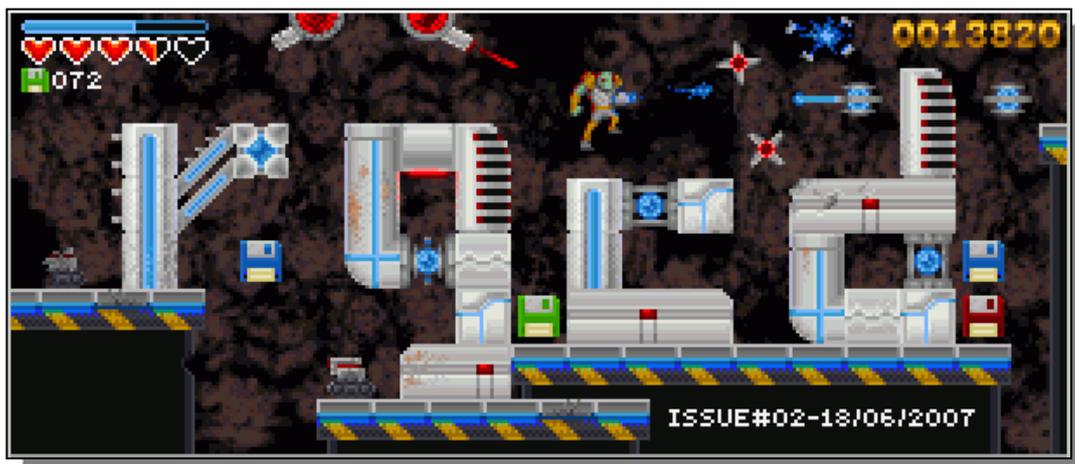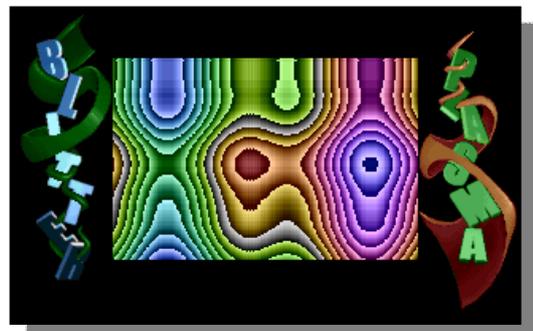# Commodore Free

Issue Number 11
August 2007

FREE to download Commodore Magazine
Available in PDF text HTML and as a D64 image

www.commodorefree.com

ISSUE#02-18/06/2007

Editor

Another great issue! Although I say it myself, maybe it's a little over dominated by the Jens Schofield interview, which I reprinted with permission from "Total Amiga" magazine. The magazine is now sadly closed.

Jens Also answered a couple of extra questions I sent on behalf of Commodore Free readers and even took the time to re-read the article, update and amend the interview. So a big thanks for taking the time to do this Jens. So who you maybe wondering is Jens and what does he do – well you need to read the interview to find out more.

Thanks to everyone who has sent emails of support, especially when I "went off on one" possibly due to the pressure of the deadlines I imposed on myself to release monthly issues of Commodore Free magazine, and life in general trying to get the better of me.

Unfortunately it seems no one has invented a machine to freeze time or even been able to lend me some form of time machine, the B.B.C. Didn't respond to my plea to use the T.A.R.D.I.S. to go back in time a couple of months so I could get ahead with Magazine issues and be more relaxed. I presume the T.A.R.D.I.S. is still needed by "the Doctor" for the new series, I wonder what "the Doctor" does when he isn't on television, does he take time out from saving the world? And does he still get paid from the B.B.C. for relaxing?

I would like to thank everyone who has been interviewed for there time and comments and say that "my frantic emails and screaming" were just to get the information in a timely manner.

HOW CAN I HELP COMMODORE FREE
Ok the best way to help would be "write something about Commodore" (yes for the observant I spelled the company correctly this time) _grin_seriously though articles are always welcome,

WHAT ARTICLES DO YOU NEED
Well they vary contact me if you have an idea but I am looking for

Tutorials – (beginners and Expert)
Experiences with Commodore
Why I love Commodore machines
Interviews – maybe you have access to a power user

Thanks Nigel

Contents and Index

READERS LETTERS

Hi,

Great magazine, I so appreciate the work you guys put into its production.

Now a brief introduction. My name is Lee Speakman, I am 30 years old, and have worked in IT as a career (from technical support, programmer to IT manager). Currently I am self employed in a completely different field.

I love the Commodore machines and have many stored in my loft - their state of dormacy is relative to current time and space constraints (isn't that what everyone says?!). Anyway, however unfortunate, they are not getting
the use they deserve - however that is another story.

I have followed the Commodore scene for many years, although I have Never been involved with any groups or fan clubs, I guess I remained on the periphery, for reasons that will become clear. 'Back in the day' I loved the games and it was all about the games. I first had a C16, which I loved
and fondly remember many great hours on that machine. Then I got a C64 and my world changed!!! The graphic and sound capabilities of the C64 were (are) brilliant. As I said, at that time (when I was a wee lad) all I cared about was the games.

I have read with great interest the Commodore Scene mag, and followed, for many years, developments for the C64 and Amiga on the Net. But even as someone who is competent with computer technology I sometimes feel the C64 fan scene forgets those, like me, who come into the C64 a late stage (or as a youngster) and don't understand the hardware so well. I guess you are thinking an IT bod like me should undertstand it all so well. Well, although I love Commodore I cut my teeth on Windows, and have come back
 to the C64. Of course I have programmed BASIC and even assembly language
 ...
put never in specific relation to the C64. I know what I am supposed to do; I have a disc drive connected to my C64, and can find my way to save a file. I know the C64 can make great music using it's SID chip, but to get to learn the basics is not so easy and this is my point...

If I need to brush up on my PHP programming I grab a book or 'google' it...and there I can get information from beginner to 'super user'. I have Not found this the case with the C64 scene, too complicated and in at the deep end, and to learn anything is an involved and time consuming process ... I must state I am in no way detracting or critising the great work done by everyone who has kept the scene alive all the years. However, I guess I feel it is a paradox; that whilst your technical knowledge has kept the scene alive it may have inadvertantly isolated newbies to the scene! For example, it is difficult for me to approach my friends (who specifically had

a C64) with developments in the scene as they take one look at it and dismiss it as techno-geek stuff... and I have to agree. To summarise, I think what you have all done is amazing, but could it be that to bring on board new 'retro' fans you need to run some basic

articles? For example, an article on the developments on the C64 from a basic perspective, like how to get started - such as how to add a hard drive, installing GEOS, how to connect to the Internet, etc. All these things may seem annoyingly basic to experienced users but not to me, and, I am sure from my experience, not to others who played the C64 for games but those who would perhaps come back if the technology was explained in a 'dummies guide to' the C64 way.

I am willing to help, with game reviews or whatever... so I am not just writing to tell you what (IMO) should be done ;-). I hope that the
 tone of this email is not in anyway negative. Just trying to make some suggestions, which are obviously, at the end of the day, just my opinions and of course I am totally open to the fact I might be completely wrong. But, I feel that I have waited so long to write and message, and am feeling that at a time when I really want to learn I am frustrated with lack on information on how
to get started. I know I could spend a month learning the intricacies of the C64, and perhaps in a way, that is the true path of any true devotee
but when you have been spoilt like me, and everyhting is available in easy how-to guides, I am affriad that no matter how much I want to program or upgrade my C64, and until I can get results this evening it will simply remain one of those desires that comes after the easier things! C'est la vie!

Yours sincerely,
Lee.

COMMODORE FREE
Lee thanks for your comments firstly though Commodore Free is written and produced by myself only! I have managed to beg borrow articles from other people but the main bulk of the magazine is produced by myself.

Now with this knowledge you will understand fully why I have no time left to create how to guides and beginners courses. I am running Dave moormans beginners guide to basic, he has written for the magazine, although he is having problems at home so the course is on hold at the moment, also I am running Jason Kelks Excellent HEX files,

I do take the point about needing guides for beginners and not alienating new users, so if anyone is reading and would like to submit a beginners guide please feel free to contact me. The problem is I can only produce what you write about, due to the amount of time it takes to produce the magazine and edit the various versions (rather badly)

Thanks

NEWS

VICE emulator

The versatile Commodore Emulator running on various hardware now runs on PPC version of Amiga OS with Warpos and warpUP

Downloads available
Binary for M68K AmigaOS 3.x systems:
Binary for PPC AmigaOS 4.x systems:
Binary for PPC MorphOS systems:
Binary for Intel AROS systems:
Binary for PPC AROS systems:
Binary for PPC WarpOS systems (Experimental) :
Binary for PPC WarpUP systems (Experimental) :

Head over to
http://www.viceteam.org/index.html

or the Amiga download section
http://www.viceteam.org/amigaos.html

COMMODORE IN 3D
Dear Visitor,
in this my little Gallery, you find some selected samples of my work, wich I did the last few couple of years, and still do, as I find the time. I am happy to share them with you, and if you enjoy them, my work is done. Sincerly,
Yours Christian Taeuber
http://www.3d-taeuber.de/gallery/gallery_main.html

On the website amongst other items of visual eye candy are pictures of Commodore Computers viewable in 3d (with the special glasses) below is a sample

Commodore Plus 4 Demo "SHADE"
http://plus4.emucamp.com/software/Shade/
Also you can watch it online via Youtube
http://youtube.com/watch?v=1vOgXf1GnO0

Commodore FREE
This is an amazine Demo for the Commodore plus4 the more I see the machine the more I am stunned by what it can do, If you don't have a Commodore plus 4 I suggest you watch the youtube video somewhere. Excellent

DTV Demo
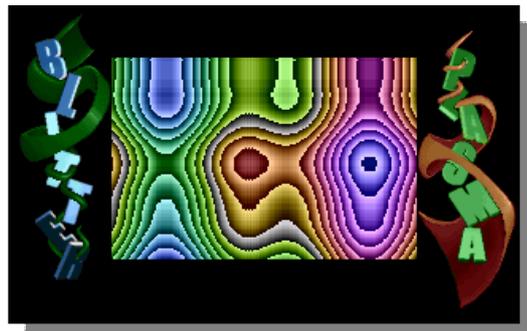
Tristar & Red Sector Incorporated (TRSI)
http://www.trsi.org/

Released a demo for your Hacked DTV unit called "Ghost in the machine" available from here
http://noname.c64.org/csdb/release/?id=49214
Or watch on youtube available here
http://www.youtube.com/watch?v=4ESzkETdtuQ

Protovision News
Update July

RR-NET AVAILABLE AGAIN
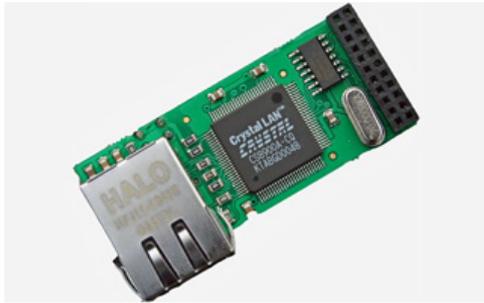RR-Net, the network interface card for MMC64 and Retro Replay, is again available from the Protovision Online Shop!

Online Shop:
http://www.protovision-online.de/catalog

Direct link to RR-Net:
http://www.protovision-online.de/catalog/product_info.php?products_id=67

Despite the rise in German value added tax, the

selling price of 50 Euro has been held.

The new RR-Net is 100% software compatible, but the mechanical appearance has changed. Unlike with the old RR-Net, the socket for the network cable now faces to the right rather than upwards. This update fits perfectly with the MMC64 but with Retro Replay it results in a conflict with the buttons - it -does- fit, but it isn't very elegant.

The following image shows the collision of the LAN cable with the buttons of RR:
http://www.protovision-online.de/hardw/gfx/rr_and_rr-net.jpg

SINGULAR BROWSER CUSTOM DOWNLOAD SYSTEM BACK ONLINE
Singular Browser by Soci/Singular is a graphical web browser for C64/C128. If you own the network interface card RR-Net or (E)TFE, you can go online with Singular Browser on your Commodore.

The custom download system for Singular Browser was offline for a quite some time due to the server moving. Since a while it can be reached again at the usual address http://singularcrew.hu/browser . Thus it is again possible to download a version fitting your hardware setup.

The disk version can still be found at
 http://noname.c64.org/csdb/release/?id=48032 .

NTSC VERSION OF TURBO ACTION ROM V1 FOR RETRO REPLAY
Last time we introduced Turbo Action ROM V1 for Retro Replay by SounDemoN. Previously, SounDemoN has spiced up the good old Action Replay ROM with an improved Turbo Assembler that runs entirely out of Retro Replay ROM and utilizes RR RAM for the source, thus leaving the entire $0801-$ffff area available for code.

SounDemoN has now released an NTSC version of the ROM.

Retrohackers.org Forum topic:
http://retrohackers.org/forum/viewtopic.php?t=249

Download NTSC version:
http://soundis.infa.fi/unofficial_tar_v1.zip

Download PAL version:
http://www.dekadence64.org/tar_v1.zip

C64 JOYSTICK TO PLUS/4 ADAPTER
Now available in our Online Shop: C64 Joystick to Plus/4 Adapter. This adapter is for those who want to use their C64 joystick on Plus/4.

Online Shop:
http://www.protovision-online.de/catalog

Direct link to C64 Joystick to Plus/4 Adapter:
http://www.protovision-online.de/catalog/product_info.php?products_id=111

ULTIMATE NEWCOMER NEWS
It is time to give you all news on our progress with the project. We are glad to inform all of you uber-patient fellows about the following:The 12th beta build of Ultimate Newcomer was deemed fit to be a Release Candidate and was assigned that status. Both main language versions and the most relevant hardware versions have been in testing for six weeks now. Release is only a matter of months away, depending on play- and hardware compatibility test results, and things that might need further changes or fixing. We are committed to release a BUG FREE game as a fitting end to the 16 years of development of this project.

On Monday, the 2nd of July, one of our play-testers, Leon\SGR\CHR, made the first successful playthrough of the RC version, in "Solo mode".
- Only a single, harmless logic flaw was discovered during this particular playthrough.

Hardware compatibility and tech features took final shape as well. Almost every planned feature was successfully implemented:
- 1541 version: 11 disk sides, improved fastloader, data layout optimized for less disk swapping, the formerly separate Boot and Save disk
 sides are on the same disk side now

- 1581 version: three 3.5" DD floppy disks, loading and de-packing a complete area is 4-5 seconds

- CMD FD-2000 version: two 3.5" HD floppy disks, disk swapping is only necessary for Loading and Saving

- CMD FD-4000 version on a single 3.5" ED floppy disk- IDE64 version: the game can work entirely from HDD or CF card, or it can work from a CD or DVD and Load/Save game positions to HDD or CF card

- An English and a Hungarian language version of all versions listed above; German language version is delayed, but hopefully it will continue in the near future

- PAL/NTSC auto-detection and support

- 6581/8580 SID chip auto-detection and support

- C128 Auto-boot support with all floppy diskversions; works both with the internal drives of C128D and C128DCr and externally attached 1541/1571/1581/CMD FD floppy drives

- C128 directly supported: de-packing is accelerated by switching the CPU to 2MHz mode while the VIC is drawing the screen borders, providing about 30% extra speed over the C64

- SuperCPU directly supported: practically INSTANT de-packing, when coupled with the IDE64 version, almost a magnitude faster disk I/O

The server for newcomer.hu is currently offline. It is currently moving to a new location and hopefully be back online soon.

The last news item is about a friend, a former project participant and colleague.

- Hereby we publicly express our wishes of ENDURING LOVE AND A LIFETIME OF HAPPINESS to Andras Lay, the coder for the original and the Enhanced Newcomer, on the occasion of his wedding in early July!

POLL: 4 PLAYER GAMES COLLECTION?
Since 1997 Protovision has been developing games for the C64. Up until today, a lot of games were

released as a single offer, including many games with Protovision 4 Player Interface support. For quite a while we have been considering whether it is worth compiling a 4 player games collection to give new life into the titles with a box and cover. The following games are going to be in that box: Bomb Mania, Team Patrol, Quadris, Quadtron, Snacks 4 Snakes, Hockey Mania and Tanks 3000. It will be a nice party game collection, won't it?

However, we are not sure if there is enough interest in the older titles to make a collection like this worth releasing. That is why we would like to start a little poll to see if there is general interest in such a partybox.

The poll is taking place in the Protovision section at the Lemon64 Forum at http://www.lemon64.com/forum .

Lemon64 thread: http://www.lemon64.com/forum/viewtopic.php?t=24066

Your opinion is wanted! Thank you.

HARDWARE SECTION HAS BEEN UPDATED
Our hardware section has been updated once again. We have added utilities and other software and links concerning the upgrades and add-ons that we stock such as the MMC64, RR-Net and Retro Replay. For instance, there is now a list of software that will work directly from the MMC64, including Copycat by Fairlight, a new demo released at the recent Big Floppy People Party last weekend. Enjoy!

PRICELIST UPDATED
There is also a new pricelist (07/07) available, including the new C64 Joystick to Plus/4 Adapter. As usual, you can find the pricelist here:

 http://www.protovision-online.com/pricelist.htm

http://www.protovision-online.de

Amiga Future Magazine
1st English Issue
http://www.amigafuture.de

Magazine only 4.50 Euro
Magazine and CD 7.50 Euro

6 months subscription 34 Euro
6 months subscription 51.90 Euro

With the sad demise of the rather excellent "total Amiga magazine" http://www.totalamiga.org/ as detailed in an earlier issue of Commodore Free magazine.

I really had no other option but to continue my subscription to Amiga Future, well I could have asked for my subscription payments back I suppose (Amiga Future took over any outstanding issue subscriptions from Total Amiga)

Amiga Future has been available for some time reaching issue number 67 but only as a German language magazine, the magazine has now and English language version.

The edition I am looking at now is the 1st ever English edition of the magazine, as everyone is aware English people are lazy and only ever learn one language (English) so they have to get other people to do the work for them

Issue number one looks very professionally with a clean layout and is very well produced. The issue lists some 19 Co-editors as well as the main editor 3 Text correction writers and 13 translators. Slightly more than

Commodore free then as there is just me; of course more staff writers are welcome as indeed are 1 off contributors!

Unfortunately it is very obvious when reading the magazine that the issue was created in German and then translated into the English language. The text is readable, but the Grammar is sometimes incorrectly formatted having the effect that the reader sometimes has to have a double take on the paragraph to understand the writer's comments.

I understand from various emails and groups that this issue was rather rushed, mainly due to the demise of the English language Total Amiga magazine and lets be honest its only at issue one in English.

The magazine is still readable and a superb effort from the contributors, (I don't want anyone to think I

am complaining here I know my English writing skills lack a little something)

The magazine cover and back are in glorious full colour; but the inside is sadly monochrome, obviously this is a cost problem as producing a full colour version would have the effect of raising the Magazines cover price to a point where most users would object to its purchase.

My issue came with a CD rom containing shareware and full versions of software; obviously the magazine is cheaper if purchased without a CD rom.

In issue one we have the usual subjects covered, News, Party reviews, Cheats, Readers letters and reviews, previews, Hardware and a workshop section. The magazine features adverts from Amiga world, Amigakit, Amiga future itself and Acube

The first edition is some 52 pages in length with around 7 of these taken by advertisements; even so it's a fairly weighty read. The magazine has a good mix of features and detailed explanations and very clear photographs or drawings where applicable, there is even a section about Amiga Modding and putting an Amiga 600 into a DVD player casing.

So to summarise
The English translation needs checking, maybe by an English reader, the magazine is a good mix of features and well written, professionally produced and is well worthy of the cover asking price

Magazine History
In 1998, , ICP Verlag rename its Spin-off Amiga Plus Sonderheft into "Amiga Future". The magazine was published by ICP, but completely created by APC&TCP, a former user group which had turned into a software publisher over the years.

In January 2000, ICP left the Amiga market and sold the publications to Falke Verlag. In 2000, Falke sold the title to APC&TCP, who now publishing the magazine

Interview with Jens Schofield
Individual Computers

http://www.jschoenfeld.com/indexe.htm

The following article appeared in the now defunced Amiga magazine "Total Amiga" after emailing the editor and Jens both agreed that I could republish the article in Commodore Free magazine, I would like to thank "total Amiga" for letting me use the article and Jens for agreeing the reprint and re reading and updating his statements, Also I managed to add a couple of questions myself, these appear first. The interview is very long so lets get on with it: Here we go then.

Commodore Free questions

Q - Have you ever thought of approaching Maurice Randal www.cmdrkey.com to acquire the rights to the CMD product range, to mass produce Commodore 64 products like the SCPU, Ramlink and Cmd Hard drive, If you haven't have you offered Maurice help in the manufacture of CMD products,

A -I have thought of it, but that would involve so Much work that I would not have the time to do it all. The designs are nice, but not up to date. Before they can be produced, they'd need a Complete re-design. In other words Negotiations About the value of CMD would be *very* hard.

Q - If you were given an unlimited amount of time and development costs what product would you create and why (it can be none computer related)

A -I really think that such a thing would not be Related to computers. You might be able to create a connection through "electricity", but that's about it: I have read a lot about Stirling engines in the past two years and even built a small model engine that runs on a tea light. I made a simple modification that was initially meant to control it's power output (RPM of the free-running engine), but it turned out to be a nice increase of the power-to-size ratio. One property of Sterling engines is that they're easily scalable to almost any size. I'd like to find out if my modification can work on an engine that's big enough to output 5kW (or more), and use it to make solar energy. Unlimited amount of time and money would give me the chance to patent my inrease-of-power-idea and pay an engineer or two to develop a decently-sized engine that can be sold to any household. More development would have to be done on the power grids, as distributed power generation requires intelligent power routing. The electricity-related CO2 output of this planet could be reduced dramatically.

ciao,
Jens Schönfeld

Total Amiga Questions to Jens
Q -Could you start by introducing yourself to those of our readers who may not know who you are, and to those who do and want to know more about you?

A- My name is Jens Schönfeld, and I'm the founder and owner of "Individual Computers". I'm the man behind things like the Graffiti video card, the Buddha IDE controller, the Catweasel floppy controller and multiple other expansions for the Amiga. Top-sellers

were the X-Surf networking card and the IDE-fix (+express) adapter.

Q -When did you first become interested in hardware development, and what was it that attracted your interest?

A -I was always fascinated by electronics since I was a kid. The most interesting part of playing with Fischertechnik was to add lamps and to make it move with motors. My cousin introduced me to computers without really intending it: He gave me his old Sinclair ZX81, probably assuming I couldn't do anything with it but use it as a non-working toy. As soon as I learned reading in primary school, I read the manual of the thing and begged my mom to allow me to connect it to our TV. I taught myself Basic, and my mom made sure that I didn't only read computer books. The first kid's book I read -- after the Sinclair manual -- was Pitje Puck! The ZX81 was soon replaced by the Commodore 64, and I always tried to control my Fischertechnik with it. However, having no education in electronics, I fried the C64 fairly often. At some point, my mom refused to pay for the next repair, so my only chance was to find out how to repair it on my own. The invoices with part numbers of exchanged chips gave valuable hints, and I got a basic understanding of "what chip does what" inside this "magic machine".The puzzle was completed by magazine articles about hardware. I can't really explain why the hardware articles were so much more interesting, but looking back, it might have been because I was too lazy to type in the program listings. I preferred adding LEDs and switches to my C64, resulting in the machine that I have on the title page of c64upgra.de. I get frequent requests like "is that a real C64, or just made up for the photo?" -- it's real, and it's the C64 that I used as a kid. I won't part with it!

Q -When did you decide to make a business out of it?

A - During school, I had a lot of spare time to do computer stuff and make contact with other computer users. Being a rare hardware-person, I soon got to know the "makers" of the C64 and Amiga scene: Chris Hülsbeck (he worked for Rainbow Arts back then), the Factor 5 crew, Kaiko and later Neon entertainment -- they always consulted me when something hardware-related had to be done. This wasn't a problem time-wise, as school is only half-days in Germany. The afternoon was free after I did my homework, so I had lots of time to meet with friends who also had a C64 or an Amiga. Many games of the time were protected with copy-protection schemes that I invented: Turrican, Apidya and other titles used my long-track writer hardware. Try playing through Apidya and get to the final credits screen; it says "Hardware: Jens Schönfeld" (among many other credits). I finished school in 1993 and instead of serving in the military, I did a "civil service" in a senior citizen home. This reduced my spare time a lot, and spending more time on computers meant doing less hours at the senior citizen home, resulting in a lot less money in my pocket. That was the time when I decided that my beloved hobby had to make money, not cost money,

so I could continue doing it. Neon Entertainment were the first to give me contract work in 1994; we developed a motion-tracking system together that was based on several Amiga 1200's with my real-time video digitizers: One Amiga per camera, and several cameras pointing at the same person from different angles. The data was used to Calculate 3D-coordinates and have natural movement data that can be used in games. I registered a business in the summer of 1994 to make it all legal, but didn't really intend to make it a big company. I just wanted to be able to do the work and make money with it legally, but my main plan was to study electrical engineering at the university of Aachen. I started that in the fall of 1994 and continued the business as a part-time job, mainly doing contract work for other Amiga companies, the biggest of them being ACT electronics, the makers of the Apollo accelerators (I did the service/repairs for them for quite a few years). When Doom came out for the PC, I wanted to have that game on my Amiga, but soon friends with more software knowledge taught me that the Amiga is missing an essential feature: A chunky graphics mode where one byte in memory represents one pixel on the screen. That's when I started my first own hardware design, the Graffiti card. It was presented at the Cologne show 1995 and first shipped in January 1996. The success of the card changed my mind, and I wanted to turn more of my ideas into products. The company soon turned from a part-time job into a full-time job where I didn't have much time left for the university. I passed most of the exams, but never finished my diploma. I have three exams and a thesis to go, but will probably not do that anytime soon. I'm not registered with the university any more, but can re-register and continue almost anytime -- maybe when I'm 60 years old!

Q -For how long has Individual Computers existed, and how many people are involved?

A - When I started in 1994, I had no plans to expand the company. However, I knew that I was really bad at software, so that had to be done externally. I hired contract workers to do software, or turned to the "big names" of the Amiga, for example Oliver Kastl did the IDE-fix and Buddha software. Since January 2006, I have hired two programmers to do the main software work. I'm even in talks with a third, because I have a few projects in the works that require a lot of manpower. I do want to continue support for older projects, such as the Catweasel, so I have to create more jobs.

Q -Can you support yourself by developing Amiga hardware, or do you have a "day job" outside of Individual Computers?

A - Individual Computers is keeping me busy for 70 to 90 hours a week, there would be no time for a "day job". Like I said, I'm currently creating jobs to complete all the work, and the company will grow even more: After summer 2007, I will move out of Aachen and double the space for the company. Since the prices in and near Aachen are fairly high, I'm moving out in the country, because all I need to do my job is fast Internet and a next-day-delivery service, which is available almost everywhere in Germany. A good friend of mine has put it this way: "You could do your job almost anywhere, maybe with the exception of the north pole!".

Q -What are your feelings regarding the current Amiga situation, and how do you think OS 4 and MorphOS are shaping up?

A -To be honest, I feel sorry for the Amiga community. They have been split into a "blue and a red camp", and a lot of energy is wasted on war between these camps. Many people have lost the focus, and there's nobody who is channelling all the energy that is still there. Small projects are being started but never actually finished or even brought near a state where it could be called "a working prototype". OS 4 and MorphOS both have a lot of power, and I guess I'm not the only one who thinks that their power should be united. However, there's a lot of negotiating to be done if that marriage should ever happen. There are too many bad feelings on both sides, and some of them are even justified.

Q -Can you comment on your own position on this split in the market, and the well-publicised dispute between Individual Computers and Genesi?

A - conflict requires two sides to maintain it, and I'd finally like to put this aside - it's almost five years ago and I have moved on. Being frequently reminded of the loss I've had doesn't help the situation. But do you really think that the Amiga Inc-people are that much better than BBRV? With the recent developments (or better: announcements), I get more and more understanding for the people who have turned their back on Amiga and the remaining community. Bill McEwen did not accomplish anything in the past eight years and he probably won't change that in the future.

Q -How long do you think you will be able to dedicate your time to Amiga development?

A - Amiga is making less than a quarter of my revenue at the moment, but it's constant business. I guess that I could continue infinitely, because I still have a lot of ideas that I never turned into products. However, business is not the main reason why I dedicate a lot of time to the Amiga. Amiga is a philosophy that other computers lack, a lot of concepts of the Amiga OS and the Amiga hardware are either missing, or have bad replications on today's mainstream computers. I must admit that I do my main work (CAD, emails and OpenOffice) with an x86 machine, but it's always fun to turn on the Amiga. The fun has been spoiled lately by people in public discussion forums, so I took a break: I accepted contract work that has attracted more and more employers, as my design was a huge success at CeBit. It was even rewarded the category winner "hardware" of a German innovation reward. Employers are lining up at my door because my ADSL2+ CPE design has better performance (especially on bad lines) than most of the competition.

Q -Among your recent designs for the Amiga market are a chip RAM expansion and an '030 accelerator for the A600. Is there really a substantial market to make A600 accessories profitable?

A - I don't expect to make much money on the A600 expansions. Those projects were mainly made for the fun of it -- the A600 is a cute machine, but it does not generate substantial revenue, so anything I develop for that machine has to be done in my spare time. If I'd dedicate my main time to projects with such low margins and low quantities, I'd go bankrupt pretty quick.

Q -You recently released a news item stating that the A600 accelerator, as well as the A500 version of your

Buddha IDE controller, will be delayed indefinitely, giving the reason that contract work will "keep you busy for the next few weeks." How long is this "indefinite delay", is there any chance these two products will be released this year, or is it currently uncertain if they will ever hit the market?

A - Both will hit the market, but I can't tell you when.

Q -And, what kind of contract work is it that has you occupied at the moment?

A - It's not Amiga or retro-computing related at all. My Keyrah design has attracted the attention of a company that needed a product for a realtime USB application, and the company Viprinet hired me to do the complete hardware design of their Multichannel VPN router. This included the hot-pluggable modular system, communication modules of all kinds, the case design and mass-production.

Q -You have also designed a soundcard, the Delfina. What makes this different than all the other PCI soundcards on the market today?

A - The Delfina has a specialised processor that can not only playback samples, but also plays MP3 without the CPU needing to do the de-compression. Effects can be added like echo, hall, flanging, delay -- this is not possible with a Soundblaster unless you're using the main processor for effects like that. Delfina is a very Amiga-like idea of a soundcard, because it's a specialized piece of hardware that reduces the load on the main processor.

Q -What exactly is a Flipper interface?

A - The Flipper interface is a bridge between the Amiga and the mainstream computing world. I invented it during a time that seemed like the transition between classic Amigas and the next generation PPC Amiga machines. I always wanted my hardware to keep it's value a lot longer than ordinary expansions, and the Flipper interface adds to that: It's a dual interface for the same piece of hardware. One side can be plugged into a Zorro slot of an Amiga. Autoconfiguration makes it available to the Amiga OS. If the user switches to a modern Amiga with PCI slots, he takes out the card, flips it around and plugs it to the PCI slot of a PPC-Amiga or a mainstream computer with PCI slots.The Flipper interface has only been used for the Catweasel MK3 so far, but it's also planned for the Delfina card with some extensions. However, I won't promise a release date for the Delfina Flipper interface, because I don't want to disappoint anyone. I have promised it for too long and didn't find the time to actually do it. With the amount of work I currently have, I have no idea when I can find some spare time to actually make the flipper interface for the Delfina. For all those people who want the Delfina in their Zorro-based Amiga, I have a special offer for a combination of the A1200-clockport Delfina card and a Zorro card with a clockport.

Q -You also have another soundcard, the Atlantis. What's the difference between this one and the Delfina?

A - The main difference is that the Delfina is available and in stock. Atlantis was only made once, and the prototype has been demonstrated on multiple shows. However, the design was never brought to a state where it could be called "production-ready", so I shelved it forever and did the cooperation with

Petsoff for the Delfina instead. One of your most famous pieces of hardware within the Amiga community today is the Catweasel, which is a floppy controller, simply put. Maybe you could explain a little more about what exactly it is that it does?

Q -Is it possible to just plug in any 3.5" drive you can get your hands on, and then use this to read all sorts of weird floppy formats, such as an Amiga formatted 1.76Mb HD disk?

A - You got it -- it's mainly a floppy controller that takes standard PC floppy drives and uses them to access all kinds of floppy formats, including Amiga DD and HD disks. The controller is available for various Amiga models and for PCs with Windows or Linux. For 5.25" disks, does it require any specific sort of drive, or can you plug any kind of pre-PC disk drive, or maybe even a Commodore 1541 into it? The Catweasel requires PC-standard floppy drives with a 34-pin Shugart connection. The Commodore 1541 drive only has the Commodore-IEC bus, which is not compatible with the Catweasel. If you want to read 1541 disks, just take a PC 5.25" drive and insert the C64 disks, the Catweasel can read the disks with that drive. Most people still think that the drive itself is incompatible, but really the controller is responsible for the data transfer. A drive mainly consists of mechanics and signal conversion circuits that do not care about the disk format. The Catweasel therefore makes ordinary disk drives truely multi-talented.

Q -Does it handle any other formats apart from the above mentioned floppy sizes, such as cartridges or cassettes?

A - Neither cartridges nor cassettes use standard interfaces such as the shugart interface. However, if you have a tape streamer that was used with old floppy controllers, it would be possible to design drivers for the Catweasel. Especially the MK4 offers new features that support such hardware, but I never intended to support all the different non-standard streamers, because even if you're connecting them to the same interface as the floppy drives, they do need totally different commands that are completely different from vendor to vendor. The new controller features mainly aim at disk formats that were popular in the early 80's and 70's. There are 8 and 3-inch drives that need a few more hardware features, and the Catweasel MK4 supports them with the forthcoming floppy-adapter "Kylwalda II".

Q -For the latest revision of the Catweasel, you added a SID chip, the sound chip used in the C-64. How come? I don't really see the logical connection there.

A - The logical connection is made through emulators. An emulator can do almost everything that the original machine can, with the limitations that the hardware of the host computer gives. One limitation is the floppy controller, it can only handle MFM format, so the C64's GCR-formatted disks appear unformatted to the PC floppy controller. The same applies to the SID chip of the C64: If emulated, you always have a delay between picture and sound. Further, every SID has it's own character because it's partly an analog chip. You cannot emulate these different sounds 100%, as every filter characteristics of every chip is individually different. A real SID chip brings emulation a lot closer to the original, but still keeps your desk tidy. No need for multiple machines, monitors and keyboards on one table.

Q -What platforms is the Catweasel targeted at, and what's the story with drivers for OS 4 and MorphOS?

A - The Catweasel MK4 mainly goes into x86-based machines that are running Linux or Windows. I have seen a significant peak in sales when I published the new Windows beta drivers, which adds to these statistics. OS 4 and the UBoot rom of the Amiga One also support the MK4, with still a lot of work to be done. I gave the source codes of the classic Amiga drivers to a programmer who is now working on a PPC-native port of the multidisk.device. This will bring all the capabilities of the classic Catweasel drivers to OS 4. Since I'm not spending any money on these drivers, I cannot give any release date. The story behind MorphOS drivers is easily told: I made Catweasel drivers for MorphOS in early 2003, which created sales of about 30 units. I had to sell my Pegasos due to a decision of the management of Genesi: Dropping the price of the Pegasos by a few hundred EUR meant dropping the used-value of any Pegasos in the field. To limit the losses that the MorphOS port of the drivers had already generated, I sold the Pegasos. About a year later, a new MorphOS version came out that was incompatible with the multidisk.device, and people wanted a free update from me. I refused, because I don't have a machine any more, and because I am not willing to spend money on the development of drivers for an operating system that currently does not have hardware to run on legally. What applied to the MK3 drivers in 2004 also applies to MK4 drivers today: I will not spend any money on the development of drivers when there's no substantial sales to expect.

Q -You wouldn't consider sharing the driver sources with a MorphOS developer, as you did for OS 4?

A - I wonder what's the difference of me handing the drivers to someone, or someone taking a good look at the open-source Linux drivers. If there's someone who seriously wants to work on MK4 drivers for whatever OS, he should approach me and ask. Instead, too much time is spent in online forums, ranting about others, but not really doing something. Like I said before, a conflict requires two sides to be maintained. The "upper management" has only used the deveopers of the community to build business plans, convince investors to spend money but was only pushed around in the end (and this applies to both camps). It's time to build new alliances and set the conflict between the communities aside, especially because it was not created by the community, but by the management.

Q -Out of all your hardware achievements, which three of your designs are you most proud of, and why?

A -The Catweasel is surely among the three, as that's a product that turned into a true self-runner. Hobbyists are using it, and so are forensic laboratories, including the US computer forensic department of defence. The Catweasel keeps surprising me, even after ten years. We're constantly finding new fields where it serves well, and with a new programmer on the Windows drivers, I'm expecting interesting updates, especially in the field of data recovery. The other two I'd like to mention are fairly simple things, but they were real challenges during development: The Retro Replay for the C64 does about the same as the Action Replay did back in the day. However, the logic chip that I used on the cartridge is full of timing-tricks and manual on-chip routing to make the design fit and to make it work

with all C64 models. I solved many problems that arose from mixing high-speed CMOS logic chips with the slow speed logic chips of the C64 without customers even noticing. The same applies to the Buddha IDE controller for the Amiga, so these two are on the same level of complexity.The last thing I'm really proud of is Keyrah. The user can take an old keyboard of a Commodore computer, and use it on the USB port of a mainstream computer (PC, Mac, Amiga anything else that has USB -- even X-Box!). On the outside it looks like a simple microcontroller scanning the matrix and passing the information to the host system. However, if you're a bit into electronics, you might notice that there are very few components on Keyrah. One thing that most people I spoke to thought was impossible to eliminate was the crystal. I found a way to time the USB communication according to the tight specifications of the USB-IF (I became a USB-IF member in 2005).

Q -What is your best selling item, and how many units have you sold of this so far?

A - That's easy to say: The Catweasel is the top seller. More than 5200 units have been sold in the past ten years, where other well-selling products of mine hardly come close to 3000 units. This is mainly caused by all the different versions of the floppy controller that I designed. I have eleven different designs in my CAD system, where ten were actually mass-produced, including the latest MK2 "anniversary edition". Other products experience one, maybe two revisions over their lifetime.The Catweasel will be outnumbered by my ADSL2+ system within one year. I have requests from all over Europe and even from Africa, and I'm in the lucky position to choose the best offer for the next contract.

Q -What's your general procedure behind bringing a new product to market -- from idea stage to finished product?

A -That depends on the kind of product. Some go through multiple stages of prototyping, others aren't even prototyped but go straight from idea into the CAD system and into production. It all depends on the amount of new developments that go into a product. If you take the X-Surf for example, there was hardly any new development in it. The Zorro interface was proven technology from the Buddha IDE controller, and except for the PnP isolation of the Realtek Ethernet chip, there was nothing new to develop. The card went from idea into mass-production within ten days, where most of the time was spent on finding mechanical solutions for the metal bracket and the boxes. Sometimes I still hand-wire prototypes, but most of the time, a prototype already looks very much like the final product because it takes about the same amount of time to design a PCB as for me to hand-wire a prototype. For most products, it's necessary to make at least two or three initial prototypes, not only for me, but also so a programmer and a betatester have something to work with. It would be a waste of time to do that all manually, so prototype PCBs are mostly the first step after a proof-of-concept in the simulator of the programmable logic chip design programs.

Q -How much of the work do you do yourself?

A - When it comes to hardware development, I do most of the work myself, but when it comes to software, I depend on others. I can do very basic test routines ("hard-coding"), but any OS-related programming is over my head. My programming

knowledge ends at 6502 assembler on the C64 and a little bit of Turbo Pascal on the PC. Oh, and Basic on the ZX81/C64!

Q -Have you ever had to cancel a project during its creation, for any reason?

A -Not many, but there are some. I wanted to do a second, extended version of the Graffiti for a long time (higher resolution, more colours etc.), but that turned out to be so expensive that I never even got to a prototype stadium. Another thing that I tried was a "simple" adapter that turns PC HD disk drives into Amiga disk drives, but it turned out to be not-so-simple; in the end, it was a dual floppy controller with a lot more capabilities than the Amiga and the PC floppy controller. That project wasn't shelved completely, I have re-used parts of it for the very first Catweasel. As I mentioned earlier, there's one version of the Catweasel that never made it into mass-production; it's a low-cost version for the parallel port that required a lot of CPU power. It was a predecessor of the MK2 version and I did not complete it because the speed gain of the MK2 over the MK1 was extremely good. At the same time, I was able to reduce the price, so there was no need to create in-house competition. Two obvious things that never reached the market can still be seen on my web page: I explained Atlantis before, but "Kickflash" in the form as it's advertised on my page also never reached the market. The reason for that is the license for a Kickstart ROM that I never had. I did not want to produce a product that's only worth something if you create an illegal copy of a Kickstart ROM, so it never went into production. However, recent communication with Amiga Inc. gives hope that I can have an affordable Kickstart license, so finally, eight years after announcing the product, I'll be able to produce a legal version of that Kickstart switcher/flasher.The last thing I remember that I shelved was an early concept of the VarIO. The current VarIO only has a high-speed serial and a high-speed parallel port. Other plans included a PS/2 port for mice and keyboards, but the design that I made was somehow buggy. I never took the time to find the cause of the "sometimes-missing-a-bit" error, but focused on some cool interfaces instead. The choice was right for two reasons: Shortly after that, E3B's Subway came out, making PS/2 peripherals for the Amiga almost obsolete (at least those that need drivers, like the VarIO), and VarIO as it's available right now got top ratings in the German Amiga magazine.

Q -Have you created, or participated in the creation of, anything Amiga related beyond Individual Computers?

A - Yes, I was involved in multiple other hardware developments. The Hypercom 3plus and Hypercom 4plus cards are my designs, because VMC has split up with the designer of the original Hypercom cards, Karl-Werner Riedel. I made the new "plus" cards in 1998, which solved all problems that the old cards had. Another design that's Amiga-related is a replacement for a floppy drive called "EZ-drive". Eyetech has used these "silicon drives" (that was the internal name) to start an Amiga that is installed in a Kiosk system. Another design that I made for someone else is a USB card. I designed it for Creative Development (CreDev), but they never finished their software. One prototype was made, but without software, hardware is truly useless.

Q -Do you use Amigas at work (apart from testing the hardware you produce)?

A - Not any more. I used an Amiga for my emails from 1994 until 2002. Back in 1994, no real Internet software and access was available to the masses, so I had to do some tinkering: I used Matt Dillon's UUCP package for the Amiga and an Arexx converter to go from UUCP to a format that a famous mailbox software (Fastcall) understood. It worked quite good, and I even managed to make it Y2K-compatible with an additional tool. I'd love to use the Amiga a little more, but CAD-Software, FPGA compilers and OpenOffice are just not available.

Q -How has the decline in the Amiga market after the demise of Commodore affected Individual Computers and your sales statistics?

A - The demise of Commodore happened when I registered my business, and I started making my own designs much later, so that did not affect me. However, I do see that the Amiga market is not really growing! The funny thing is, no matter how often I think "it's going to be over this year", customers come and bring the Amiga-numbers to a level where it was the year before. That's right, there has been no real decline in Amiga hardware sales for the last four years. However, Amiga does not make the majority of my income, I'm happy that I have the retro-computing products and the mainstream computer things such as the PCI diagnosis card -- all that combined pays all my bills and even gave me the freedom to go on a holiday for the first time in years in summer 2006.

Q -Has the development of "Next generation" Amigas in the past years had any impact on your business? We might have to do some word definitions first: Something can only be an Amiga if it has Amiga spirit. Neither the overpriced Eyetech boards, nor any other PPC-mainboard has it. I have mainly lost money on the Next-gen boards, where the Peg caused the majority of my losses.

A - bplan's PPC boards would be perfectly suited to fill the gap in the Amiga hardware market. The dream-alliance that I talked about earlier would surely involve one of their designs, Hyperion's OS (maybe spiced up with some MOS features) and Clone-A for the true Amiga spirit [see below for more information on the topic of "Clone-A"], be it with an add-on card, or even with embedding the technology in a board that bplan designs.I hope that this makes it clear that I'm not "all against blue or red", but "for the Amiga community" and re-uniting the forces.

Q -You recently made a deal to supply ACK Software Controls with parts for their upcoming PowerVixxen, do you have any other business relationships within the Amiga market?

A -There's no real partnership with ACK Software Controls. Adam Kowalczyk has received sample connectors, he placed an order, caused some cost on my side that he never paid and failed to show prototype pictures of his designs since 2005. I tried settling with him, but he obviously found someone else to fool. I don't expect any true hardware to come out of his new cooperation.Apart from that, there's only two names that are connected to classic Amiga hardware: E3B with it's USB and networking products and Elbox. E3B is a close cooperation partner -- we talk openly about all plans, do the parts-buying together to reach decent quantities for orders in far-

east, and when it comes to customer support, we also help each other out. Elbox on the other hand is not really open for cooperations. I tried to supply drivers for my PCI cards in their PCI boards, but their methods of protecting their intellectual property go way too far in my opinion. Elbox even set Michael Böhmer (the owner of E3B) and me to "full moderation" on the Yahoo Mediator mailing list, which means that our postings cannot only be kept from reaching the list, but they can even be altered without other readers being able to see if it's really a genuine posting. I'm not saying that this has already been done, but the pure possibility of it keeps Michael and me off that mailinglist.

Q -How come you're so committed to the Amiga and C-64? It can't really be all about the money, now can it?

A -That's right, the money is a secondary reason to put so much time into products that only sell a few hundred units. There are many other reasons -- I grew up with these machines, and it's fun to squeeze out ever more out of them. It's a challenge to solve hardware-related problems with today's technology. It might seem easy with the possibilities we have today, but the challenge is to make it worth while, even with the high production cost and low quantities.
Like I said earlier, it's got to be fun, and fun doesn't only mean money, but also doing it for a community that appreciates the work, and getting attention for accomplishing things that others thought were impossible. I've made a lot of friends through my business over the years, and I always enjoy going to Amiga shows. The show itself is mostly work, but the party-and-going-out part after the shows makes up for that. That's where I got to know really interesting people that I think can only be found in the Amiga community. I wouldn't like to do the same in a grey PC market where it's all about huge quantities and anonymous sales.

Q -Being one of the most active hardware developers in the Amiga market, with talent and a great track record, have you ever considered developing a "next generation" Amiga motherboard?

A -I actually did, yes, but that would require two big developments that I don't have in my portfolio yet: A fast CPU design and the Amiga chipset. To me, an Amiga needs at least an OCS/ECS compatible chipset, otherwise it doesn't really feel like an Amiga. I'd have lots of peripherals to put on the board, and have lots of ideas to add value without increasing the price dramatically. However, the development process for such a board is long and expensive, so I never really started... until about a year ago.

Q -Are you currently working on anything new, as of yet undisclosed? And, would you care to share? I promise to keep it between you, me, and a few hundred readers...

A - I'm working on two flickerfixers, one for the Amiga that will output a 75Hz picture for PAL screens, and another for the C64, because I keep losing 15kHz C64-compatible monitors. Both products will most probably not be finished this year [this interview was made in 2006, the flickerfixers are put on hold because of the very successful contract work]
Since we agreed that this interview is not published before October 2006, I can also share the biggest project with you: I'm working on the Amiga chipset, together with Oliver Achten, the developer of the MMC64 and now the project leader of "Clone-A".

He's one of the two guys that I have hired since January of this year, and we started the plans and preparations for this project in late October of 2005. The goal is to create a cycle-exact Amiga chipset replica with today's technology. Oliver and I are going to demonstrate the prototype at this year's [2006] AmiWest show. The demonstration will be something that the visitors can influence: I'd like to encourage people to bring their favourite disks with them and try them in our computer. Any game, demo or program, just bring the disk -- the computer has 2MB chipmem and a 68000 processor. Let me emphasize again that we are not selecting the kind of software that will be demonstrated -- we will be completely unprepared for the kind of programs people bring. We just want to demonstrate that if it runs on an A500, it'll also run on our chipset.

The current name of the project is "Clone-A". We're replacing each chip of an Amiga 500 bit by bit. At this point, Denise, Gary, Paula and the CIAs are completely removed and replaced by small FPGA boards. It's pretty certain that we won't have a finished Agnus chip at AmiWest, but we already have a very good idea of what's inside, because we have already reverse-engineered the inter-chip communication, and to do this large parts of Agnus need to be known. [update: the Clone-A chipset is finished, including Agnus, and has been demonstrated on march 31st, 2007].

Our approach to a re-implementation of the chipset is surely one that takes the longest, compared to a full implementation "from scratch" that Dennis van Weeren did for his Minimig. There's also NatAmi that tries a full re-implementation based on documentation. Oliver and I are going the most complicated route, but being able to work with any combination of the real chipset and our FPGA-replacements leaves no room for mistakes. We have no other chance than to be 100% correct, and everytime we're fixing a bug, we discover that the fix actually produces a smaller design. It's really amazing what Jay Miner and his colleagues have crammed into about twenty thousand transistors per chip!

I really have no idea when I can turn this chipset into a product, but it gives a lot of possibilities. You can think of a new classic Amiga board, an extended chipset with more chipmem and a faster blitter, a daughter card for whatever mainboard that you can buy today and many other things. I'd also be open to a cooperation with someone who wants to turn this chipset into a toy like the C64DTV. A portable Amiga that runs for many hours on a cellphone battery is definitely within reach. [update: the first Clona-A machines are planned for Christmas 2007].

Q -Could you elaborate a bit about the different approaches between "Clone-A" and the Minimig?

A -Dennis took the UAE source and the description of the chipset registers to make a forward-engineered Amiga-compatible chipset. This is not necessarily a bad move, but like I said, our approach leaves no room for mistakes, while he has much more freedom for a similar, but not exactly-the-same implementation. Before we take the next step of implementing a part of a chip, we do extensive reverse-engineering, for example by writing test-programs and doing measurements on the chips with a logic analyzer while the programs are running. We're also doing really strange things to find out what the inner workings of the chips are, for example

programming them in a way that you're not supposed to.

Q -How many man-hours have gone into bringing it to its current state, and how much more time do you expect will be required before you have something finished'ish?

A - We never counted the hours, but the combined manpower is easily 2000 hours, given the fact that we're both not working full-time on the project, and that an average working-year has 2000 working hours. I'd say that we need another 300 hours to bring Agnus to a state where it can be considered cycle-exact. [update: it took a lot more than that...] It's really hard to tell how much work has gone into the project, because I have put a lot of knowledge into it that I gathered way before the start of Clone-A. I once did an add-on for a TV studio that wanted to have a special Genlock interface: They did not only want to mask between the computer-picture and the TV picture, but they wanted to define a transparency for every colour that the Amiga displays. I was only able to do that with an almost complete implementation of the Denise bitmap-logic, so I already had good knowledge about Denise back in 1995. Then Oliver did further research for his implementation of Denise, which has many features that haven't been discovered yet, even by emulators. The next thing is the part of Paula that controls the disk drive: There's a lot of Catweasel knowledge that I explained to Oliver, and he implemented the floppy part in record time. That's another big advantage we have: We are a team, while the other projects are made by single people.

Q -So, let's just get this straight, the Clone-A will basically be a complete miniature-A500, 100% hardware compatible, that can be offered in any configuration you might want an A500 in today? A500-in-a-joystick, A500-in-a-desktop-case, A500-in-a-handheld-device, etcetera?

A -Anything that involves an Amiga-on-a-chip (such as a joystick or handheld) requires huge investments that I can't do alone. However, our approach - compared to the forward-engineering approach that Dennis does -- produces the smaller design, so in the end, ours is better-suited to be produced as a chip. If there is an investor who wants an Amiga on a chip, Oliver and I can offer the smallest and therefore cheapest design with the positive side-effect that it is cycle-accurate.

Q -Does it come with an IDE interface and RF-modulator? Would there, by any chance, be Catweasel technology doing the floppy controlling?

A -I'd say that a mini-ITX Clone-A should have everything that a classic Amiga user has today: Halfway decent CPU (at least an 030), IDE, floppy that works with normal 1.44Mb drives and a PC keyboard and mouse connector. The monitor should be VGA, not an RF modulator. There's a good demand for A1200 boards, but supply is limited and the prices are high. However, anything that I'm dreaming of here should be taken as what it is: Speculation. I don't know what the final specs will be, nothing is written in stone yet.

Q -How do you anticipate products incorporating Clone-A being marketed? What will the first revision be able to do, and what can be expected from future revisions? Will there some day be a "Clone-B" emulating the AGA chipset?

A -AGA does not add very much to the design size. Since the blitter and the complete Paula chip stayed the same, we're only talking about 27 instead of 25 DMA channels and a local bus performance upgrade by a factor of four. That's something we can easily accomplish with the type of memory and the type of logic chips that we're using. Remember that we're talking about a machine that was up-to-date in 1985. According to Moore's law, AGA performance should have been reached 36 months later in 1988. We are using 2007 FPGA technology, where talking to 133MHz SD-Ram is no trouble at all.

Q -If a new revision would at some point be released, would the original Clone-A be upgradable by a quick reflash of the FPGAs?

A -Yes, as I said earlier, I'll try to keep all my future hardware re-configurable.

Q - Will it come with an "Amiga OS and ROM" licence, making it a complete A500/2000 once you add the basic peripherals? Or could it be bundled with "Amiga Forever"?

A - That's what I tried to discuss with Bill McEwen, but he failed to prove that Ainc. is the rightful owner of the Amiga IP over almost two years now. There are more options, because there are multiple authors who made Kickstart-replacements for the Amiga1000 back in the days, and I managed to dig up two of those authors. However, a true name license from the big brand of the 80s is the most desirable option, and that's work in progress; nothing to repport at the moment.

Q -Have you been in discussion with anyone else about turning this into any specific type of mass-market product?

A -Sure, but no written agreement has been signed yet, so I would not like to give their names here.I don't expect that it's reasonable for all the good boys and girls out there to expect Santa to bring them one of these this year?

[2006 answer]
No chance, sorry. As I said, Agnus still needs a lot of work, and after that, we still have to implement a 68000 processor into an FPGA before an Amiga-on-a-chip can be made. I even doubt that Santa will make it in 2007, but you never know. The worst thing that can happen to a hardware design is that the news about the prototype is spread too soon. If Minimig and NatAmi would not exist, I would not be demonstrating Clone-A at AmiWest this year, I would rather wait until the first product with the results of the work is ready to ship. Most people don't realize that a working prototype only makes perhaps 30% of a finished product.

[2007 update]
Oliver and I are working hard on Clone-A so the first version can be shipped this year. However, Clone-A is still no finished product and the only thing I can ask for is patience.

Q - Lastly, anything else you would like to add?

A -This has gotten really extensive -- I hope not boring. Thanks for everybody's time!

POWER c compiler
Glenn Holmer (Q-Link: ShadowM)
http://www.lyonlabs.org/commodore/c64.html

Q - Please introduce yourself to our readers

A - My name's Glenn Holmer, and I'm a Java
programmer living in Milwaukee, Wisconsin (USA).
I've been a programmer and a Commodore user for
twenty years, and have a web page at
http://www.lyonlabs.org/commodore/c64.html.

Q - Can you give some brief information into your
computing background and how you came across the
Commodore Brand?

A - My first job with computers was as an operator on
an IBM 4331. All the applications in our shop were
written in BAL assembler and I couldn't figure it out,
so I thought I'd buy a computer of my own to see if it
would help (it did). I picked the Commodore 64
because of its sound capabilities and have been in
love ever since.

Q - Please explain to our reader what "power c" is
and what the C programming language is

A - C was developed in the early 1970's and was
intended as a substitute for assembly language that
was faster and easier to code. Power C is a
Commodore 64 (and 128) C compiler that was
released by Spinnaker in 1986; an earlier version by
Pro-Line in Canada was known as C Power.

Q - Can you give our reader a brief syntax from basic
to C, maybe a countdown timer so they can see the
format of the C programming language

A - Sure... here it is in BASIC:

```
10 FOR I = 10 TO 0 STEP -1
20 PRINT I
30 NEXT
40 PRINT "BLAST-OFF!"
```

and in C:

```
int main (argc, argv)
int argc;
char **argv; {
  int i;

  for (i = 10; i >= 0; i--) {
    printf("%d\n", i);
  }
  puts("BLAST-OFF!");
}
```

Q - Do you think in your opinion C programming
language is easier than say Commodore Basic or
another language

A - As you can see from the example above, C is
more difficult. This becomes more apparent as you
begin to work with other features of the language like
structures and pointers. On the other hand, as the
saying goes, with knowledge comes power!

Q - one of the benefits of C programming language is
that it is "portable" can you explain the term and how
"portable" is the power C code

A - Since C is a very simple language and relies on
libraries for much of its functionality, compilers can
be written for different machines that can take the
same source file and produce a working program
specific to the machine at hand. Power C code is not
quite so portable to other machines because it uses
an older dialect known as "K & R".

Q - Is C language an industry standard then

A - It has become less common for programmers to
know C; now they are more likely to know C++ or
Java. But C is still everywhere, and the syntax of
C++ and Java are based on it.

Q - I remember reading that the original Commodore
Amiga libraries were written in c also C is heavily
used in the PC and Unix world if learning Power C
would the same principles apply to other formats of
machines

A - Absolutely. As I said, Power C uses an older
dialect, but what you learn about pointers and so
forth would definitely carry over.

Q - What makes "Power C" an appealing language,
and why utilise this on Commodore machines

A - There is something about the syntax of C that is
very seductive: it is compact and expressive at the
same time. And once you learn it well,you can code
very fast, which makes it appealing to use on a
Commodore. Assembly language takes too long to
code, and higher-level languages like Pascal or
COBOL take too much memory.

Q - What is SWL, and what does it stand for?

A - SWL is "Shadow's Widget Library". Shadow is
my nickname, and SWL is a set of Power C libraries I
wrote that are designed to make it easy to create
sophisticated user input screens from Power C.

Q - Is this a labour of love or do you know people are
actively using this language and the extra extensions
you have created

A - I only released the SWL libraries a week ago
(although I did talk about them at the C=4 Expo in
Cincinnati), so I don't suppose there are a lot of
people using them yet! I have been in contact with
several other people who are using Power C both
here and abroad, but would like to see it used more,
because its libraries are so easy to share.

Q - Please tell our reader about Power c extensions,

A - Power C source files are compiled into object files, and object files are linked together to form executable programs. You may have to link your object file with several others to complete that process. But if several object files are used to build a library, you need only tell the linker the library name, and he will find all the entry points in all the associated object files by name. If you link a program against the SWL object code, for example, you may have to type in the names of up to six files at the linker prompt. But if you use the library, you only type "swl.l", and the linker includes what he needs from all six of them.

Q - What are widgets

A - This is an old term that just refers to the elements that make up a user interface: text input fields, checkboxes, etc.

Q - Are all the extension to power C on your page created by yourself

A - Not at all! Everything in the downloads section on my site was written by other programmers in the heyday of Power C and the Commodore. The only code that's mine is SWL and the drive enumeration and relative file support routines that come with it. I hope there wasn't any confusion about that, but I've added all the authors' names next to the links.

Q - Is the Compiled c language as fast as machine code

A - Almost.

Q - What does it take to use Power C?

A - While you can write and compile programs using a single 1541 drive, the more power you throw at it, the better. Compiles of long programs can take quite some time, so if you can get your hands on them, I would recommend a SuperCPU and a CMD hard drive or two.

Q - Where wouldn't Power C be a good language to use for example could Games be written in the language or is it designed for business applications

A - I think you could use it for just about any type of application. The limiting factor would be the memory usage. Compiled C on the Commodore is pretty fast, but takes up a lot of memory. Most of the time I spent developing SWL was spent translating earlier versions written in C into assembly so a program using them would still fit!

Q - You seem to be a collector of operating system and interpreters and compilers for Commodore machines, is this some obsession, and why the fascination

A - Yes, it's an obsession! I will never have enough compilers! Send me more that I may feed upon them and grow strong! Seriously, I've always been fascinated with languages, both spoken and computer. I would like to give a presentation at one of the Commodore expos about what languages are available, but have become very focused on mastering Power C.

Q - What is your favorite Commodore operating system and compiler/interpreter and why

A - For compilers, it's Power C, no doubt about that. Operating system is a little more complicated. I like the idea of Contiki, but it is, shall we say, not particularly robust. I'm interested in learning more about LUnix, which was an attempt at writing a multitasking Unix-like operating system for the Commodore.

Q - Also what would be your least favourite and why

A - Commodore BASIC, I guess! The '64 doesn't have much of an operating system, or I would put that in the same category. The Commodore 64 just begs to have new tools created for it!

Q - You said in a recent email you were releasing "version 1.00 of the SWL libraries", are there more to come or will you concentrate on making these as bug free and compact as possible

A - The next step is to write an application based on SWL. This is actually why I wrote the libraries in the first place: I wanted to write a Power C app but didn't want to re-invent the wheel if I decided I wanted to use the input routines again later. It was a detour of many months, but now that I'm actually writing the application, it's going very quickly. I'd love to see people use (or at least try) SWL, and I welcome bug reports. In my dreams, I also see a community of Power C programmers sharing sound, networking, and graphics libraries they have written. A lot of resources are available on my Power C page, http://www.lyonlabs.org/commodore/powerc.html.

Q - Are there any applications written in power C especially utilising these extensions our readers can download to look at what is achievable

A - Come to ECCC in Chicago on September 27 :)

Things that are being considered for the next version:
• (bug) banner text centered wrong (one character to the right)
• doList() should show a title if one is passed
• menus should support paging, or at least home/shift-home
• allow for scrolling single-line text entry (and maybe labels) when there is more text than can be displayed
• for drive routines, add functions to send disk command and read error channel (already in my working copy)

I'm also working on a replacement for Power C's malloc() and free() functions, because they use a first-fit algorithm that leaks memory; a program that repeatedly allocates and frees large numbers of SWL "objects" will find itself out of memory very quickly (the worst-case scenario is a program that repeatedly reads CMD directories into a menu structure, then frees the directory entries and menu items and allocates new ones as the directory tree is traversed). Naturally, that's turning into a saga of mythic proportions. To find out all the gory details (including a snapshot of the source code), offer suggestions, or just tell me I'm crazy to be doing this, visit my web log...

http://www.lyonlabs.org/roller/shadow/entry/swl_shadow_s_widget_library

SWL version 1.00

http://www.lyonlabs.org/commodore/c64.html
Information and help file

This file describes the SWL library for the Power C compiler (Commodore 64). If you don't have a copy of the compiler, you can get it on my web site, http://www.lyonlabs.org (see the Commodore 64 section).

Please send bug reports or documentation errors to me (Glenn Holmer) The SWL library is a set of text-based C functions written in assembler using C-ASSM (also available on my web site). SWL provides:

- string input with restricted character and input length

- bordered windows that restore the screen beneath them when they are closed

- menus with submenus

- simple widgets (label, text, checkbox, listbox) that can be grouped

It is distributed as a .D64 image containing source, object files, a library file, this documentation, and some demo programs. The basics of using SWL in your programs are covered here; for detailed API documentation, see the source files:

swl-menu.a
swl-menuutil.a
swl-wdg.a
swl-wdgutil.a
swl-asm.a
swl-irq.a

You can see which functions are in each source file by looking at the .def statements at the beginning of each file.To use SWL in your C programs, include the header swl.h and link with the library swl.l. The library file and the six object files corresponding to the source files above must be on your work disk.

Notes on the SWL API
Although SWL was meant to be called from C, some of the APIs have assembler entry points because they call each other. See the source code for these entry points and their calling conventions.

TEXT INPUT
The basic building block of SWL is the text input routine, wchrin():

wchrin(string, mask)
char *string;
int mask;

Before calling wchrin(), call swl_init() to enable the IRQ routine for the keyboard; you can disable it again later by calling swl_kill(). The IRQ service routine has two exported hooks: ihooktop and ihookbot (see swl-irq.a).wchrin()'s input can be restricted by ORing together the following values in the exported variable "mask":

$01 (MSK_NUM): numeric input only
$02 (MSK_ALW): allow only specified characters
$04 (MSK_END): use input terminator table ("endkeys")
$80 (MSK_CHK): checkbox input: one character only,
          space only, toggles a checkmark

MSK_NUM and MSK_ALW can be combined (e.g. numeric with decimal point), but MSK_CHK trumps both (it is meant for the checkbox widget described below). The allowed keys and end keys are in 16-byte character arrays named "allowed" and "endkeys". To add or

remove end keys for an individual call to wchrin, call addEnder and rmvEnder (in swl-irq.a). For allowed keys, just strcpy the characters to the allowed array (there is an API for this if you are using widgets).

WINDOWS
SWL supports text-based windows, which are written directly to screen memory. The area of the screen occupied by the window is buffered and restored when the window is closed. Up to eight windows at a time can be open, and they can overlap.

openWnd(left, top, width, height, title)
int left, top, width, height;

clsWnd()

There is also a routine to draw a box on the screen, which is not buffered:

drawBox(left, top, width, height)
int left, top, width, height;

CURSOR LOCATION
There are two routines to set the cursor location:

locate(x, y)
int x, y;

wlocate(x, y)
int x, y;

locate() sets the x and y cursor position (counting from 0) and clears the screen line link table. wlocate() checks to see if a window is open: if so, he locates the cursor within the window, otherwise he calls locate(). wlocate() returns FALSE (0) if the coordinates are out of range for the window.

MENUS
SWL has support for menus, which can appear anywhere on the screen. Menus are represented by a menu structure with a pointer to a singly-linked list of menu item structures. A submenu is a menu item with a pointer to the submenu. There are "constructor" functions for menus and menu items, as well as functions to add items and submenus to a menu:

struct *menu newMenu(left, top, parent, title)
int left, top;
struct menu *parent;
char *title;

struct *menuitem newItem(text)
char *text;

addItem(menu, item)
struct menu *menu;
struct item *item;

struct *menuitem addmenu(menu submenu) struct menu *menu, *submenu;

See the header file for the structure definition (note that there are fields called mExtend and iExtend that can be used to "subclass" these structures). There are two types of menu:

struct *menu doMenu(menuptr)
struct menu *menuptr;

struct *menu doList(menuptr)
struct menu *menuptr;

doMenu() draws the menu within a window and restores the screen afterward; doList() draws the menu using drawBox() and does not restore the screen. In addition, doList() ignores submenus. It
is meant for simple listboxes (see the listbox widget described below). Menus are exited with Enter (ENTER) or F5 (KEY_EXIT), and end keys are respected, meaning you can check the value of endkey to see how a menu was exited (you can also check the menu's mEndkey field). The return value is the menu structure the user exited from (which may be a submenu), or 0 if a top-level menu was dismissed with F5.

If a menu item was chosen with Enter, the menu structure's mChosen field will be set to TRUE (1) and the mCuritem field will indicate which item was
selected (you will have to walk the item structures with a counter to get to it; see menutest.c for an example). Menu items can contain a pointer to a dispatch function (iAction), so you can just check to see if that's non-null and call it if so.

WIDGETS
The widget APIs pull together all the elements of SWL to allow the creation of input screens or dialogs where the user can use the keyboard to move back and forth among several fields and accept or cancel the input as a whole. The keys, inspired by Q-Link, are F7/F8 to move forward and backward among the widgets, F1 to accept, and F5 to cancel. They are
defined in swl.h.

A group of widgets is a circular, doubly-linked list of widget structures. There are four types of widgets: labels, text input, checkbox, and listbox (all of which share the same structure). All widgets are displayed when doWidget() is first called. During the data entry loop, label widgets are ignored, but text inputs are handled by wchrin(). Checkbox widgets are also handled by wchrin(), but with the special flag

MSK_CHK, which allows only a single space as input and uses it to toggle between a check mark and an underscore. Listbox widgets call the doList() form of menu. As with menus, there are "constructor" functions as well as a function to add them to a group:

```
struct *widget newLbl(left, top, text)
int left, top;
char *text;

struct *widget newTxt(left, top, text)
int left, top;
char *text;

struct *widget newChk(left, top, state, dummy)
int left, top, state;
char *dummy;

struct *widget newList(left, top, menu)
int left, top;
struct menu *menu;

addWdg(widget, firstWdg)
struct widget *widget, *firstWdg);
```

Each widget has its own set of end keys and allowed keys. End keys are added to the endkeys table when each widget gains focus, and removed afterward (since the function keys must remain active), but each widget's allowed keys replace the allowed keys table while it has focus. As with menus, the widget structure has a field named wExtend for "subclassing" (in fact, the listbox widget uses it to store the menu pointer). To display a group of widgets, call initWdg() to set up the function keys (make sure to call swl_init() as well if you are using text or checkbox widgets), then call doWidget() with a pointer to the first widget of the group:

```
doWidget(first, inWindow)
struct widget *first;
int inWindow;
```

The inWindow argument indicates whether the widgets are contained within a window; if so, the window cursor location routine is used, and any widgets that would extend beyond the right edge of the window are truncated before display. When doWidget() returns, call killWdg() to remove the function keys from the endkeys table, and swl_kill() if you were using text or checkbox widgets.

The return value is a pointer to the widget the user exited from (or 0 if any screen locations are invalid). As with menus, widgets can have dispatch functions. With widgets, however, the loop will exit as soon as a widget with a dispatch routine loses focus. The reason for this is so that one widget can affect another (e.g. a checkbox changing another widget from text input to a label to disable it).

To make this happen, SWL would have to call the C dispatch function from within the widget loop's assembler code, which I was not prepared to do (it would also have required an additional flag to indicate that the dispatch should be called immediately). The solution is to check manually for a dispatch function when the loop exits, and handle this on a case-by-case basis (re-entering the loop after the dispatch has been
called if you want to continue). There is an example of this technique in the demo program wdgtest.c.

UTILITY ROUTINES
SWL also provides some utility routines:

```
int banner(text, edge, align)
char *text;
int edge, align;
```

Draws a banner at the top or bottom edge of the screen in reverse video, aligned
left, center, or right. See swl.h for constants (BNR_ for edge and ALN_ for alignment).

```
char wgetchar();
```

Reads a character from the keyboard (blocks until a key is pressed).

```
char wgetkey();
```

Reads a character from the keyboard (non-blocking, may return 0).

ASSEMBLER UTILITY ROUTINES
If you are using assembler, there are some additional routines available that are not callable from C. These are documented in swl-asm.a and swl-irq.a:

```
multiply (integer multiply)
beep     (sound a bell)
savtemp  (save temporary variable area)
rsttemp  (restore temporary variable area)
charout  (write a character to the screen)
scnout   (write a screen code to the screen)
```

KNOWN BUGS
There are no known bugs at this time. Please send bug reports to the address at the top of this file.

KNOWN LIMITATIONS
There is no support for screen colors or custom character sets. The APIs for adding end keys and allowed keys are not consistent.

Welcome to www.rgcd.co.uk,
the online home of the RGCD discmag!

RCCD is a new downloadable CD-ROM based magazine containing the very latest retro reviews,

features and developer interviews, providing its readers with an essential one-stop resource for all their retro gaming needs. RGCD's main focus is on the new releases for 8/16-Bit computer platforms, but we also dedicate a good percentage of our reviews and feature space to retro look-and-feel PC-based remakes and independent games, so if that's what you're into then you are in the right place.

The RGCD project is the brainchild of James Monkman (a long term reader of Imagine Publishing's 'Retro Gamer' and 16-bit Atari fanatic) and it was created with the long-term goal of becoming a community run discmag.

Starting initially with a team of three people, the plan is to create sufficient interest amongst members of the retro-gaming community and to actively recruit new members so that future issues of the magazine are released regularly and without all the work being left to one person.

Hopefully, RGCD will eventually have a team member dedicated to each of the 8/16-Bit machines that are still being actively supported and developed for by their respective 'scenes', but as our manpower is currently limited, we are unable to cover every machine out there in each issue.

However, our main aim is for quality content over quantity, so you can rest assured that if a release is featured in the magazine then it's probably worth playing.

In each issue of RGCD you'll not only find reviews of all the latest retro releases, but there'll also be direct links (to files on disc) of each game, emulator or tool reviewed irrespective of platform.

Also, as it's a CD based magazine we've also made the effort to create easily printable, full scale jewel-case artwork so that you can keep each issue in its own CD case along with the rest of your retro paraphernalia and memorabilia.

Please note that at www.rgcd.co.uk you can preview each issue of the magazine (essentially just the featured game review and a list of the other content), but in order to actually read the rest of the articles and reviews you'll need to download the full-fat .ISO image and either burn it to disc or mount it on a virtual drive.

There is also a cut-down 'lite' version (excluding all games and emulators) is also provided as a

downloadable .ZIP archive for those of you with limited internet access or slow download speeds. Also, because the magazine (and website) uses javascript to display the game screenshots in a funky little window-box-thing (click on the small images to see what I mean), please do not panic if Internet Explorer flashes up with warnings about 'active content' and so-on.

RGCD is 100% spyware free and all files are virus checked before uploading.

The RGCD Team

James Monkman
Founder of RGCD and currently the magazines main contributor, James has a near obsessive passion for

retro gaming, especially with regard to collecting and playing new games for old and unsupported machines.

Officially a 'hater' of next-gen consoles, James likes to pretend that it's still 1992 and prefers his computers to have 16-Bits (or less).

If you feel so obliged, you can become one of his 'friends' by clicking here:
www.myspace.com/heavystylus.

Dudley
British videogame and motorsport expert Dudley is well respected by at least three people for his honest and occasionally completely fictional writing.

He runs the combined sarcasm and blog site Ask Duds and is a contributor to Retro Fusion where he runs the regular audience participation feature 'Let's All Play'. By day he works in development for a medium size software company where he attempts to change the universe through innovative accountancy solutions.

Dudley lives in London with a flatmate, about 50 games machines and several broken pieces of electronics which "might come in handy". While he is the Walrus, he has not spoken to the Egg man in several years.

Ruari O'Toole
Ruari O'Toole is an avid gamer who found himself caught between both sides of the Amiga vs Atari wars of the eighties and nineties. He is an obsessive scourer of car boot sales and junk shops, and misses the days when chunky polygons and parallax scrolling blew peoples' minds.

SirClive
SirClive is a retro gaming collector with a particular fondness for the Commodore 16, VIC-20 and the ZX Spectrum. He can be found regularly at the Retro Gamer forum and also runs the Weekend Gamer VIC-20 Archive.

He is a support member of Team Weekend Gamer, contributing to WGTV - a downloadable gaming TV show.

Both the VIC-20 archive and WGTV show can be found at www.weekend-gamer.co.uk.

T.M.R.
T.M.R. (aka Jason Kelk) has been playing, designing and programming games for 8 and 16-Bit hardware for over twenty two years, almost all for his own entertainment, and writing about them for the last eleven. In short, he's a bit of a show-off, really.

When he finds time in his busy schedule (mostly filled with self-aware sarcasm) he pretends to manage and edit Oldschool-Gaming.com (a reviews site dedicated to recent games released on classic hardware) and is a member of multi-platform 8-bit game and demo development team Cosine.

Travis Fahs
Travis hails from the US, presently residing in the New York area. This means he never knew the joy of arguing over a dozen different home computer standards with his friends, but he made up for it by bickering about everything else gaming-related.

Travis may not live in the past, but he at least keeps a summer home there. A lover of losers, he can't help but gravitate to the systems time has forgotten. As a freelance gaming journalist, he feels a sense of obligation to know his gaming history as well as he can. Plus he's just a sucker for all things 2D.

Elliot Taylor
Without Elliot, none of this would have been possible. Elliot Taylor is the technical wiz behind the mechanics of RGCD and is solely responsible for all the ASP/XHTML code and design of both the RGCD website and the discmag itself.

Although originally a hardcore Atarian, Elliot now spends the majority of his time creating bespoke business software and web-based solutions. More details can be found on his website at www.ejtstudios.com.

Ethan Worley
Ethan has been creating digital art for about 8 years and drawing since before he was even conceived. He is currently trying to teach himself animation, guitar, and actionscript but is quite an unfocused pupil. He is also in a volunteer fire brigade and plays basketball poorly. In his free time he enjoys sleeping and looking for food to eat. He thinks typing in third person is strange.

RGCD Needs you
In order for RGCD to reach it's ultimate goal of becoming a community run, regularly released and extensive retro project we need a much larger development team. If you are interested in submitting reviews or any other related articles for use in RGCD then please get in touch via the form on the Contact page.

Interview with James Monkman
RGCD Disk Magazine Editor
www.rgcd.co.uk

Q - Please introduce yourself and RGCD (Retro Gamer CD) to our readers.

A - Hi, I'm James and I'm the editor of RGCD - an html-based discmag dedicated to retro gaming, especially with regard to new game releases for oldhardware. Amongst other things I make a living out of DJing old-school funk 45's, soul and hiphop in various clubs and bars down in the South West of England (hence my myspace page and 'Heavy Stylus' handle), but my main love in life aside from music is for the 8/16-Bit home computers that I grew up with. In all, I'm a self-confessed geek, but hey, I guess anyone reading a Commodore magazine in 2007 must be able to relate to that(!) Oh, and I'm 28 year's old, married with a kid on the way.

RGCD was initially something that I started purely for my own enjoyment – I wanted an outlet to practice my writing (*another* hobby of mine) and I've been a fan of diskmags since my disk-swapping days of the Atari and Amiga 16-Bit computers so it seemed the logical choice. RGCD was originally planned as some sort of unofficial companion to Imagine Publishing's Retro Gamer magazine, but that was a no-go (hence the disclaimer at the bottom of each page) and as a result the project evolved into the multi-format review platform that it is today.

Soon after starting development, ZX Spectrum and VIC20 enthusiast SirClive joined the team, and since the first issue the team has grown to a total of eight members - including Cosine's T.M.R (Jason Kelk) who some of your readers will probably know. With the first issue downloaded 1000's of times (both ISO and ZIP versions) and positive feedback from all around the world I'm really proud to have started the magazine and hope that it'll continue for many, many issues.

Q - So the magazine is a HTML version, what prompted the decision of a HTML magazine?

Yes, it's written in HTML, and before anyone flames me I *AM* aware that the ISO nature of the mag is an awkward and potentially unfriendly format to choose.

The main reason for choosing HTML is that I lack the ability to code a proper, traditional diskmag interface - believe me, if I could do it I would. I also lack PDF experience and tools, so that was a non-starter (although if someone wants to create a PDF version of RGCD then they are more than welcome).

The actual template for the mag was created by RGCD's web guru Elliot Taylor. I just cut-and-paste and edit bits using my limited HTML 'skills', which is the reason why the magazine format is universal on every page :oP

Q - So is the CD free to download? Why didn't you charge for the CD?

Yes, and I've no plans to charge for downloads in the future either – even if RGCD suddenly becomes a massively popular worldwide phenomenon (which it won't). You can quote me on that! With regard to charging for the 'CD', one of the possibilities that we are considering as a team is actually offering a subscription service, selling limited runs of professionally presented and printed CD copies and mailing them out to subscribers for a very reasonable low unit-price (plus P&P). However, we won't be able to offer this for some time yet.

Q - The disk is in an ISO format, so users download the iso image and then use whatever software they have to create a readable cd, is that the way it works?

For the full-fat version of the magazine, yes. The whole concept of the comprehensive, all-inclusive discmag approach came from my love of diskmags on the old 16-Bit Amiga and Atari - as mentioned above, I would have preferred it if I could have created a proper user interface for the magazine rather than using HTML.

Potential readers have three choices; they can either download the 'Lite' version of each issue (containing just the magazine articles and weighing in at about 10MB zipped), download the .ISO (issues 01 & 02 are both under 200MB each) and either burn it to a

CDR or mount the image on a virtual drive using Daemon Tools, Microsoft XP Virtual CD-ROM or similar application. For those who choose to burn a physical copy I've included standard jewel-case size artwork to print out (both hosted on the website and, from issue 02 onwards, also on the CD).

Q - Will there ever be a printed version for sale?

No - I lack the financial backing, means or experience required to create a printed paper-based magazine.

Q - What sets you apart from lets say "Retro Gamer" magazine that is commercially maintained?

The main difference (aside from the format) is that RGCD focuses on Modern homebrew developments for retro platforms rather than nostalgic features on games from the golden era of computer gaming. With Retro Gamer and Retro Fusion already doing an excellent job of providing 'real' retro content in their magazines (and not forgetting the Retro section of Games TM), there seemed little point in the RGCD team pooling our limited resources and going down the same route. However, with regard to reviews of new games for old platforms, RGCD is arguably the most comprehensive magazine currently available - especially when you take into consideration that all the games reviewed are also included on disc.

Q - What formats are covered by the magazine?

The line up of machines covered changes from issue to issue as the content is totally dependant on what games have been released. With the 8-Bit Spectrum, C64, MSX, Amstrad and Atari being popular development platforms RGCD tends to cover more releases for these than anything else, but we The ethos of the magazine is to cover games released on any commercially unsupported console or computer (including the Dreamcast and GBA). With the addition of new team members, our knowledge base is slowly growing and we are becoming more proficient at reviewing new titles for a wider range of machines with each issue.

Of course, it would be foolish to omit the many excellent PC and Mac based remakes and independent retro-style games that are released every month after all, RGCD is a magazine designed to be read on a modern computer...

Q - Retro gamer seems to focus on what I would call old games but not retro for example "the making if tomb raider". What in your mind makes a game retro? (for me personally retro is 8 bit)

Personally, I would term a machine as retro when it is no longer commercially supported - i.e. you can't buy games for it in the shops. By my reckoning, the GBA, Dreamcast, N64 and PS1 are all now retro platforms. The PC is a little harder to define, but then I suppose you would use operating systems (DOS, Windows 95, etc) as a benchmark.

Q - Following on I don't mind new games on old hardware, but old games on new hardware like the PS3 isn't that just companies making a quick killing?

I don't really see the point in splashing out £400 for a cutting edge console and then paying to play Street Fighter II on it. That's what emulators are for! The commercial re-packaging of old franchises is a real

bug-bear of mine - I would much prefer that publishers invested their money into indie developers creating new and original games for current-gen platforms. There's plenty of talent out there and no-one is interested in investing in it.

Q - One problem I have with running a free magazine is that "real life" gets in the way. Has this problem hampered the CD magazine in any way?

Of course! However, I'm pretty organised with my free time. I don't tend to play many modern titles anymore, so my gaming time is now split between playing retro games and reviewing them. At the beginning of the development cycle I tend to review one or two games a week, then near the release date I cover up to six or seven - I work better under pressure(!)

Apart from Issue 03 (which will be released at Retro North on the 24th of August – see www.retronorth.co.uk for details), there's not really any enforced release date; RGCD is ready when enough articles and reviews have been completed. With the team growing in size, future issues should hopefully be completed within the proposed bi monthly target, but for now it's all a very relaxed affair. I mentioned above that my wife is pregnant, and I've no doubt that Real Life will take its toll when the baby is born...

Q - Who contributes to the magazine? I did notice Jason Kelk on the writers list, Readers of Commodore Free will I am sure recognise Jason from the Hexfiles he kindly let me reprint in Commodore Free and some of his Commodore games and Demos.

The current line up is: James Monkman (me), Dudley, Ruari O'Toole, SirClive, T.M.R (Jason Kelk), Travis Fahs, Elliot Taylor (web designer) and Ethan Worley (pixel artist). I originally started with just Elliot and SirClive,and since then the magazine has attracted several other members.

Q - Has anyone from "retro gamer magazine" been in contact?

The style of the graphics for example is very similar. Actually, yes they have - but not for the reason you're thinking. Two RG writers have been in touch asking if they can contribute articles, so the team may be even larger by the time issue 3 comes out :)

Q - A nice touch is to be able to print the CD artwork for the CD case, have you thought about a separate image for printable CD roms to print "on disk"?

Nope. I use an archaic TDK LPCW CD labeller (Google it) to print on my CD's, so I've no need to create a separate image for the CD. If someone Could provide me with a basic template I'd consider it though.

Q - The website looks very professional were there problems with its design?

Yes - it took absolutely ages to create. Elliot (the web designer) is an old friend of mine and created the HTML template as a favour (on the cheap) - and unfortunately as a result the project was low priority for him compared with his proper paid IT work. However, we're both really pleased with the final result and he's really quick at modifying bits and fixing bugs.

Q - You must have a favourite game can you tell our reader what are your top 5 and maybe your top 5 platforms?

Oh crikey - that's a hard one. In no particular order, five of my all-time favourite games are...

1. Uridium 2 (Amiga 1200), 2. Cave Story (PC), 3. Star Control 2 (PC), 4. Metal Slug 3 (Arcade), Jet Set Radio (Dreamcast) (If I was stuck on a desert island with these I'd be happy). Machine wise, my top five would be:

1. PC (essential for emulation!), 2. Amiga 1200, 3. Atari Mega STE, 4. Commodore 64, 5. Sega Dreamcast.

Technically I prefer the Atari to the Amiga (because it's MUCH easier to use and configure), but for games the A1200 always comes out on top...

Q - In a recent email you confessed to owning a Commodore 64. Have you looked at operating systems like GEOS / wheels and Wings or are you a Games fanatic only?

A - Confessed? Hey, I'm PROUD to own a C64! :) In answer to your question, I bought it solely to play games and scene demos on real hardware - I've purchased an MMC64 cart (which I'll be reviewing in the next issue) and an old 1541 too. It's great messing around with it - I always wanted one as a kid.

Q - Do you think there is a market for another games system or maybe an Amiga1200 / Atari1024 style computer/gaming platform?

Maybe, but only in the form of an FPGA, like with the C-One. I recently found out about the Bazix one-chip MSX (http://en.wikipedia.org/wiki/1chipMSX) - a really neat way of presenting a system-on-a-chip in a design that can still use the console's original peripherals but with USB, S-Video, VGA, PS/2 and SD compatibility. This is the future of retro gaming. I really wish someone would re-model the C-One is the same way, creating a new system that retains compatibility with old peripherals.

Obviously, a new Atari or Amiga system in the same format as the one-chip MSX would be the ultimate in new-retro gaming hardware.

Q - Have you seen the Commodore gaming computers, do you think you would be tempted to purchase on of these systems over say a Dell or Gateway badged machine?

Yes, I've seen a few pictures and read about them online. However, as I have no interest in buying a PC to play *new* hardware-intensive games I'd have little use for the power these systems offer.

Q - Back to the magazine, is there someway our user can help for example contributing articles or links to new games on older hardware?

I'd be especially interested in hearing from anyone who'd be interested in creating a PDF version of the magazine, but aside from that we are still looking for more writers to join the RGCD team.

Q - Maybe our reader is an arty type and has a great logo or cover designer would these be accepted?

Again, any help or contributions would be appreciated. The long term goal of RGCD is for it to become a community project - and for that to happen we need a much bigger team.

Q - Will you be accepting donations?

A - Yes, in fact I've just added a PayPal donate button. We've had a total of £0 donated so far though(!)

Q - With the magazine being HTML you need a machine to view it – is there an option to print out all the pages or a selection of pages to "read in the bath" or "on the train going to work"?

A - Not at the moment I'm afraid. A PDF version would be the solution, but until someone joins the team to assist with this RGCD will remain a PC-based magazine.

Commodore Free I wish you luck with the magazine, Its a great gesture to the retro community

Thanks   www.commodorefree.com

Using the Commodore 128 Computer with a VGA Monitor

After the sad news about Commodore Scene's Vga adaptor, it now appears there is still light at the end of the tunnel for users wanting to use Commodore machines with Newer monitors
The information below was taken with permission from the following website

http://home.comcast.net/~kkrausnick/c128-vga/c128-vga.html

It seems that this user has managed what many have tried to do for a long time, its not a neat solution but does appear to be a working solution to an old problem

Using the Commodore 128 Computer with a VGA Monitor

It's now possible to use a Commodore 128 with a VGA monitor – without too much hassle or expense. Below is the configuration of my system, allowing for use of both 40-column and 80-column video modes at the flip of a switch:

RTV Veg Lite Composite-to-VGA converter (for 40-column mode).Appx. cost: US $40-60

Highway CGA (RGBI)-to-VGA Converter (for 80-column mode).Appx. cost: US $90-140

Basic wiring:

40-column video is routed to the RCA jack on the Composite-to-VGA converter.

VGA output from the Composite-to-VGA converter is routed to the VGA bypass connector on the RGBI-to-VGA converter.

The RGBI-to-VGA converter connects directly to the 9-pin D-Sub connector on the Commodore 128 for 80-column video. The VGA monitor is connected to the VGA Output connector on the RGBI-to-VGA converter There is a bypass switch on the back of the RGBI-to-VGA converter that, when used with a Composite-to-VGA converter, allows you to toggle between 40-column and 80-column modes. The switch is in an awkward location, though (in the back between the power and bypass cable connectors), so for convenience I've added a toggle switch to the front of my project box.

Thanks to members of the Commodore 128 Alive! forum

http://landover.no-ip.com/128/index.php

for information and suggestions instrumental in making this this possible. Special thanks goes to Mangelore for providing information necessary to overcome the lack of Intensity pin on the RGBI-to-VGA converter, thereby allowing all 16 distinct colours!

micro-KIM project
Interview with Vince Briel

Q - Please introduce yourself to our reader

My name is Vince Briel and I run a small company called Briel Computers that produces computer kits based around the vintage theme. I used to collect computers and now focus most of my time designing hardware.

Q - When did you first become involved with computers?

Back in the late 1970's I was introduced to computers at my Jr. High school. It was a Decwriter II terminal that simply had a keyboard, a printout instead of a screen and an acoustic modem to dial into the HP Access timeshare basic mainframe. First time I used it, I was hooked. I remember skipping lunch to go into the computer room and play adventure or star trek.

Q - What machines do you own and do you have a favourite system

I currently have about 20 vintage machines, PET 2001 chicklet keyboard, KIM-1, TRS-80's, and Apple II's. My favorite vintage machine is my Apple II plus. It was my first computer and so it will always be my favourite.

Q - The micro-Kim project, can you explain to our reader about this project?

The Micro-KIM is a single-board computer designed around the 6502 CPU that comes with on board keypad and six digit display. It is based on the KIM-1 computer designed by Chuck Peddle as a development board for the 6502 CPU. When I started designing the Micro-KIM, I set a goal to produce a kit single-board computer for under $100. This was no easy task. When you start adding up the price of components to build a small 8 bit computer, the price quickly adds up. With a lot of part searching and design work, I was able to reach the $99 goal. The final result is a redesign of the original KIM-1 using some of the original design, incorporating slightly more modern design and reducing the size to a much smaller form factor.

Q - So would you say that the micro-KIM a clone?

Yes. At first, I was going to keep almost all of the original design only making changes to replace the 6530's which are not available. In the end, I made some changes reducing chip count and total parts to reach the $99 kit goal. All of the original KIM-1 software should work on the Micro-KIM. I've only tested some of the software out there but so far, everything works just like with the original KIM-1. Some of the decisions I had to make when designing the Micro-KIM was with things like the expansion connectors. On the KIM-1, there are a lot of signals that are either not needed or can easily be produced with simple logic. They are spaced very far apart and would require a large PCB to duplicate. The Micro-KIM expansion port contains all of the necessary signals to replicate the KIM-1 expansion connectors, so it is possible to recreate the expansion connectors on the KIM-1 making the Micro-KIM hardware compatible with the KIM-1. In order to get the Micro-KIM board size down to 5"X6" I was forced to leave

off the cassette interface. Also, the 2nd 6532 was left out. It is possible to add these in the future if there is enough demand for it. However, the Micro-KIM includes the KIM-1 TTY interface as a RS232 connection allowing you to send and receive programs using a terminal program like Hyper Terminal.

Q - I am sure many readers will ask the question "why bother"

I have been asked this question before. The answer is simple. I'm trying to produce kits like you could buy in the 1970's and 1980's and build and have a working computer. Kits like this just don't exist anymore. Now you can sit down with you kids and teach them how to solder together a computer.

Q - What is special about the Micro-KIM and the original Kim computer

Well, the KIM-1 has been labelled the first "single-board" computer and is one of those little known Commodore computers. The Micro-KIM is my attempt to make an affordable kit computer for people to build. If you want to build your own, the project is fully open source and the schematics are on the website for download. Unlike many other replica's and modern clones, the Micro-KIM uses all common components, no custom programmed chips (except the EPROM) or micro-controllers. This makes it possible for students to collect parts for themselves and build their own based on the schematics. Hopefully the project can be helpful to students learning microprocessor hardware fundamentals.

Q - Does the micro_KIM have extra/enhanced Functionality over the original KIM machine?

The RS232 interface was added on-board so the user can use the KIM-1 built in TTY option. Also, the Micro-KIM comes with 5K RAM where the KIM-1 only had 1K on board.

Q - You are selling the machines in both kit and complete setup, are these readily available and what are the costs and delivery charge?

Yes, the Micro-KIM is available in both kit and assembled form. While I focused the project on kits I understand that some people just can not solder or don't want to. Therefore assembled versions are available. The kit includes all of the components to build the board and you simply need to add a wall wart power supply. The assembled version comes soldered and tested and also requires a power supply. Production is now underway and you can get a kit for just $99 or an assembled for $149. Shipping is extra and is $8.95 in the USA or $21 outside the USA.

Q - Do you need to order the parts from yourself or can they be purchased from electrical component suppliers

All parts needed to build the kit except for the power supply is included. No hunting down components.

Q - what uses are there for such a system in today's modern world?

There are real world applications that the Micro-KIM can be used for. It is possible, for example to make it into a home burglar alarm with some interfacing. Mostly the Micro-KIM is a great tool to learn how to program a 6502 processor or learn about the hardware design.

Q - Can you tell our reader about some of the other projects for example the Altar PC and the Replica 1 (apple 1 clone)

Sure. I designed the replica 1 which is a clone of the Apple 1 computer. As a collector I wanted an Apple 1 but the price was way out of my league, so I decided to build a clone. When I was nearing completion I began to get a lot of email requests to purchase one so I decided to start Briel Computers and began selling boards. Shortly after I designed the replica 1 I designed a daughter-board card that gave Apple 1 or replica 1 computers a serial port based on the video and keyboard I/O on the Apple 1. It was virtually invisible to the Apple 1 or replica 1 and it added a way to communicate with PC's and other computers with a terminal program.

After that I designed a 4 Meg RAM card for the Apple IIgs. I had been approached about doing this design and I looked at all of the data on the RAM port and had a design in my head in less than 30 minutes. I built a prototype without even having schematics drawn up first. I broke every engineering rule there is doing that but sometimes if I don't get ideas down fast I loose focus. So, I had a working 4 Meg card that used old 30 pin PC SIMM's chips and 1 74LS138 and it worked perfect first time. I gave this design to Garber Street Enterprises as a gift as long as Briel Computers was somewhere on the card. I probably lost out on sales but my work is not about money but creating. The AltairPC is a more difficult project than I originally thought it would be. The concept is a functional clone of an Altair 8800 front panel mounted on a desktop PC. Now your P4 computer has that vintage flair. Great idea but I am no mechanical engineer. Modifying PC cases in a production format is difficult and requires a lot work. My original design was using a micro-controller to emulate the front panel but it just didn't have that vintage feel to it. I'm now working out the case design issues and redesigning the front panel so that it is an actual complete Altair 8800 all on the front panel. The idea of having your P4 system in a case that looks like an Altair 8800 is a lot of fun.

Q - How much interest has there been in all these projects and has the interest surprised you?

Well, I don't advertise. I have to admit, I am happy with the interest and enthusiasm that people have shown towards the kits. I really enjoy seeing my kits hacked and modified.

Q - Why do you think users are still interested in older machines, could it be that new computers like Pc`s are just to complicated and difficult to say learn programming

No, I don't think computers are more difficult. Actually, today's computers makes it possible for just about anybody to build their own system. What I think has been lost is that style that computers had. Every

machine didn't look like every other machine out there. Today's computers are just amazing but the interest is part nostalgic, and in some ways, people just need to know how we got where we are today.

Q - Do you think newer younger users are interested in these machines maybe as learning tools?

Absolutely. I'm really amazed when I get emails from 11 year old students wanting to build one of my kits. If my kits help generate interest in computer kits again, that would be great.

Q - You also are the owner of the "http://www.kim-1.com/"; website for KIM 1 enthusiast has there been any feedback About this site?

Actually, I don't own that site. It is owned and run by Vern Graner.

Q - What other resources are there for Kim-1 users

Hans Otten has a great web site for KIM-1 users as does Vern Graner. Bob Armstrong has a good site with modern add-on hardware for the KIM-1. The first place I would stop at is 6502.org

Q - Could you update our reader about how the KIM-1 Came into being and a little about its history?

Sure. Actually I was fortunate enough to be at the Vintage Computer Festival East 4.0 when Chuck Peddle gave a video conference session describing the start of MOS and the 6502. In 1975 former Motorola engineer Chuck Peddle formed MOS technologies and created the 6502, a $25 CPU. At the time, the 8080 Intel was hundereds, and here was this new 6502 that was similar to the Motorola 6800 for only $25. They wanted to sell the CPU's at a computer convention but they didn't allow sales onsite so they had a hotel near the convention and sold the processors right out of the nearby hotel. Chuck mentioned that they had a "barrel" of 6502's but only the top 10% of the barrel had working CPU's. Chuck had also designed the KIM-1 (Keyboard Input Monitor) as a development board for engineers. What they didn't realize is that a new hobby market was just beginning and the majority of their customers were not engineers but average people. Soon people where designing add-on hardware and writing programs and creating user groups all based on a development board.

Q - Was there much commercial software for the Original KIM machine?

Micro Chess is the most popular program that I can think of. There is a Tiny BASIC and even a version of Microsoft BASIC for KIM-1's with more memory. Most software came from magazines and user groups.

Q - Is there a thriving group of programmers creating new software for the machines?

Mostly former and current KIM-1 users that want to use their programs they wrote 30 years ago.

Q - Do you have any other projects planned?

Yes. More than I will ever have time to make. Hopefully I can get many more projects out there for people to enjoy.

Interview with Games that Weren't
Frank Gasking

http://www.gtw64.co.uk

Q - Please introduce yourself to our reader

Hi there - I'm Frank Gasking - 25yrs old and from England. During the day i'm a web developer and support officer, and outside of work I am a big retro gaming freak with a particular interest in the Vic 20, C64 and games that never saw the light of day

Q _ Please tell our reader how you were introduced to computing and Commodore

Basically it all started when I was staying over my sisters house back in early 1988 - I was playing up a bit and didn't want to go asleep, so my sister promised that if I went to bed she would dig out a surprise the next morning. Sure enough - I awoke to see a Commodore 64 set up in the corner of the room on a little telly. It was the first time I had seen anything like it - the very first thing I saw loaded up was Buck Rogers (Followed by Army Moves, Moon Buggy, Vahalla, Tapper etc), and I was instantly hooked and wanted my own games machine /computer and begged and begged for one.

Sure enough - my parents (not having much money) bought me a second-hand Atari 2600 for Christmas that year with a bundle of great games (One of my most memorable christmas'). The following year on my birthday they brought a second hand Vic 20 which has ever since had a soft spot in my heart. In 1990 I finally got a Commodore 64 (Light Fantastic Pack) and my already buzzing computing interest went up to another level. The C64 was really the machine which blew me away - and I started to purchase Zzap and Commodore Format on a regular basis. I've been part of the community ever since.

Q - Explain the idea of the "Games That Weren't" website

Games That Weren't is a project dedicated to documenting and finding lost/unreleased games which have been subject to mystery for many years across many platforms.

Primarily we try to get in touch with various developers past and present and see if they are willing to show the world their unreleased games on various platforms. We are trying to encourage others to set up mirror GTW sister sites for other platforms to join the C64, PC and Amiga sister sites under the main GTW site umbrella.

Q - What gave you the idea or need to start the website and have you always collected information about "games that Weren't?

GTW was originally inspired by an article in Commodore Force magazine on unreleased games ("That was the game that wasn't") back in around 1993. I was very intrigued about if these games could be found to be played, and it went from there really. I started with a regular article in Commodore Zone doing research into various games and managed to actually find some of them. I then found that because a fair few of these unreleased games

were out there - it would be an idea to produce an archive which would try and collaborate as many unreleased games as possible in one place. The website grew from there really and now we're regularly digging out some big titles. Basically my information collecting started when I started the regular articles.

Q - Do you just run the site For Commodore 64 Missing games or are there other "subsites" for different machines?

I mainly concentrate on the C64 side of things for archiving and hunting, as thats more than enough for me (There are thousands of unreleased games on the C64) - but we have sister sites for the PC and Amiga run by Timo Weirich and Adrian Simpson respectively. We all collaborate on a main GTW website which covers various unreleased games news from around the world for various systems. We all help each other out too with any cross over of information etc.

Q - You must have uncovered some real gems what is your greatest find for Games That Weren't?

A tough one really - but it has to be "Solar Jetman" - mainly because it was salvaged from its last remaining disk copy from a briefcase stuffed behind a radiator. It worked perfectly fine, and it was a fantastic conversion too.   That finding kind of put GTW in the limelight and has helped since uncover other titles. Second has to be a joint fight between Tyger Tyger and Deadlock (Two other huge titles which had been missing for over a decade).

Q - Also there must have been some surprises from big companies working on lets say "rubish" can you comment and give an example?

Hmmm ... If you mean possibly games we were urgently trying to find but we found poor when we found them. Not me personally - but most people were dissapointed with Tyger Tyger. Everyone was expecting this awesome Black Tiger beating game, but found that the game was infact only half finished and was really a interactive demonstration more than a game. I still loved it though :)

Q - Have you ever found a game that is virtually finished but the company pulled the game from production for some reason, maybe the company went bust before mass production and advertising thinking her about "Daffy Duck" that was given rave reviews by Zzap64 but never emerged as a game?

From the same company as Daffy Duck - I nominate "Bugs Bunny – Private Detective" as one we found. This was pretty much complete (Though without music) and was pulled purely because Hi-Tec went into liquidation before launch. Another (Which we didn't find as such) is "Shellshock" which Beyond Belief were to launch (They went bust and later sold the game to Commodore Format). Basically there are quite a few on the site which were

in this situation as it was a very common scenario for most of the games sadly (and for ones still out there).

Q - How much time do you spend working on the website and who is involved in its maintanance?

It used to be about half hour a day doing review writing – which expanded when an update was being worked on. Currently i'm bogged down in work, so I do a few hours here and there when I can-answering emails, researching, writing reviews and doing quick site updates.

I update the C64 site, entries, html etc, and myself and the guys on the Amiga and PC sites update the main GTW website. Helping me on the C64 site with research and reviews are Andrew Fisher (Research/Reviews), David Simmonds (Research/Fixing organisation), Peter Weighill (Research) and Alex Ross (Research and Reviews).

Q - Please list the 5 most wanted games you would like to find

Starting with most wanted..

1) Daffy Duck (Hi-Tec)
2) Murder! (US-Gold)
3) The Search for Sharla (Thalamus)
4) Streethawk (Ocean)
5) Putty (System 3)

Of course a fair few are fighting for those spots... there's loads more i'm keen to find :)

Q - So how do you know what games were being worked on that never made it to mass production?

Mostly through magazine research. Magazines used to regularly preview games which never appeared, or which looked very different to the final released version. Additionally when we chat to developers about one game, they'll shed light on another they worked on in the same situation. Finally we get contacted by various people with new information and occasionally a game they worked on which never saw the light of day.

Q - Isn`t this all now becoming an obsession with you?

It could do... but I try not to let it. If it became an obsession, I think GTW wouldn't be fun any more. GTW to me is a lot of fun, and trying to locate these games is a good challenge. I would admit though that the search for Daffy Duck and Murder has become obsession over the past 6 years - mainly because of the eagerness of others on the C64 scene who are also desperate to find them (I'd love to uncover them for others to enjoy).

Q - What information would you like to recieve for Example our reader may be thinking I worked on a game in XXXX year that is on the wanted list but you don't have the date would someone just emailing and confirming the date the game was worked on be good news and worth the effort from our reader?

Of course - any information is welcome for the website - but we'd also pester them for the game if they still had it ;-)

Q - (an impossible question) When will you have all the games listed?

Never - you're right - it's an impossible goal that will never be reached unfortunately. It's more realistic for something like the GX4000 or Vectrex as the release amount is in double figures pretty much, but the C64 was so open to developers - although Gamebase 64 has about 30,000 odd games in its archive, there's probably still another 30,000 (Or more!) unaccounted for still - the hard to find ones!

We'll just keep searching until the death and dig up as much as we can - mainly the ones which have been in the spotlight like Daffy Duck and Murder.

Q - Have you had companies contacting you with information and updates?

Not companies - though Dave Palmer (Who was the head of Hi-Tec) contacted us recently to tell us he found Bugs Bunny on disk for us. We originally made first contact with him though. The main people we get coming to us are ex-developers from the C64 era who worked for the big companies like Ocean, Thalamus etc.

They have often done a search for their name in Google, and found their name linked to some titles in our archive. Occasionally a developer has discovered a game they did which they haven't seen for almost two decades!

Q - How do some of the still running companies look on your efforts, for example has anyone asked you to remove titles for some reason or have you had any favorable comments?

We've had no comments at all - nor any requests to remove anything just yet. Of course, if the likes of Electronic Arts asked us to remove anything, we would do so. We try to make it clear that GTW is non-profit based and not hence doing any harm (Especially because the games aren't already being sold for profit else where - because they weren't properly released in the first place! :-)). Some day i'm sure things could get messy with a particular finding - especially if it was something like "Sonic X" on the Saturn, but we'd be careful about putting anything like that up and would most likely tell people to search with Google for a download to play it safe :)

Q - Are you currently working on any other projects, directly or indirectly, am I right thinking you were working with Richard Bayliss on a sub hunter port of the Vic 20 game to the commodore 64?

I occasionally help out with Vinny Mainolfi's "End of the Line", though i've sadly not helped for a while because i've been so busy. I also occasionally write for "Old School Gamer" which is run by Jason Kelk and have just submitted a new article for Retro Gamer magazine on a lost Vectrex game.

Development wise I am currently working on about 3 games doing graphics - Two games which I can't mention at the moment, and Sub Hunter. Sub Hunter was originally to be a port of the Vic 20 game, as the C64 version sucked ass.

Now its evolved into a similiar game to the Vic 20 with many improvements and different styles of gameplay crammed in. I think also it should be Richard's best game ever on the C64 that he's written. It will soon be launched on Cronosoft on tape (With a custom Ocean tribute loader) and disk, with a free download on our websites - hopefully in time for Christmas 2007.

Q - Have you written any games yourself and did you have any games commercially published? If so can you name a few our readers can look at?

I have done a few questionable games in the past with nothing spectacular at all - Certainly never had anything published unless you count games being put on Commodore Zone's covermount. I hope that may change with Sub Hunter soon though with a Cronosoft launch.

I was mainly doing stuff for Binary Zone PD in SEUCK, but dabbled with enhanced BASIC too. Overall my two best efforts were Synetic (SEUCK) and Q-Billion (BASIC), but neither were ground breaking.

Q - Can you tell our reader in your opinion what is the worst mistake Commodore games manufacturers made?

Rushing conversions I would say is probably the worst mistake made - Tiertex are a key example of a company which just wanted a quick turnout instead of concentrating on quality like Thalamus did. But unfortunately Thalamus have gone, and Tiertex are still going! :-/

Also, some companies made strange decisions - with Solar Jetman, the only reason it wasn't released was because the company decided that it wouldn't appeal to gamers - yet it was 100 times better than most stuff in 1992.

Q - How do you rate the current games for PC and playstation,xbox etc

As sad as it is - I see life through rose tinted glasses most of the time and really don't get on with new games. I feel there is not much difference between the first person shooters, and all the 3D platforming efforts feel very stale to me. However, I have an X-box with Burnout Revenge, Pro Evolution 5 and a load of the popular releases regardless.

Burnout and Pro evo get played a lot, but the likes of Half Life 2 and GTA are gathering dust (I got bored of them very quickly because of the time they needed dedicating to get into them). Because I work all day and have little time at home - I love games I can pick up and play.

Old games have this quality, and some games like Burnout Revenge do also - luckily some developers are realizing that most gamers are casual gamers

and want a quick fix - hence some of the recent remakes.

Q - Do you think the "gameplay" has been lost on graphics and sound for new games?

In most cases - yes. I feel particurly poor games can hide behind a lot of gloss due to excellent technology. Sometimes a poor game can however be made good by interactivity via online gaming - which makes sense, as we often found on the C64 that some games were crap as single player - but came alive when another human was involved. However, I feel a greater quantity of games today are poor and just hide behind the gloss and licensing.

On the likes of the C64, because of its limitations in comparison to the big consoles of today, it is harder to hide a poor game under graphics and sound. "Another World" by X-Ample is one prime example which is mentioned a lot for being a game which looks the dogs but plays like a brick.

Q - What is your favourite game and least favourite and why?

My favourite game of all time is probably Midnight Resistance, mainly because i've been playing it for so long and still enjoy it. I additionally love The Sentinel, Blue Max and Burnout Revenge recently.

My least favourite game has to be Chase HQ on the C64 - after seeing the awesome Spectrum conversion, this just made me sick on the C64. A poor waste of a tape. Even the music is a cheezy insult.

Q - going back to Games That Weren't has anyone finished off partly completed games?

Richard Bayliss did finish off Super Pac Twins for XLCUS a few years back. Boombastic Benny was additionally finished off as Bomberman 64 for the recent game competition held by Game Overview. Apart from that, nothing that I know of.

I wish someone would someday finish off Spellcast - my favourite GTW of all time.

Q - Finally our reader looking at your website what can he/she do to help?

Just please keep checking out the archive - email us if you know anything, know about any of the developers or have information from magazines of the past etc. We'll add whatever is submitted into our information base for later updates in the future.

Hexfiles part 6
By Jason Kelk
http://www.oldschool-gaming.com/

Hello children, today we're going to be looing at raster interrupts and later on we're going to be making one of our own.

You'll need the inside of a toilet roll, some sticky backed plastic and two washing up liquid bottles - remember to use plasticine behind card when you want to make a hole with your scissors and you may want the help of a responsible adult when cutting things. Or at least an irresponsible adult, since they're more fun.

Before I start a word of warning; the first piece of example code in this article use stroboscopic effects and some viewers may find these effects at the least uncomfortable to watch.

 If you have a history of epilepsy or an adversion to strobe effects, don't execute the first piece of code, just read the documentation and dissection. This only applies to the file called raster_1.asm and the later files can be executed with no difficulty.

Last issue I left you all messing around with the sine curves on that little demo we did, didn't I? So, did you enjoy yourselves? Good! Okay, now up until now our code has been using what's called "runtime", and in theory anything can be written that way.

But the C64 can also do something called an interrupt which, as the name suggests, involves interrupting the runtime code and popping off to do something else. Normally the C64's interrupt is set to a part of the Kernel ROM (the set of housekeeping code that Commodore supplied with the machine) and it takes care of reading the keyboard and a few other little tasks.

Since we believe in leading by example I won't just go off and teach you about all the different kinds of interrupt, for now the only one you'll need is the raster interrupt. If you remember our demo, it waited for a raster line using $D012 and then did something, but using a raster interrupt we can do something else on the runtime and whenever that raster position comes around the machine interrupts what the runtime code is doing and perform a few other tasks.

Okay, so we need some code to look at to get this concept across, load Turbo Assembler (it's on this issue's cover disk) and the source file raster_1.asm As usual I'll do a breakdown of what you've just loaded in a second, but for now assemble and run it with SYS2304.

The code appears to have run but but the cursor has come back up again and the border is flashing very rapidly, right? That's what we mean by interrupt, the C64 is stopping the runtime code (where BASIC and our previous pieces of code work from) once a frame and is doing a little INC $D020 to flash the border colour.

And we can do anything from interrupt, play music, move sprites, scroll the screen and, with more than one split, change what the VIC chip is doing at various points down the screen. Okay, so lets take a look at our code:

```
split          = $00
               * = $0900
               sei
```

First off, we set up split as a label, giving it an actual value of $00. If we change that value we can alter

where the raster actually takes place on the screen, from line $00 (as here) to line $FF. And, as before, we set our code start with the *, this time to $0900 (2304). That's followed by a quick SEI to turn off the interrupts, so that nothing goes amiss while we change things.

```
               lda #<int
               sta $0314
               lda #>int
               sta $0315
```

$0314 and $0315 are where the C64 looks to find the address it should call for the interrupt, normally it's set to $EA31 (the housekeeping routines we mentioned earlier) but we want it pointing to our code called int, which will later call $EA31 itself. The LDA #< and LDA #> will get the memory location of int for us, saving us from working it out; in this case, $0314 contains $27 and $0315 gets $40, since INT gets put at $4027 by the assembler.

This reverse the numbers system is called lowbyte/highbyte format (since the lowbyte, the $27 here, goes first and the highbyte goes second) and from here onwards, reference to the lowbyte will mean the last two digits of a hex number and highbyte will mean the first two.

```
               lda #$7f
               sta $dc0d
               sta $dd0d
```

Despite the interrupts being "halted" by the SEI command earlier, the interrupt flags themselves can still be set; writing $7F over $DC0D and clearing the top bit prevents a rogue IRQ interrupt occurring whilst doing the same to $DD0D prevents rogue NMI interrupts.

The latter are less common but more likely the longer the program spends in "SEI mode" so this is a nice little precaution to prevent some hard to track erratic crashes that may occur as your code becomes more complex.

```
               lda #split
               sta $d012
               lda #$1b
               sta $d011
```

Now we set the position of the split we want by writing it to $D012, the raster register. In this case it's defined by the label split, as we've previously mentioned, so it will be positioned on rasterline $00 which is at the top of the screen.

The reason we set $D011 is to clear the Most Significant Bit (or MSB) of the raster, since there are over 256 raster lines on the screen (on PAL machines, as used in the U.K. and Europe) a single $00 to $FF range is too small so one of the bits of $D011 is used as a ninth bit to give a total range of $000 to $1ff.

```
        lda #$01
        sta $d019
        sta $d01a
```

$D019 is an indicator, the first bit tells us when an interrupt has happened, so we're just priming it here ready for the main routine and then writing to $D01A in order to tell the C64 that we want a raster interrupt, not any of the other kinds it has available.

```
        cli
        rts
```

Ah, now CLI is a new command. It's pretty much the reverse of SEI, it turns all the interrupts back on and therefore enables our new interrupt. Then it's an RTS to take us back to BASIC, at least for the runtime code, and that's the interrupt setup out of the way! Now it's time to get onto what happens during the interrupt itself.

```
int         lda $d019
            and #$01
            sta $d019
```

int is the routine we pointed $0314 and $0315 to earlier, so it's now where the C64 looks when a raster interrupt is called. At this point, we want to check $D019 to see if the first bit is 0 or 1 (in other words, if the Most Significant Bit of the raster is set, since $D012 can be $00 twice during the screen and we want the one where the MSB isn't set) and...

```
            bne dosplit
            jmp $ea81
```

...if it's the former we can go on to our raster split, the routine dosplit (or "do split"). Otherwise we call $EA81, which is another of the little housekeeping routines from the C64's ROM that does most of what our housekeeping friend $EA31 does but without the keyboard reading. After all, we don't want the keyboard read more than once every 50th of a second, it causes all sorts of problems!

```
dosplit         lda #split
                sta $d012
```

Since the value we put into $D012 gets cleaned out when the interrupt is triggered and a split happens, we have to put it back in again for the next frame.

```
        inc $d020
```

Then we increment the border colour, just to make what's happening a little more noticable (otherwise it would look exactly the same as a normal system interrupt).

```
        jmp $ea31
```

And to round things off we call $EA31 which, as I've already mentioned, is where the C64 normally goes on it's own interrupts (the values in $0314 and $0315 are $31 and $EA respectively) so that the housekeeping happens.
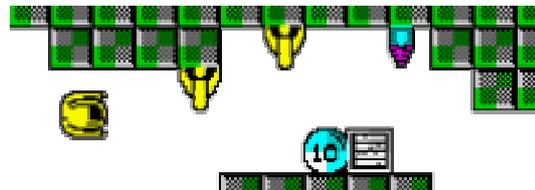
Well, that's pretty much your lot again, but just for something to play with until I get back next issue, load raster_2.asm from your hard disk, then assemble the code and run it. Most of the code and data is from the original demo which we've covered quite extensively before now but a few slight changes have been made.

The most major are that it now runs using a raster interrupt and the settings for $D018 and the addition of a custom character set but I'll explain the latter in more detail next time. Once again, if you have any queries, comments or suggestions contact me and we'll do lunch.

The source code for the routines above can be downloaded here for easier reference

http://www.oldschool-gaming.com/files/c64/hex_files/part_6_files.zip