if it's available. If it isn't, or there is no supplier any more, well that's too bad, but Atari never once claimed that all ST programs would work on the Falcon.

Knife also works for me, though I've never tried it with HD floppies. What extra info does he expect from the BIOS with regard to HD disks? It's all there as far as I'm concerned.

He says that the 'my programs work, so what' responses are unhelpful. Well yes, if they made no mention of the software he claims is incompatible. But of the software he says doesn't work (and those of which I possess, of course) I simply don't have the problems he apparently has had. Under those circumstances either I'm sitting on a time-bomb of bugs waiting to happen (unlikely after a year's daily use) or these bugs don't exist. I know which I believe...

He has some cause for complaint about the speed of MultiTOS, but that's about all. Other than that it is a superb programming achievement, when you consider what it is. Okay, so a good piece of programming doesn't always translate into a good program, but if you really need a multi-tasking OS then MTOS is certainly usable. I get the feeling that it's being held back by the hardware - couple it with a 32MHz 030 or even better an 040 and the situation might be very different. And apparently the current developers' version is much faster.

I could go on, but there's little point. He seems convinced that he's bought a real dog, and I don't think he'll be swayed from that position. I just wish he'd stop trying to convince everyone else of the same thing.

Steve CIX #616

I I think Atari have done a good job with the Falcon. Doubtless they could have continued development and improved the video side further incorporating eg. "hardup" features in the base machine, but that would have further delayed release of the machine.

Hopefully they will have realised that processor power and video output are areas where they cannot afford to stand still. They have to do as they have done with the Jaguar, i.e. jump ahead of the competition.

Let's hope the next machine has the processor and video capabilities to satisfy those who want to work at the highest resolutions and speeds at a sensible price.

Barry CIX #617

I ›Windows or System 7 are not perfect either, so what?

Too right they aren't.

Speaking as someone planning to upgrade to a Falcon later this year, I have studied Ofir's comments, and those that followed his, with great interest, and have been immensely reassured by them.

Six months ago I had sworn I would never buy another Atari product, or indeed another piece of ST software, and my next planned "upgrade" was going to be to a 486.

Then I bought a modem (a peripheral that I'd be able to use equally well on my PC) and joined Cix. I started talking to people here, I started buying ST magazines again, and began to realise that although the ST market might not be growing, it is still thriving. The major complaint of many people - a lack of games - doesn't worry me, and if it ever does I can always buy a Jaguar.

As an upgrade to my STe, the Falcon has become a very desirable item all of a sudden. I like my ST, after all, and positively detest Windows. Why switch to a 486 when everything I need is still here, in the ST family?

Personally, although there are certainly problems with the Falcon, they are not necessarily any greater than those to be found on other platforms. After all, our latest company software purchase, WordPerfect 6.0 for Windows, is apparently seriously bug-ridden. Windows itself is a nightmare after the joy of using TOS with NeoDesk, and although System 7 may be better in some ways, I think the general pricing of Apple machines and software rules a Macintosh out entirely.

And that brings me to my only niggle about the Falcon. I wouldn't consider buying one if I weren't already an ST user, for one simple reason: the price. When are we going to see a sensible RRP for this beast?

John CIX #621

I I commend you for your reasoned reply to Graham Hinton's letter.

Eric CIX 624

I Quite agree - the feeling seems to be unanimous. I'm quite surprised at ST Applications for carrying that drivel. Paul has been reasonably fair in printing criticisms of Atari and a whole raft of letters from disgruntled owners moving over to the PC but this kind of inaccuracy does nothing for anyone.

Andrew Wright CIX 625

● Not all drivel; as Ofir says in his reply above, "many of the points he (Graham Hinton) makes are true and valid". The main justification for running Graham's letter in issue 38 was to continue a lively and informed debate. Judging by the responses it got we've succeeded, and the Falcon looks all the better for it!

Programmers' Forum

In this month's edition of ST Applications' regular programming column, we look at the somewhat neglected subject of environment variables.

Environment variables

A long, long time ago, Programmers' Forum received a letter from **Leslie Dewhurst** of Leamington Spa asking about environment variables. To be precise, he asked a lot of questions:

I wonder whether one of these days you could put in ST Applications an article explaining environment variables? They seem to be a bit of a mystery; I have never seen them explained. What are they? How do they get set? Are some of them set automatically? Can one set them oneself, and if so, how? What can they be used for, and how does one do it?

On the principle of better late than never, we'll have a look at this subject now. First, what are environment variables? Environment variables are a method by which one program can tell another about the environment that it will find itself in. They are normally most useful in a situation where one program, such as a shell like the Desktop or a command line interpreter (CLI) is involved in running other programs.

An environment variable looks like:

NAME=some_data

where NAME is the variable name, and the contents of the variable immediately follow the equals sign. It is conventional for variable names to be written in upper case. The data can be anything at all: text, numbers or symbols.

Applications

Having seen what environment variables are, the next logical question is to ask what they can be used for. There's probably no widely applicable example of their use on the ST, but almost everyone who has used a DOS machine will have come across one particular environment variable at one time or another. The PATH variable is set in the AUTOEXEC.BAT files of most DOS installations. It lists a series of directories that the DOS command line interpreter should search when looking for a file. The search is only started if the file cannot be found in the current directory.

Why is this useful? On a typical MS Windows installation, the Windows code will be held in a folder called C:\WINDOWS. In the AUTOEXEC.BAT file there will be a line that includes this folder in the search path, perhaps something like:

PATH=C:\DOS;C:\WINDOWS;C:\

To start Windows from DOS, a file called WIN.EXE needs to be executed. The PATH environment variable allows the user to do this by typing 'WIN' regardless of the current directory. In the example above, if there is no WIN.EXE at the current path, the DOS folder will be searched, and then the WINDOWS folder, where the program will be found and loaded.

In general, environment variables are often used to hold information about where a program was loaded from, or where it should look to find its data files and so on. For reasons that will become apparent shortly, many early ST programs made no use of environment variables. Two current environment-aware applications that may be familiar to some readers are Cixcomm/Cixread (the CIX off-line reader system), and the Lattice C 5 integrated development system. Both of these packages consist of multiple programs, whose behaviour (where to write temporary files, where to find library files, etc.) is controlled by environment variables set by the overseeing program (Figure 1).

Finally, Atari have also made use of the environment variable system to support the passing of long command lines to programs. Normally, GEMDOS limits the length of a command line to 126 bytes. Under the ARGV protocol, command lines of arbitrary length can be processed by ARGV-aware programs. A full description of ARGV requires more space than is available in this article. If there is enough demand, then we may return to this topic in a future issue. In the meantime, there is a widely-available official Atari documentation file which thoroughly explains ARGV.

Environment variables and the AES

In GEMDOS terms, the AES is treated as just another program. As a consequence, when it is started during a system boot (after the AUTO folder programs have been executed), it receives an environment block. A copy of this environment is subsequently inherited by all programs started from the Desktop.

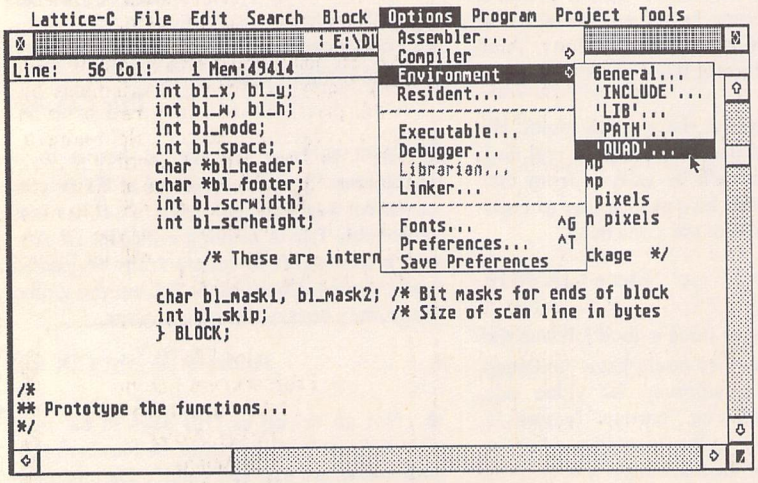


Figure 1

The Lattice C integrated development system uses environment variables to control where the compiler searches for header files, writes its temporary (quad) files etc.

```
                    Environment String Display

Program was started in the following environment:

  CIXNAME=jonellis@cix.compulink.co.uk
  EDITOR=E:\SYSTEM\TEMPUS.PRG
  REPLY=E:\CIXREAD\REPLY.SCP
  SCRATCH=E:\CIXREAD\SCRATCHP
  TEMPPATH=E:\
  CIXCOMM=E:\CIXREAD\
  CIXREAD=E:\CIXREAD\
  PATH=E:\SYSTEM\
  INCLUDE=E:\SYSTEM\HEADERS\
  LIB=E:\SYSTEM\LIBRARY\
  QUAD=G:\

AES environment strings found at $00027690:

  PATH=
  C:\

Press RETURN to exit:
```

Figure 2

The environment inherited by a program started from within Cixcomm, as seen by the program in Listing 1. Cixcomm uses environment variables to inform other programs in the Cixread/Cixcomm suite about the current configuration.

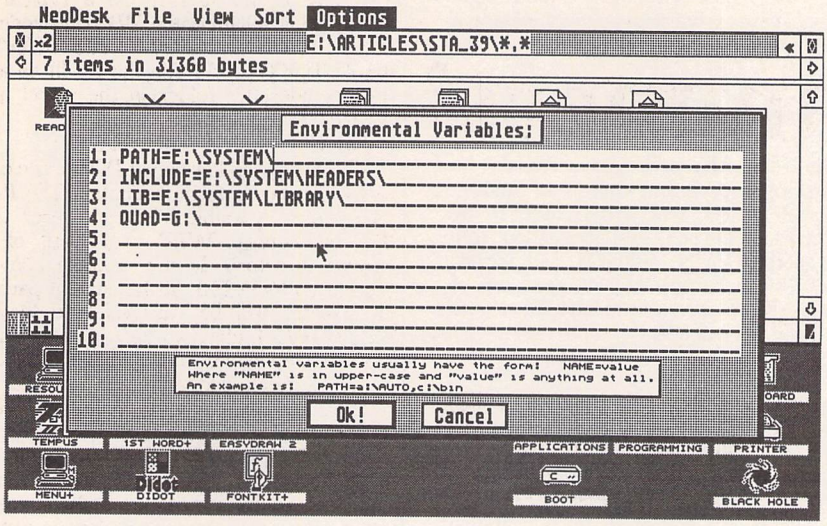


Figure 3
NeoDesk allows the user to control the environment of programs launched from it by setting environment strings prior to executing the program.

The default AES environment consists of a single variable, PATH which is set to the root directory on the boot drive. In the absence of an explicit path specification, the AES uses the setting of this variable to determine where to look for resource files. Some of the AES shell library functions are also capable of using the PATH environment variable. For example, shel_find() allows programs to locate support data like .RSC or .INF files by searching the AES PATH.

For hard drive users, the AES should receive an environment of:
PATH=C:\

Unfortunately, because of a long-standing bug in TOS, still present in TOS 4.02, this has been corrupted to:
PATH=*C:\ (where * represents a null byte)
which is not terribly useful. It gets worse, as the AES actually looks for and interprets this altered form of the environment variable. On top of this, there is another bug in TOS 1.04 and 1.6x which causes the AES to fail to recognise the variable at all, resulting in drive A: being used as the default path for resource files. Perhaps if Atari had got this right to start with, more programs would make use of environment variables.

All of the above applies only to pre-MultiTOS versions of the AES. Versions 4.00 and later, which form part of MultiTOS, have a completely reorganised environment handling system that works properly. Indeed, MultiTOS AES can be configured by altering the values of a series of environment variables set during AES initialisation.

Looking at the environment

Enough of the background - let's turn to some code for inspecting the environment. Listing 1 contains Lattice C source for a program, SHOWENV, that lists out the variables in its own environment, and also in that of the AES (and hence the Desktop). Figure 2 shows an example of its output, and illustrates the effect of the extra null in the AES path string.

To understand how SHOWENV works, you'll need to know about the basepage, the structure that GEMDOS uses to contain essential house-keeping data about each program that it executes (see the very first Programmers' Forum in STA 2 for more details!). As a memory jogger, the listing contains a C structure representation of the basepage.

In Lattice C 5, most of the hard work in parsing the environment block is done by the start-up code contained in C.O. main() is passed an array of character pointers ('envp'), one for each string in the environment. A NULL pointer indicates the end of the array. It's simple enough to step through this array, printing each string.

Looking at the environment of the AES is much more difficult. The AES has a function, shel_envrn(), which allows the environment to be tested for individual variables by name, but there is no easy way to look for all variables.

Listing 1 uses a technique of borderline legality to locate the AES environment block. It does not work under MultiTOS, but should be fine on all other setups. The idea is to use the p_parent field in SHOWENV's basepage to locate the basepage of the program that executed it. This process is repeated until we find a basepage associated with a program with a text (executable code) segment whose address is the same as the start of the AES, as read from the system variable exec_os ($04FE). This is taken to be the AES basepage, and the p_env pointer is then used to find the environment block. The block is decoded by noting that the format (see Box 1) is identical to that of several C strings followed by an empty string.

Manipulating the environment

The easiest point at which to affect a program's environment is just before loading it. Programs that use Pexec to execute other applications are responsible for creating an environment block in the correct format, and then supplying a pointer to that area as part of the Pexec invocation. Alternatively and more commonly, a NULL environment pointer can be passed to Pexec, which will give the child program a copy of the parent's environment.

This strategy is used by NeoDesk and other replacement desktops or shells to provide a proper PATH variable, amongst others, to each program that is launched from within them. NeoDesk gives user access to these variables through a dialogue box (Figure 3). Command line interpreters usually provide a 'set' or 'setenv' command to perform the task in a non-graphic fashion.

Lattice C provides three functions that allow a program to change its own environment space: putenv(), getenv() and rmenv(). These handle adding a variable to the environment, reading a variable's value from the environment and removing a variable from the environment, respectively. Full details on their usage can be found in the Lattice documentation.

When using these functions it is important to remember that the Lattice C start-up code transforms the environment block passed by GEMDOS into an array of character pointers. These functions manipulate the Lattice representation of the environment, not the block set up by GEMDOS. As a consequence, when new variables are added using putenv(), the original environment as reflected in the 'envp' argument to main() is untouched. An up-to-date version of 'envp' is held in the external variable 'environ', and it is this that should be used to access the environment once any changes have been made.

To illustrate the use of putenv(), Listing 2 provides Lattice C source code for a shell-like program. Upon loading, it adds three new environment variables, and then invokes SHOWENV.TOS (Listing 1), which should be in the same folder. SHOWENV will display the new variables as part of its environment.

Next Month

Next month, *Programmers' Forum* will feature some more newly-rediscovered questions and tips from readers' letters. Keep the letters coming in - the more we receive, the better the column gets! 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

The forkve() function used in Listing 2 provides an interface between the Lattice C environment where the command line and environment are represented in the standard UNIX 'array of pointers' format, and the realities of the GEMDOS world.

Fiddling with the AES environment

There are few times when it is necessary to fiddle with the AES environment, although it might be useful in a couple of specialised cases. There are a couple of patch programs (AESPATH from HiSoft and AESFIX by Sven Andersson) which correct the TOS 1.04/1.6x bug described earlier; these do so by tweaking the AES environment block.

Going further than this, and adding new variables to the AES environment is fraught with problems. There is no legal way to do it on pre-MultiTOS versions of the AES. Despite this, it is possible to come up with a fairly non-intrusive hack to achieve the desired effect. Box 2 and Listing 3 contain details of a way to achieve this: for the technically-minded only!

Under MultiTOS (AES v4.00 and later), altering the AES environment is both legal and easy. To set a variable, simply include a line of the following format in either MINT.CNF or GEM.CNF:

```
setenv NAME=whatever_data_you_like
```

The MultiTOS AES environment can also be modified by a program while it is running, using shel_write(). shel_write() used to be used for executing one GEM application from within another. Under MultiTOS, shel_write() has acquired a battery of new uses, one of which is AES environment manipulation - see Table 1 for more details.

Porting to other compiler systems

Although much of the information in this article refers to Lattice C, similar features should be provided by most other modern compiler systems. Prospero C seems somewhat weak on this front, apparently lacking a putenv() function. However, implementation of putenv() functionality should be feasible given a little thought.

AES Environment Hackery - The Gory Details

The technique used by Listing 3 involves delicate tinkering with some poorly documented phases of the operating system boot sequence. The key points of the program are:

* The environment must be hacked before the AES is started because once the AES gains control it may take an internal copy of the environment which would be inaccessible. Therefore, the change must be made from the AUTO folder.
* The intervention must occur after the AES environment has been set up, so we can include any existing strings in the new environment.
* The AUTO folder program in Listing 3 achieves the above by hooking into the exec_os vector ($04FE) which is used by TOS as part of the AES initialisation, at a time after the AES environment block and basepage have been initialised. A portion of the program including a new exec_os handler and the new AES environment data is made resident.
* When invoked, the exec_os handler replaces the original contents of the exec_os variable and then initialises the replacement version of the PATH variable with the boot drive. After this, the AES basepage is altered so the environment pointer addresses the block in the patch program.
* The AES boot is continued by patching the basepage text pointer to address the AES entry point (as it normally would), and calling the Pexec function in mode 4 which allows the execution of a program whose basepage and environment are already set up.
* The new environment block contains the PATH variable in the mutilated format, as the AES expects, in an attempt to minimise disruption. New variables are added before PATH.

This seems to work reasonably well, although NeoDesk has problems when Listing 3 is resident. One possible problem area relates to the status of the environment block. Under normal circumstances, a program's environment lives in a Malloced block that it owns. This patch places the AES environment in a block of memory rendered outside the Malloc/Mfree system by the use of Ptermres. If the AES were to terminate, this might cause problems when Mfree is used in an attempt to remove the environment block.

A more sophisticated version of this program might make things a little cleaner by not installing the new environment during the exec_os handler. Instead, the exec_os routine would point the p_tbase field of the AES basepage to another handler and then start it up with Pexec. When the new handler is activated, it should be in the AES context. It would then Mfree the old environment block and Malloc a new one of sufficient size, copy the new environment into this block and update the p_env field. Finally, the AES entry point address should be put back into p_tbase, and the AES boot continued by a jmp to this address.

Environment Strings - The Details

When a program is started by the GEMDOS function Pexec, it has two blocks of memory allocated to it. One contains the program's basepage, code, data, stack and so on. The other contains the environment supplied by the program's parent. To enable the program to locate its environment data, one of the fields in the basepage (p_env) points to the start of this block. It is up to the program to do something with this pointer if it is concerned with its environment.

The format of the environment block is laid down by Atari. The variables are stored in the standard null-terminated form as used for C strings. Each successive environment string follows immediately after the null that terminates the preceding string. The end of the whole block is marked by an empty string, giving rise to two adjacent null bytes.
Taking an example: an environment containing the following strings:

```
PATH=C:\
TEMP=G:\TMPFILES\
```

would be stored in memory as:

```
PATH=C:\*TEMP=G:\TMPFILES\**
```

where '*' indicates a null byte.

When a program terminates, its environment block, along with all the other memory blocks that it owns, is returned to the GEMDOS pool.

Quite how the environment information is made available to the programmer depends on the language and implementation. In Lattice C the start-up code parses the environment information, generating an array of pointers to strings, terminated with a NULL pointer. This array is passed as a third argument to main(), conventionally called envp, and can be processed in a similar way to argv.

Table 1

Manipulating the AES environment with shel_write()

For this purpose the format of shel_write() is:

```
shel_write(8,submode,idata,pointer1,pointer2);
```

Submode	Action
0	Function returns size of AES environment block.
1	Add the variable addressed by 'pointer1' to the AES environment. The variable should be in the usual format: a null terminated string of the form NAME=value. This mode can also be used to delete variables from the environment by using a string of the form NAME=
2	Copy 'idata' bytes from the AES environment into the buffer addressed by 'pointer1'. The function return is the size of the AES environment less the number of bytes copied. If the destination buffer is big enough to take the whole environment block, the return will be 0.

Listing 1
=========

```
/*
** Listing 1.
** Programmers' Forum STA 39 (March 1994)
**
** Program to display the environment strings
** inherited on start-up.  Additionally, a
** search is made for the AES basepage from
** which the AES environment is located. This
** does not work under MultiTOS.
**
** Compiler system: Lattice C v5.60
** Compile options: -cargfku
**  Meaning: Enable ANSI mode, disable trigraphs, enable
**           non-ANSI keywords, assume unsigned chars
** Link with C.O, LC.LIB to form SHOWENV.TOS
** Written on 12th January 1994
*/

#include <osbind.h>
#include <stdio.h>
#include <string.h>


/*
** Define C structure representing the basepage for
** non-Lattice implementations (Lattice has a header
** file, basepage.h, that contains the appropriate
** information.
*/

typedef struct basepage
            {
            void *p_lowtpa;             /* Pointer to start of TPA        */
            void *p_hitpa;              /* Pointer to byte after TPA end  */
            void *p_tbase;              /* Pointer to TEXT segment start  */
            long p_tlen;                /* Length of TEXT segment         */
            void *p_dbase;              /* Pointer to DATA segment start  */
            long p_dlen;                /* Length of DATA segment         */
            void *p_bbase;              /* Pointer to BSS segment start   */
            long p_blen;                /* Length of BSS segment          */
            void *p_dta;                /* Pointer to current DTA         */
            struct basepage *p_parent;  /* Pointer to parent's basepage   */
            long p_reserved;            /* Reserved long                  */
            char *p_env;                /* Pointer to environment strings */
            long p_undef[20];           /* Undefined: do not use          */
            char p_cmdlin[128];         /* The command line data          */
            } BASEPAGE;


/*
** External variable provided by Lattice C
** start-up code containing the address
** of our basepage.
*/

extern BASEPAGE *_pbase;


/*
** Declare function prototypes...
*/

int main(int, char **, char **);


/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    char **strptr, *estr;
    void *oldSSP;
    BASEPAGE *bptr;
    void *AES_text;

    printf("\033E                        Environment String Display\n\n");
    printf("Program was started in the following environment:\n\n");
    for (strptr=envp; *strptr != NULL; strptr++)
        printf("  %s\n",*strptr);

    oldSSP = Super(0L);
    AES_text = *(void **)0x04FE;
    for (bptr=_pbase; bptr != NULL; bptr=bptr->p_parent)
        if (bptr->p_tbase == AES_text)
            break;
    if (bptr == NULL)
        printf("\nCannot find AES basepage\n");
    else
        {
        estr = bptr->p_env;
        printf("\nAES environment strings found at $%08lX:\n\n",estr);
        while (estr != NULL && *estr != '\0')
            {
            printf("  %s\n",estr);
            estr = estr + strlen(estr) + 1;
            }
        }
    Super(oldSSP);

    printf("\nPress RETURN to exit: ");
    getchar();
    return(0);
}
```

Listing 2
=========

```
/*
** Listing 2.
** Programmers' Forum STA 39 (March 1994)
**
** Program to show how to set up environment
** variables under Lattice C 5 and then
** communicate them to a child program.
**
** Compiler system: Lattice C v5.60
** Compile options: -cargfku
**  Meaning: Enable ANSI mode, disable trigraphs, enable
**           non-ANSI keywords, assume unsigned chars
** Link with C.O, LC.LIB to form FORK.TOS.
** Written on 16th January 1994
*/

#include <osbind.h>
#include <process.h>
#include <stdio.h>
#include <stdlib.h>


/*
** Declare function prototypes...
*/

int main(int, char **, char **);


/*
** Declare the external variable provided
** by the library containing the updated
** version of the environment.
*/

extern char **environ;


/*
** The program starts here...
*/

int main(argc,argv,envp)

int argc;
char **argv, **envp;

{
    char *newargv[] = {"SHOWENV",NULL};

    printf("\033E                        Environment String Demo\n\n");
    printf("Setting up new environment strings ARTICLE, ISSUE and DATE...\n");

    putenv("ARTICLE=Programmers' Forum");
    putenv("ISSUE=STA39");
    putenv("DATE=March 1994");

    printf("Press RETURN to load SHOWENV.TOS:");
    getchar();
    forkve("SHOWENV.TOS",newargv,environ);

    printf("\nPress RETURN to exit FORK.TOS: ");
    getchar();
    return(0);
}
```

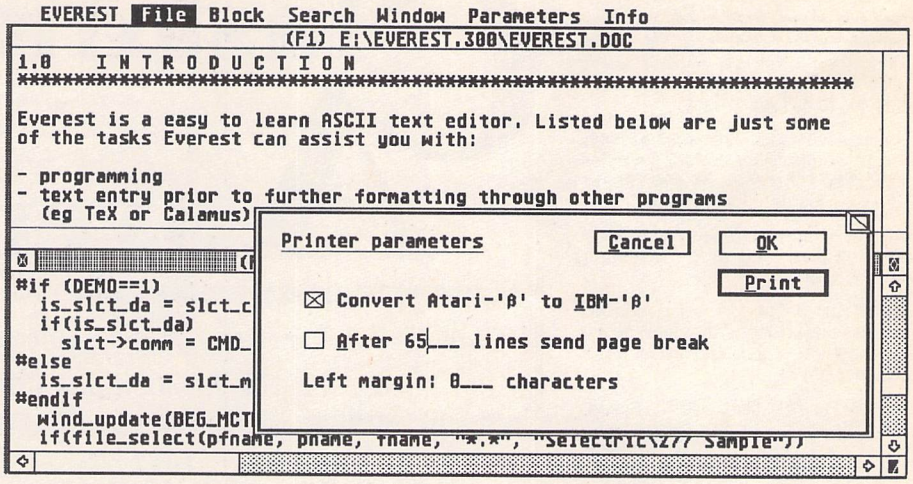
Listing 3
=========

```
**
** Listing 3.
** Programmers' Forum STA 39 (March 1994)
**
** Program showing one crude method for hacking the
** AES environment on pre-MultiTOS setups. This might
** be useful in cases where all programs are to be
** started from the Desktop with a particular environment.
** The technique is similar to that used in the FIXAES
** program by Sven Andersson. This is not fully tested -
```

```
** use as a basis for your own experimentation. In
** particular, it doesn't get on with NeoDesk v3,
** probably because NeoDesk diddles with the AES
** initialisation code too.
**
** Assembler system: MCC ASSEM v12
** Written on 15th January 1994
**

**
** Define symbols used by the program.
**

GEMDOS    equ     1
Cconws    equ     $09
Super     equ     $20
Ptermres  equ     $31
Pexec     equ     $4B

XBIOS     equ     14
Supexec   equ     38

p_env     equ     $2C             Offset of p_env point in basepage.
Just_Go   equ     4               Pexec mode for executing program


**
** System variables...
**

_bootdev  equ     $446            Device used for boot.
exec_os   equ     $4FE            Pointer to AES entry point


          TEXT

**
** The program starts by jumping to the installation code,
** at the end of the file.  This allows us to make only the
** minimum code resident.
**

start     bra     install(pc)     Install the program.


;=============================================================
**
** The resident exec_os vector handler.
**

          dc.l    'XBRA'          XBRA vector header.
          dc.b    'EHak'          Our identifier.
old_vec   dc.l    0               Place for old vector

handler   pea     undo_vec(pc)    Restore the old vector value.
          move.w  #Supexec,-(sp)  Needs to be done in supervisor mode.
          trap    #XBIOS
          addq.l  #6,sp

          move.l  a6,old_a6       Store value in case it's important.
          move.l  4(sp),a6        Fetch pointer to AES basepage.
          move.l  p_env(a6),a0    Fetch pointer to environment.
          cmp.l   #'PATH',(a0)    PATH variable ?
          bne.s   all_done        No - hasty exit.

          move.w  boot(pc),d0     Fetch boot drive letter
          add.w   #'A',d0
          move.b  d0,drive        and copy into our area.
          move.l  #env,p_env(a6)  Insert our environment block.

all_done  move.l  old_vec,8(a6)   Point to start of code in basepage.
          clr.l   -(sp)           Execute the AES using Pexec in
          move.l  a6,-(sp)        the Just Go (original flavour) mode.
          clr.l   -(sp)
          move.w  #Just_Go,-(sp)
          move.w  #Pexec,-(sp)
          move.l  old_a6,a6       Restore old a6 value.
          trap    #GEMDOS         Off we go... (should never return).

**
** The portion of the installed program that needs
** to be run in supervisor mode as it accesses
** variables in protected memory.
**

undo_vec  move.l  old_vec,exec_os.w  Replace the AES start-up vector.
          move.w  _bootdev.w,boot    Copy the boot drive.
          rts

boot      dc.w    0               Device used for booting, A=0, B=1 etc
old_a6    dc.l    0               Storage area for registers.


**
** The new environment for the AES. Add new
** variables at the start of this block.
**

env       dc.b    'NEWENV=True',0
          dc.b    'PATH=',0
drive     dc.b    'A:\',0
          dc.w    0,0
          dc.l    0


;=============================================================
**
** The installation code portion.
**

install   clr.l   -(sp)           We need to do the installation
          move.w  #Super,-(sp)    in supervisor mode, so enter now.
          trap    #GEMDOS
          addq.l  #6,sp
          move.l  d0,a6           Copy the old SSP.
          pea     banner(pc)      Print the sign-on message.
          move.w  #Cconws,-(sp)
          trap    #GEMDOS
          addq.l  #6,sp

          move.l  exec_os.w,old_vec  Install our vector handler.
          move.l  #handler,exec_os.w

          move.l  a6,-(sp)        Return to user mode.
          move.w  #Super,-(sp)
          trap    #GEMDOS
          addq.l  #6,sp
          move.l  #install,d0     Address of first byte to trash.
          sub.l   4(sp),d0        Calculate length of block to leave.
          clr.w   -(sp)           Zero return code.
          move.l  d0,-(sp)        Size to keep resident.
          move.w  #Ptermres,-(sp) Terminate and stay resident.
          trap    #GEMDOS

;=============================================================
**
** Data area for installation code.
**

banner    dc.b    13,10,13,10,'AES Environment Hacker v1.00',13,10
          dc.b    'Programmers Forum STA39, 15 January 1994',13,10,13,10,0

          END
```

Shareware Column

Joe Connor takes a look at Everest, an excellent Shareware text editor...



Everest V3.0e on top of the world?

It's a great feeling to stumble across an application which stands out from its rivals and even more pleasing when the application in question is Shareware. German versions of Everest have been around for some time but it was only last summer that Steve Taylor and I got involved with translating the program into English and asking the author to support a UK version. An early unsupported English version 1.5 appeared without permission on the ST User cover disk and the author, Oliver Schmidt, was understandably annoyed about this release. Happily, the latest V3.0E is officially supported by me in the UK, and so if you're looking for a powerful, easy to use and ultra compatible text editor take a look at Everest.

Because ST User took advantage of the lack of distribution restrictions on the older V1.5 Oliver has decided not to allow magazines, cover disks, or PD/Shareware libraries to carry Everest.

I have persuaded Oliver to allow the ST Club to distribute Everest and you can order a copy of Everest V3.0E on disk WP.154. Remember if you continue to use it you must pay the Shareware fee to register your copy.

Nearly all ST enthusiasts use a text editor of some kind – it's the ideal way to edit INF files, write quick letters and edit program source code. Everest carries out all these tasks with ease and style, and here's a feature list followed by details of a few extra special features:

- ✓ Runs on all Atari 680x0 computers and with all known graphic cards
- ✓ Fast scrolling on all models, with or without a blitter chip
- ✓ No cursor overrun (or other similar annoying glitches)
- ✓ Enhanced GEM interface
- ✓ Can load large (›300Kb) files without problems
- ✓ GDOS (monospaced) font support, provided GDOS (or GDOS replacement) is installed.
- ✓ Dynamic memory allocation to leave the maximum memory free for other applications, ideal for multitasking environments.
- ✓ GEM Clipboard support
- ✓ Can be called from a Command Line or Shell and installed onto most desktops. Using these options it's possible to open up to ten files simultaneously
- ✓ Keyboard shortcuts, file lists, abbreviations files, etc...

File lists: if you regularly need to edit the same combination of files the 'Save file list' feature can store the currently loaded files and cursor positions for instant recall using the 'Load file list' option.

Abbreviations: this feature loads an ASCII format abbreviation file into memory. A list, which you prepared earlier, contains your commonly used phrases and keywords. Everest can now automatically expand any keyword you type into your chosen phrase, a very powerful tool.

Error messages: programmers can configure Everest to respond to compiler specific error messages. After entering your compiler error messages into the dialog using the "%" marker for the filename and the "#" marker for the line number Everest can now search the compiler generated error file and if any errors are found Everest automatically loads the relevant file and displays the error in a topped window with the cursor placed at the start of the offending line.

To register your copy in the UK take the following steps:

1) Write a cheque or Postal Order for nine pounds made payable to: Mr J. E. Connor

2) Enclose a blank, unlabelled disk and stamped addressed envelope for the return of your labelled Everest master disk and send it to:
Joe Connor, 65 Mill Road, Colchester, Essex CO4 5LJ.

Registered users can obtain the latest English version at any time by following step 2 above.

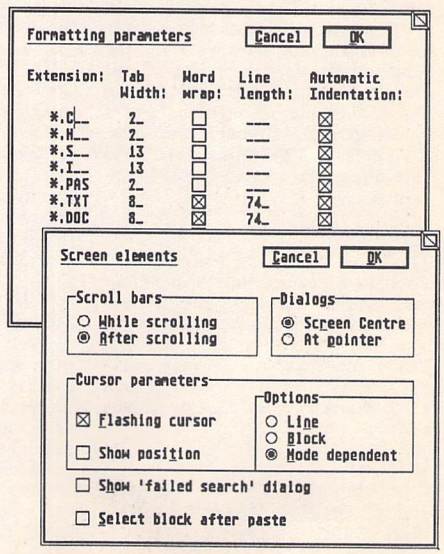
Current Shareware versions:

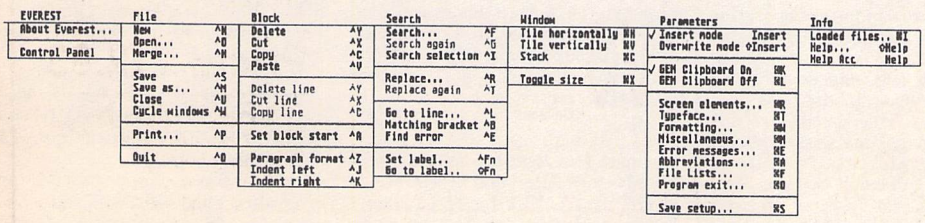
Kandinsky 1.57e
Winlupe 6.6
Selectric 1.10e
Everest 3.0e

Below:

The formatting parameters of your most commonly used filetypes can be preset making it easy to move from editing an INF file to typing in a letter. Automatic Indentation is especially handy for programmers, positioning the cursor under the first column used in the preceding line.

The scrolling speed in Everest is very fast but can be increased still further using the update cursor after scrolling option.





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Please use the form on page 58.

For Sale

Sequencer One Plus, latest v1.3, and sample series disk 2 (guitars and strings). All boxed c/w manuals. Gajits allow re-registration. Both together for £25. Tel. 0494 872449. (39)

Protext v5.01 £25, Protext v5.53 £40, Taxan Supervision colour monitor £190, Star LC10 colour printer £95; all plus p&p. Tel. 081 553 3780. (40)

Atari ST User magazines, May 87-Aug 91. 50p each + p & P. Tel (0827) 330427. (40)

2.5MB 520 STFM, 124 mono monitor, second drive, Star LC10 printer, some software, etc. £250. Mid-Wales 0654 710987. (39)

Atari STFM 4MB, fitted with AT-Speed, MS-DOS emulator £250, SM124 mono monitor £60, Signum 2 £25, Protext 5 £25, Harlequin 2 £25, NeoDesk 3 £20, all original software, boxed with manuals, all above for £350. Tel: Tony on 0532 531960 after 4pm. (40)

Dual 5.25" and 3.5" Cumana external disk drive £40 plus postage, Master-sound sampler £8, Playback stereo cartridge £8, games £5: Maniac Mansion, Leisure Larry Lounge Lizard, Leaderboard 3D golf, Pictionary, Fun School 2, Steve Davis Snooker; or any 3 for £12. NeoDesk 3 new, unused, unregistered £8, Blitz Copier £5. Tel John 0323 500910. (40)

Flexidump Plus £5, UIS III £3, Blitz Copier £5, games £3 each: Star Wars, Wizball, Vampires, Empire, Backlash. Mi-print £2. All originals with manuals. Tel: 0323 500910. (40)

STM 2.5MB, TOS 2.06. Twin floppies, SM124 and colour monitors. Forget Me Clock, Fast Basic cartridge, Micro Prose golf, Railroad Tycoon, Civilisation, Fontkit, Calligrapher Pro v3, Wercs, Populous, Degas, F16, Falcon. ST Apps (most issues), books, Concise guide, ST Internals, etc. Lots of PD and cover disks (ST Format/Review). Also Citizen 120D 9-pin printer. Will split. Phone Ian on 0753 867595 (Berks.) with offers. (40)

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Tweety board stereo card £5, games all £2 each: the Karate Kid Part 2; Cards; International Soccer; Defender of the Crown. Phone Andrew More on 081 651 2529 (eves). (40)

1040 STF 4MB Ram TOS 2.06 £200, SM124 mono monitor £60, Spectre GCR v3 £150, 4-way serial switchbox £15, 2-way printer switchbox £10, 2-way auto printer switch £30. Tel Chris on 0530 244653. (40)

Atari ST games £7 each or nearest offer: Graham Taylor's Management, Speedball 2, Lemmings, Mercenary 3, Storm Master. £8 or nearest offer for Football Crazy (Kick Off 2, Player Manager and Final Whistle); £5 each or nearest offer: Blood Money or Puzznil; £3 ono: First Division Manager, North and South, Flip It and Magnose, Onslaught and Asterix. Phone 021 351 4909 eves only. (48)

Atari ST Tricks and Tips book £7, ST Disk Drives Inside and Out £8, Your First ST Basic Manual £6, Korg Wavestation Performance Library for ST High Resolution £10, ST Partner multi accessory £10, NeoDesk 3 £10. Fred 0633 266647 evenings. (40)

Atari ST 4MB Ram, 16MHz Turbo processor, TOS 1.4, 40MB hard disk (ICD interface with clock), 2 d/s 3.5" floppies, Overdrive display enhanced, NVDI GEM extensions, Colour and mono monitors with c/over switch, fitted in Tower case (separate keyboard), Golden Image hand scanner with TouchUp software. Hundreds of disks (many original games and utilities) and assorted spares and accessories £450. Star NL10 dot-matrix printer £70, AT Speed PC emulator £50. Phone 0372 274410. (39)

Desktop publishing, Atari 1040 STE computer, Atari SM124 mono monitor, Atari Megafile 30 hard disk, Gasteiner Speed Mouse. Already loaded with Fleet Street Publisher and Timeworks, full manual and disks, all in original packing; and quantity of other programs. Just add your printer to start producing. £500 for quick sale. Ring Brian Martin on 051 489 9733 after six. (40)

SM 144 mono monitor £80, Phonic Faxmodem and software (9600 fax,

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The complete morse trainer and simulator, with realistic 'on-air' emulator and integral editor, with complete control of your listening equipment. In addition to sending, your Atari can also receive and decode morse from your own key using the supplied interface cable. Send Cheque/PO for £29.99 payable to Boscad Ltd at: 16 Aytoun Grove, Balbridgeburn, Dunfermline, Fife, KY12 9TA. Telephone (0383) 729584 evenings for technical information.

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The ST adventure magazine on disk! Reviews, solutions, hints, special features and much, much more. Runs in colour only. Produced bi-monthly. SynTax costs £3.50 an issue, £20 for a year's subscription. Cheques made payable to S. Medley should be sent to: 9 Warwick Road, Sidcup, DA14 6LJ.

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This self-tutorial guide incorporating sections on frame drawing, entering text, changing fonts and styles, importing text and images, drawing boxes and lines, loading, saving, printing, text rulers, headers and footers and page numbers. Available at £5 (including postage) from: David Waller, The Sandon School, Molram's lane, Great Baddow, Chelmsford, Essex, CM2 7AQ. Cheques should be made out to 'Sandon School'.

Genealogy

Newgen, my genealogy program, runs on any ST(E) or TT and is easy to use; it will print family trees, etc. Send large SAE for details or £17 for program. E G Richards, 2 Peckarmans Wood, London SE26 6RX.

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Use up to four light beams with your ST. Measure speed and acceleration. Write data to disk for spreadsheet. Invaluable for science National Curriculum AT4. High resolution only. Software and manual with full details £20. Cheques payable to:
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Graph, Euclid and Stack

GRAPH can draw simple functions, implicit functions, parametric and polar functions and display the gradient functions of any of these. It will also display the solutions to first order differential equations and do a simple plot of complex functions. The zoom facility can also be used to find accurate solutions to equations.
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Both these programs can save, reload, and print the drawing made by them.
STACK is an arithmetic calculator (Hewlett Packard type) for use with very large whole numbers. It will factorise smallish numbers (up to 15 figures) quite quickly.
Cost: £10 for a disk containing the programs, documentation and some examples. Michael Girling, Camel

2400 modem) £80; Forget Me Clock £5; Rossiter DeskJet buffer £10; Lattice C v5.5 £20, plus others. Phone 0489 577860. (40)

Sheet feeder for Star LC-10 printer, hardly used, £25. Thunder Hawk £8; Outrun £4; Star Wars £4; Lombard RAC Rally £4. All prices plus p&p. Call 0903 502596 eves. (39)

Mega STE 4 50MB hard drive with PC emulator fitted, VGA monitor, hand scanner, second floppy drive, all boxed. £750. Progate 50MB hard drive Series II boxed £200. Canon BJ-300 boxed £200. Some serious software and games. Phone 0737 761861 after 7pm or weekends (Surrey). (40)

HiSoft C Interpreter £25, HyperPaint £6, VIDI-ST (mono) £35. Tel 0709 895707. (41)

Compute! Tech. Reference vols 2 & 3: Programmers' Reference Guide (Peel): Programming the 68000 (Williams) £5 each. Tel: 0363 772599. (40)

Speedo GDOS, £25 inc. P&P. 3 disks in HiSoft wallet and manual. Original cost £40. Call 0272 730984. Ask for Phil. (39)

ST Internals, Atari ST Machine Language, Introducing ST Machine Code, Real Time 3D graphics for the Atari ST, Computers and Chaos - ST edition. All books in excellent condition. £60 ono. Tel Chris on 061 344 0684 after 5pm. (40)

ST Applications - I am deserting the PC for the Atari Falcon and have a lot of PC original software that I would like to swap for ST/Falcon software and hardware, eg Pagemaker 5 for Windows, full package swap for Calamus

Hard disk 104MB. Cased with PSU and controller to plug on to any ST. Very fast. Loaded with loads of utilities, art, music, etc. Also hi-res SM124 monitor. £250 - will split. 0602 490614 or mobile 0850 527443.

SL. Phone 0282 415630. (39)

EVS-1 synthesiser module £100; Quantum Paint £4, HyperDraw £4, Band in a Box v4 £10. Call Steve 0633 892749 eves. (42)

Canon BJ-200 printer, cables, switch box £185; Star LC24-200 Colour printer, ribbons, cables, Flexidump 2 £130; Migraph 400dpi H-scanner, OCR & Touchup £85; Kempston scanner, Super charged Easydraw + Tools, Hyperpaint, Art Studio, MasterCad (all boxed with manuals) £80, Spectre GCR ROMs, extra drive cable, Apple System disks, GDT Printlink (Epson, etc.) Drivers, Ghostscript £100, Vortex HD+ 40mb autopark hard disk + cables & FMN clock cartridge £110; Vortex HD (as above - can be chained), Neodesk 3, Knife ST, Superbase, Word+,.acc PS driver £150; Cyber:- Studio, Paint, Control, Sculpt, HQ Renderer (all with BIG manuals) £50; Hisoft PowerBasic, Modula-2, Wercs, GFA basic, compiler, GEM book £35; all Microprose sims (all in boxes - excellent condition), F29, Falcon, Flight Sim, Vroom etc.; Please call DAVID on 0604 586387 (after 6:00pm). (41)

Wanted

4/40 Stacy. Tel 0738 37165 eves. (40)

Scanner owner: could you scan a couple of black and white pics for me for a small fee? Can't justify a scanner of my own. Laurice 0732 357648 after 6pm. (39)

Modem 2400 baud minimum. Ring 021 743 3828. (39)

At Once 386sx PC emulator for Mega STE. Colour graphics card for the VME bus also wanted. Tel: 0483 233419, ask for Toralf. (39)

A4 or flatbed scanner and suitable software for use on Mega STE 4, preferably 600dpi but anything considered. Cash waiting. Tel: Steve (0276) 21469 at 67 The Avenue, Camberley, Surrey GU15 3NF. (40)

General

Atari clearout: 700 disks plus manuals plus books, 1meg STFM Blitz copier, monitor, switchbox plus 8 disks of HAM radio £12 plus p&p. 0983 615987; 30 The Mall, Binstead, I.O.W. PO33 3SF. (40)

Full set of New Computer Express from issue 1 to final, plus part work (not bound) "The Home Computer Course", published by Orbis (1983) - good reading for computer historians. Make a donation to Guide Dogs for the Blind and take them all away. Phone 0295 255081 (Banbury, N. Oxon). (41)

Calamus 1.09N/S (please include fonts) and That's Write/Write On files printed on HP LaserJet 4L for 25p (incl. p&p) per A4 side. State single/double-sided. Send disk, cheque/p.o. and contact no. to: K. Hornby, 33 Ingleton Drive, Lancaster LA1 4RA. (40)

Call the Fractal BBS. Loads of features and very friendly. 2400BPS after 9pm on 0305 266304.

The Bird Brain BBS - 0305 860245 10pm - 10am every night, all welcome. (43)

I'll Try That Once! ST Based BBS. Loads of File Area's, 60-70 Message Echo's. 10 Online Games. All speeds V326 V426. Give it a Go! on 0453 765378 8pm to 8am. (40)

Membership of the Cheshunt Computer Club is the essential accessory for your Atari. If you live within reach of Herts then give me, Derryck Croker, a ring on 0923 673719 with your name and address and I will send you details. (R)

My Little Phoney BBS (0793) 849044 - all speeds up to V32bis and HST. Specialist Atari ST BBS, carrying all Atari-relatedfidonet and Nest Echoes, and importing international ST file echoes (AFN/ADN). High speed and technically aware callers are especially welcome! (R)

Crystal Tower BBS 081-447-8244 24hrs 300-2400 Baud (Towernet System) Atari ST, PC, Languages, Comms etc + much more. All welcome. (R)

Guide Dogs for the Blind Appeal - Please send used postage stamps to help this worthy cause to: 19 Dunloy Gardens, Newton Abbey, Co. Antrim, BT37 9HZ. (R)

Professional typeset from 1st Word disks. Over 100 Faces. Output to high quality PMT. Much better than laser. Also cheap printing A5/A4 single colour. Contact: AZTRAL Games, PO Box 8, Lowestoft, Suffolk, NR32 2AS. (R)

The Confederation BBS - Support bbs for all "HITCHHIKER" software releases and GFA programmers. All the latest PD/Shareware from Europe and USA as well as Netmail message areas. On line each evening 10.00pm to 7.00a.m., at all speeds up to 2400. Give us a call today and you will not be disappointed as we are the most friendly BBS in the country - dedicated ST BBS only. 0533 413443.

'Alternatives' fanzine - Quarterly. £1 per issue. Issue 9 out now (Autumn), Issue 10 out soon. Send £1 (which includes p+p) and address to Alternaties, 39 Balfour Court, Station Road, Harpenden, Herts. AL5 4XT. Writers, visionaries, artists needed. Details to the above address.

DNA BBS. Ireland's first, only and best Atari BBS. On line specialist technical and MIDI help. High speed callers especially welcome. Instant access on first call. A Ratsoft/ST BBS. Call (24hrs) +353-1-549029 (V32BIS). (50)

Contacts

Mature (OAP) ST contacts, to exchange news and views in general and ST software in particular. Please write to: Geoff Lovett, 12 Marina Drive, Marple, Stockport, Cheshire SK6 6JF. (39)

Falcon contacts wanted! Do you own one of these fantastic machines? If so, let me know. Write to: Frank Myrland, 3853 Vraadal, Norway. (40)

Are there any ST user groups in South-East London? If anyone is interested in forming a SE London ST DTP group (or could put me in touch with an existing group), please contact Ian Elvey, 30 Overhill Road, East Dulwich, London SE22 0PH; Tel: 081 693 1735. (40)

Quarry House, Wadebridge, Cornwall PL27 7HZ.

DEGASART v2.0

Demo disk of the above compart tutorial is now available. Please send a cheque/P.O. for £1 or a blank DS disk and an SAE to Keith Markland, 15 Stourton Road, Ilkley, W. Yorkshire LS29 9BG.

Morse/RTTY Transceive

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STA39

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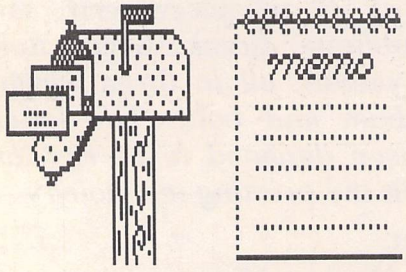

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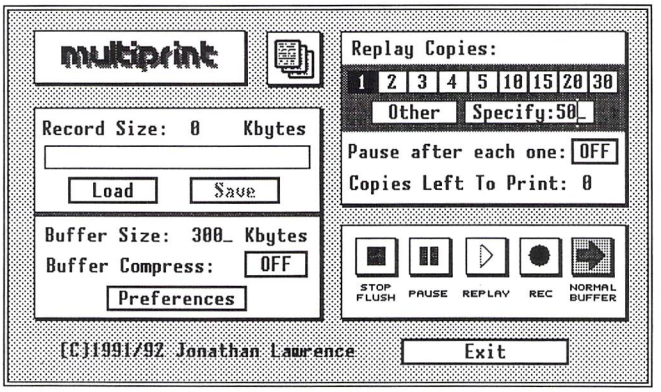
Multiprint



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X-Debug

Advanced Debugger for Atari ST/TT computers

X-Debug is an advanced debugger for the Atari range of computers. It is both a low-level debugger, showing memory dumps and register contents, and also a medium-level debugger, understanding about certain high-level languages and allowing source display single-step, and local variable access, for example.

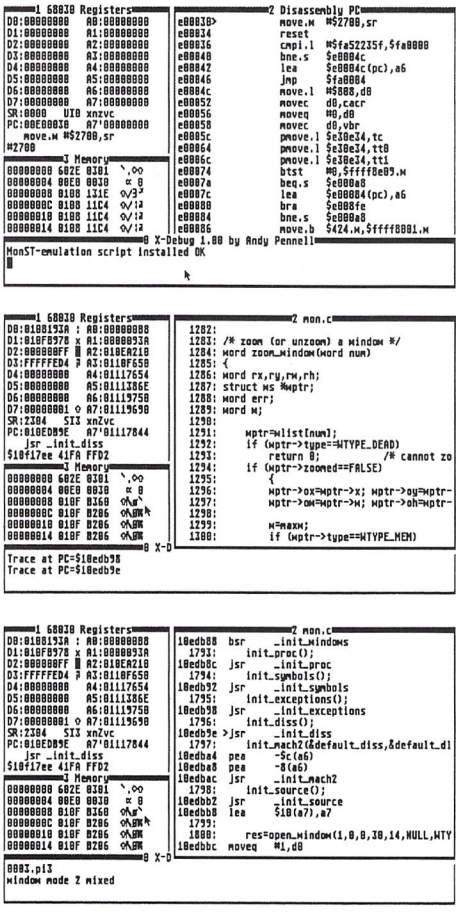
The best support is for Lattice C, as that is the only compiled language that outputs full debug information, but it also supports line-number debug (as created by HiSoft Basic and Devpac 3), and symbol-only debug (usable with virtually all ST compilers).

Crucial to the whole debugger is the X-Debug language. This is a simple yet powerful script type language that allows complex operations to be built up from a sequence of standard operations. It supports a full expression evaluator, aliases, and procedures with parameters. It is also an important factor in customising the user interface, allowing specific commands to be attached to particular keypresses.

X-Debug runs on STs and TTs with any monitor type. One megabyte of RAM is recommended, and TOS 1.4 or later avoids problems with larger programs. Written by Andy Pennell, the creater of MonST.

£24.95

The ST Club
2 Broadway
Nottingham
NG1 1PS



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