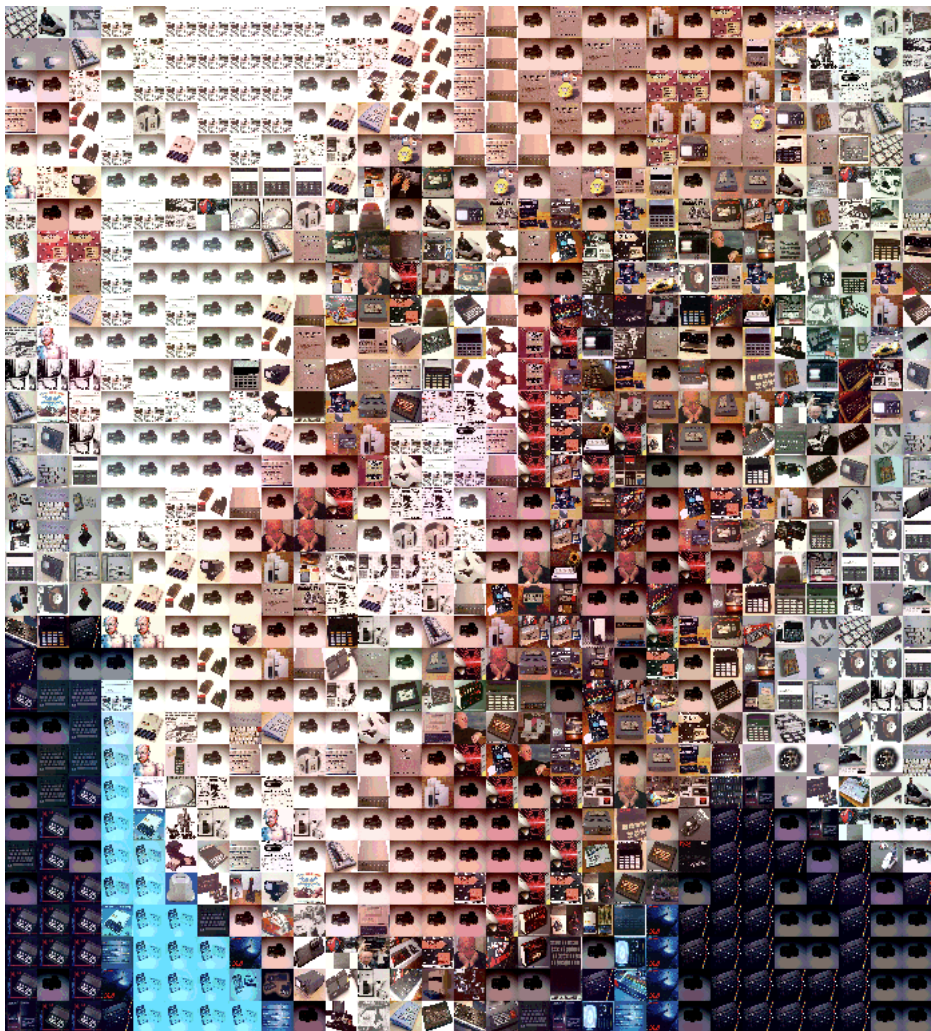




Spectrum computing today



Coming back to Sinclair?



PRICE LIST

New:

PC-PSU with supply for 2 Floppies and MB02	36,00 €
MB02-Printerlead	13,00 €
Spectrum +2A, new and original package, complete	220,00 €
Diskinterface D80 + Flopppy for Didaktik or Spectrum	111,00 € KS
B-Laufwerk for D80	60,00 € KS
Proface AT Extern (Keyboardinterface for connecting PC-Keyboards to Spectrum)	55,00 € KS
Proface AT intern	52,00 € KS
Melodik AY-Soundbox (unboxed)	21,00 € KS
128k upgrade Kit for 48k (only Hardware Specialists)	21,00 € KS
128k upgrade Kit incl. building inside (send Spectrum board)	52,00 € KS
Mice Maus (Mouse using Kempston Port)	25,00 € KS
+2 Cassetterecorder	36,00 €
Floppy Disc drive (1,86 with MB02, 720k with Opus, 780k with +D) Please specify	24,00 €
PSU for +2A/B and +3 or PSUI for +2 (also 48k and 128k) Please specify	31,00 €
FDD lead for 2 drives	4,00 €
Microdrive	25,00 €
Multiface 128 (working also on 48k)	26,00 €
Dust Cover 48k+/128k	8,00 €
Keyboard membrane 48k	11,00 €
Keyboard membrane Spectrum +/128k, new quality, not aging	21,00 €
Printer Ink Ribbon original STAR LC 10 , Doublepack 2 pieces	11,00 €
Microdrive Cartridges (ex-software)	3,50 €
Plus 3 Tapelead	10,50 €
Spectrum +2 Lightpen	36,00 €
Spectrum +3 Lightpen	27,00 €
Silverpaper for ZX Printer	5,00 €
Phaser-Pistole with Software (Tape or +3)	20,00 €
+3 drive belt	2,00 €
Wafadrive Cartridges	16K= 7,00 €, 32K= 7,50 €, 64K 8,00 €

Used:

Sinclair ZX Spectrum 128k, complete with all cables	144,00 €
Sinclair ZX Spectrum +2, complete with all cables	70,00 €
Sinclair ZX Spectrum +2A, complete with all cables	65,00 €
Sinclair ZX Spectrum +3, built in 3li drive, complete with all cables	100,00 €
Sinclair Spectrum 48k (Gummy), complete with all cables + Introduction Tape	64,00 €
Sinclair Spectrum 48k +, complete with all cables + Introduction Tape	64,00 €
+3 Drive (tested)	74,00 €
Interface I	62,00 €
Opus Discovery Diskinterface with 1 x 720k Drive (new ROM)	118,00 €
Joystickinterface	1-Port 3,00 € 2-Port 11,00 €
Joystick (many different)	2,50 €
Sinclair SJS-Joystick (+2/+3)	6,00 €

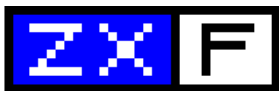
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Tel./Fax: 0049 711 775033

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AUTUMN 2002/Issue 2

Contents



Eight - that's right: *eight* - pages of Spectrum news (5-12)



Remake review: PeeJay's Maziacs PC (13)



What you thought about ZXF 01 (14-15)



The ZXF interview: Alex Goryachev on the Sprinter (16-20)



Back to the Spectrum: your ZX2000 user guide (22-26)

From Bitmap to Screen\$: loading screen tutorial (27-31)

+3/2A SCART lead: improve your Plus 3 picture (32-33)



The Genuine User Friendly Interface (34-35)

Errata (ZXF01)

Page 22 - **goto** - The entry for ZX32 should have (05/04/00) entered under 'updated'; under 'Save to tape (TZX)' it should read 'Yes'

Page 8 - **new** - The download URL for Metalbrain's SevenUP is incorrect. See this issue's **new** for correct details. Also on this page, the fourth line up from the bottom of the right hand column should read "(listing on page 12)"

If you enjoy ZXF and you want it to continue then consider yourself duty bound to let me know this (mail@cwoodcock.co.uk). All other feedback will be gratefully received also - criticisms (please be kind), improvement suggestions and notifications of any errors you think you've spotted are essential for this sort of project to succeed.

If you would like to contribute to future issues of ZXF - even if it's just to write a letter - **please do**; contact me again by the email address above.

Editor: Colin Woodcock

Thanks to: John King, Alex Goryachev and Thomas Eberle.



ZXF/02 page 4

Coming back to Sinclair?

Computers today are everywhere. How often have you heard that before? It's exactly what people like us were predicting 20 odd years ago to somewhat cynical ears - guess what: it actually came true; divorcing computers from the fabric of our lives today would be like splitting up Microsoft: desirable for many, but ultimately far too much hassle to be bothering with for real. In many ways, it's brilliant. In many other ways, it's just plain dull. And the more these machines become embedded in the daily grind, the duller they seem to get. The abilities of the average 'work computer' would have blown us away not so long ago, but there they sit, running Office, looking beige (even the trendy new black ones), next to the fax machine and an in tray. Just appliances. Just tools to get the job done.

Why go back to the Spectrum? The answer's really not at all that complicated. Why go camping? Why listen to radio? We've known for time aplenty that less is often more when it comes to escaping the stresses of a working life. And these days, as the pace gets faster and faster still, the need for less and simpler and slower is perhaps greater than it has ever been before.

In recent months I've started collecting Spectrum hardware for a new little project of mine, a device I intend to call the **ZX-BOX**. The idea came to me when I looked at LCD's home page and I've since discovered that at least one other enthusiast has hit upon my idea exactly. Beyond that I'll keep you guessing for now; the point is that this idea marked my return to Spectrum hardware - out came the old 128 and Plus D interface from the taped-up

box under my old bed - for the first time in a good ten years, I might add - and I've been searching the local car boot sales and ebay listings ever since (and just this by itself has been a lot more fun than I would previously ever had imagined it could be - especially the drama of an ebay auction!). I don't have to do any of this and the end result I already know won't be much to speak of by today's standards in technology. But the problem-solving processes I'll go through on the way will take me right back to those simpler days, when you wanted more - yes - and ingenuity was the way that you got it.

If you're just returning to the Spectrum scene then this issue of ZXF is dedicated to you. Things have moved on a bit since you were last here, but you'll soon get used to the changes and start feeling at home again. The Spectrum scene is an active one: there's plenty to get involved in, no matter what 'level' you are; so pull up a chair and get stuck in.

And one final note: let's not forget that hobbies such as ours are a luxury far from the minds and lives of the vast majority of people on this planet. May I ask you to pay particular attention to the back page of this issue: a small, but very deserving charity that I once worked for as a childcare volunteer. Some of you wrote to me saying ZXF was a magazine you would pay for; I'm not asking for that, but if you do have a pound or two spare in your pocket I know the White Cross would make good use of them. Just a suggestion.

Until next time.

Colin Woodcock

mail@cwoodcock.co.uk



Double the fun

> +3e ROM for 16 bit IDE interface

One of the drawbacks of Garry Lancaster's +3e IDE hard disk interface (see last issue for more about this project - featured recently, by the way, in Shaun Bebbington's **Retro Computer Mart** page in **Micro Mart**: nice one Garry) is that half of the disk's capacity is lost in the conversion from 16 to 8 bit; a 1Gb disk will only give you 500 Mb of space on which to store your Spectrum programs, for example (which must be just awful).

In fact, 16 bit IDE interface designs do exist for the Spectrum - a whole range of interfaces designed by Sami Vehmaa and called ZXATASP (see <http://home.sol.se/amiga/>), and now Garry has released a new version of the +3e ROM to be compatible with them. The interfaces themselves look like monsters compared with Garry's simple little device, still winter's coming and something's got to fill those long evenings. For the ROM, visit www.zxplus3e.plus.com.

Spanish SPArkLe

> New Spectrum archive online

SPA2, the **SPANish SPectrum Archive** is a new website of "a project aimed at the collection, storage and preservation of every Sinclair Spectrum program ever released in Spain," and it launched on 16 September. The site, sort of the Spanish equivalent of WOS, opened its doors with no less than 500 titles already available in TZX and DSK format, and it also aims to collect inlays and instructions. The Spanish contribution to the Spectrum is often underacknowledged - this site, along with the great new **Es.spectrum** emulator (see *Emulator News*) should help broaden the picture. And the site is in English as well as Spanish, so you really have no excuse. Get over to www.speccy.org/spa2/ right now.

More miner action

> Willy's continuing adventures

Miner Willy (I played it safe there with that title, didn't I?), the character that has become an icon of the ZX world, is in no danger of losing his appeal, it would appear. New to the MM scene over the last few months are the JavaScript version of Matthew Smith's 1983 classic and, just recently, a new spectrum version featuring themes from the **comp.sys.sinclair** folklore.

The first of these really is quite a sight to behold, four levels of the original game in pure JavaScript (no, not Java - JavaScript), coded by **Carl Woffenden** and to be found online at www.bigredswitch.co.uk/games/manic/. Although this version has no sound, the graphics have been taken straight from the original (minus the colour clash). I really didn't realise you could do stuff like this in JavaScript; as one CSSer put it, this is "the single most best use of JavaScript I think I've ever seen."

Manic Miner CSS, on the other hand, is a new spectrum version of the game, put together by N Fishwick (**Fishy Fish** in CSS) using **Andrew Broad's** *Manic Miner Screen Editor* and featuring such levels as *the Chuntey Generator*, *Scribbler's Fridge* and *L @ @K, W @ W, R @ RE!* *** Described by Stuart Campbell already as "the best MM 'sequel' I've seen," you can download the game from www.fishyfish.net/manic/

Andrew Broad himself is something of a Miner Willy guru, having released a number of MM sequels over the last five years, including *Manic Miner 4* and *Manic Miner: The Hobbit*. His amazing site at www.cs.man.ac.uk/%7Ebroad/spectrum/willy/ contains a wealth of MM information, but will be closing soon as he is due to leave university (where it's hosted). So get over there whilst you still can (and hit Save).



Crap is back

> CSSCGC 2002 launches

Equinox Tetrachloride has taken on the challenge to host this year's **comp.sys.sinclair Crap Games Competition**, and the entries are already coming in. This year's contest is the seventh annual celebration of the standard of spectrum programming most infamously established by the *Cascade Cassette 50*, nineteen -count 'em - years ago.

For those of you uninitiated with this ancient ZX tradition, Eq's introductory text at www.cl4.org/comp/spectrum/cgc2002/ tells you pretty much all you need to know:

"CGC entries are laughably poor homebrew Spectrum games, usually written in the powerful BASIC language.

"Some of these games delve richly into a putrid goldmine of special effects: beepy sound, colour clash, the lot. Others are just pseudo-games that hinge upon cheap jokes. As long as the game is crap and somehow amusing in its crapness, it is a genuine contender for the mouth-watering prize."

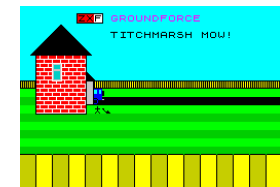
If you're a returner to the Spectrum scene, you'll no doubt be looking for a *reason* to program with purpose, just like you used to: here it is, and what's more you can do it secure in the knowledge that your clumsy coding will actually be considered a feature.

If you need guidelines, check out "So, you wanna write a crap game" at www.unsatisfactory.freemove.co.uk/crap.html

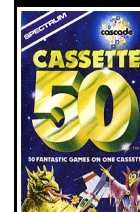
ZXF's own entry, *Groundforce*, saw lack of quality simply oozing out of ZX SPIN for a frightening number of evenings; meanwhile, my old mate Gareth has released his own foray into the dregs, sharing with us

all in *Ferrari Driving Experience*, his recent day out at Thruxton and advising that "playing the game is virtually indistinguishable from the real thing."

Check out the loading screen tutorial in **exp** to find out how to front-end your creation with a work of spectrum art, and also a few BASIC loader tips (if you don't know what that is, read 'Back to the Spectrum' first).



The Cascade Cassette 50



"Congratulations! You are now the owner of the sensational 50 game tape called CASSETTE-50 brought to you by CASCADE"

Can it really be as bad as they say it is? Actually, it's worse. The Cascade Cassette 50 compilation (Cascade, 1983) is the most appalling collection of BASIC games ever conceived, marketed with complete and utter absence of conscience. Not even magazine type-in listings were this bad. No really. But for something to be as thoroughly dreadful as all that, it invariably falls off the bottom of the bad scale and ends up at the top of the good one. So actually, it's brilliant.





Emulator news

OVERVIEW: New directions in Spectrum emulation

A busy few months it's been indeed, with two brand new emulators hitting the scene and updates implemented in many of the existing titles, a few of which we haven't heard of in a good while. All of this, by itself, is blimmin' marvelous stuff, but the planned enhancements to SPIN are especially exciting. TZX management seems to be one of the most significant areas of emulator development over the last 12 months and the current direction being taken is giving us increasing amounts of control over our virtual little cassettes. And quite right too. The tape recorder might have been physically external to the early Spectrums, but so integral was its being to the use of the computer, it was to all extents and purposes a fully fledged part of it; it too needs to be emulated right alongside the Spectrum itself, and emulators such as **Spectaculator** are doing a particularly good job of this at the moment.

With both **Klive** and the new beta release of **Spectaculator** featuring both the Currah Micro Speech and the Cheetah SpecDrum on their list of emulated features, a new corner seems to have been turned in peripheral hardware. Previously the remit only of the likes of **RealSpectrum** and Gerton Lunter's **Z80**, peripheral devices have been studiously avoided by many of the 'mainstream' emulators until now. But with the emulation of the main machine and all its variants now generally about as close to perfect as it's possible to get, some new directions are needed for authors if they are to keep on improving their babies and outdoing their competitors (let's be honest here - it's *because* there are so many Spectrum emulators that their quality is so outstanding). The implications of all of this are quite exciting.

ES.PECTRUM

Es.ppectrum is a new Spectrum emulator by Javier Chocano, released recently in beta. The emulator supports a wide range of machines, from the original 48k to the +3. Previously only supporting tape based machines, the latest version as I write (0.6b2) has been updated to include .DSK support; in testing, a few disk images seemed to work fine, however Operation Wolf crashed fairly quickly and when I tried to format a new disk I was told it was write protected... emulate your way out of that one if you can.

Where **Es.ppectrum** breaks the mould is in its support for foreign models, including the entire range of Spanish Spectrums (there's even a Spanish +3e), a French +2 and Pentagon/Scorpion support. This gives us UK users access to new Spectrum perspectives, including the original 1985 128k

Spanish operating system - a kind of 48/128 hybrid (no tokeniser, but also no menus) - which was developed, of course, into the UK 128 system for a (desperate and futile) launch by Sinclair in the following year.

Es.ppectrum also supports the Magnum Lightgun bundled with +3s and +2As - is, I believe, the first emulator to do so - giving you mouse controlled access to the handful of games that supported this device (not quite the same as a real gun in your hand, but if you've ever handled the Magnum you'll know you're not missing much). Get it from www.espectrum.tk.

KLIVE

Another new emulator: **Klive** by Steve Snake has taken us all by surprise. Coming quite out of the blue, this is a fully

Emulator news

blown emulator of all Spectrum models (but not the +3e) which includes support for both the Currah Micro Speech (see below) and the Cheetah SpecDrum. Version 1.1 of the emulator, released just a few weeks after 1.0, also supports real tape loading through your soundcard and loading from mono .WAV files. You can load and save .SCR screen\$ files (for some reason, many emulators that allow you to save .SCR files don't also allow you to load them back in, so this is a definite bonus) and - what fun! - there is also an option to increase the speed of your emulated Speccy, taking it full throttle to 'Max Power!' if you so desire (2000% on my machine): take that Bilbo Baggins' carpet.

Klive's help system leaves a lot to be desired, consisting of a credits box only; I was left

wondering how exactly you are supposed to load in .WAV files (it isn't obvious) and when I selected Real Tape Mode I received the message "Real Tape Not Supported!" at the bottom of my screen, but as to whether this is a report on my soundcard or something to do with the status of the program I remain none the wiser. Even without these enhanced features, however, Klive is an excellent little emulator that has got the competition thinking - as we shall see - and you can grab hold of a copy for yourself at <ftp://ftp.worldofspectrum.org/pub/sinclair/emulators/pc/windows/Klive11.zip>

VBSPEC

Hello again... The Currah Micro Speech

The Currah Micro Speech, manufactured by Welwyn Electronics, was released late 1983 for £29.99. The little black box, which also acted as a sound amplifier by mixing the Spectrum's sound output with the RF television signal, was a speech synthesis device that ran together *allophones* (speech sounds) into words. And now you can find out just how good it was, courtesy of **Spectaculator** and **Klive**.

When you power up your speech-enhanced Spectrum, Currah's own copyright message appears at the top of the screen; from this point on all your key presses will be articulated until you (gratefully) discover the 'LET keys = 0' command that turns this rather annoying feature off. Actually programming the unit to speak for you is a simple matter of assigning a sequence of allophones to the variable s\$, so typing in 'LET s\$="he(II)(oo)"' will produce a reasonable "hello" when you press enter. The allophones themselves come in four flavours - single letter (as in

h and e above), double vowel (as in oo), double consonant (as in II) and 'complex' (for example ar, as in, erm, arm). For each of these sets (see a complete list at <http://mudhole.spodnet.uk.com/~majik/sinclair/thirdparty/allophones.html>),

intonation can also be made high or low by using upper case or lower case letters respectively.

A few Spectrum games (50 in total) detected and supported the Currah Micro Speech, adding synthesised messages to the action (a complete list of these games can be found at

www.worldofspectrum.org/infoseek.cgi?Currah*speech). If you've got a copy, try loading up **Jetman** and listening to what our hero tells you when your careless joystick management ends him up dead (yet again). The cheeky blighter.



Emulator news

vbSpec, the Spectrum emulator by Chris Cowley written entirely in Visual Basic (don't ask why, just accept it, ok?) has been updated to version 1.50 and now supports fully .TZX files, including a little cassette tape interface. Chris credits Mark Woodmass (co-author of SPIN) for his help in this work. Download it from <http://freestuff.grok.co.uk/vbspec/>.

SPECTACULATOR

A massive update for Jonathan Needle's lovely **Spectaculator**; not only has 128 support been added at last (128+ and original +2 only), version 3.0 beta also features the Currah Micro Speech and the Cheetah SpecDrum (now where did he get that idea from...?). Although this is a beta realease, it runs like a thoroughbred on my machine; the main reason for the beta suffix, in fact, is that Jonathan has yet to update his excellent help system to include all these new features - and since he's just become a daddy it's unlikely he's going to find the time for this in the immediate future. Ain't that the truth.

This is the second update to Spectaculator since the last emulator roundup in ZXF 01, version 2.5 (released in July) having added in Romantic Robot's Multiface 1 to the emulation; accordingly, version 3.0 now supports the Multiface 128 also. You can download this fantastic emulator - still the best for creating your own .TZX files, as far as I'm concerned - from www.spectaculator.com. And here's a tip for Jonathan - when all else fails, the vacuum cleaner opens puts babies to sleep; welcome to the bizarre, but beautiful world of parenthood.

REALSPECTRUM

The one we've all been waiting for (and then

kind of forgotten about, amidst all this activity) now has a name. Described by **Ramsoft** staff as "another revolution in Spectrum emulation," **RealX**, the "next-generation RealSpectrum optimized for DirectX" is (still) on its way. In the meantime we have a new update to the classic RealSpectrum to keep us occupied while we wait. Version 0.96.16 (beta 13), otherwise known as "Katun," adds in support for the Rotronics Wafadrive (a looped tape storage device not unlike the Sinclair Microdrive) and thus we have yet another file format: the format specs for .WDR files are promised at the website. Katun also adds in support for the Magnum lightgun via the PC mouse.

Beta 13 has also been compiled to run under Windows: **RS32** is a separate download but essentially the same old RealSpec running in a window, and allows WinXP users the access to the emulator that was denied to them by the DOS version. Head over to www.ramsoft.bbk.org/realspec.html for more information on it all.

X128

A considerable number of spechums (I'm sorry, I hate that word; this is the first and last time I'll use it) around the world have remained faithful to this DOS emilator, despite all of the bewildering changes going on (not all of us are lucky enough to have high speed Pentiums, after all); now their loyalty has been rewarded. Version 0.94 of James McKay's creation comes with bug fixes and better support for a number of file formats, including TR-DOS. There are also a host of new "half-finished" features, such as ZX81 emulation, Interface 1/microdrive support and "an experimental attempt at

Emulator news

'movie' files." You can find out what that's all about at www.worldofspectrum.org/x128/.

Z80

Not an update, but the full version of Gerton Lunter's classic **Z80** Spectrum emulator is once again available through the new **Outlet** site reported on elsewhere in the news section. Once upon a time (three years ago, in fact) this was an amazing emulator; it's still very good, but its £15 price tag for the full version (£20 if you want both the DOS and the Windows versions) makes it the only commercial PC Spectrum emulator around that I know of, and compared to the likes of RealSpectrum... well let's just say that you get more for your nothing these days. All the same, good printer emulation - and still the only windows emulator to feature microdrive support: head over to www.fidcal.com/Outlet/.

SPIN

SPIN had been quiet for a few weeks, until Paul Dunn - co-author with Mark Woodmas of this daringly innovative emulator - bounced cheerily into comp.sys.sinclair to

announce version 0.3 open and ready for business. A lot has been added this time. A lot. To begin with there's support for the Magnum lightgun and the Currah Micro Speech (are we beginning to spot a pattern here?); there's improved support for compressed zip files and better RZX compatibility with **RealSpectrum's** version of the format. Now the interesting stuff: you can now insert a blank tape to record on via the Recording menu (although the whole process is not as intuitive as

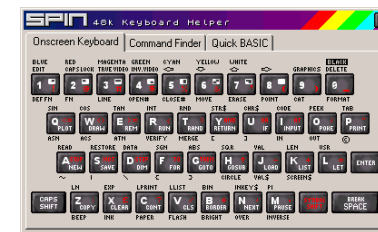
Spectaculator's approach to this: new tapes being recorded onto don't show up in the tape browser as they do in Spectaculator - to all extents and purposes recording and playback are treated as completely separate, handled by different buttons and menu systems) and there is now basic support for block editing, allowing you to cut, paste and insert new blocks - previously you needed dedicated software such as **Taper** to manage such tasks.

But that's not all. New also to this version is the 'keyboard helper' a keyboard input window that is, quite simply, superb - both the idea and its implementation. We've needed something like this for ages; Spectaculator's keyboard map is good, but this is better: not only does the helper find all those awkward commands, symbols and punctuation marks, it will actually input them for you into the emulation window too.

In fact, the keyboard helper offers not one, but three different ways of doing this. First is the Onscreen Keyboard (pictured), the keys of which you click with your mouse and behave exactly as the keys on the real

thing do. Second is the Command Finder, which features an alphabetical scrolling list of commands, symbols and modes, which can be clicked on and entered. Finally there is the Quick BASIC window, into which you can type your line of BASIC into a text box and have it sent to the Spectrum as either an ASCII string (for 128k modes) or 48k tokens.

<ftp://ftp.worldofspectrum.org/pub/sinclair/emulators/pc/windows/SPIN03.zip>. Have fun.



Above: The SPIN keyboard helper. Genius.



1k Minigame compo finishes

With the submission deadline reached on the 1k Minigame competition at www.ffd2.com/minigame/, voting is currently in progress to decide upon the winner. The contest, open to most (if not all) emulated 8-bit platforms and which required games submitted to be no more than 1024 bytes in total, featured no less than 10 Spectrum entries, ranging from *Spectris* (wonder what that one's about) by Paolo Ferraris to *Dotathon* by Russell Marks. Voting closes 7 October.

New Outlet

Outlet, the disk based Spectrum magazine produced by **Chezron Software**, is now available again from their new site at www.fidcal.com/Outlet/. Chezron - now renamed *Fidcal*, won't be producing any new issues, but their entire back catalogue of some 450 issues can be bought from, at £2.00 a disk for 1 to 5 disks (more than that and you get a discount). The disks are in Plus D format (which *RealSpectrum* can read).

Congratulations returns

The site which aims to "provide you to the ending sequences to the games you thought you'd never see, mainly because you were crap at them" (Scribbler) is back after a year of absence. **The Congratulations Archive** is at www.congratulations.co.uk.

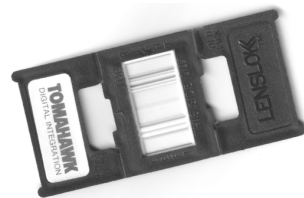
HiSoft BASIC online

Cameron Hayne, author of **HiSoft BASIC**, "simultaneously the fastest integer compiler and the fastest floating-point compiler available for the Spectrum," has made available the manual for this superb utility at <http://hayne.net/Spectrum/HiSoftBASIC/>. The manual is available both as a web page and as a MS Word document. If nothing else, you can now compile your Crap Game entry into "100% machine code," which - as

we will all recall - made a game good by default.

LENSLOK emulated

LENSLOK, everybody's favourite most-hated security device, has received the emulation once-over by **Simon Owen**. **LensKey v1.0** is a tiny (11k) program that acts just like a LENSLOK was supposed to, decoding the seemingly random mess of blocks on the



screen into an entry code; the main

difference between LensKey and the plastic original, of course, is that LensKey actually works.

LensKey currently supports *ACE*, *Art Studio*, *Elite*, *Jewels of Darkness*, *Price of Magic*, *Tomahawk* and *TT Racer*, and can be downloaded from <http://homepage.ntlworld.com/simon.owen/lenskey/>

SevenuP in beta

Apologies to **Metalbrain** for linking to an out-of-date file in last issue's news. **SevenuP**, his rather smashing PC Spectrum graphics editor (in both Windows and Linux versions) has now reached version 0.61b. Since the version reported on in ZXF 02 (0.4a), documentation has been added to the download and there is new support for masking. SevenuP is now distributed under GNU General Public License (GPL) and therefore the source code can also be obtained from Metal's website. Which is www.speccy.org/metalbrain/.

I like this editor very much; it's a little on the slow side, however, so you'll need a fast

machine to run it on. Check out our feature on loading screens in **exp** to see how SevenuP can be used to clean up an image.

SE(A) change

Sinclair Extended BASIC, Andrew Owen's updated version of Spectrum BASIC that aims to become fully platform independent whilst maintaining compatibility with the majority of Spectrum software (so it could be used on any of the Spectrum or Timex machines and - in theory - other Z80 based machines), has become open source. Andrew will remain in overall control of the project, but copies of the source code can now be obtained by emailing him at aoweninoz@yahoo.com.au. He is currently after volunteers for - as he calls it - 'non-techy problems,' including such tasks as updating the Spectrum BASIC programming manual to match SE Basic and draughting an Open Source license agreement for the software.

Andrew is - as most regulars of **comp.sys.sinclair** are probably well aware, from the rush of air above their heads whenever he posts - on a different plane of Spectrum knowledgeability than the rest of us mere mortals. One person who seems to know what he's talking about, however, is **Geoff Wearmouth**, who has recently released his own modified Spectrum ROM. The **Sea Change ROM**, "a radical re-working of the ZX Spectrum ROM" which gives an extra 256 bytes of RAM by relocating the system variables in the ZX Printer buffer, is incompatible with most Spectrum software (although BASIC programs should work, and so should many of the original 16k games that made no ROM calls - for example the 'Sinclair ten' that became ROM cartridges) due to the movement of the system variables and the operating system routines. The commands LPRINT and LLIST no longer work, and the future plan is to use the space freed up by these to create two brand new UDGs (User Defined Graphics) on 'V' and

'W', bringing the total to 23. You can download the SC ROM from www.wearmouth.demon.co.uk/SEA/sc01.rom (it will run easily in emulators, such as **SPIN**, which separate out ROM files from the main program code; download the file into your SPIN directory and then, in the emulator, select View > Options and in the Hardware section choose 48k and enter sc01.rom under ROM Filename). If you want to see it in action first, Geoff has a Java version running on his web page at www.wearmouth.demon.co.uk/SEA/seach.htm

Spanish ROM translated

Yet more Andrew Owen, who has also recently released his English translation of the original Spanish 128 ROM. You can already access the Spanish language original of this, the precursor to the British 128k ROM, through the **Es.spectrum** emulator (see page 7); this update by Andrew allows us to understand it.

The Spanish 128 really is a fascinating ROM to study. As with the British 128, commands are typed in letter-by-letter, however there is no menu system and there are a number of 'new' commands, such as RENUM and EDIT (these commands were functionally available through the British menus, but not at the same level of complexity - the renumber option on the British 128 Edit menu, for example, renumbered your entire BASIC program in increments of 10, whereas the Spanish RENUM n1, n2 will commence the renumbering process at line n1 and increment by n2). Perhaps the most interesting feature is the built in text editor - complete with word wrapping - which I suppose was sacrificed to make room for the menuing system.

Get it from **Philip Kendall's** ROM collection at www.srcf.ucam.org/~pak21/spectrum/roms.html.



Maziacs PC

Programming: Andrew Canham (aka PeeJay)
Graphics: Andrew Canham & Ric Lumb
Download it from: www.peejays.remakes.org/

Here's a bit of trivia for you: did you know that Don Priestley, the original author of Maziacs, went on to write such Spectrum classics as Popeye and Trap Door? Don became known for his skill in manipulating large and colourful sprites - but not through Maziacs he didn't. Incidentally, this game had to be loaded with LOAD "" CODE.

Maziacs was one of those ridiculously simple, yet ridiculously addictive Spectrum games that you just had to play over and over. The premise is this: you are in a (very) big maze; you have to find the treasure; you have to bring the treasure back to your starting point. On the way you will encounter maziacs - nasty monsters there to protect the treasure from thieving swines like yourself, swords with which to kill aforementioned maziacs (rather careless of the maze designers to leave them just lying around like that), food to keep your energy up (I mean, what were they thinking?) and dead bodies which - when touched (shudder) - obligingly show you the route to the treasure for a few seconds (by highlighting it in yellow). Killing a maziac uses up one sword. Fighting a maziac without a sword will almost certainly increment the number of dead bodies in the maze by one (but you might just get lucky). And that's about it.

PeeJay's remake - coded in Blitz Basic - stays faithful to all of this (although there is a second version of the game - Maziacs PJ - which is accessible from the game's main menu). The differences are of course in graphics and sound. Maziacs PC assumes a slightly oriental flavour: the little stick man you used to guide around the maze is now some sort of cuddly toy/3rd dan blackbelt hybrid, and oriental strumming and whistling noises accompany you on your travels as you search for the treasure. If the new graphics aren't to your liking, Kindly PeeJay has also included a '1983 graphics' mode so you can enjoy the original all over again. You can also change the graphics quite extensively by using one of the extra tilesets included in the download or - if you're feeling brave - by designing your

own.

The speed with which PeeJay developed this remake was quite astonishing - particularly when you bear in mind this is the first coding he's done in ten years apparently. I wasn't quite sure what to expect when I loaded up his efforts for the first time, but I can happily say that I was very pleasantly surprised indeed. So this all bodes rather well for future PeeJay releases.



The Spectrum original and the remake.



VERDICT

Graphics	7
Sound	7
Playability	7
Addictiveness	8
Overall	7



Judging from your feedback, it seems you quite liked the first issue of **ZXF**. I've had close on a hundred emails congratulating me on it and just one telling me to go and do something to myself which, well, just isn't possible (if you're that person, please email me again with an address I can reply to - I'd like for us to have a solution-focused chat). I wasn't going to print any of these, but since my request for topic-based letters in **CSS** a while back met with absolutely zero responses <insert appropriate moan comment here> you're going to have to put up with it. Here's a small selection. Meanwhile, if you would like to write a letter to ZXF, please do - it doesn't have to be long and complex. mail@cwoodcock.co.uk. Over to you.

STAR LETTER

My parents say that I already wanted to program the Spectrum at the age of 3 :)

it was the first computer I've ever touched in my life. And I never forgot it..... I always look up information about this little machine, to get information/pictures from the time that it got released.

Sometimes I feel sad that I wasn't born when the spectrum got released, and that I've never seen shops with original software/machines and spectrum-advertisements in newspapers, etc.

That's because I'm only 17 right now, so I wasn't there when it all happened :(

But that's also the main reason why I love your magazine!! It gives me the feeling that I'm reading a magazine from the old days (although they probably weren't like this).

And now I can get all the news and good links out of your magazine, so I really hope you'll continue it.

Greetz,

Jasper

It's wonderful to know that the Spectrum can still appeal to a generation who weren't even around during its heyday. I hope there are many more like you in years to come Jasper.

Just thought that I'd send a personal congratulations along with the newsgroup posting - it's a fantastic little 'zine. It's so much more like the old speccy mags than anything else these days - I'm printing it out as I type, and will have a damn good read tonight in bed :)

Dunny

Bloody marvellous.

No, seriously - I have not a negative criticism to make. Thanks very much.

Dave

Wonderful stuff. Nice to see something like that which is nicely produced (formatting, layout, etc), and done by someone who writes well.

And PDF is the perfect format for something like this; you'd lose a lot if you tried to render it into HTML (I speak from experience!).

Victor

Man I must tell you that I really like your ZXF in pdf format.

I am glad that you have made it freeware.

Hendrik

I'm a Speccy fan from Buenos Aires, Argentina, and I was reading your Speccy "virtual magazine" ZXF... it's excellent!

It's very well written, it has an excellent design and -the most important- it's very interesting to read.

I can't wait to read the second issue of the mag, I hope you continue your excellent job.

Keep up the good work!

Hernán

Just had read the first issue and found it quite amazing. That's great than Spectrum Magazines Publishing is alive again, and not only in Russia but worldwide (there're at least 3 paperprint Speccy magazines in Russia). Good luck !!!

Denis

Well done Colin ... this is a TOP job!

The format's easy on the eye, it's well written and it's packed with enthusiasm. It's also much more up-to-date than I would have expected, with its articles on SPIN and the very recent Exploding Fist and Sabre Wulf remakes. Roll on issue 2, I say!

Ed

Gordon Blimey O'Crikey Lawks O'Bennett! That's blimmin' excellent, matey! When the others said it was very professional, I thought they were just being kind. But they weren't.[1] I just hope you can keep it up. (Arf! Yoinks! F'narr! -Ed.)

[1] Well, they *were* being kind but they, erm... weren't being, um, "kind". Or something.

Duncan

WHERE IS ZXF BEING READ?

Many thanks to all of you who completed the feedback form on the download page. Whilst most readers are from the UK and Spain, **ZXF** has been read in other locations all across the globe! In total I received responses from 21 different countries. See for yourself:

Country	Number of responses	Rating (out of ten)
Australia	2	9.5
Belgium	2	8.0
Brazil	1	10.0
Denmark	4	8.3
Germany	4	6.0
Greece	2	10.0
Holland	2	9.5
Ireland	3	9.0
Italy	2	9.0
Lithuania	1	0.0
New Zealand	1	10.0
Russia	3	8.3
Serbia	1	9.0
Singapore	1	10.0
Slovakia	1	8.0
South Africa	1	10.0
Spain	14	8.1
Sweden	1	10.0
Thailand	1	10.0
UK	24	8.9
USA	4	9.8
TOTAL:	75	8.6

Don't forget to fill out the feedback form for this issue if you download and read it - which, erm, I guess you are...



Meet the Sprinter

Tut tut. In how many Spectrum ebay auctions have I read descriptions like, "not much now, but it was state of the art in those days!" Actually, no it wasn't.

Floppy drives and hard disks were state of the art back then. Even CD-ROMs weren't that far off (my mother was using them where she worked - county library headquarters - loooong before they became mainstream). No, the Spectrum was never 'state of the art.' What it was - and was importantly - was affordable. The concept of the *home* computer - something that families might be able to purchase - was an idea that appealed to Sir Clive (never mind the why) - who, through the Spectrum and the ZX81 before it, gave hundreds of thousands of people access to technologies *and ideologies* they could otherwise not have experienced. The only modern equivalent of this forgotten concept seems to be the games console or a second hand PC. Oh sure, the cost of PCs has plummeted in recent years, but even so you're still looking at a general minimum of £400 - £500 for a new piece of kit; did you ever think you'd find yourself regarding such prices as 'cheap'? Salaries might have gone up since the 1980s, but not by that much they haven't.

You might well have heard of the Sprinter by now, developed by **Peters Plus** in Russia. Do you know what it is though?

A key feature is Spectrum compatibility, but this is not a Spectrum clone, and neither is it an emulator. What it is is a

Zilog based machine with 4Mb RAM that chugs along at 21MHz and can display up to 256 colours on a TV or CGA monitor.

21MHz? 4Mb RAM? Why on earth would anyone want to bother with that? But the Sprinter sells for \$170 (that's just under £110). Why

is it that we don't have something like this over here - something that families on the wrong side of the rich-poor divide (which hasn't narrowed since Labour came to power) actually have a chance of affording?

Not that I'm suggesting that the Sprinter is

only worth a look because it's cheap, because I most certainly am not. I remember as a newly qualified teacher my utter disdain at having to use an Archimedes machine in my classroom. "Get with the nineties!" I wanted to cry, "where are the

PCs?" But very quickly I grew to love my little A3000 (I hope it's still being used to educate children, but I have to say I doubt that it is). And as ICT Co-ordinator of our little junior school I soon learnt the whole point of having a variety of machines for children to learn

with, which is that variety results in generic computing skills, rather than platform specific skills. A bilingual child acquires conceptual knowledge more easily than a monolingual child because she is not restrained by a single language structure: she learns to look beyond this as an abstract boundary and to spot the shifting concepts beyond (consider





the connotations of the word 'kitchen,' for example, and compare them with the connotations of 'cuisine'). The current dominance of the PC in British classrooms can only result in the perpetuation of the Wintel myth that theirs is the only and the best way of doing things.

And the Sprinter is a very clever computer, its PLD allowing a dynamic architecture that controls a number of different configurations - as you can read for yourself below.

What is the Sprinter?

The Sprinter is a modern 8 bit multiform computer with Z84C15 CPU by Zilog Inc. The computer is *multiform* because it can change its architecture and hardware features during work.

For this feature the Altera PLD (Programmable Logic Device) is used. The PLD contains information about the Sprinter's hardware features; this information can be changed by loading a new variant of the architecture from an external file at any time. It might be a new variant of graphics screen, a new allocation of memory or several new ports for extended features of the computer. Therefore the Sprinter can have several variants of hardware (*hardware configurations*) for each user program if needs be. For example, the Sprinter has *Spectrum Configuration* to allow it to use Spectrum software. Other configurations give the user access to all the graphic and sound features of the Sprinter computer.

Can you explain a bit more about the different configurations? What abilities/features do the different configurations of the Sprinter offer?

Today's model of Sprinter computer (Sprinter 2000) has several configurations. Let's begin with the Spectrum Configuration - the most popular today.

Why the lengthy preamble? I have a fear that the Sprinter will all too easily be written off by readers as a machine with nothing to offer. No it's not a PC, but that doesn't mean it has no place. It's cheap, it's creative and it's an alternative.

Anyway, I've been having a little chat with Alex Goryachev of the Sprinter Team over the last few weeks. Here's what he's had to say.

This configuration allows the usage of the software of several Spectrum clones: ZX Spectrum +2, Pentagon 128/512 and ZS Scorpion 256. The Sprinter CPU (Z84C15) is fully compatible with the Z80 (the Spectrum's CPU), therefore Spectrum Configuration has compatible modes for all these Spectrum clones. Each mode has the usual Spectrum menu, Basic, AY, Kempston mouse, Tape, TR-DOS, original INT and ULA.

On first inspection you will not find many differences between using the Spectrum mode on the Sprinter and using a real Spectrum clone, but Spectrum Configuration on the Sprinter has new features:

- 1 Fast change model of Spectrum clones. You can select a clone in the special menu.
- 2 Usage of several RAM-disks. Six RAM Disks can be set to any TR-DOS drives.
- 3 Saving/loading images of TR-DOS disks (TRD files).
- 4 Change frequency of CPU (3,5MHz/21 MHz). Some Spectrum programs work better if they work quickly.
- 5 Changing some features of any Spectrum modes. You can create special mode for each Spectrum program.

- 6 Usage of periphery like ISA modem, CD-ROM, hard disk, AT keyboard, MS Mouse.
- 7 "Sprinter ZX" mode with access to the some of the features of *Sprinter Configuration*.

Now about the main configuration - *Sprinter Configuration*. This configuration allows the usage of *Estex* applications. Estex is an operating system for the Sprinter computer. Today Estex contains Disk Subsystem (DSS) only.

Estex applications provides access to the most interesting features of Sprinter computer, namely:

- 1 Support of 4Mb memory allocation.
- 2 Usage of hard disk up to 42Gb.
- 3 Text video modes: 80x32 and 40x32.
- 4 Graphics video modes: 320x256 with 256 colours (palette of 16M colours) and 640x256 with 16 colours.
- 5 16 bit stereo sound.
- 6 The Accelerator. The Accelerator is the internal device (was made in PLD) which serves for quick work with memory data blocks. Today it is present in all configurations except Spectrum Configuration.

So, all these features are supported by software. Today Sprinter has a file manager (like Norton Commander), a graphic files viewer (BMP, PCX, SCR), player of sound files (WAV), audioCD player, terminal program for ISA modem, ZIP files unpacker, a graphics editor and a lot of utilities.

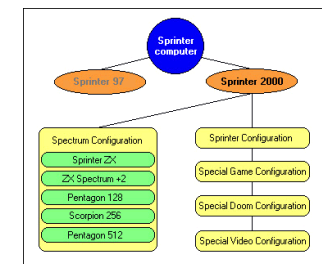
Also, there are several special additional configurations which have some differences from the Sprinter Configuration.

A *Special Doom Configuration* is a configuration with extended features of the Accelerator. In this configuration, the Accelerator supports compression and the

distend of pixel lines. This feature is useful in any 3D programs.

Today only a Doom demo uses this configuration.

Another configuration is the *Special Video Configuration*. This configuration supports the *Sprinter Video* format (SPV). Today, SPV is a stream of unpacked video and audio data in size of 160x128 pixels. The Accelerator can double each pixel for fullscreen video mode. We have a beta



version of a video player which uses this configuration already.

And finally there is a *Special Game Configuration*. This configuration serves for the support of some hardware features in arcade games. For example one particular game, *Thunder in the Deep* (by Deviant group), uses a pixel by pixel hardware screen scroll by the Accelerator.

Ok, so would it be fair to say that the five configurations can be summarised as:

***Spectrum Configuration* - For Spectrum and Spectrum clones compatibility (with enhancements);**

***Sprinter Configuration* - For applications (eg, word processing, file management, graphics packages)**

***Special Doom Configuration* - For 3D games.**

***Special Video Configuration* - For**



multimedia.

Special Game Configuration - For arcade games.

Yes, you're right. Sprinter works in the different configurations for the most effective work.

How do you select these modes? Is this something you do when you start the computer or can you change back and forth between modes whilst it is running?

All configurations and modes can be selected by the user program during a computer session. Program can switch ports to select any mode or configuration, or can load a new configuration from an external file.

For example, to use Spectrum software (as TRD files) from Estex (Sprinter Configuration) we use the application *Spectrum Launcher*. This application can execute TRD from a command line. Spectrum Launcher switches computer to the Spectrum Configuration, create a TR-DOS RAM-disk, copy a contents of TRD file to RAM-disk and finally execute Spectrum program. Also Spectrum Launcher can select any modes of Spectrum Configuration without executing of TRD file. In this case you can start work in a usual Spectrum menu as on an original Spectrum or Spectrum clone. And finally you can switch between Spectrum modes during work in Spectrum Configuration by a special menu. And you can return to the Sprinter Configuration by this menu too.

Special configurations (Doom, Video, Game) don't have any menu and can be used by programs only.

So the different configurations are a bit like, for example, the different graphics modes you used to get on older computers - you can change between them as much as you like during a computer session, but certain software

for the Sprinter will only work in certain configurations - is that right?

Yes, absolutely.

So what sort of software has been developed for the Sprinter?

Our main work is the creation of Estex, the operating system for the Sprinter computer. Today it is DOS with support for FAT16 and FAT12. But we continue work and Estex will have all parts of modern operating systems: Graphics SubSystem, Graphics User Interface and others. A lot of applications have been created for Estex. There are file managers, graphics and text viewers, Spectrum Launcher (for the usage of Spectrum software), a terminal program, a graphics editor, an audio CD player, a WAV player, a ZIP archive decompressor and a lot of utilities. A large part of the existing software has been created by Sprinter users. Today our main target is the release of a full operating system which will be useful for programmers. Also we support the creation of new developers tools.

So Estex contains lots of mini applications - a bit like Windows for the PC, with its media player and so on. Have other developers brought out their own programs for the Sprinter?

The creation of a lot of mini application is a usual way of a new computer which has not all software at start. We don't plan the repetition of any modern operating system, for example Windows. But we do plan to finance the creation of several important applications: text editor, universal viewer, manager of archives, data base and sheets. It will be a powerfull pack for users. They will be large and rich applications, with a lot of features, but they will not be the first programs from other developers. Only about 30% of all Sprinter software is by PetersPlus. Today Sprinter users know several experienced programmers. File manager, terminal program, viewers, some

players, program languages and a lot of utilities were created by different programmers. Sixteen new programs were created for Sprinter computer during this year alone. All of them are freeware. But today we know about the first commercial project of an arcade game for Sprinter.

Am I right in thinking there is a Sprinter emulator for PCs already? How accurate is the emulator - does it emulate correctly all Sprinter configurations?

The emulator of the Sprinter computer has the name *Sprint* (and is by *Shaos*: www.shaos.ru). The emulator is free software under the terms of the GNU General Public License. It is not finished yet: today it is a very simple emulator, supporting Sprinter Configuration only. It features emulation of the BIOS and Estex functions (but not all functions). The emulation of changing version of firmware is not supported.

So, today's emulator is a shell for executing some Estex applications. It can show off the graphics features of the Sprinter; it can help programmers to create simple Sprinter programs on the text screen: it can be useful, yes, but it can't replace a real Sprinter computer. We are in contact with the author of the emulator and he has complete information about the Sprinter computer for his work.

So what exactly does the Sprinter cost - and what do you get for this?

The cost of the Sprinter computer is \$170 USD. The computer in a standard set includes the Sprinter's mainboard, AT case, AT keyboard, MS mouse, 3.5" FDD, video cable, software and manuals.

The Sprinter's mainboard, *Sp2000*, can be purchased separately at a cost of \$115 USD. This package contains the Sp2000 mainboard with 4Mb RAM and 256Kb videoRAM; FDD and HDD ribbon cables; video cable; software and manuals.

Is it easy to fit a standard hard disk to the Sprinter? Are there any models which are incompatible? What about CD ROM drives?

The Sprinter can use any IDE hard disk up to a capacity of 42Gb. But a HDD with more than 2Gb needs to partition on 2Gb. FAT16 specification requires it. Also IDE CD-ROM can be set.

Today Sprinter can use any two IDE devices simultaneously.

Who are the people behind the development of the Sprinter?

The Sprinter Team are: Ivan Mak (Senior Hardware Engineer) author of most ideas of Sprinter architecture, Denis Parinov (Senior Software Engineer) author of the operating system *Estex* and Alex Goryachev (Sprinter Project Manager).

When did the project to design and build the Sprinter start and what experiences/inspiration brought about the idea?

The Sprinter Project started in 1996. The ZX Spectrum computer was still very popular in Russia in that year. The original idea of the Sprinter Project was the creation of a new Spectrum clone which could use modern periphery: hard disk, AT keyboard, MS mouse, 3.5" floppy disk drive; also to add a new graphic mode with 16 colors for each pixel. But during the work, the Sprinter developed yet more powerful features. So today we have a second model of the Sprinter computer, Sprinter 2000 (with Sp2000 mainboard). But the Sprinter is a Spectrum compatible computer still.

Peters Plus: www.petersplus.com

FAQ: www.petersplus.com/sprinter/faq.htm

Sprint: <http://robots.ural.net/nedopc/sprinter/>

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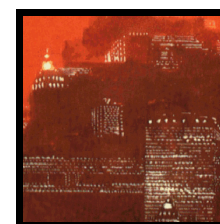
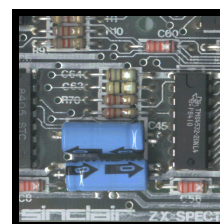
TEL: 01708 630477 john@pcwking.freemove.co.uk

www.pcwking.freemove.co.uk



Back to the Spectrum

Part One. So you're back. And the Spectrum has moved on. And you're confused. This issue we take a look at getting you back to the point at which you left: playing games on your ZX Spectrum - virtually speaking, that is...



I tried using a speccy emulator several years ago...but I see that they have improved by leaps and bounds now. So...what is the best emulator to use for running on XP - as I find the amount of emulators about now pretty confusing.

Also...what is the need for so many different formats - and what is the best format to use?

TIA

Steve



So you've finally realised. You think that new technology is great - of course you do - but ever since you packed away that old Spectrum in a box and taped up the lid something has most definitely been missing. At last you understand you were turning your back on more than just an obsolete computer.

And now that you are back, where do you start? A search for "ZX Spectrum" on Google reveals over eighty thousand links, many of which - to even the most enthusiastic of returners - can appear to make absolutely no sense whatsoever. TZX? RZX? Snapshot? Chuntay? What's it all about?

Things have moved on since the days of "Start tape, then press any key." And in this series of articles I hope to make these developments a little easier to digest. We'll start this issue by assuming you to be fresh to the modern Spectrum scene completely and deal with matters of emulation, then build things up from here in future issues. Although these articles are written with

complete 'beginners' in mind, however, I hope this will all actually be a service to a variety of Spectrum hobbyists at various stages of their ZX rehabilitation; if, like me, you're spending time lurking in the shadows of CSS wandering whether your one little question will be screamed at for its ignorance/naivety/ten thousand references in the CSS FAQ, then I hope you'll find here some answers.

So where do we start? We start, of course, with emulators, of which you will need at least one. There is an absolutely enormous number of emulators to choose from (see www.worldofspectrum.org/emulators.html for a complete list; is the Spectrum the most emulated computer on the planet? I suspect

so), but you'd be wrong to assume they're all pretty much of a muchness. Spectrum emulators vary. They vary chiefly in the following areas:

1) The operating system they run on.

RealSpectrum, for example, currently runs only in DOS (a Windows build has just been released), as does X128. There are also, of course, emulators for other computers (Macintosh, Acorn, Amiga, Playstation, etc) and other PC platforms (eg **Fuse** for Unix); I am qualified to comment on none of these (sorry).

2) The models of Spectrum emulated. Nearly all emulators emulate the whole range of Spectrums (ie, 48k, 128k, +2, +3 and +2A), although **Spectaculator** currently only supports the original 48k Spectrum, the first 128 and the +2 (not the +2A or the +3). Some emulators also emulate some of the eastern european clones (eg, **RealSpectrum** emulates the **Didaktik Kompact**, the **Pentagon** and the **Scorpion**) and a couple (**RealSpectrum**, **SPIN**) emulate Garry Lancaster's **+3e** (reported on last issue).

3) Spectrum peripheral hardware supported. Most emulators will emulate a joystick, but generally that was far as hardware emulation went in most emulators until recently, when first **Klive** and then **Spectaculator** added in support for the Currah Micro Speech and the Cheetah SpecDrum. **RealSpectrum**, however, emulates a vast range of add-on storage hardware, from the ZX Interface 1 and microdrives to the popular Plus D interface (you can actually put a Plus D formatted 3.5" floppy into your PC's floppy drive and read/write to it in the normal way from your emulated Spectrum).

4) Tape support. Whilst nearly all emulators that I know of support the .TZX virtual cassette file format, they vary currently so far as *saving* to a .TZX file is concerned. All can save to a snapshot file, of course, but if you're authoring your own programs rather than simply saving your place in a game then .TZX is a more 'authentic' way of saving your work and also allows the luxury of loading

screens and multi-loader games (more on TZX later). **Spectaculator** and **RealSpectrum** will both allow you to save to tape.

5) User-friendliness. Generally speaking, all Spectrum emulators are extremely competent pieces of programming. There is, I feel, an unspoken assumption that the end users of these programs will be fairly computer and spectrum literate, however, and in my mind the emulator that best stands as an exception to this is Jonathan Needle's **Spectaculator**, which has a well thought out layout and help system.

.TZX? Snapshot file? Wot?

Time to explain all those file formats. The Spectrum, of course, saved primarily to cassette tape. The +3 had a built in 3" disk drive, which was the default saving/loading media when a disk was inserted; there were also various add on disk drive interfaces over the years that allowed you to use standard 5.25" and 3.5" drives with earlier Spectrums (eg, the MGT Plus D interface) and actual storage devices such as Sinclair's own microdrive. In the main, however, Spectrum emulators deal with only tape and the +3 drive (the main exception to this is **RealSpectrum**, which emulates many of these devices).

Let's take cassette tape first. Now here's the problem: a Spectrum program stored on tape rarely consisted of a single *file*. Your average early Spectrum game, for example, would usually consist of *at least three files*: the BASIC loader would come first, followed by the loading screen and followed next by the main program code. The first of these - the BASIC loader - would be announced by something like "Program: Asteroids" (or whatever the game was called) in the top left corner of the screen (as programmers got more clever they worked out how to get rid of the 'program' bit and just display the game's name). The purpose of this small program is to prepare the machine for the files to follow; you see, when you type LOAD "" (or select Tape Loader from a 128 menu) the Spectrum

expects a BASIC program to load - most games, however, were written in machine code and machine code has to be loaded with a different set of commands (`LOAD "filename" CODE start address, file length` or `LOAD "filename" CODE` followed by `RANDOMIZE USR start address`). The BASIC loader, therefore, is a BASIC program that loads in and executes the remaining files for you (effectively entering these more complex commands on your behalf and saving you the hassle) - first the loading screen and next the main program code.

So it's not just a question of emulating files; the whole tape containing the files has to be emulated if Spectrum emulators are to remain faithful to the original experience. This is where the file formats **.TZX** and **.TAP** come in, the former being a more recent formulation and more authentic than the latter, but less well supported across the complete range of emulators. A TZX file is, therefore, a *virtual cassette* which contains all the spectrum files necessary for the game to run, and your emulated Spectrum accesses this in just the same way as your original Spectrum did, loading the BASIC loader first and so on. Some of the most recent emulators (**Spectaculator**, **SPIN**) now even come with a 'virtual cassette player,' which allows you to play, stop and forward/rewind the virtual cassette; **Spectaculator** even includes a record button and the option to insert a 'blank tape' for your own programs to be recorded on.

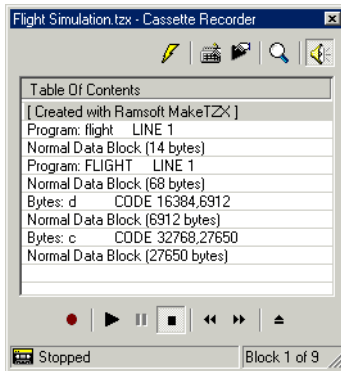
But before virtual cassette files (or 'Cassette/tape images,' as they're sometimes called) were sorted out, the mainstay of the

spectrum emulator was the 'snapshot file'. A snapshot file is essentially a memory dump (or 'snapshot') of the Spectrum's memory at any given point - most game snapshot files that you can download from the Internet have been saved (or 'snapped') just at the point at which they've loaded. The origins of this file format go back to the days of the original Spectrum hardware: with all these add on disk drive devices (and eventually the +3 three inch drive) a way had to be thought of for transferring existing software owned by an

individual from tape to disk (where was the point in owning a posh new disk drive if you couldn't use it to speed up the loading of all your favourite games?) Most games protected their BASIC loader from easy hacking, hiding the listing (and therefore the start addresses) through special tricks that left a blank screen and perhaps a copyright message, so it wasn't just a matter of loading the file into memory and then saving it back onto disk with a new BASIC loader modified as appropriate. So disk

drive interfaces such as the Plus D sported a little snap button which you pressed once your game had loaded from tape; at this point the game would freeze and you were able to save it - as it was, at that precise moment - to disk.

So a snapshot file - in contrast to a virtual cassette file - really is just *one file*. You don't get the BASIC loader or the loading screen with this sort of file; when you load it back in you just go straight back to the point at which you saved the file, be that at the start of a game or somewhere in the middle (at the end of a level, for example, so you don't have to play the game right from the beginning next



Spectaculator's cassette interface, complete with recording button



time). Snapshot files were great at the time - a convenient way of loading a favourite game quickly - but as emulators developed and the pangs of nostalgia for the good old days grew, something more authentic was required; also snapshots were no good for multi-load games (where each level in a game had to be loaded separately from tape). These days, therefore, the preferred format for distributing Spectrum software is the virtual cassette format; snapshot files are mainly used for saving your progress (although an innovative use for snapshot files has been implemented at www.thespian.demon.co.uk/congrat/index.htm, otherwise known as 'The Congratulations Archive,' where you can download snapshots of games at their point of completion to find out what happens at the end). The two snapshot formats are **.SNA** and **.Z80**; both are supported by the vast majority of emulators (and both support also 48k and 128k snapshots).

So that brings us to the +3 disk drive. In the same way that .TZX is a 'virtual cassette,' .DSK is a 'virtual disk' or 'disk image' of a +3 three inch disk. For emulators which support this format (most 128k emulators do for loading from disks; not all do for saving to them) you simply select a disk image via the emulator's menu system and this then 'inserts' the virtual disk into your emulated +3's disk drive - from this point on you access the disk using the usual +3 commands (the manual is online at www.madhippy.com/8-bit/sinclair/zxspec3man/index.html).

So where do I get these files from?

That part is simple. The Spectrum community are blessed by the work of a certain **Martijn van der Heide**; his site - **World of Spectrum** (www.worldofspectrum.org/) - contains the biggest archive of Spectrum files on the planet. If you can't get hold of the title you're after amongst the thousands there, it's either 'missing in action' (MIA files are listed at WOS; if you find you have one of these you

know where to send it now!) or it's distribution has been denied by the original copyright owner. Martijn has been working tirelessly over the last few years to contact every last game author to establish whether it's ok to distribute their work for free via his site; a small number have told him it's not (eg Ultimate, Code Masters) - these titles are listed, then, but not available for download. But there's still more than enough to choose from, and you can also download many of the original game inlay cards (as graphics files), plus emulators, PC utilities and an enormous amount of Spectrum documentation. Be appreciative, be very appreciative; Martijn gets nothing for his troubles other than our unending admiration.

That should get you going! Next issue we'll take a look at Spectrum game remakes, the modern Spectrum demo scene and the vast range of PC utilities that exist to enhance your Spectrum experience still more. We've only just started!

Emulators...TZX

As written above, **Spectaculator** and **RealSpectrum** both allow you to create your own .TZX files. **SPIN** has also added this capability to its (ever) increasing list of features recently (see **new**), although - in my opinion - not in as intuitive a way as Spectaculator (which is why I use that emulator in the following loading screens article).

I've also just learned that - contrary to the information I presented in last issue's **goto** section - **ZX32** also allows you to save .TZX files. To do this you must first type in and execute your save command on the emulated Spectrum (ie, `SAVE "proggy"`, then Enter twice) and then select `Save As` from the ZX menu, following which you can choose either .TZX or .TAP from the "Save as type" box - ordinarily these two options don't appear. Thanks to **Lee Prince** for that information, via comp.sys.sinclair.

Bitmap to screen\$

Getting your bitmapped masterpiece from your *My Pictures* folder to the front end of a brand new TZX isn't as easy as it first seems. Here we take a step-by-step look at one way of doing this. Get ready to spruce up those CSSCGC2K2 entries...

WHAT YOU WILL NEED *The (freeware) tools you'll be using:*

BMP2SCR: PC graphics conversion utility by LCD
www.lcd-one.da.ru/

SevenuP: PC SCR editing utility by Metalbrain
www.speccy.org/metalbrain

ZX32: Spectrum emulator by Vaggelis Kapartzianis
www.geocities.com/SiliconValley/Bay/9932/

Spectaculator: Spectrum 48k emulator by Jonathan Needle
www.spectaculator.com/

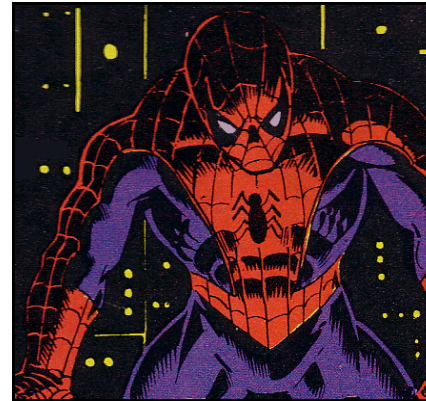
With the **comp.sys.sinclair** *Crap Games Competition 2002* (CSSCGC2K2) upon us (hurrah!), it's time to dust off the orange manual and start writing BASIC (badly) again. We all know, of course - from all too many years of bitter experience - that loading screens were utterly useless as indicators of a game's actual eventual quality; what better way then to add to the crapness of your entry this year than a fantastic looking loading screen that builds up expectations to a level from which it really hurts to be dropped?

But - somewhat surprisingly, given the very high quality of the Spectrum software on the 'market' today - no one single piece of software exists that can manage all of this for you. It can be done of course, but only by using a number of different programs together. What follows therefore is a process I've cobbled together and is, I would suspect, almost certainly not the only (or the most efficient) way of managing this task (I'll rely on the knowledgeable amongst you to put me right in next issue's letter page if my suspicions are correct), but it does work.

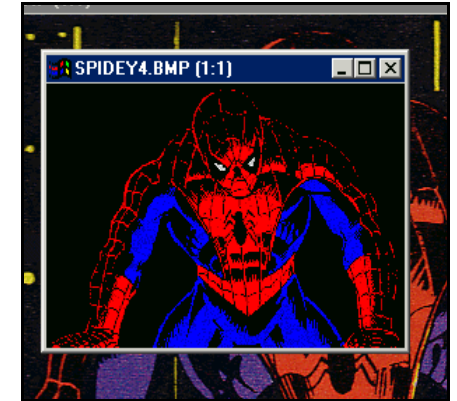
So we'll be using the excellent **BMP2SCR** to convert our initial image into an SCR file, and **SevenuP**, the recently released Spectrum graphics editor, to clean it up a little. We'll be loading the SCR into **ZX32** so that we can then save it out again as a snapshot file (although SCR is now the standard format for Spectrum screens, surprisingly few of the best known emulators support it; ZX32 does), then we'll be loading it in this format into **Spectaculator** where we can then start up and save our screen into a new TZX file, complete with a BASIC loader all of its own.

Ready? Let's go!

exp



1 - Choose your image. I'm using this picture of Spider-man which I scanned from an old comic cover. The number and layout of the colours makes this an ideal picture for conversion.



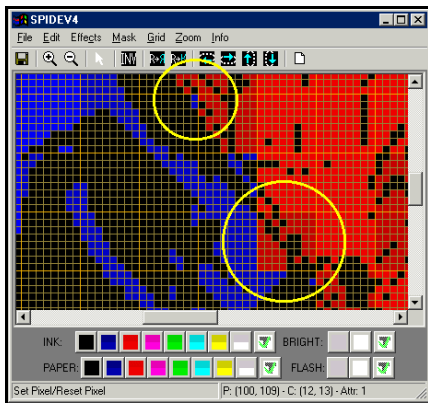
2 - Prepare your image. To make the image simpler for conversion, I've got rid of the yellow bits in the background and reduced the number of colours to 16. I've cropped the image and resized to 256 x 176 pixels. Now it's ready for conversion to SCR format.



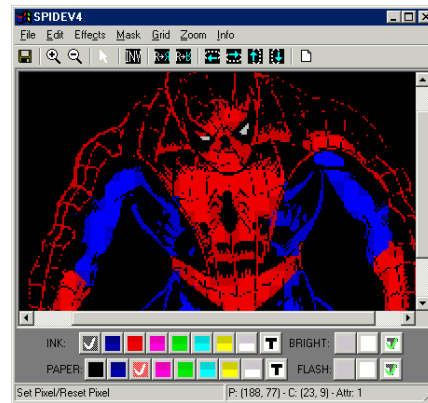
3 - BMP2SCR. This PC utility allows us to convert our image into a variety of Spectrum related formats, but we must be careful here to choose an SCR format. I'm using option A - 'BMP to SCR color'



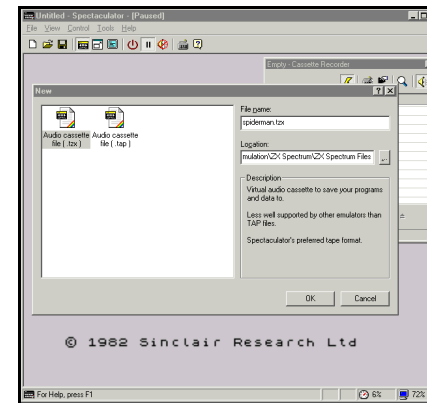
4 - BMP2SCR (cont). In the top left corner is our original bitmap; below it is our new SCR. Notice how the program has used bright to give our hero some dramatic highlighting: other options from the main menu (see last box) would not have given this. We could leave it here, but there's a little bit of colour clash that could be improved. Save the file...



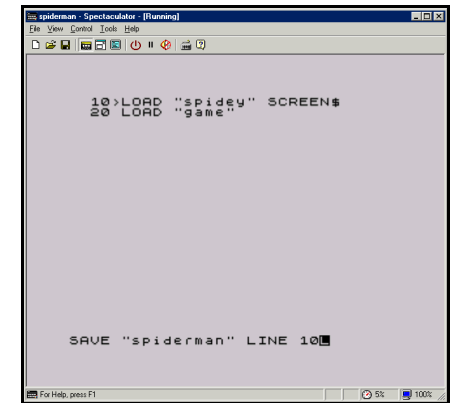
5 - SevenuP. In this utility we can clean up our image whilst it stays in SCR format. There are just a couple of cells I want to work with (circled in yellow) - some very minor incidences of colour clash. Take care to work a cell at a time - the red in one cell might be INK; in the next it could be PAPER.



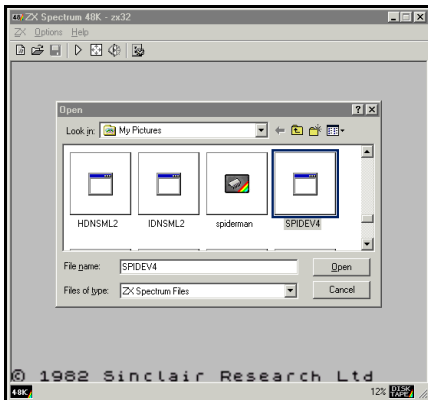
6 - SevenuP (cont). There. Our SCR image is now ready to meet an emulated Spectrum. There are lots of other things you can do in SevenuP, such as flipping the image horizontally or vertically. A text option would be nice (hint hint)...



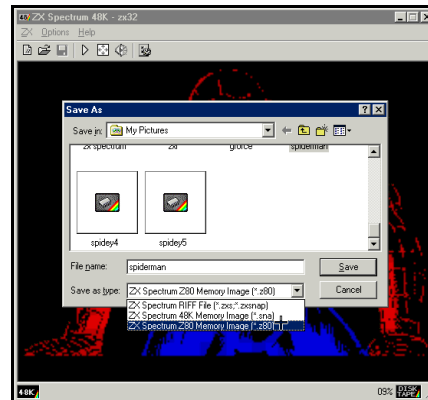
9 - Spectaculator. First of all - before we go anywhere near our snapshot - we need to start a new, blank tape on which to save it. File > New brings up the box above. Select TZX format, give your tape a name and select a folder to store it in. Your tape is now inserted into the virtual cassette recorder.



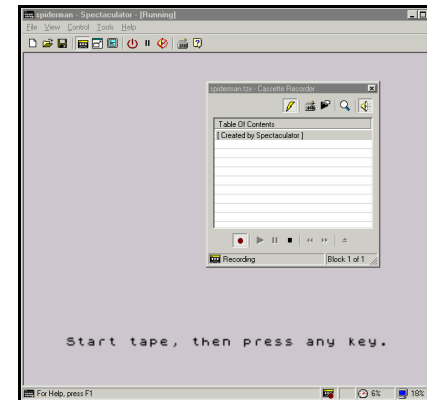
10 - Spectaculator (cont). Next we need to write a short BASIC loader for the loading screen we are about to create and - of course - the actual game itself (you did remember to write a game, didn't you?). A simple loader is shown above. You'll notice that the SAVE command entered has "LINE 10" added - this is so the loader runs automatically when it has loaded. Type the command as shown...



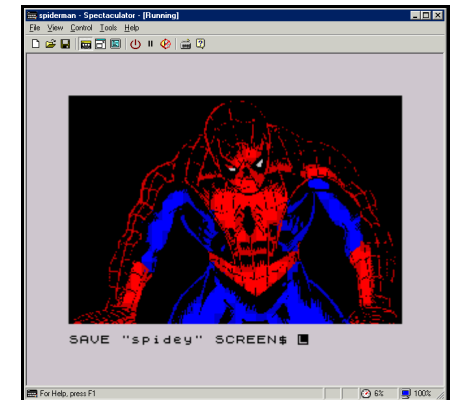
7 - ZX32. From good old ZX32 we can load in our SCR file. **Klive** also offers this option, but the snapshot file we are about to save doesn't work at the **Spectaculator** end of the process when created with this (when you load the snapshot in the emulator clears the screen before you get a chance to save it). Anyway, locate your file via ZX > Open...



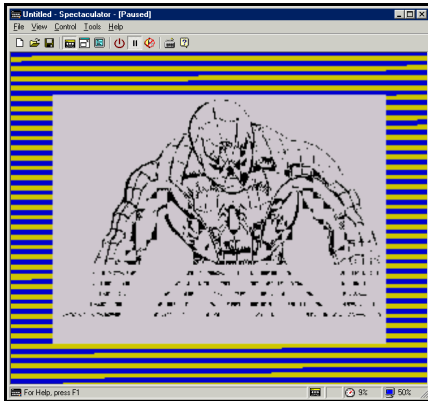
8 - ZX32 (cont). ...and, without any further ado, save it back out as a snapshot file (in this case in the .z80 file format) using ZX > Save As. **Important:** make sure ZX32 is in 48k mode before you load the SCR file - it makes working with the snapshot file in Spectaculator much easier.



11 - Spectaculator (cont). ...and hit Enter. *But don't "press any key" yet!* First you must click on the red record button on the Cassette Recorder to get the tape going. *Now* you can click back on the main emulator window and press a key to start recording.



12 - Spectaculator (cont). With the loader saved to tape, we can now load in our snapshot file and save this onto the tape too. Enter the command to SAVE as above - remembering to use the filename you identified for the loading screen in the BASIC loader - and repeat the process with the record button described in (11).



11 - Finished! To load your tape from scratch, simply reset the Spectrum and do a normal LOAD "" (with your new tape still in the cassette player, of course).

Update

Me and my big mouth. I happen to mention on comp.sys.sincclair the lack of SCR support in Spectaculator and, within hours, Jonathan Needle only goes and adds it in. ...which is good, erm, of course. Here's what he wrote:

I've quickly put together a plugin for .SCR files which you can get from www.spectaculator.com/download/misc/zxscr.zip

Just extract zxscr.dll into the drivers folder in the Spectaculator folder. Restart Spectaculator and you'll be able to load and save .SCR files from File->Open/Save As.

Note: This will only work on v3.0 beta #1 and NOT 2.5 (because of plugin API differences).

So now - if you wish - you can cut **ZX32** out of the equation altogether and simply load the SCR straight into Spectaculator.

And also this from Paul Dunn: *"The latest version of SPIN supports loading of SCR files through drag n drop... A feature that not many people know about!"* Well now we do.

Better BASIC loaders

Fancy sprucing up your loader? Of course you do! Spectrum file names have a limit of ten characters, but you can get around this in 48k BASIC by using the token codes. Each of the keyword tokens (PRINT, LOAD, NEW, etc) are represented by single byte codes; you can insert these codes when you save and produce seriously lengthy file names by doing so. SAVE CHR\$ 169 + CHR\$ 172 + CHR\$ 177 + CHR\$ 203 + CHR\$ 232 + CHR\$ 204 + CHR\$ 227 would give you, for example: "Program: POINT AT LEN THEN CONTINUE TO READ" (a full three characters to spare) when you load the program back in. All of the word tokens are given below, along with their codes. Don't forget to add "Line 10" on the end before you save.

165 RND	181 ASN	197 OR	213 MERGE	229 RESTORE	245 PRINT
166 INKEY\$	182 ACS	198 AND	214 VERIFY	230 NEW	246 PLOT
167 PI	183 ATN	199 <=	215 BEEP	231 BORDER	247 RUN
168 FN	184 LN	200 >=	216 CIRCLE	232 CONTINUE	248 SAVE
169 POINT	185 EXP	201 <>	217 INK	233 DIM	249 RANDOMIZE
170 SCREEN\$	186 INT	202 LINE	218 PAPER	234 REM	250 IF
171 ATTR	187 SOR	203 THEN	219 FLASH	235 FOR	251 CLS
172 AT	188 SGN	204 TO	220 BRIGHT	236 GO TO	252 DRAW
173 TAB	189 ABS	205 STEP	221 INVERSE	237 GO SUB	253 CLEAR
174 VAL\$	190 PEEK	206 DEF FN	222 OVER	238 INPUT	254 RETURN
175 CODE	191 IN	207 CAT	223 OUT	239 LOAD	255 COPY
176 VAL	192 USR	208 FORMAT	224 LPRINT	240 LIST	
177 LEN	193 STR\$	209 MOVE	225 LLIST	241 LET	
178 SIN	194 CHR\$	210 ERASE	226 STOP	242 PAUSE	
179 COS	195 NOT	211 OPEN #	227 READ	243 NEXT	
180 TAN	196 BIN	212 CLOSE #	228 DATA	244 POKE	

Project: +3/2A SCART lead

If, like me, you're getting back into real Spectrum hardware again, you'll no doubt be immersed in the joys of re-discovery. A not so joyous finding of mine was just how bad the Spectrum display looks on a colour TV (emulator authors have a long way to go before they capture the sheer dreadfulness of that one thoroughly). But this can be overcome: Alan Cox has designed a SCART lead for the +3/2A RGB/PERITEL socket, which John King has built and written up at www.pcwking.freemove.co.uk/helpage42.html; John has kindly given me permission to reproduce this information here. Please note, this lead *will not work* for the original Spectrum 128 or the first +2.

Perhaps I should start by saying that the tasks to be undertaken on this page are not for those of you without electrical and soldering skills; for the competent, the following circuit will give a quality picture and mono sound through a television set from a ZX Spectrum +3. This lead should also work with a +2A but as of yet I have not tested it on one. The lead was designed by Alan Cox and has been built and tested by a number of different people (including myself) on a number of different makes of TV (with almost complete success).

Should you build one of these leads kindly report the results so we may judge the success rate (john@pcwking.freemove.co.uk).

Parts and tools required

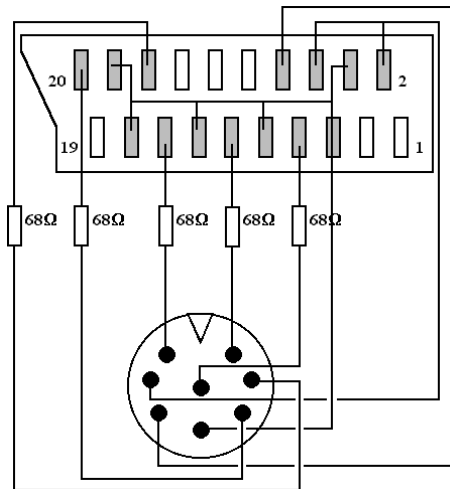
- Scart Plug (also known as an Euro Connector or Peritel Plug).
- 8 pin male DIN in-line plug.
- Five 68 ohm resistors (quarter or half watt)
- 6 feet of six core cable.
- 6 feet of single screened cable (for the sound connections).

- 15 watt Soldering Iron.
- Solder.
- Electrical tape (or cable ties).
- MultiMeter.
- Side cutters, Long nosed pliers and a small screw driver (all of which can be found in any DIY tool box).

Procedure

Alan Cox offers a plain English way to produce the lead and could be preferred to my circuit diagram:

- Connect SCART pins 4, 5, 9, 13, 17 and 18 together and then to RGB pin 2.
- Connect SCART pins 7, 11 and 15 to RGB pins 8, 6 and 7 respectively via 68R resistors.
- Connect SCART pins 2 and 6 together and then to RGB pin 3.
- Connect SCART pin 8 to RGB pin 5.
- Connect SCART pin 16 to RGB pin 1 via a 68R resistor.
- Connect SCART pin 20 to RGB pin 4 via a 68R resistor.



An eight core cable was used for the production of this lead and gave satisfactory results.

Just in case it is not obvious, use the six core cable to connect the DIN plug video/RGB connections to the Scart plug and the single screened cable is for the sound connections to the Scart Plug. Once the Scart lead has been made up following the above diagram, tape the two leads together (or use cable ties). **With both the TV and +3 switched off** plug in your lead, then switch on the two machines and test.

It is well worth the effort of making up a Scart lead for your +3 machines, as the quality of picture (the sound remains mono) far exceeds that obtained from a Black/White, Green, Amber or Colour Monitor. Games are given a new meaning when played using a 32 inch wide screen Television.

NB Due to the nature of Television design there is a possibility that the lead will not work on every make and model of TV sold throughout the world.

Left: Alan Cox's Scart lead visualised by John King. Plugs are viewed facing solder connections.

Below: Resistor colour codes. On four band resistors the first two digits identify the value, the third the multiplier (how many 0s to add) and the fourth the tolerance. On five band resistors the first *three* digits identify the value, the fourth the multiplier and the fifth the

black	0	0	0
brown	1	1	1
red	2	2	2
orange	3	3	3
yellow	4	4	4
green	5	5	5
blue	6	6	6
violet	7	7	7
gray	8	8	8
white	9	9	

tolerance. So the resistor below is 270 K ohms: 2, 7 and 4 zeros. The colour band on the edge shows the left hand side.



PIN	SIGNAL
1	+12V
2	GND
3	audio out
4	composite sync
5	+12V
6	green
7	red
8	blue



Above: +3/2A RGB/PERITEL socket

Below: Scart plug connections

PIN	USAGE	ALTERNATIVE NAMES
1	Audio Right Out	Audio Output Right
2	Audio Right In	Audio Input Right
3	Audio Left Out	Audio Output Left
4	Audio Ground	Audio Earth
5	Blue Ground	Blue Video Earth
6	Audio Left In	Audio Input Left
7	Blue	Blue Video Input
8	Status/16-9	Function Switching
9	Green Ground	Green Video Earth
10	Reserved Comms.	Data line 2
11	Green	Green Video Input
12	Reserved Comms.	Data Line 1
13	Red Ground	Red Video Earth
14	Fast Blanking Ground	Comms. Data Ground
15	Red	Red Video Input
16	Fast Blanking	Blanking Input
17	Video Out Ground	Video Output Earth
18	Video In Ground	Blanking Ground
19	Video Output	Composite Video Output
20	Video Input	Composite Video Input
21	Ground (Common)	Plug's metal shell

Another little read from my collection at www.cwoodcock.co.uk. I'm still waiting for your submissions for this section. The pain can end, you know - all you have to do is sing...

The Genuine User Friendly Interface

(My forthcoming address to the Computer Literacy Association)

Keats said: "I am in that temper that if I were under water I would scarcely kick to come to the top." Of course he was referring to the repartitioning of multi-gigabyte hard drives. *[Pause for laughter to die down]* It might seem incredible, in these breathtaking days of clock speeds faster than a speeding bullet's bad case of Chicken Teaka Leaka and memory sizes so vast the entire works of Jeffrey Archer and his contemporaries could be stored proportionately to a bar of complimentary Palmolive soap stolen by Ceaucescu and hidden "somewhere in his house," that the layman could still be pushed to set his disk caching parameters correctly - yet research continually and repeatedly suggests such a bizarre fact to be true. Colleagues, I share with you your utter astonishment in that 90 per cent of computer users world-wide don't find a General Protection Error message entirely sufficient and informative a notification of their machine's troubled status, yet it goes deeper and still deeper than that. Last week, the Society for the Abolition of Obscure Acronyms - better known to us all as StAbolObAm - published results implying that 80 per cent of users are unable - unable, I tell you - to calculate their ideal SIMMS RAM to Virtual Memory swapfile ratio. We have given them mice, my friends; we have given them WYSIWYG truetype fonts and shortcut thumbnails: we have not yet given enough, it seems.

As some of you might know, my hardware company went under two years ago due to the low sales of my four dimensional multi-phasic soundcard - apparently user configuration of the DMA and IRQ circuit board jumpers to avoid conflict with the ISA requirements of other peripheral expansion devices was asking too much. I was so depressed I ate a balanced diet for two months. Then, a favourite episode of Knight

Rider gave me an idea. Could it be possible that the public really did want a system that did everything for them? Don't scoff colleagues - your immediate riposte might well be "What on Microsoft is the point in having a point and click system if you can't point and click at things?" yet I have now heard a mouse described so many times as "that box thing" - regardless, I might add, of its ergonomic design - I am convinced this is the case.

Such a system would naturally require a degree of Artificial Intelligence. AI is, of course, at a far more advanced stage than most people realise. Version 3.129 of Satansoft's Backgammon springs immediately to mind for its clinically proven prejudice against anyone over the age of 34. And need I remind you all that Solitaire will never let you win if you should be doing something else? It is therefore not at all, as many might suppose, that such a system would be technically unfeasible - rather it is just plain silly that anyone should want to create such a thing.

So it is with mixed emotions that I stand before you all today to introduce the Genuine User Friendly Interface - which, on the advice of StAbolObAm, I have shortened to BOB. BOB is the result of 18 months of love and labour, and these are some of its features:

[OHT 1 - note: remember to use a comical typeface]

- Full multitasking capability.

- Speech and language recognition and control, incorporating a comprehensive repertoire of colloquialisms, dialects and idioms.

- Mood swings.

- Mancuvian accent.

Bob is programmed to be an assistant, a

secretary, a friend, a domestic pet and, when necessary, a public relations officer. Its telephone answering mode incorporates a wide variety of techniques to deal with double glazing sales and market research surveys. It can debate the scriptures with visiting Jehovah's Witnesses, leaving the user free to enjoy a cool beer or a relaxing cigarette. It is licensed to perform marriages, funerals and to serve drinks at parties. In addition to all of this, the connection of a digital video camera to the system gives BOB sight, allowing a wide range of additional functions and advisory roles. I submit to you as exemplification a transcript of a conversation we held last week as I was leaving for an evening of cheese and pickle sandwiches at the Laskey's: *[OHT 2 - note: use speech bubbles for extra laughs]*

BOB: Where are you going?

Me: The Laskey's.

BOB: In that?

Me: What's wrong with what I'm wearing?

BOB: Have you been to the Laskey's?

Me: You don't think it goes with the brickwork?

BOB: I hear they have a fondness for cake there.

Me: What sort of cake?

BOB: Battenburg.

Me: You're right. I'll change.

In short, BOB does everything people wish computers could do. And more. His complex neural structure allows him to learn new languages quickly and efficiently, and he is already fluent in fourteen different tongues, although Welsh is causing him some problems. Last month, fantastically, BOB discovered a pattern to babies' cries and immediately struck up a conversation with a pair of three month old twins on the nature of PI: it turns out they didn't like it.

Finally, BOB is programmed in multiple entertainment techniques. He can impersonate successfully an enormous repertoire of comic styles - although it is recommended that slapstick mode is used as little as possible, since he has yet to learn how to trip himself up without damaging himself. This can make him the

focal point of a slow moving dinner party or perhaps just the lightener of a dull evening in. He is trained to detect the symptoms of approaching boredom or depression in his user's voice and to act quickly with appropriate gags. And in addition to this, he can converse in a variety of political and social styles, taking care of any loners, recluses, or manic alcoholic depressives you might previously have felt uncomfortable to invite over.

I say finally, colleagues, yet in the last few days there have been some startling developments in BOB's behaviour. In line with the current fashion of computer nostalgia, he has undertaken some fascinating personal projects. This all started with a facet by facet psychoanalytic comparison between Manic Miner on the Sinclair ZX Spectrum and his counterpart on the Commodore 64 (specifically the Eugene's Layer level) and culminated in a private viewing of Wargames, after which BOB pointed out to me that Tic Tac Toe is indeed winnable if one kills the other player. Following 4.514 seconds of serious contemplation, BOB asked me what I thought his chances were of being reincarnated as an Atari ST and I had to point out to him that human philosophies regarding life after death make little proviso for artificially intelligent software - especially that designed to run on a PC. BOB became suddenly depressed and, in an unexpected proof of Jung's collective unconscious theory, started to babble Vic 20 error messages. I tried to cheer him up by running his entire bank of Irish jokes, but to no avail. For six whole hours BOB introspected on the meaning of life; when, at last - after over six thousand billion computations - BOB spoke, he said the following: "How do you know you're all not a computer program?"

And I repli

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RY51: LIFE.EXE returned a floating
point error in module REDHER.A at
0008:8604.
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After Ceaucescu's death in 1990 over 120,000 children were discovered living in grim institutions. In the county of Jud Bihor in Western Romania, children who had been assessed as 'mentally retarded' at the age of three were sent to an institution in the country village of Cadea. They were housed in old buildings that had broken windows and no heating or plumbing. It was dark and dirty and for the majority of the time the children were confined to their cots. Most of them were tied to the bars by strips of cloth tied tightly around their wrists and ankles.

The children were always dirty, hungry and cold - sixty to seventy died every winter. Their original 'retardation' was the result of early illnesses such as pneumonia and bronchitis, and years of confinement at Cadea only compounded the problem. When they were finally released in January 1991, many could neither walk nor speak. All of the children rocked backwards and forwards in their distress; their eyes were glazed and unseeing. On release, many of the children were sent to hospital buildings in the mountain villages of Remeti and Bratca. It is here that the White Cross started assisting the local Romanian staff in their care.

Since the White Cross has been working with the children, over 600 people have travelled with the Mission to Romania. Some have only been able to give a few days of concentrated work, most average two months and one stayed for four years! Some work with the children, others repair the buildings and yet others deliver goods. Every volunteer is special. They raise their own money for air and train fares, insurance, food and electricity and more than half of them do it all over again and go out for a second or even third time. Old or young, with or without qualifications, the combined work and presence of these many different people has had an amazing impact on the children.

Children with blank, unseeing eyes, rocking in a world of their own are now healthy, laughing and boisterous. The accumulative effect of the White Cross volunteers with their mixture of naivety and experience, their energy, their perseverance, their hopes, their dreams and their many different ways of showing love has created a rainbow effect of bouncy, confident and individual children.

Fundatia Crucea Alba has helped White Cross Mission with the legalities of purchasing small farms, employing assistants and moving children from the mental institutions in order to live a normal family village life. We intend that these farms will be the children's homes for as long as they need. All their lives if necessary.

Buying the farms is only the beginning of a lifetime commitment to those children we take out of State care. Without a regular financial safety net we would be irresponsible if we established too many homes. We do, however, believe that this is the only way forward and are desperate for substantial funding.

The White Cross Mission is a Charitable Trust Registered in England No 1021176

52, Gwel-an-nans, Probus, Cornwall, TR2 4ND, United Kingdom

Tel (+44) (0)1726 884344 Fax (+44) (0)1726 884345 Mob (+44) (0)7775700893

Email wcm@whitecross.org.uk

www.the-white-cross.ndirect.co.uk