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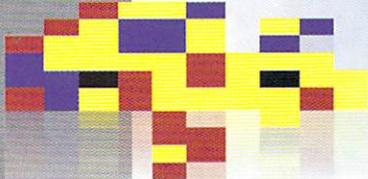
Das Magazin für wahre Computerfreaks

G064!
Commodore
WORLD

GO64!



NEWS/ REPORT



HobbyTronic 2000

COVER

DER KULT UM DEN C64

Die Geheimwaffen von Commodore
Interview mit Andreas Escher
Die Rainbow Arts Story

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CARRIER DETECT
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CULT OF C64

The secret weapons of Commodore
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The story of Rainbow Arts

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HOW TO GODOT



FORMEL 1 VERWALTUNG AUF
DER HEFTDISKETTE/
FORMULA 1 DATA BASE
ON THIS DISK

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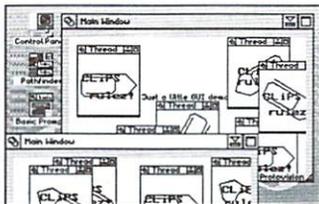
It wouldn't be spring, if there was no HobbyTronic. We were there and are featuring the big fair with the long tradition among computer enthusiasts.



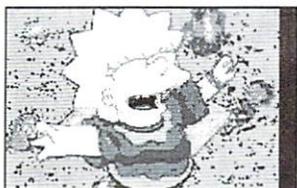
8 Cult of C64

C64 and all its software and hardware have become cult symbols. Read our reports about Rainbow Arts and about the secret developments of Commodore which were never released. The cult starts at page 8.

12 CLIPS - Corner



And we are continuing on our exclusive column about the brandnew operating system for the SuperCPU namely CLIPS. In this issue we will feature the unique technics of clipping, the handling of windows outside of the screen, which was never done before on C64. Start reading on page 12.



19 Balancing and Palette

A thing which every image processing program can do is the adjustment of brightness and colors. A thing that is no problem for GoDot. More on this topic at page 19.

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Preview of the next issue...

Digitizing!

It doesn't matter if it's sound or graphics, the C64 deals with all digitizing matters suprisingly well. Read about the basics and try the digi player on the cover disk. A great digi hardware project is waiting for you as well!

plus:
SID-musics on air? We are definately not kidding! Read more about it in GO64! issue 5/2000!

Dear reader,

Commodore's name and everything affiliated with it has become cult long ago. That's reason enough for us to feature this topic in this issue. Beginning from cult games to those genius coders/artists/musicians like Manfred Trenz/Andreas Escher/Chris Huelsbeck and Rainbow Arts as well as secret hardware Commodore never dared to release - all those are things which make our hobby more interesting.

In times where almost every new product, every new movie and every new living style is called 'cult' by mass media, just to be forgotten in the following year, we have chosen a real cult and to feature several aspects of it.

I wish you much fun with this issue!

Guenther Bauer

P.S.: Although this month is far away from April, this issue is nevertheless the April issue of GO64!/Commodore World Magazine. I hope this was hint enough...

News Flash

New C64 emulator CD by CyberTech

The CD contains a mix of various emulators and lots of new C64 freeware from almost all fields of computing, and comes with a table of contents. The price is DM 39 (ca. US\$ 21). - The ST64 emulator for the Atari ST is available again as well after minor malfunctions have been repaired. The emulator is fit for all Atari ST and Milan computers and the package deal includes sourcecode and a printed handbook, for the price of DM 15 (ca. US\$ 8). - CyberTech are searching for all kinds of musicians to produce a sampler CD. Your applications together with samples of your musical work should be sent on CD, MC or MiniDisk to the address below. The plan is for the production of 1000 CDs. If you need further information, please contact CyberTech under the following address:

CyberTech Gbr
Akazienstr. 23
D-30826 Garbsen
Germany

(ec)

New CD 'SYS49152' by Mikron64

Computer-modulated voices are probably Mikron64's most conspicuous characteristic. Their texts are self-reflexive or deal with such emotional states as loneliness, longing, love or euphoria. Their basic attitude is to always be positive, unpretentious and never to take yourself too serious. Their music often seems to

come straight out of old-time C64 games, from a period when soundmonitors still were up-to-date. The sounds are original C64 sounds. The chords of the first track are unforgettable and could even be out of one of my own jingles from the year 1992 ('Short POP' demo, Candyland/Plush). You can find demo tracks at this address: www.Mikron64.de

(ec)

The following CDs are now available at the Go64! shop:

Back in Time I DM 27.50 (ca. US\$ 15)
Back in Time II DM 27.50 (ca. US\$ 15)
MPEG Back in Time DM 12.50 (ca. US\$ 7)
MPEG Back in Time DM 12.50 (ca. US\$ 7)
Immortal DM 27.50 (ca. US\$ 15) Ruben Monteiro
Wanderer DM 27.50 (ca. US\$ 15) Jogeir Liljedahl
Nexus6581 DM 27.50 (ca. US\$ 15) (in a few weeks) Reyn Ouwehand
SYS49152 DM 19.70 (ca. US\$ 11) (Mikron64)

www.mikron64.de

(ec)

'Giana Family' - The family strikes back!

Following 'Bubble Bobble Nostalgia' for PCs, there is also a new version of 'Giana Sisters' for PCs. Andreas Kahn, a 22-year-old student from Hamburg and still enthusiastic fan of the original game, has resurrected the sisters and presented 'Giana Family'. It is a multi-player game with a network option, a level editor and it works under Windows. The game together with various sets of levels is downloadable from the Internet. So far, it remains unclear whether the key combination 'ARMIN' will take you to the next level...

http://www.stud.uni-hamburg.de/users/a_kahn/

(vr)

Orders for Metal Dust will now be processed!

Soon it will be possible to order your own original of the SCPU 'shoot'em up' game 'Metal Dust' at Protovision's homesite. Everyone who wants to offer their support for the boys should register now. And, just as a side remark: Lots and lots of orders will without doubt have a very positive effect on the programmers' motivation ...

<http://home.t-online.de/home/bundyman/>

(vr)

New book project: C64 - The Culture

Two future communications designers from Wiesbaden chose to investigate the phenomenon C64 in their final diploma thesis and now are looking for fans and programmers who are willing to help them. The thesis paper is going to be a comprehensive project and will

contain information about history, technical details, sales numbers, press reviews, games, crackers, hackers, office applications, the demo scene, SID chip music and many themes more. If you want to offer help you can either contact the two students by e-mail or telephone.

Matthias Schäfer: +49 (0)611 / 8100294

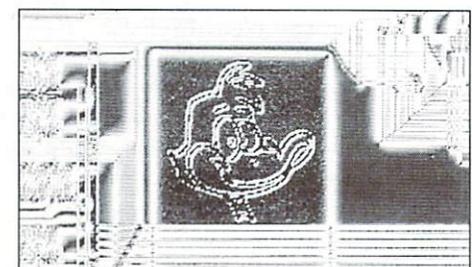
Oliver Weiller: +49 (0)611 / 9011822

E-mail: C64thecult@hotmail.com

(vr)

There is a C64 at the core of every Gigahertz Pentium computer

Every Pentium computer of the latest generation contains a C64 somewhere deep in its body, and we are not talking of emulators here. In fact, there is a C64 at the very heart of every of the most modern Gigahertz racers - on the Intel CPU. Chip designers have amused themselves by etching their own personal note into the silicon structures of computer chips for ages. Flocks of ducks, Dilberts, Mickey Mouses, caterpillars, dinosaurs and alligators, even complete herds of buffaloes inhabit the microstructures that under normal circumstances remain invisible to the human eye. The National High Magnetic Field laboratory in Florida has spent some time observing these droll little animals. The collection by now comprises a fully-fledged zoo that can be viewed on the Internet under the address <http://micro.magnetic.fsu.edu/> creatures. The latest examinations with the help of an electron microscope led to the discovery of the C64, which evidently still has its fans amongst chip designers, with our picture as a proof. One cannot help but feel a certain satisfaction at the revelation that even at Intel some people still can appreciate a really GOOD computer. If you don't want to check out all the pictures on the National High Magnetic Field Laboratory's server, there is a shortcut via this address: <http://home.t-online.de/home/mysoft/gigahz2.htm>, where you can also find this article and the images. (wte/gb)



HobbyTronic 2000

This year's HobbyTronic trade fair opened its halls from February 16th to the 20th in Dortmund, Germany. While last year the HobbyTronic nearly fell flat because of a lack of visitors, this year visitors flocked to the exhibition. In spite of the date which is only shortly before the start of CeBit, 187 exhibitors had opened stands (5 % more than last year) at the HobbyTronic and the number of visitors (approx. 70,000) fairly exceeded last year's (66,000).

by Gunther Richter

The participants of the 23rd fair dedicated to PCs, software, radio and electronics could profit from the ever-increasing demand for computer hardware and software and from the visitors' willingness to spend their money on computers and computer-related goods. The range of products and services offered at the HobbyTronic 2000 included nearly everything the heart of a computer aficionado desires. Among the 120 product groups available at the HobbyTronic were difficult-to-obtain special articles. They are one of the reasons, apart from bargain prices, why this fair has become the largest and most popular computer fair in Germany. Moreover, radio amateurs, and all fans of electronics, video and TV technology could choose from a wide variety of products, equipment and services.

VS-Elektronik, Conrad-Elektronik and the Dutch bargain seller together with the various computer clubs seem to belong to the few constants at the HobbyTronic. Many of the smaller companies differ from year to year so that every year there are new opportunities for discoveries and for comparing prices.

Unfortunately the percentage of suppliers of electronics and meteorology instruments decreases every year. The main emphasis of the trade fair is on computers and computer equipment as well as on telecommunications. And, yes, it is true, bargains are always waiting just around the corner. For example: there were 64MB PC100 SIMMs, starting at prices from DM 105 (about \$51 US), 64MB SO-DIMMs (notebook RAM) starting at DM 190 (\$92), recent printer models (e.g. EPSON Stylus 740) for about DM 279 (\$136), printer cartridges for DM 10 (\$5), batteries for mobile phones starting at DM 30 (\$15), digital cordless phones starting at DM 69 (\$34) and countless other interesting offers. As was to be expected, suppliers of software and hardware for the C64 were not present. Maybe next year one of the computer clubs or suppliers will also offer the CMD product range or some Scantronik remainders. On the other hand, fortunately nearly all of the junk sellers have disappeared from the HobbyTronic.

According to its tradition, the HobbyTronic this year as every year offered various special exhibitions. This year's artistic attraction was the Airbrush exhibit. Printers, monitors and

computer cases in general were transformed into true masterpieces of art with the well-known airbrush technique. Visitors could attend a live airbrushing session. Those who have always dreamed about changing the look of their computer to match their office styling or brightening it up with their favorite design can fulfill their wishes with the help of this unique process. Airbrush is not really something new, but nevertheless it's fascinating to watch the artists at work and to see the pictures evolving from delicate lines.

The special exhibition '25 years of Personal Computers' organized by the Heinz-Nixdorf-Museums-Forum (HNF) gave an impressive review of the evolution of Personal Computers and continued last year's special exhibition by the same entity which was entitled "5000 years of computers". This time, no cuneiform scripts from Mesopotamia were on exhibition, but computers from the 20th century. The exhibition probably reawakened some memories in many of the visitors, who had the chance to take a look at treasures from the Apple II to our legendary C64, from the first Mac to the V20 and the numerous ATARI copmuters. All of the computers were working properly. In order to be able to answer questions about software and hardware exchanging opportunities concerning the C64, and to show that even today there are still publications dealing with C64s, the HNF asked us for an issue of the GO64!, a wish we promptly fulfilled. The HNF's computers by the way are mostly donations, and the HNF even has a CRAY-II in their collection. Julia Bruchhausen from the HNF explained that only a small part of their exhibition could be moved to HobbyTronic. The museum in Paderborn, Germany, offers lots more. For instance, they have a working reconstruction of the Leibnitz machine, a Thomas arithmometer from 1850, a Jacquard machine with punchcard system, components of the ENIAC copmputer from 1945, the board computer of the Gemini space capsule and an 'Apple I'. The collection consists of 5000 exhibits on writing, calculating, office equipment and computer technology displayed on 18,000 square meters. Moreover, the museum has the possibility to come up with individual special programs for its visitors. But the HNF is more than just a museum. The 2nd WDR's (Westdeutscher Rundfunk, a local German radio and TV station) "Computer Night" on the 11th and 12th of December 1999 was held at the HNF. If you're interested and want to take a look at the museum's exhibits, try one of the following:

<http://www.hnf.de>



Picture (1): © 2000 by Gunther Richter



**Heinz-Nixdorf-Museums-Forum
Fürstenalle 7**

D-33102 Paderborn

Germany

Tel.: +49 (0)5251 - 3066 - 00

Fax: +49 (0)5251 - 3066 - 09

GEOS User Club

As with last year, the GUC did not offer any information or exhibits on the C64.

1. Wittener Computerclub:

Two months ago the 1. Wittener Computerclub elected a new chairman: Stefan Zelazny (<http://home.t-online.de/home/galaktus/index.html>), a veteran Commodore user. Naturally the activities of the computer club are not restricted to C64s but it can be assumed that special attention will be paid to the C64. Stefan was immediately willing to start a guest book at the stand (once more, thanks very much to Stefan Zelazny and the 1. Wittener Computerclub). In the Commodore corner of the stand he showed a C64 relay card which was used to control various electrical devices under the title "Controlling with the C64". The selection of devices was very interesting, with some true eye catchers amongst them, for example a water tap without installation, a turning red alarm light and a siren.

It was good to see so many C64 fans around. The C64user guest book at the 1. Wittener Computerclub's stand at the end of the HobbyTronic held 92 inscriptions. Amongst them was Oliver Biasin who had the longest way to the fair, as he lives 454 kilometers away. There was also an autograph by a C64 user from Sandweilen, Luxembourg, who apart from Oliver Biasin had the second C65 at the HobbyTronic.

Here some other interesting names from the guest book:

Helmut Rerig
Nikolaus Malecki
Meeting Point BBS (<http://go.to/mpbbs>)
Jürgen Heinisch / Geos User Club
Heinz Nixdorf Forum
Dirk Klettke
Frank Jurke (Hoogo/Padua)



Dr. Johannes Schulze-Oechtering
Ralf Knabe (Stressic)
Arndt Oevermann
Dr. Reinhard Kratzberg (Wan Tu-Eit, MySoft)
Bodo Faros (GIG Süd)
Oliver Biasin (CCL)

Some of the visitors also wrote funny comments into the guest book, here are some examples:

Hi, I'm Björn's girlfriend and I'm suffering from his C64 addiction. Annette God save the Queen, 8, 1 Markus Knuputsch (or something similar, it was hard to read)

On Friday and Saturday, Helmut Rerig demonstrated hardware from CMD (SCPU 16MB, RAMLink, Turbo232, 1750XL, FD2000, HD40) along with Wheels on his C128. He also had connected a zip and a CD-ROM drive. Two more special treats were the self-made central power supply and the drive number control at the front of the machine. This equipment increases working speed incredibly. The coffee-producing industry is probably happy that it was not available earlier on, as coffee breaks during loading and saving periods are now unnecessary. This fact is especially noticeable when you return to a standard C64. Helmut Rerig described the visitors' interest in his installation as "lively" - no wonder as such a combination of various machines is no everyday feature.

On Saturday, Dr. Reinhard Kratzberg made his appearance and demonstrated his MySoft Edition. He stayed until Sunday at 6 p.m.. During this time visitors flocked to the stand and in the ensuing hectic; unfortunately some names got lost. Nevertheless, there were some interesting things to see, for instance, a 386 together with a C128 and an HD-2000 in a Commodore Slimline case. Moreover, the same fan had a 64 Rev. E in shorter C64 II case, with



a 128D metal keyboard. He himself had made the upper part of the case out of sheet metal. The whole thing resulted in an extremely small C64 with an external keyboard, but unfortunately we do not have any photographs of the machine.

On Sunday the C64 section of the stand was hosted by Stefan Zelazny, Oliver Biasin and Dr. Reinhard Kratzberg. Even on this last day of the HobbyTronic the stand had lots of visitors, though the number was not as high as on Friday and Saturday respectively. Oliver and Stefan had a great time playing 'Giana Sisters' at the HNF's stand. They demonstrated to the 'speechless' visitors how to survive the first levels and also the famous 'ARMIN' cheat. Reinhard Kratzberg and Stefan Zelazny also surprised the public with a heated discussion about the pros and cons of different BASIC editors on the various computers exhibited.

Overall, the HobbyTronic was quite a success for the 1. Wittener Computerclub and also for the C64. Stefan Zelazny could not confirm the lack of interest in the C64 that Micheal Hesse had noticed last year. The autographs 1. Wittener CC's guestbook, and HNF's exhibition and demonstrations, speak for themselves.

The 1. Wittener Computerclub's webpages can be found at this address:

<http://www.en.shuttle.de/server/>

As a summary, the HobbyTronic has again become a lot more attractive since last year and bargain hunters can find some interesting offers in Dortmund. Many of the exhibitors have taken over the computer clubs' idea and offer to test the hardware purchased from them on the spot. Obviously it has become more important to offer quality at a lower price.

By the way: The HobbyTronic Computer exhibition 2001, the 24th trade fair for PCs, software, radio and electronics will be held from 02/14/2001 to 02/18/2001 in the Westfalenhallen 5 - 7, so one more exhibition hall than this year and the last years is planned for ... (ad)



Second thoughts about the HobbyTronic 2000

by Helmut Rerig

I have been a visitor of the HobbyTronic in Dortmund for some years now. This year I also came as an exhibitor. I had contacted the 1. Wittener Computerclub, and, as they had a very large area to themselves this year, they gave me the opportunity to present present-day subjects under the motto 'Commodore C128 and the technology of the year 2000'.

Of course I also had the chance to take a look around at the fair and see what interesting things I could find. So here's my view of things at the HobbyTronic 2000:

At first I thought that the hope for any special bargains would be in vain anyway, as they have disappeared some time ago. But nevertheless there is always a lot to see at the fair and you only very rarely encounter such a wide range of hardware and software at one place. Speech-recognition software attracted a lot of interest, however, one cannot help asking oneself, "who needs such things?" In my mind, such software may be interesting to lawyers or chief executives as a substitute for a secretary, but for John Doe it is just not worth it and it might simply be a little too much. On the other hand though, speech recognition for mobile car phones can possibly save lives...

Anything else? There were lots of offers of ink

for refilling printer cartridges. But to me this seems a little dangerous, because my experiences with that kind of ink have been negative. Those printers with the jet system integrated into the printer cartridge (e.g. HP printers) tolerate all inks. But you should be careful with some Canon and EPSON printers, as the jet system is installed in the printer and refill inks that do not contain the same kind of solvents may block the jets.

Another of the offers at the trade fair were games, PC books and CDs galore. Considering the printing costs the books come virtually as presents. I always wonder who wants to read those endless PC books? Any readers who reach the end must have forgotten anyway what the beginning was about! The CDs were sold at prices that only cover the costs for the recordable media itself, however, they mostly contain software and music that in these fast, modern times are already past their heyday.

But it was possible to make some bargains for our favorite computer, the C64/128. One supplier sold 100 5 1/4 inch disks for DM 5 (\$2.50) and 100 3 1/2 inch disks for DM 15 (\$7). A friend of mine told me that HD disks are very hard to find nowadays, which is quite true. The storage media used in today's PC world are probably mostly zip disks or CD-ROMs.

Another supplier even offered the original EPROM writer 'Quick Byte 2' by Jahn for only DM 10 (\$5), complete with the manual. At the same stand one could purchase a cheap CD called 'Homecomputer Nostalgie-Box' with various emulators and the complete issues of the 64'er mag, by the publishing



house Franzis-Verlag.

I'm sure I could have found a lot more stuff, but I did not have the time, as I had not only come to take a look around but also to exhibit my own project.

The stand of the 1. Wittener Computerclub had many visitors and various computer system users found their platform: PC, Acron, Amiga, C64, C128 etc. People showed a lot of interest in the stand and especially in the C64 with a relay control pc board, as well as all the other machines belonging to it that were on display there.

On the two days of the fair I had a lot of work and many questions to answer. The installation I had brought along had been put together under the title 'Commodore C128 and the technology of the year 2000'. It consisted of a flat C128 / SCPU 128 with a 16MB RAMCard / RL with 16MB RAM / CMD REU 1750 XL / CMD-HD / CD drive / zip drive / 1571. Naturally, every installation is only as good as the software it runs with, so I used GEOS128 with the 'DoubleDesk128' interface on the RAMLink.

The 'DoubleDesk128' offered the possibility to copy and start files directly from the CD. As not all people use GEOS I also had two other programs running. The banking program 'Banking128' by Holger Stühr aroused a lot of interest, and the same is true for the test version of 'RL-Commander V3.xx' by the same programmer (further development of the original program by Rudolf Sanda).

The two days of the fair were over much too quickly, and while they were very interesting, they also required a lot of commitment. Once again I'd like to thank the 1. Wittener Computerclub for its hospitality, and I'd also like to thank all the visitors who actively took part in the success of the fair. (ma)

Coverstory



Sebastian Herk

THE SECRET WEAPONS OF COMMODORE



Sebastian Bach



Reinhold Neudörfl 1997 für C64.de

by Nicolas Welte

Secret Weapons isn't just another website dealing with classic computers like so many others on the Internet. While other sites may contain pictures of all different types of computers and usually the corresponding technical data, SWoC (Secret Weapons of Commodore) delivers previously unknown devices and projects funded by Commodore. Naturally, such a website can not be 100% correct, so be forewarned that there may be errors or false information. But this is one of the charms of the site, since others are encouraged to contribute information and help out.

The initial page is somewhat simple and contains no frames. There are only a few inline pictures on the page. This site can be viewed with LYNX without losing any information. Most pictures are text links, so they can be downloaded easily. The images are of varying levels of quality. Some come from old computer magazines. Others are of used equipment to which time has not been kind. The truth is, however, that these pictures are better than none at all; plus, the main focus is on the text descriptions of the devices.

Visitors to this site will be rewarded in various ways. Readers will be informed about the history of Commodore, from its humble beginnings as a typewriter company in the 1950's right up through to its role as a player in the personal computer revolution, as well as the dramatic ending. You'll also learn about the lives of the founding father of Commodore, Jack Tramiel, who funded the company for many years, and later joined Atari in a search for something different.

Journeying through the Secret Weapons website you'll see a wide range of unusual machines, but you'll probably recognize many of them. The legendary C65, successor to the C64, is probably the best known example of hardware that was never commercially produced. Just about everyone

No, it's not what you think. We're not talking about the newest military technology, but rather something from our favorite computer company. Cameron Kaiser's website (<http://retrobits.com/ckb/secret/>) contains information about rare, unknown and never-before-seen hardware projects from Commodore.



**Cameron Kaiser,
author of
Secret Weapons**

has at least heard of the C65. Commodore produced and distributed some devices in selected areas of the globe, and are almost completely unknown in the rest of the world. A good example of this category is the Commodore Max, a C64-like games console distributed in 1982 in Japan. The C64GS console, available in England in 1990, was well known to most European Commodore fans. This product wasn't vigorously marketed, and ended up being little more than a curiosity.

Surprisingly, many devices never made it to the United States and were only available in Europe: The first Commodore 128D in a plastic case, the Commodore 116, the C64G and C64GS, as well as the 1570 disk drive. These products qualify as Secret Weapons; at least for most of the world. The C116 and C64GS weren't hits in the countries of their production, and they quickly disappeared. As a result, there is only a small group of followers for these computers. In contrast, it seems that there weren't any products that were distributed in the USA that were not also produced elsewhere.

Let's take a look at some of the highlights: Commodore had a complete working series

of business computers that never made it big. This is the CBM-II-Series, a successor to the PET series. Two fundamentally different variations were built: One had a 40 column screen which used the VIC-II videochip (the same as used in the C64), and the other had an 80 column display and used the 6845 chip (just like the 8000 series PET computers). Both computers were fitted with the 6581 Sid sound chip. The unusual feature of this series is the 6509 CPU, a variation of the well known 6502. The 6509 had a special feature: This processor has a built in mechanism for dealing with multiple RAM banks, up to a total of 16, that can be filled with up to 1 MB of ram. These computers were available for purchase with up to 256 kB ram. They also contained slots for planned processor upgrade cards using the Z80 and 8088 (for the usage of CP/M and MS-DOS). After a short time these computers disappeared from the market and slipped into obscurity.

Another computer, somewhat related to the CBM-II series, also enjoyed a limited amount of popularity. It's history is connected to the origin of the C128, as developer Bil Herd revealed on Compuserve in 1993 (the German translation was printed in 64'er magazine). Commodore planned a computer, the D128, using the 6509 CPU, 6845 and VIC-II chips. This computer was supposed to be incompatible with all other computers made up to this point. Bil Herd, having just finished the development of the C64-incompatible 264 series, considered this to be a dead end project due to its incompatibility with the C64. The concept of the C128 was born. Ideas for the C128 also

came from the never-sold C900 series, which used the VDC 8563 video chip to produce 80 column graphics.

The CBM 900 was conceived as a UNIX workstation with a 16 bit Zilog Z8000 CPU. The CPU itself was not successful despite it's progressive technology. The few existing C900 prototypes look very much like the Amiga 2000, but have a built in 5.25" disk drive rather than a 3.5" drive

The entire Commodore 264 series also has an entry on this site: Even the most well known representatives of this group, the Plus/4 and C16, could eke out a living in the niche market, and this held true for the mostly unsuccessful C116. During the development period, several other variations appeared. Originally, the series was designed as a set of business computers. This explains why the flagship model C364 was equipped with a numeric keypad. Moreover, it had built in speech synthesis hardware like the Magic Voice module for the C64, but with an extensive vocabulary. Only three C364 units were built, one of which is owned by Bo Zimmerman (<http://www.zimmers.net/>). The C264 is the direct ancestor of the Plus/4. This model didn't contain the integrated software that the Plus/4 contained. The C232 is a variation of the C264 with just 32k RAM housed in an identical case and with the same keyboard as the C264. At least twenty units were sold as clearance in the Netherlands, Commodore must have been closer to production with this machine than with the C364. The widely produced Plus/4 and C16 still contained memory tests for the 32k version in ROM.

Surely the most well known of Commodore's secret weapons is the Commodore 65. Rumors started to spread early on during the development of the C65, and many C64 users waited eagerly for the new machine. Unfortunately, the hopes of many were dashed: The production of this 8-bit machine with Amiga-like capabilities was cancelled, due to the possibility of competition with the Amiga. The development of this machine progressed quite far, indicated by the few hundred fully working machines in existence. The hardware and software were never fully completed, and that is why many ideas were not completed. These ideas were, however, saved in the developer documentation. As Commodore went into bankruptcy, the C65 prototypes (originally manufactured as software developer's machines) as well as

retrobits.com and the Commodore Knowledge Base proudly present



They were the secret weapons!

The unrealized phantasms of technological wonder!

The ravings of mad geniuses made flesh and locked away in caverns of dust never to see the light of day!
The demons that Tramiel forgot, to come tapping at their door even as the winds of oblivion beckon and spit!

Most recent changes made to this site 14 February 2000 - [here's What's Newly Discovered](#).
Please also read this note on [using images and information from SWaC](#) and this very important [Disclaimer](#)

[What Is This Archive?, or, An Excruciatingly Lengthy History of Commodore](#)

The horrifying tale of the behemoth from its origins in the blackest nethermists of time, to its agonising struggle against the clattering maw of destruction!

- [The Secret Timeline](#)
- [The Other Intellect/TOI Series, The Colour PET and the 65623 Video Chip](#)
The cold intelligence that may have changed history, only to be lost in awful darkness for all eternity!
- [The 3008](#)
A tiny, often-remnant in the metamorphic sea that produced the mighty PET!
- [The 6509s: P500, B500, B128/256, 610/710, 620/720, 630/730, H700, HX256](#)
Only the alien green of their phosphors could match their bizarre design for sheer astonishment!
- [D128](#)
The eerie travails of fate may have caused future generations of Commodores to be forever cursed by its design!
- [The CBM 900](#)
A brooding colossus of awesome power eternally bound to oblivion by the chains of the 68000!
- [The Educator: Educator 64 \(4064\)](#)
Its diabolical cognitions sought to infiltrate the innocent child's mind with its horrifying stench!
- [The 7501s: 116, 116 Portable, Book 116, 232, 264, 364](#)
Even then the fantastic beast of the TED chip could mold an metamorphic beast into fearsome incarnations beyond the conception of mortal man!
- [The Commodore 65](#)
The last gasp of a giant, its tentacles struggling to repulse the hordes that now beset it!
- [The Portables:](#)
 - [The HHC-4](#)
Memories of the "calculator days" stem in the febrile brain of this lost demon!
 - [The Executives: SX 64, DX 64, Executive 64, SX 100](#)
Power crushed and compressed into proportions so dense that the entire galaxy might implode beneath their fantastic bulk!
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 - [The Ultimax/Max Machine, The 64GS, The 64CGS](#)
Feralie lumps of cold steel, their ghosts even today haunt your 64's memory map!
- [The Peripherals:](#)
 - [The Disk Drives: SFD 1001, 1541D, 1542, 1543, 1551, 1561, 1563, 1565, 1570, 1571-II, 1572, 1590, 1591, 8060, 8061, 8062, 8280](#)
Fate's minions bound by total allegiance, their fates were sealed as their infernal masters were swallowed by time's gaping maw!
 - [The Hard Drives: "HD10", CBM D9060, CBM D9090](#)
Like black leeches, their swollen, fleshy lips working to swallow anything within reach, down their insatiable gullets!



The 1570 disk drive, almost totally unknown in the USA

the development information was sold, and the rest is history). Whoever owns a C65 today should really treasure it, for in addition to being very rare, it would bring in a hefty sum of money. But who would want to sell theirs anyway?!

These are only some of the many types of secret weapons dreamed up and created by Commodore developers. As you can see in picture #1, there are quite a few others to be seen. A huge list of peripherals and special computer variations can be explored from a different and fascinating chapter in Commodore's history. Just like the game Chessmate, these devices deserve a position in GO64!'s Cult Corner.

Cameron Kaiser was nice enough to answer a few questions for me. Our interview follows:

Cameron Kaiser was nice enough to answer a few questions for me. Our interview follows:

GO64!: Cameron, what is your personal Commodore history?

Despite the fact that I use them incessantly now (and am writing this E-mail on one of my two workhorse 128 systems), my first computer was not a Commodore of any sort, but a Tomy Tutor, an obscure 16-bit system with similar architecture to the TI 99/4A. In fact, my first experience with a 64 was a fairly bad one, thanks to a phenomenon that happens when you type an odd number of quote marks. :-). Naturally, I got over it when my parents got me one in 1984, not long after the system had started becoming increasingly popular. I still have that particular unit, even though the PLA blew out a few years back.

I wrote several articles for COMPUTE! Gazette until it folded, and a few more for

LOADSTAR, mostly utility programs but also a few more "atypical" items like an adventure game programming language and even a periodic table tutor. Nowadays I write and release shareware and commercial titles under the Computer Workshops name, and of course for the 64.

In my little apartment I have two 128s, a 128D, a Plus/4 and an SX-64; in storage, I also have a breadbox 64 system and a VIC-20, plus a few other interesting components like a 116 casing Martijn van Buulsent me. And, of course, my workhorse 128s are my primary system.

GO64!: How did you get started with SWoC and how did you get the idea for it? And where did you get all this amazing information from?

I got the idea from a similar site the Atari 8-bit camp had once, the URL for which I have unfortunately forgotten. It covered some real Atari oddball machines, and I figured that Commodore must have had some skeletons in the closet themselves, so I took the systems I was then aware of, compared it with Jim Brain's comprehensive (not anymore ;-)) list, and dug through the Net and my own archives. Much of the early information Marko Mikeli had catalogued quite a bit before on his own secrets page, but more came out of the woodwork as soon as I started releasing my own updates and finds on the models. All the information you see on SWoC ultimately had a source, some as brief as a footnote in a book somewhere, but they all have independent verification for their existence. Of course, most of SWoC's content comes from the cadre of sharp-eyed collectors and readers who have sent in scans, clippings, URLs and even components (in addition to the 116 case, I have a MagicVoice, and Richard Atkinson sent me a complete Sound Expander, box, software, unit and all), and they're the real source of the rather startling history of one unique computer company. For the rest, I consulted my own library, plus the vast transcribed resources on the Net, and a whole array of used bookshops. You never know what you'll find there, and I found quite a few gems.

For the record, the machine I want more than anything else is a 900. The 65 is only a close second. :-)

GO64!: You're presently running many Commodore projects, and there were even more in the past, which you had to pass on

due to real work(tm). What can we expect from you in the future?

Naturally, both SWoC and the Commodore Knowledge Base will be updated as new information arrives, so that will stay the same. The ninth edition of SWoC is under construction right now.

I'm also working on some new software titles. HyperLink 2.5, the upgrade to HyperLink 2.0, Computer Workshops' hypermedia system, will feature a web browser and Internet access. Using a shell account, you will be able to browse the Web and even view .jpps and .gifs without CPU acceleration or even extra hardware. It should be ready for download by early summer, and will be shareware. You can see screenshots at

<http://www.armory.com/~spectre/cwi/hl/web.html> .

Of course, the project that keeps on going, Nether, is still being worked on. Nether is a 3D shoot'em up featuring texture mapping, dynamic light sourcing, and a completely realised game world with switches and secret areas, an automap, and of course a host of nasty aliens. The old version is being refitted with a new and faster 3D rendering package, but I don't have an expected release date for that. Nether's URL is

<http://www.armory.com/~spectre/cwi/nether/> .

There's also a few ideas coming down the pike, but I'll keep those under my hat for now. :-)

As for new web projects, I don't know of any yet, but the best ideas are the ones that just come to you out of the blue. So we'll see!

GO64!: Thank you very much for this interview and good luck with your projects!

In closing, I'd just like to reiterate that this site is really fabulous, and well worth a visit by every one of our readers. I know you'll enjoy it too. Have fun!

(ad)

Cover Disk

Formula 1 Database V 5.0

Formula 1 Database V 5.0 is a program for editing, calculating and printing the results of the formula 1 drivers championship on C 64 and C 128 (in C64 mode) in a comfortable way. On the C128 the 2 MHz mode can be used to accelerate calculations.

The program consists of the parts

- * F1-BOOT
- * F1-VERWALTUNG
- * F1-SURFACE.OBJ
- * F1-CHR/MOB.BIN
- * F1-MAIN

which must be on the same disk. F1-datafiles are marked with two leading graphic characters looking similar to a finishing flag.

To run Formula 1 Database, use the command

```
LOAD "F1-BOOT", 8, 1
```

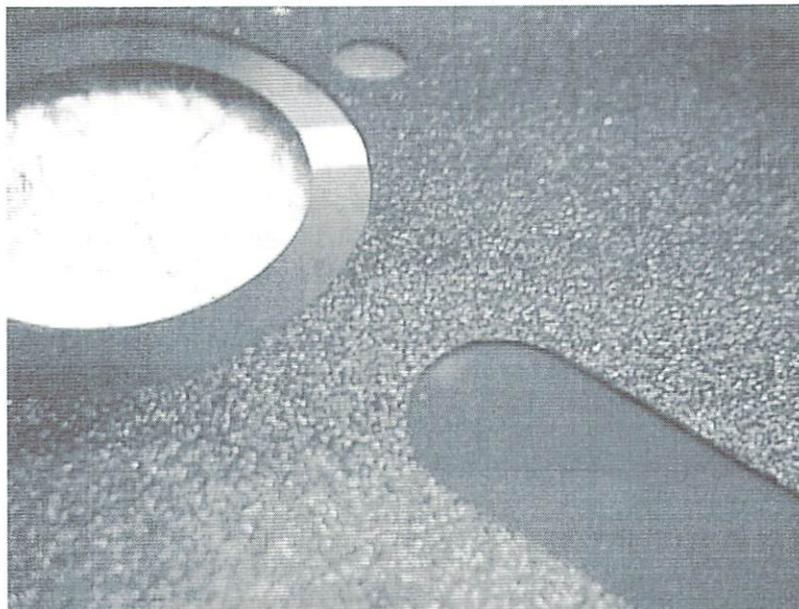
which loads all parts and starts the program automatically.

Using the program

Formula 1 Database V 5.0 can be controlled with the keyboard or a joystick in port 2. When using the keyboard, the following keys are important:

"Cursor up/down":	Select line
"Cursor left/right" or "+/-":	Forward/back
"F1/F3":	Paragraph up/down
"F5/F7":	Line up/down
"HOME/CLR":	Move to start/end
"RETURN":	Activate/enter
"P":	Print
"M":	Back to main menu

If you use a joystick, the up/down directions are equal to cursor up/down. By pushing it left or right you can choose one of the icons in the screen border, which can be activated with the fire button. From left to right the icons work the same way as "F1", "F3", "F5", "F7", "-", "+", "M" and "RETURN".



The new charset contains the German umlauts, which can be entered by "Shift :;" (ü), "Shift ;;" (ï), "@;" (?), "C= o" (á), "C= p" (ç), "Shift @" (è) and "Pound" (ë).

Main menu

1.) Change parameters:

If there is no file in memory, a new one can be created by entering the maximum numbers of drivers and races. Note: These values can't be changed afterwards! You can also activate or deactivate (which may be necessary when using certain cartridges) the C128's 2 MHz mode, choose the printer type (Epson 9- or 24-pin models and MPS 801 compatibles), control the sending of linefeeds and set the secondary address for transparent mode of your printer interface. The transparent mode sends all chars without transformation to the printer, the secondary address for it depends on the interface model (for example 1 for the Wiesemann 92000, see manual, 5 for Xetec). The value "256" sends the output to the userport.

2.) Enter formula 1 drivers:

Select line and press "RETURN" to enter the drivers/teams. With "P" you can print their list.

3.) Enter results:

With "factor" you can select if full or half point is given to the drivers. If a race has to be stopped before finishing most of the distance, the winner for example can gain only five instead of ten points.

4.) Show results:

Here you can see and print the results of the races.

5.) Show statistics:

Shows statistics and ranking for a driver.

6.) Show points:

Shows table with points from the first up to the selected race. If two or more drivers are equal, the number of first, second, ... places determine their positions.

7.) Save file:

All F1-datafiles on the disk and the name of the file in memory are shown and can be chosen. After an optional modification, the saving begins. With "+" or Icon 6 the directory of a different diskdrive is loaded.

8.) Load file:

If there is already a file in memory, you get a warning that it will be deleted by loading a new one.

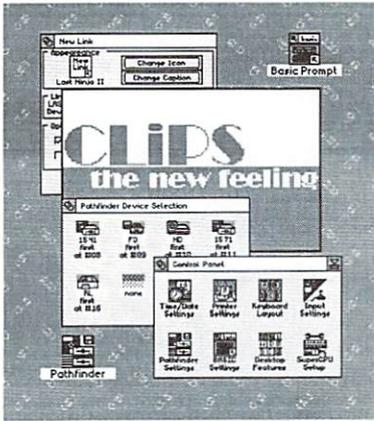
9.) Quit/restart:

Restart deletes a file in memory and allows to create a new one.

Items 2 and 7 can only be chosen if there is a file in memory, for item 3 at least one driver must have been entered. To activate items 4 to 6 the result of a race must be present. If the necessary data isn't there, you hear a signal tone.

Printing is possible at items 2, 4, 5, and 6. If the printer is not ready, you get an alert sound; you hear the same sound in case of a disk error.

Thomas Klein/ad



CLiPS - Corner live during its development

As we noted in the CLiPS report in issue 1/2000, CLiPS makes use of data areas called "virtual bitmaps". This means that an application which wants to display something on the screen doesn't write it directly into the graphics memory, but into another memory area that has been assigned to it by the CLiPS memory manager when the application was started. This virtual graphics buffer is only as large as the program's window. This way, a program that displays, say, an analogue clock, doesn't need a full-size bitmap, but only one as large as the clock.

Overlapping windows

Imagine the CLiPS desktop, with some windows on it overlapping each other, and one of the windows in the back showing the familiar rotating paperclip. This window is partly covered by other windows of other applications, like the Pathfinder. Now imagine what a task it would be for the small paperclip demo if it had to find out where it may draw, and which pixels and line segments it has to leave out, because they are covered by the corner of another window? Unthinkable. But with the virtual bitmap concept, the rotating paperclip doesn't have to know if it's half covered - it is always fully drawn. The real time-intensive task, namely copying the clip into the actual bitmap that's displayed by the 64, is handled by the system. CLiPS maintains a matrix that tells exactly which windows are

where, and particularly, which window is at the top in each cursor cell. This way, the system won't paint a window in full, if two thirds of it are covered by another window!

CLiPS is on the way to becoming a revolution in the world of operating systems on the 64. At the moment, it is being developed piece by piece. Every step, and each conceptual detail is carefully planned, in order to create an open system that offers maximum flexibility and performance to both the user and the programmer. Every issue will feature the news from the CLiPS development labs at Protovision. Today's article describes CLiPS' powerful window management system.

by Malte Mundt

The same procedure as...?

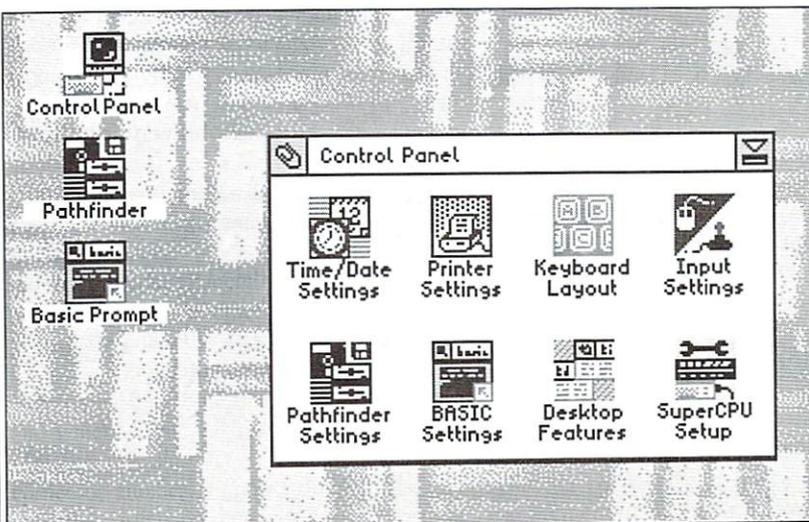
Moving a window does not result in all programs lying behind it being asked to redraw their windows, as known on other systems, where redrawing a window may take quite some time, depending on the complexity of the task. One simple example on the 64 is GeoWrite, which redraws the text line by line after removing a dialog box - even if the machine is equipped with a ram expansion that could easily buffer the graphics area covered by the dialog box.

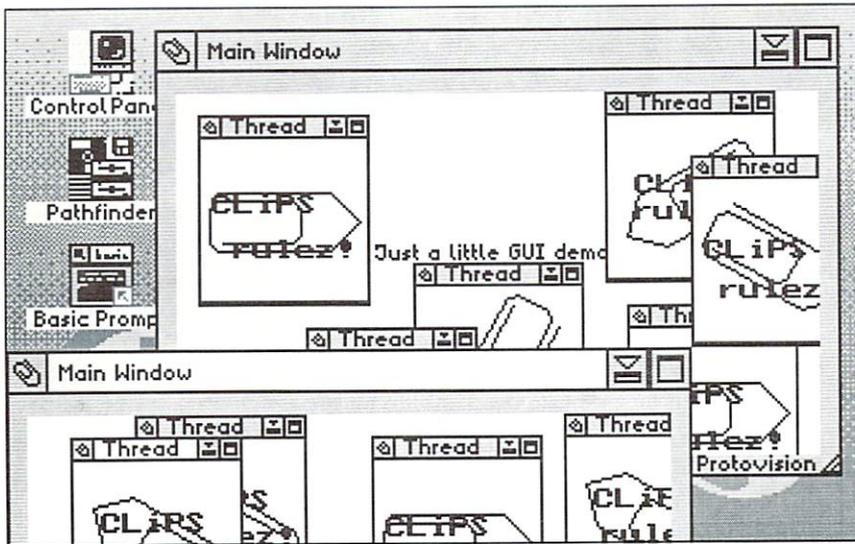
CLiPS uses a more effective method - the applications hardly notice when their window is moved, since the full contents of their windows is always kept in the virtual bitmap. Moving a window only causes the matrix mentioned above to be updated, and the next time the screen is refreshed, any newly visible window part is displayed from the virtual bitmap.

Clipping

In contrast to "clipping" (meaning working & playing with CLiPS), "clipping" is a general term that denotes a system's ability to draw windows that are partly outside the visible area of the screen. Here lies another benefit of virtual bitmaps, besides efficient memory usage: since the application simply draws into this bitmap, it is independent of the position of the window. Not only does it free the program from handling variations of bitmap addresses when a window is moved; it doesn't even have to care if a text line to be displayed has to be broken because it exceeds the screen area! It simply writes everything into the virtual bitmap, which is located in the fast memory of the SuperCPU, instead of the slow ram of the C64 which is still clocked at 1 MHz, and where the VIC reads its data.

Clipping itself is automatically done by the CLiPS' window refresh routine: when it refreshes a window which is half out of the screen, an optimized routine is used to copy only the visible part into the real bitmap.





Local changes

Since CLiPS is designed to use the available resources, the capacity of the SuperCPU in particular, as efficiently as possible without wasting them, it doesn't have to redraw a whole window just because a small portion has changed. All an application has to do is tell the operating system which region of the window it changed - only this region will be handled during refresh. This saves an enormous amount of processing time, which can be used by other running programs, since CLiPS is a preemptive multitasking operating system.

Nested windows

As a special feature, CLiPS' window management system offers the possibility to open so-called MDI windows (MDI = Multiple Document Interface). These are windows in which other windows can be created, which can only be displayed inside their main window, and can't be moved out. This way, a word processing program could allow you to open and edit several texts at the same time. An image processor could display several image clips with different effects applied to them; an IRC (Internet Relay Chat) program could open several channels and private message windows at the same time, which the user could re-order as he likes. Naturally, if a parent window is minimized, all its child windows are minimized, too, although they can (and should) be threads of their own.

Sufficient space

The highest flicker-free resolution available on the 64 is a HiRes bitmap measuring 320x200 pixels. Such a screen is easy to fill, unless the icons, gadgets and texts are reduced to unreadable sizes; also, this is why the CLiPS taskbar isn't constantly visible, but can be brought up at the lower border with a mouse click. But since you never have enough space,

CLiPS users will be able to open up to four "consoles" at the same time, each a CLiPS desktop of its own. These consoles can freely be ordered, for instance, in such a way that a window moved beyond the right border on console 1 appears at the left border on console 2. This allows seldomly used windows to be

kept on other desktops. Or think of running an application on desktop two, while its source code is still opened in an editor on desktop one, waiting for further changes.

But a window may also be as wide as two, three or even four desktops, if it becomes necessary for some reason.

This feature will prove important when it comes to viewing web pages or pictures larger than 320x200 pixels. Take a look at the World Wide Web, and you'll see that there are hardly any sites that could be stuffed into a window measuring only 320x200. And if you open a web page with non-Commodore content today, you can hardly expect it to support Lynx. This problem will be solved by CLiPS in the best way available on the 64: by creating a large window with 640x400 pixels that occupies all the four consoles. Then, this huge window can be navigated using either the keys or the mouse.

Next time we'll explain the disk concepts used by CLiPS. Will it support using more than four drives simultaneously?

(gb)

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Graphic Interpretation



Picture: Schmitts Back

by Bruce Thomas

I had a visitor from France yesterday. Now, for some readers this wouldn't be newsworthy. I imagine there are even a fair number of CW/GO64! subscribers who live in France. I live in Western Canada, so my visitor was a fair distance from home. I admit, visitors to my home normally wouldn't show up in a magazine article about Commodore computers and GEOS.

The reason for this visit, and what was done during it, brought up many things that warrant discussion here. My visitor was not a stranger. He had lived in Canada for 30 years and retired back to his homeland 7 years ago. He used to be a member of our local UserGroup and decided to look me up on his return visit to help solve some GEOS problems. He brought four of his GEOS disks with him.

Start Me Up

Two of these were original boot disks that he uses regularly to boot GEOS 128. Now, this should set bells and whistles ringing everywhere. The number one rule of GEOS, even though V2.0 comes with a Backup Boot Disk, has got to be 'protect your original boot disks and make copies for everyday use'. The GEOS copy protection scheme means that you can't just use any disk copy software to create usable copies.

There are a number of options still available including Maverick (available from Centsible Software [www.centsible.com] with all parameter disks for \$29.95) and geoMakeBoot (available from CMD [www.cmdweb.com] for \$12.95). Maverick lets you create boot disks on 5 1/4" media while geoMakeBoot lets you create a boot disk on any media format supported by GEOS. Wheels (or also MegaPatch 3) is another option and it even comes with its own Boot Disk maker program. I used

The Visitor

Maverick to make Boot Disk duplicates for my visitor.

Take a number

The next problem that my visitor had was the serialization of his two bootdisks. One disk was V1.4 of GEOS 128 and the second one was V2.0. When he installed his V2.0 he answered the question about previously installed applications wrong and ended up with two serial numbers. Now, there are a number of ways, including Maverick, to modify or strip the serial number from applications so they will work with different boot disks.

Since my visitor did not have any add-on packages he was only having trouble with geoWrite. Yes, geoWrite is coded to the boot disk it was first installed to but its datafiles are not, so you are right to ask where the problem is. Simply use the V2.0 version of geoWrite to open the files created by the earlier version and go from there. This brought up the next issue.

Department of Redundancy Department

My visitor only has one disk drive - a 1571. This is great as the 331 KB storage space allows him to save a lot of files to one disk. This is not so great as it makes it harder and slower to copy files from one disk to another. Basically, if you are using GEOS you should have more than one disk drive. Disk drives can be picked up today for very low prices. For reasons we will cover later your system should include a 3 1/2" Disk Drive (1581 or FD-2000).

Not only are physical drives easy to find but there are a multitude of RAM devices to choose from, and many of them can be found on the used market. The speed increase you get from a RAM device is a real boost to your productivity. Get the most RAM that you can which means a 16 MB CMD RAMLink (get the optional Battery Backup unit while you're at it).

Since his original geoWrite work disk had V1.4 of geoWrite on it my visitor was booting from his original GEOS 128 Boot Disk to access those files. To use his V2.0

geoWrite work disk he would boot from his new boot disk. The simple fix was to delete the original geoWrite and copy his new geoWrite to the original work disk. If you are using a single disk drive you need to know how to copy files between disks or face the same dilemma as my visitor.

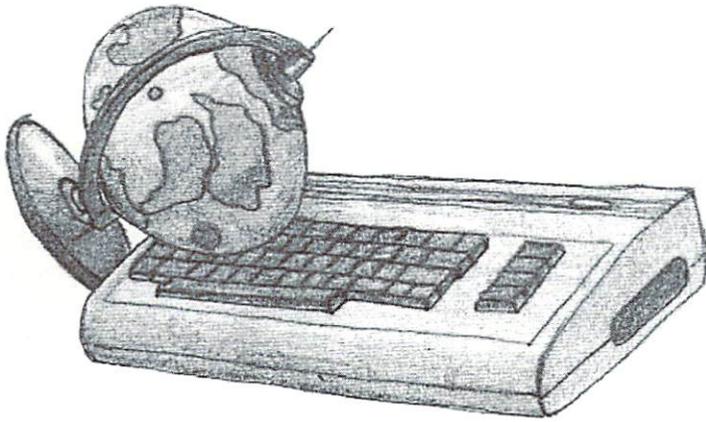
My visitor also reported frequent troubles booting his GEOS System disks. Both of his disks booted fine on my system so I suspect he may be having some drive alignment or dirty head issues. Having a second drive gives you options when equipment failure occurs.

PC Compatibility

The last thing that I did for my visitor was take his geoWrite files and convert them so they could be read on a PC. In order to make the information readable by PC programs it is necessary to convert the files to TRUE ASCII format. ASCII is an acronym for 'American Standard Code for Information Interchange'. This format ensures that characters are identified by a pre-determined value so that any computer program with ASCII capability can read the data.

By nature our Commodore computers use their own character codes (known as PET-ASCII) as well as their own disk format (although the disks are the same physical size as PCs use). These differences make transferring data to another computer a bit of a challenge, to say the least. With the help of special software we can read and write PC formatted disks on our 1571 and 1581 (or FD) drives. Since most PCs these days don't have a 5 1/4" Disk Drive it is a requirement to use the 3 1/2" format if you want to follow this procedure.

For many years our only option for reading from, or writing to, PC disks was Big Blue Reader (BBR) from SOGWAP Software - and it still does a fantastic job. These days we also have more options including geoDOS and MegaPatch3. geoDOS lets you make use of the 1.44 MB 3 1/2" PC floppies (including formatting) while BBR only utilizes 720 KB floppies. Prior to the transfer we must convert our GEOS files into ASCII format.



Again, we have a number of options including WrongIsWrite (WiW) and geoDOS. WiW, by Joe Buckley, lets you convert any version of geoWrite file from/to ASCII, PET-ASCII, etc. as well as other useful GEOS functions such as changing fonts and stripping Carriage Returns among other things. WiW is available, as a commercial product, on the Storm Systems disk and also on Dale Sidebottom's Laser Lover's Disk. There are also a few earlier versions that are PD.

geoDOS handles the conversion as the file is written to the PC disk so no intermediate steps are needed. Another item that needs to be mentioned follows along with this translation theme. Since our Commodores use different codes than ASCII does for each letter you must name your files in all uppercase letters prior to the transfer (this then shows up as all lowercase on the PC). Again, geoDOS handles this automatically.

Also keep in mind that older PC operating systems had limitations on the names they could accept. These limits said a file name could be only twelve characters long at most (8 for the name, a dot and a 3 character extension). In this case name your file with a '.TXT' extension to identify it as an ASCII

text file to the PC Operating System.

Maverick: -
Centsible Software (<http://www.centsible.com>)
Price: with parameter disks \$29.95US

geoMakeBoot:-
CMD (<http://www.cmdweb.com>)
Price: \$12.95US

BigBlueReader:-
CMD (<http://www.cmdweb.com>)
Price: \$39.-US
Alternative: LittleRedReader (C128) -
PublicDomain (you can find it in the internet or on several boards)

StormDisk:-
GeosUserClub (<http://www.NewGEOS.de>)
Price: about US \$15

geoDOS:-
V 2.8 PublicDomain (boards)
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Until next time, enGEOy your Commodore !
 (me)

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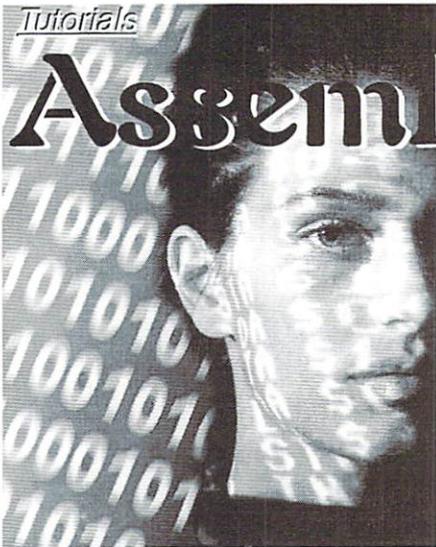
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Assembly Language



Picture: Bernhard P. Hoff/PhotoLibrary

by Wanja Gayk

Part 13

You rarely need to really write your own routines, because most of it is already available in the C64 operating system's ROM. Saving with assembly language is not that different from saving with BASIC. It is a bit more flexible though and is address-oriented as opposed to simply adopting the BASIC start address (usually \$0801), as done by the normal SAVE "program",8.

The Cheap Way

The simplest but also least flexible way to save is to use the operating system's load and save routines. This has the advantage that any floppy drive fastloader can accelerate the routine and that it can be relatively short. The disadvantage is that you can't use it to load into the area starting at \$D000, that is, as soon as the files become so long as to lie under the I/O area, the computer crashes. This is the same phenomenon which occurs when loading a program of more than 202 blocks length in BASIC.

Loading:

```
LDA #$08      ; file number (not
              ; really needed for
              ; LOAD)
TAX           ; disk drive device
              ; number (in this
              ; case 8)
LDY #$00      ; secondary
              ; address=0
JSR $FFBA     ; set file
              ; parameters
LDA #$10      ; number of
              ; characters in name
LDX #<filename ; name's address
              ; low byte
LDY #>filename ; name's address
              ; high byte
JSR $FFBD     ; set filename
              ; parameters
LDA #$00      ; 00 = load, 01 =
              ; verify
LDX #$34      ; loading address
```

```
LDY #$12      ; low byte
              ; loading address
              ; high byte
JSR $FFD5     ; load!
STX $AE       ; save end address
              ; low byte
STY $AF       ; save end address
              ; high byte
RTS
```

filename .text "0123456789ABCDEF"

It's quite simple as you can see. First, you need to set the file parameters - the device number and secondary address. The secondary address says whether you wish to load to an address of your own or to that to which the program has been saved before. If the secondary address is \$00, then you load to the address you are about to give. If it is \$01, you will load to the address from which the program has been originally saved (corresponds to LOAD"NAME",8,1), and the target address you are giving later is ignored. The parameters are handed over by a ROM routine at \$FFBA. Then you have to say how long the filename is (in this example 16 chars, hex = \$10) and where it is within the memory. After giving the parameters, you can say whether the routine should load the data or verify them with the data in the memory and to which address you would like to load the data (given that you have been using the secondary address \$00). In our example, I am loading to the address \$1234. Now we load (or verify, depending on the selection) using JSR \$FFD5. After the load/verify process, the end address +1 is stored in X and Y register. From there you can store them somewhere in the memory; you may need them later on. The filename has to be at the given address in ASCII code (that is Commodore PET-ASCII, not standard ASCII).

Saving:

```
LDA #$08      ; file number (not
              ; really needed for
              ; SAVE)
TAX           ; disk drive device
              ; number
LDY #$01      ; secondary address
              ; $01 (not really
              ; needed with
              ; disk drive)
JSR $FFBA     ; set file
              ; parameters
```

```
LDA #$10      ; number of
              ; characters in name
LDX #<filename ; name's address
              ; low byte
LDY #>filename ; name's address
              ; high byte
JSR $FFBD     ; set filename
              ; parameters
LDX #<start   ; set start address
              ; low byte
LDY #>start   ; set start address
              ; high byte
STX $FB       ; save start
              ; address (low)
STY $FC       ; save start
              ; address (high)
LDA #$FB      ; say at which zero
              ; page address the
              ; start address
              ; can be found
LDX #<end     ; end address +1
              ; low byte
LDY #>end     ; end address +1
              ; high byte
JSR $FFD8     ; save!
RTS
```

filename .text "0123456789ABCDEF"

This is effectively just like the load routine, except for two differences which I would like to explain. The secondary address is only important for saving to datasette. If it is \$02, then an EOT marker is saved behind the program saved (EOT =here: End Of Tape). If it is \$01, then there is no such marker. When saving to tape, you can also skip the filename by simply setting its lengths to \$00 and forgetting about the related parameters. For disks, the filename is absolutely mandatory though!

The start address says from which address saving the data should start, for instance, so that you could save data from \$1000 to \$1FFF. The start address has to be stored in the zero page, and the save routine has to be given that address. It is advisable to use the zero page addresses \$FB/FC, since the BASIC ROM uses them as well; thus, you will not mess up anything more than the ROM does itself. I has to be added to the end address, so that if you wanted to save data from \$1000 to \$1FFF (including \$1FFF), you should give \$2000 for the end address.

The Advanced Method: Loading and Saving also under the ROM

As I said before, this aforementioned method may load and save quite easily, but the C64 just messes up when exceeding address \$D000. In order to circumvent that problem, you load a program byte by byte, switching off the ROM only for a short time when the appropriate byte is written into the memory. Then you turn the ROM back on so that a new byte can be retrieved from the disk. You will understand that method quite quickly. The disadvantage is that this way of loading is seldom accelerated by software floppy drive fastloaders, because most of them simply hook themselves up by means of the "load vector" at \$0330/\$0331; they effectively just replace the load routine at \$FFD5, which we are not using at all in this case. A good hardware speeder, such as JiffyDOS though, speeds up this kind of single byte load routine also.

Load under ROM:

```
LDA #$08      ; file number
               (mandatory, just as
               with OPEN)
TAX           ; disk drive device
               number
LDY #$00      ; secondary address
               = 0
JSR $FFBA    ; set file
               parameters
LDA #$10      ; number of
               characters in name
LDX #<filename ; name's address
               low byte
LDY #>filename ; name's address
               high byte
JSR $FFBD    ; set parameters
               for filename
JSR $FFC0    ; open
LDA #$08      ;
JSR $FFB4    ; send "Talk"
LDA #$68      ;
JSR $FF96    ;
JSR $FFA5    ; fetch byte from
               disk
STA $AE      ; store as start
               address (low)
JSR $FFA5    ; fetch byte from
               disk
STA $AF      ; store as start
               address (high)

loadbyte JSR $FFA5 ; fetch byte from
               disk

LDY #$00      ;
SEI           ; disable interrupt
LDX $34      ; switch off
STX $01      ; BASIC and kernal
               ROM
STA ($AE),Y  ; store byte to
               address
LDX $37      ; switch on
STX $01      ; BASIC and kernal
               ROM
CLI         ; enable interrupt
BIT $90      ; last byte??
BVS endload  ; if yes: finish
               loading
INC $AE      ; otherwise
               increase address
               (low)
BNE loadbyte ; if no overflow,
```

```
INC $AF      ; otherwise
               increase address
               (high)
BNE loadbyte ; and continue
               loading
endload JSR $FFC3 ; CLOSE
JSR $FFE7
JMP $F642

filename .text "0123456789ABCDEF"
```

I don't want to explain this routine in too much detail, since this would certainly be too much for this part of the course, but some things need to be said.

Using "OPEN", I open a command channel to the disk drive (you may already know that command from BASIC). "Talk" refers to the serial bus, and it roughly tells the disk drive, "Don't just stand there; say something!", that is, routine \$FFA5 fetches a byte from the disk drive or the disk. Every following call gets the next byte in the row. In the beginning, as you can see, I retrieve two bytes and use them as the "start address", starting from which I load the data. The reason for this is that the first two bytes of a disk's file always denote the address from which it had been saved. In order to save to an address of your own, for example \$1234, you simply insert a LDA #\$34 directly behind the first JSR \$FFA5 and a LDA #\$12 behind the second JSR \$FFA5; this is the simplest way, which then skips the original address.

New Commands:

BIT - Test Bits with the Accumulator

Actually, this command is seldom used - most of the time in order to skip a byte, but it does also have a real function. The accumulator's content is combined via AND with the data at the given address. If all bits in the result are clear, the zero flag is set; otherwise, it is cleared. (In addition, bits 6 and 7 of the value from the memory is transferred into the V flag yet to be explained and the N flag.)

An example:

```
LDA #$FF      ; value $FF
STA $1000     ; to $1000
LDA #$00      ; AND $00 with the
               contents of $1000
               and
BIT $1000     ; store bit 6 and
               bit 7 from $1000 in
               V and N flag.
```

result: zero flag set, negative flag set, V flag set.

BVC, BVS, and CLV:

BVS means "Branch on oVerflow Set", and it branches when the V flag is set.

BVC means "Branch on oVerflow Clear", and it branches if the V flag is clear.

CLV - CLear oVerflow flag. A command like SEV for setting the overflow flag does not exist! Therefore, you need to set the V flag by

means of the BIT command.

Switching the ROM off and on

Memory location \$01 in the zero page has several functions. The bits 7 and 6 are usually not used. Bit 5 controls the tape recorder engine (0 = on, 1 = off). Bit 4 reports whether a key is pressed on the tape drive or not (0 = key pressed), and bit 3 serves as data output line for the tape drive. Finally, the bits 2, 1, and 0 are used to switch the three ROM areas on and off; bit 2 switches on the charset ROM if it is 0, bit 1 switches the kernal ROM off if it is 0, and bit 0 switches the BASIC ROM off if it is 0. After a restart, all three bits are set, which means the charset ROM is switched off, and BASIC and kernal ROM are switched on. Now what do "switched off" and "switched on" mean? Well, the C64's memory has a size of 64KB and is structured in layers. At the addresses \$A000 to \$BFFF you find the BASIC ROM in addition to the RAM, at \$D000 to \$DFFF you find the C64's charset ROM - a lower case/upper case and an upper case/graphics charset. From \$E000 to \$FFFF, there is the kernal ROM. These ROM areas cover the RAM beneath them. If you try to read from the RAM at \$E000, you will actually read the data from the ROM. Thus you have to switch off the ROM before reading the RAM. The same goes for programs in those areas. In order to run a program of your own between \$A000 and \$B000, you would first need to switch off the ROM lying on it, or you will jump somewhere into a BASIC system routine instead of your program.

Let's now get back to saving:

```
LDX #<address  ; start address
               (low)
LDY #>address  ; start address
               (high)
STX $AC       ; low byte into
               zero page
STY $AD       ; high byte into
               zero page
LDX #<end     ; end address +1
               (low)
LDY #>end     ; end address +1
               (high)
STX $AE       ; low byte into
               zero page
STY $AF       ; high byte into
               zero page
LDA #$08      ; file number
               (again because of
               the OPEN)
TAX           ; disk drive device
               number
LDY #$00      ; secondary address
               =0
JSR $FFBA    ; set file
               parameters
LDA #$10      ; number of
               characters in name
LDX #<filename ; name's address
               low byte
LDY #>filename ; name's address
               high byte
JSR $FFBD    ; set filename
               parameters
```

```

JSR $FFC0      ; send "Open"
LDA #$61
STA $B9
JSR $F3D5      ; send secondary
                address
LDA $BA
JSR $ED0C      ; send "Listen"
LDA $B9
JSR $EDB9      ; send secondary
                address for "Listen"
LDA $AC        ; save start
                address (low)
JSR $EDDD
LDA $AD        ; save start
                address (high)
JSR $EDDD
savebyte
LDY #$00
SEI            ; disable IRQ
LDX #$34      ; switch off
STX $01       ; BASIC and kernal
                ROM
LDA ($AC),Y   ; fetch byte from
                memory (into
                accumulator)
LDX #$37      ; switch on
STX $01       ; BASIC and kernal
                ROM
CLI            ; enable IRQ
LDY $AC        ; compare current
                address (low)
CPY $AE        ; with end address
                (low)
BNE continue save ; if not equal
                continue saving
                LDY $AD        ; otherwise compare
                current address
                (high)
                CPY $AF        ; with end address
                (high)
                BEQ endsave    ; if equal finish
                saving
                continue save JSR $EDDD ; save byte (from
                accumulator)
                INC $AC        ; increase address
                (low)
                BNE savebyte   ; if no overflow
                continue saving
                INC $AD        ; increase address
                (high)
                BNE savebyte   ; and continue
                saving
                endsave JSR $FFC3 ; CLOSE routines
                JSR $FFE7
                JMP $F642
                filename .text "0123456789ABCDEF"

```

This routine should be quite understandable considering all I have told you thus far. In contrast to the loading routine, this routine sends "Listen" instead of "Talk" to the serial bus, which doesn't really mean anything else but "Listen to me!" To be more precise, the device on the serial bus (in this case the disk drive) functions during loading and saving

either as "Listener" or "Talker".

This routine also has a splendid characteristic; you need just a little addition in order to be able to save an area from \$1000 to \$1FFF in such a way that it will be loaded to \$2000 if LOAD"FILENAME",8,1 is applied. The first two bytes saved represent the address the load routine fetches in order to know where it is supposed to load the data (see above). In order to have this effect, you simply replace the LDA \$AC before the first JSR \$EDDD by an LDA #<address (low byte of the address desired), and the following LDA \$AD by an LDA #>address (high byte of the address).

Your creativity is unbounded with these byte by byte load routines. For instance, you could have the current loading address always displayed in a screen corner when a byte has been loaded, or you could write the byte currently loaded into the border color so that you always know whether the disk drive is still on the job, and so on.

But enough with the grand speeches already. It is time that you try out the routines yourselves and experiment a bit. So have fun. 'Til next time!

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Balancing and Palette

I bet you have often wondered what the controls, "Brightness" and "Contrast", in the "Balancing" window are for. If you play around with them, you just get trash! Isn't that right? Ha, ha, everything in GoDot has a meaning, and this is no exception. You shall see!

by Arndt Dettke

It's really awful if after changing the brightness, the most beautiful Koala picture isn't good for anything. It does look a bit darker when you lower Brightness by 2 or 3, but such a mess of colors (which have nothing in common with the original ones) isn't useful.

```
Load: Koala
Load: "butterfly.koa"
Display
Balancing
Brightness -3
Accept
Display
```

Grrrrr! Hideous! What's happening anyway? Actually, it's quite simple; if we were to look at the picture in grayscales, we would be thrilled. Those of you, who still have an old b/w tv set sitting around somewhere, should connect it just for fun and have a look at the picture. Owners of a PC with a decent C64 emulator can also switch to grayscales. You only need to change the C64 palette as shown in the special box (the example has been designed under VICE but is valid for

most other emulators, except for FRODO in which the colors can't be changed).

When you make things brighter or darker now, GoDot will behave just as you expect right from the start; the picture changes in the desired fashion. And whether you know it or not, you have discovered GoDot's "secret" at the same time! The data residing in its memory aren't color pictures at all, but pure grayscale pictures! Actually, GoDot doesn't know any colors! There are only lighter and darker shades of gray in GoDot.

Come again? My Koalas look as usual under GoDot! All colors are in place and no grayscales in sight! Well, you are wrong. GoDot uses colors just to replace the shades of gray the C64 palette doesn't have. Each color represents a GoDot shade of gray. The loaders are just clever enough to know what is considered a nice picture by the user. All right, and what do I need something like balancing, brightness, contrast, and the rest for? For three things - for printing in black-and-white, for regulating the brightness under a fixed palette, and for loading GIFs.

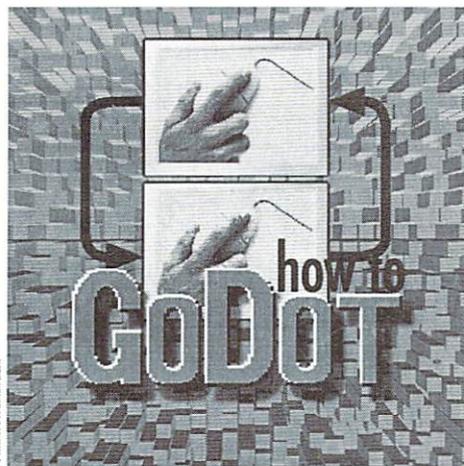
Printing

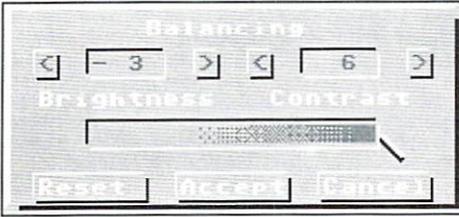
This is the simplest thing. If your picture is too light when printed, you tune Balancing's Brightness down. To avoid replacing solid black and white with patterns, you just alter the Contrast in a way that either end of the pattern display below the control buttons is pattern-free. In this picture, Brightness -3 would result in Contrast 6, for instance. Then white remains white, and black remains black (of course). But this is not sufficient for printing, since Balancing exclusively influences the on-screen display. The values in GoDot's data memory are still unchanged. In order to adjust them, you employ the module, **mod.ApplyMap**. It uses the Balancing settings on the picture data for good effect (and resets them to the average 0 afterwards). Let's imagine you wanted to print the previous picture with a reduced brightness. It would be done this way:

```
Balancing
Brightness -3
Contrast 6
Accept
Inst: ApplyMap
Execute
Inst: CanonBJC.drv (or
some other printer driver)
Black&White (not necessary
with the drivers 24Pin and
9Pin)
Print
```

Fixed Palettes

You can default GoDot to different, pre-adjusted color gradients, for example, one across all shades of gray the C64's hardware provides (which would be five). Other groups of colors are also available: brown-red gradients, blue-green, and red-green-blue mixed. They can be used on any pictures in the GoDot memory, but you should preferably load pictures in such a way that they offer the best number of shades for this





aim right away. The three loaders for PCX, GIF, and Amiga IFF pictures have an option for interpreting a picture as a grayscale picture (ah, again!). We need just that option here.

Let's load Uncle Wanja's pencil-drawn, fantasy picture into memory:

```
Load: GIF
Inst: DecodeGIF
Load "fantasy.gif"
Gray 16
Load GIF
Display
```

Oh, nice colors! Doesn't look bad... but doesn't have anything in common with pencils anymore, does it? All right, let's make it gray:

```
Colors: 5
Palette: Default
Accept
Display
```

Oy, good! Looks just like the original! If we lower the contrast (to -5), the shadow behind the head will also show very well. Can you regulate this by yourself? Let's make this as bright as possible:

```
Balancing
Brightness 10
Display
```

Remarkable! So this is how it's done! And darker... how about that? This also works, and with a bit of contrast, it's nice as well; simply set the values -3 and 6 from our printing

example again. Great, isn't it? Once you are pleased with the result, you can save it in one of the C64 standard formats (Koala, Amiga Paint, also Doodle and Hi-Eddi) without any further preparations. For other formats, you need to have that picture computed for display and converted back into GoDot picture data first. This is done by means of the module, **mod.Rendered2Raw**, which we have already used in part 5 (GO64! 2/2000).

And now for the "colored" palettes. Simply click as I do ("pick" clicks in the upper palette bar, "set" clicks in the lower one):

```
Balancing Reset
Accept
Palette
(pick:) brown
(set:) dark gray
(pick:) red
(set:) medium gray
(pick:) orange
(set:) light gray
Display
```

Okay. If you then replace white with yellow, you will only have reddish colors. And here is a tip for creating this red palette faster:

```
Colors: 9
Palette Default
Accept
Colors: 5
Palette
(pick:) yellow
(set:) medium gray
Display
```

The palettes for eight and nine colors are already red palettes (which you can also try out "for real", that is, without switching back to five colors). The two palettes for six and seven colors are blue-green palettes. Take the above palette of nine colors and set the value to 6 now. When you set Contrast in

Balancing to -5 before "Display", you will get some great results. Of course, you can also assemble your own color combinations! Just go ahead!

Optimizing GIFs when Loading

Sometimes after loading a GIF picture, you will notice that it is far too dark or too light and just looks crappy on the C64 side. Some time ago, our English C64 friend, Danny Tod, sent me a picture from a Simpson comic he had digitized himself, "coolisa.gif". It looked really bad; much too dark, the colors were hardly recognizable, actually a picture for the trash can. But Danny had already invested too much work into the picture and asked me if there wasn't some simple way of still saving that picture. I accepted. I surprised myself, because there were not many settings required in order to obtain a very good end result.

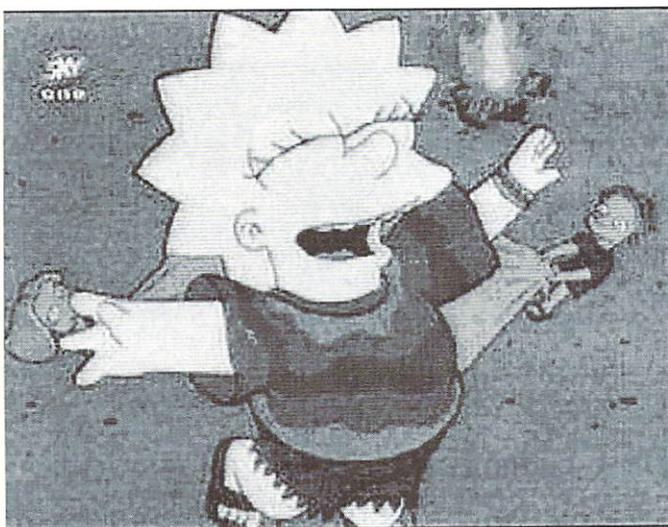
```
Load: GIF
Inst: DecodeGIF
Load "coolisa.gif"
Color
Load GIF
Display
```

This is the "original" one. Lisa's face is orange instead of yellow; just about everywhere, the blue background is black. Diagnosis - too dark. Second try:

```
Balancing
Brightness 4
Contrast 10
Load "coolisa.gif"
Display
```

Oh, wow! Nearly perfect! The face is light green now, but everything else is already quite all right. Let's keep it and simply replace the wrong face color by the right one:





```

Palette:
(pick:) yellow
(set:) light green
Accept
Display

```

a small clipping there using **mod.ClipWorks**. We then re-establish dark blue in the palette and finally render this clipping by means of Display. Those who need it, please remember **mod.Rendered2Raw!**

Picture sources:

1. Butterfly, Koala picture with the kind permission of Hugh McMenamin, United States of America
2. Balancing, screenshot from GoDot
3. Fantasy, clipping, with the kind permission of Wanja Gayk, Germany
4. Coolisa, GIF picture with the kind permission of Danny Tod, United Kingdom

Yes! This is it. This is a great one. The picture only needs some little beauty adjustments now, such as being scrolled 10 lots to the right (using **mod.Scroll**) since it is only 300 dots in width. We make the many dark blue spots disappear by replacing dark blue with light blue (just as in the face). We get Lisa's dark blue trousers back by getting

Do you understand now what Brightness and Contrast are good for? Well, do you see new possibilities? I hope so! Next time we will have a look at the Handyscanner and Scantronik's Video Digitizer.

Till then
Yours, Arndt

Palette of 16 shades of gray for emulators

no.	GoDot-no.	color	red	green	blue
0.	0.	Black	00	00	00
1.	15.	White	FF	FF	FF
2.	4.	Red	44	44	44
3.	12.	Cyan	CC	CC	CC
4.	5.	Purple	55	55	55
5.	10.	Green	AA	AA	AA
6.	1.	Blue	11	11	11
7.	13.	Yellow	DD	DD	DD
8.	6.	Orange	66	66	66
9.	2.	Brown	22	22	22
10.	9.	Light Red	99	99	99
11.	3.	Dark Gray	33	33	33
12.	7.	Medium Gray	77	77	77
13.	14.	Light Green	EE	EE	EE
14.	8.	Light Blue	88	88	88
15.	11.	Light Gray	BB	BB	BB

If you have a good look at it, you will notice that the GoDot order coincides with the number values for the grayscales. GoDot has a grayscale palette. If you activate this palette in your emulator, you shouldn't start GoDot with the standard colors since these are too dark. Simply add the line

```
"TEXTCOLORS =
0,15,11,1,12
```

to the end of the file "god.ini" in the BASIC editor and save the file again. Then GoDot itself gets an interface in shades of gray, which is used for the screenshots in GO64! magazine.



SUPERCPU

CORNER

First, we need to clarify what the real story behind a badline is. Actually, it isn't that bad, since badlines are what bring color to our screen. The VIC can't collect the color information covertly as it does with the graphics data. Therefore, it needs to block the processor temporarily in order to be able to use the data bus undisturbed when fetching the colors. While there are 63 (PAL) or 65 (NTSC) cycles available per normal raster line, there are only 23 or 25 cycles, respectively, available in a badline (with a stock C64). This reduction of computing time annoys the programmers, of course, and thus they were given the name "badline". Because it is so important for your understanding, here it is, summarized again: In order to fetch additional data not otherwise accessible, the VIC needs the data bus. Because it can only be used by one chip at a time, the processor is stopped for that period.

FLI & Co

With this really clever VIC trick (Flexible Line Interpretation), you cause artificial badlines in order to increase the picture's variety of colors. The results look really good, but eat up lots of computation time. After all, a badline is created in every screen raster line (except for the border), which requires changing two VIC registers every time. Since you only have 23 or 25 cycles to do so, there isn't much left for anything else. This is why this graphics mode has been reserved for still pictures and images.

You can see that badlines can be a processor brake not to be underestimated. To begin with, the things said thus far are valid only for the "normal" C64. In spite of this, it would be interesting to know how this looks with the SuperCPU. After all, we want to make good use of the 20 MHz, and don't want to have the 65816 waste away in a blocked condition. Let's go through the theory once more in detail.

Two Systems?

The graphics chip fetches its data from the C64 memory and requires the data bus in the C64 for that. The SCPU has its own memory and also a data bus of its own, which is synchronized with the host computer's one when needed. Then you could actually think that both could run parallel, as long as you avoid synchronization, in other words don't

Today, we will once again have a look at the idea of timing. To be precise, we will deal with badlines, which are raster lines that are so named because they slow down the C64's processor. But does this hold true for the SuperCPU as well?

by Wolfram Sang

```

; Test routine for the SuperCPU's behavior
; during a badline or when dealing with sprites
; by Wolfram "Ninja" Sang for GO64!/CW in 2000

org $0801

adr $080b, 64
byt $9e, "2061", 0, 0, 0 ; BASIC line

result1 = $fb
result2 = $fc

jmp_in:
jsr $e544 ; clear screen
lda #lo(text)
ldy #hi(text)
jsr $able ; print text
sei ; disable IRQs
lda #$35
sta $01 ; mask ROM
lda #$60
sta $d000 ; set sprite x/y,
sta $d001 ; lying within test area
lda #1
sta $d027 ; sprite color white
sta $d015 ; activate sprite
lda #$7f
sta $dc0d
lda $dc0d ; clear CIA IRQ
lda #1
sta $d01a ; set VIC IRQ
lda #lo(irq1)
sta $fffe
lda #hi(irq1)
sta $ffff ; redirect IRQ vectors
lda #$1b
sta $d011
lda #$64 ; set raster line
sta $d012 ; for IRQ ($64)
ldx #0 ; clear counter
lda #$63
cmp $d012 ; wait for raster
bne *-3 ; line $63 (badline)
cli ; enable IRQ
endless:
nop ; a short delay, so that
nop ; the counter doesn't overflow
inx ; and increase it
jmp endless ; again and again and again
....

irql:
stx result1 ; store result
lda #1
sta $d019 ; confirm IRQ
lda #lo(irq2)
sta $fffe ; redirect IRQ vector
lda #$67 ; set raster line for
sta $d012 ; IRQ ($67)
ldx #0 ; clear counter
lda #$66
cmp $d012 ; wait for raster
bne *-3 ; line $66 (no badline)
rti ; back to endless loop

irq2:
stx result2 ; store result
lda result1
ldx #9
jsr hexout ; put result 1 onto screen
lda result2
ldx #92
jsr hexout ; put result 2 onto screen
lda #1
sta $d019 ; confirm IRQ
lda #lo(irq1)
sta $fffe ; redirect IRQ vector
lda #$64 ; set raster line
sta $d012 ; for IRQ ($64)
ldx #0 ; clear counter
lda #$63
cmp $d012 ; wait for raster
bne *-3 ; line $63 (badline)
rti ; back to the endless loop

hexout:
pha ; outputs a hex number from the
accu
lsr ; x register defines position
lsr ; on the screen
lsr ; of no importance for the
lsr ; timing
jsr hexout2
pla
and #$0f
hexout2:
clc
adc #$30
cmp #$3a
bcc hexout_11
sbc #$39
hexout_11:
sta $0400, x
inx
rts

text:
byt "BADLINE:", $0d, $0d, "NO BADLINE:", 0

```

access any of the C64's own registers (VIC, CIA, SID)...

This can be easily checked using a small routine. The principle is as follows: We wait for raster line N. As soon as it is reached, we have a counter, the X register in this case, set count up in an infinite loop. In raster line N+1, we trigger an IRQ and check how far the counter has come. We do this once for a badline and once for a normal raster line. Since counting up involves only the processor, this makes it visible, whether it had been blocked during its work (the values are different) or not (the values are equal). This example is not perfectly timed, but it's sufficient for the values to be very similar instead of equal. A difference of +/- 1 doesn't mean anything; slight deviations are immaterial. We want to watch for a blockage of around 40 cycles, after all, the difference between the values should be noticeable. By the way, the program has been designed in such a fashion that it will also run on a stock C64, so that we have a means of comparison.

And indeed it returns the expected result. During a badline, the counter doesn't get as far as it does during a normal raster line, because of the VIC interfering. Let's quickly activate the SuperCPU, throw in the 20MHz gear, and start it again. And behold: The difference has disappeared! While the host computer is occupied with the badline, the SCPU can happily continue computing, as long as it doesn't need to access the C64 itself.

Therefore, something like showing a FLI picture wouldn't eat up so much time anymore, at least in theory.

But things get even better! As is commonly known, displaying sprites also costs some cycles, because the VIC needs to fetch additional graphics data for these as well. The principle is the same as with badlines, though, which means that sprites can also be displayed on a SuperCPU equipped C64 without any significant loss of time.

The Catch

Unfortunately, I have to quench expectations of hot, colorful action games and wild demo parts in UIFLI right away. After all, a major part of such modes is filling the graphics memory quickly with new contents. But the graphics memory resides within the host computer, and in order to write into it, the data busses need to be synchronized. And this is exactly what you shouldn't do, since the C64's bus is blocked during a badline. Trying to synchronize them would necessarily force the SuperCPU to wait.

The aforementioned projects are not completely impossible, after all, there is still the vertical border where jobs within the C64 itself can be dealt with. Managing this cleverly is an interesting programming job. For instance, you could compute the enemy intelligence during badlines, this being pure processor work. On the other hand, with all that

computation time available, would anyone want to play such damned tough games? Well, methods of appropriately taking advantage of this additional feature of the SuperCPU will certainly be found.

Just like Daddy ...

Finally, we will test the program with a SuperCPU at one MHz. Once again the turbo card's 65816 is used, so why shouldn't it keep on computing while the C64 is handling badlines?. But the result is negative, again there is a difference. The reason is simple: In order to ensure the utmost compatibility, the C64's timing has simply been adopted 1:1. And this is actually for the best, because otherwise you would need to completely deactivate the SuperCPU whenever you are using programs with time-critical tricks. And that would really be a shame.

Load your Canon, Part II

Once you've changed a setting like this, your printer will remember it. You don't have to run this program each time you turn the printer on. The settings are stored in the printer and will stay the same even if you unplug the power source. If you share your printer with another computer, such as a Windows computer, the settings might change though. In this case, you might have to run your configuration program again when you plug the printer back into your Commodore. There's no telling what kinds of changes are made while the printer is being used in Windows.

For this reason, there's another command we can send to the printer to have it print out a status page showing its current settings. Look at Program 2. Notice the similarity to Program 1? The only difference is in line 110. We changed the command to "@printstatuspage" and included a parameter of "on". When you run this program, your printer will print out a page showing the settings it holds for both the BJ and LQ modes

and will show which mode is currently enabled.

Program 2 - Print a status page.

```
10 c$=chr$(10)
20
d$=chr$(27)+chr$(91)+chr$(75)+chr$(2)+chr$(0)+chr$(0)+chr$(31)
30 s$=d$+"bjlstart"+c$
40 e$="bjlend"+c$
50 open4,4,5
100 print#4,s$;
110 print#4,"@printstatuspage=on"+c$;
120 print#4,e$;
999 close4
```

You can use this status page to help you determine why the printer isn't working quite like you'd expect it to. For instance, maybe you're getting all your text printed only on one line or maybe you're getting double linefeeds. This is controlled by the auto linefeed setting that we used to be able to control with a dip switch. Now, we must send a special command for controlling it. In fact, there are many other commands we can send. Let's make it simple and look at how we change

the auto linefeed setting first. This setting can be set differently for BJ and LQ mode. Your status page will show you the current setting in each mode.

Program 3 will turn on automatic linefeeds whenever the printer is operated in LQ mode. In line 110 we begin by telling the printer that we want to make some changes to the LQ mode's settings. Notice the command and parameter "controlmode=lq". This isn't putting the printer into LQ mode, it's merely telling the printer that the following settings are to be applied to the LQ mode. Then in line 120 we send a command to change one of the settings that we can make to the LQ mode. This is the "autolf" command with a parameter of "on". Run Program 3 and automatic linefeeds will now be turned on.

Program 3 - Turn auto linefeeds on.

```
10 c$=chr$(10)
20
d$=chr$(27)+chr$(91)+chr$(75)+chr$(2)+chr$(0)+chr$(0)+chr$(31)
30 s$=d$+"bjlstart"+c$
40 e$="bjlend"+c$
50 open4,4,5
100 print#4,s$;
110 print#4,"controlmode=lq"+c$;
120 print#4,"autolf=on"+c$;
999 close4
```

```

r$(0)+chr$(0)+chr$(31)
30 s$=d$+"bjlstart"+c$
40 e$="bjlend"+c$
50 open4,4,5
100 print#4,s$;
110 print#4,"controlmode=lq"c$;
120 print#4,"autolf=on"c$;
130 print#4,e$;
999 close4

```

Have you figured out how to turn those automatic linefeeds back off? Simple, isn't it. Just change the parameter for the "autolf" command to "off" and run the program again.

We can add more commands to the same program that will change other settings. Or we can make a program that will set up every setting in the printer just the way we want it to be. Line 130 can be changed to be line 140 which will make room for a second setting change to be placed on line 130. Let's say we wanted the printer to always use the Roman font. Just add the following line to Program 3:

```
130 print#4, "font=roman"c$;
```

You can change your program to add as many settings changes as the printer will accept.

As shown in Program 3, you can send settings that are in use for either BJ or LQ mode, but you can also send some settings that are in use no matter which mode the printer is in. For these settings, you would change line 110 to be:

```
110 print#4, "controlmode=common"c$;
```

Then you follow it with additional lines containing commands that are common to both modes.

In Program 1, we used a command to switch modes. This command can be considered a primary command while the commands that are used to make changes to settings in each mode can be secondary commands.

PRIMARY COMMANDS

There are several primary commands that we can send to the printer. Some are useful, but most of them aren't really needed. Here's an explanation for each one.

@poweroff (no parameter needed)

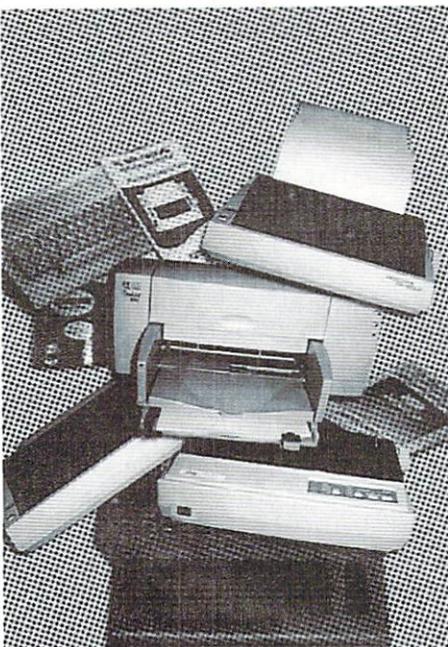
By sending this command, your printer will turn itself off. I think it's just as easy to press the power switch.

EXAMPLE: print#4,"@poweroff"c\$;

@reset (no parameter needed)

This will reset your printer to its power up state. Some software programs might send control codes for setting margins and other settings. This will restore those settings to their default states.

EXAMPLE: print#4,"@reset"c\$;



@eject (no parameter needed)

This will eject the page if it hasn't been completely fed through. Some programs don't send a final formfeed command when finished and this will do just that. Of course, it's much easier to just press the formfeed switch.

EXAMPLE: print#4,"@eject"c\$;

@setcontrolmode (parameter needed)

We've already seen this one. You can use either "bj" or "lq" to switch modes, or you can use "auto". That will let the printer decide which mode is best to use. As far as I know, if the printer sees a control code that is specific to one mode or the other, it will switch to that mode when "@setcontrolmode" is set to "auto".

EXAMPLE:

print#4,"@setcontrolmode=auto"c\$;

@testprint (parameter needed)

There's 3 different parameters you can use with this one, "a", "demoprint", and "nozzlecheck". These all print different types of test pages. The nozzlecheck test page will allow you to test how your ink cartridge is performing.

EXAMPLE:

print#4,"@testprint=nozzlecheck"c\$;

@printstatuspage (parameter needed)

Only one parameter is used with this one, "on". This prints a status page showing your current printer settings.

EXAMPLE: print#4,"@printstatuspage=on"c\$;

@changehead (parameter needed)

Send this with a parameter of "1" to move the printhead to a position where you can change the ink cartridge. Of course, you can also press the convenient switch that's located inside the machine. Maybe some printers don't have this switch.

EXAMPLE: print#4,"@changehead=1"c\$;

@cleaning (parameter needed)

Send this with a parameter of "1" to perform a print head cleaning. On my BJC-4100, holding down the formfeed button for a few seconds will also force this job to begin. The printer will perform the cleaning for you.

EXAMPLE: print#4,"@cleaning=1"c\$;

@initialize (no parameter needed)

On the BJC-4100, there are 6 different parameters that are accepted with this command. They are "bjc-4100", "table1", "table2", "table3", "table4", and "table5". The first one, "bjc-4100", will switch the printer back to its original factory default settings. I would assume that this parameter would be altered to reflect the model of Canon printer you're using, such as the BJC-4300. The others such as "table1" will switch the printer to user defined settings that are stored in various tables. The only problem with using these is that I haven't figured out how to save a current set of settings into a table. When I do, I'll write another brief article explaining it. In the meantime, it's not a big deal to just store your settings in a BASIC program and change them all with the program.

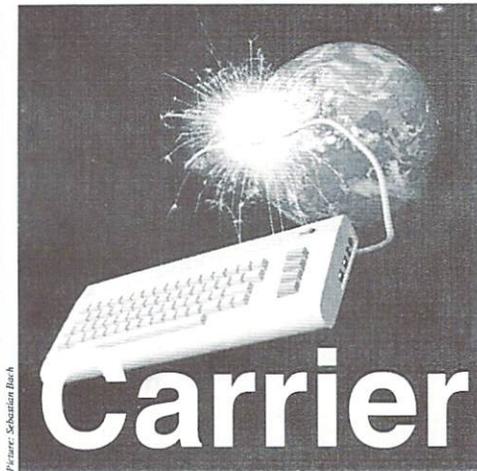
EXAMPLE: print#4,"@initialize=bjc-4100"c\$;

SECONDARY COMMANDS

Taking Program 3 a little further, you can send any secondary commands you wish to include in your configuration program. The only thing you must remember is that there are 3 groups of secondary commands. One is for the BJ mode, one for the LQ mode, and one for both modes. You always begin a group of secondary commands with the command "controlmode=" followed by either "bj", "lq", or "common". Study Program 3 again for an example of this. If you wish to change settings for more than one group within a single program, I think it's best to begin and end each group using the commands contained within the s\$ and e\$ strings that we've defined in our examples. Study Program 4 and you'll see an example of this. Program 4 is designed for geoFAX users. By running this program, you'll switch your BJ printer into a mode that works great with geoFAX's BJ360 driver. In this mode, the performance and quality is far superior to that of the LQ mode where the E360 drivers would be used.

All the secondary commands require a parameter. Each command has more than one choice of parameters. Let's take a look at the various secondary commands we can use to set these printers up.

Don't miss the third and final part of Maurice's article in the next issue of GO64/Commodore World Magazine!



Carrier Detect

And the Links go on

A recent issue of GO64! had me looking through the crystal ball at what the future holds. This time around, we're looking back to see where we've been in the last several years.

by Gaelyne R. Gasson

Some readers may be surprised to learn that I'm a "latecomer", and only truly discovered Commodore computing in the early 90's. When I first started using my Commodore, it was for writing purposes, and it wasn't until later that I discovered how much fun having a modem could be. Of course, my world hasn't been the same since!

What was your first experience with using a modem and your Commodore? For me, it was using it call local Bulletin Boards (BBS's for short). There were about four BBS's in my calling area. After spending time learning how to talk or converse with people in message areas, someone mentioned to me that there were Commodore programs I could try, including a major term program named "Novaterm 9.4". I printed the documentation for it and studied up on figuring out how to use it. I'd been using a term program called CCGMS and hadn't discovered ANSI until learning to use Novaterm. ANSI is one of the more common terminal emulations in use by many Bulletin Boards (and at the time, these were mostly non-Commodore systems). ANSI emulation displays text with

fore and background colours, among other things. As the majority of BBS's I had access to offered it, this was an improvement over the "black and white" plain appearance when using only ASCII emulation. Today, many of the newer Commodore BBS programs also include ANSI support as it's common for most term programs to have this ability.

Learning to how to download programs was a major hurdle for me, as I also had to learn about what to do with archived files and how to save copies of downloads on separate disks so I'd have them for later use. Many of the members of my computer user group didn't have experience with telecomms, so I started writing about the things I'd learned. I truly enjoyed writing about being online as much as I enjoyed my learning experiences.

As time went on, I discovered there was a Commodore BBS in my area, and to my surprise, the Sysop lived in the next block. His BBS was something he designed and programmed himself. This experience laid the groundwork for his future, he now works as a full time programmer for Electronic Arts.

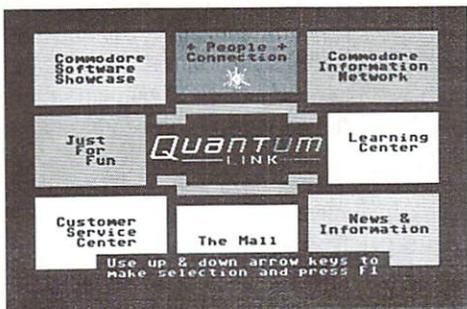
I began using Q-Link near the end of its heyday. Quantum Link (or Q-Link as it was commonly known) started life in November 1985. Of all online experiences, it's one of the most common memories for many Commodore users in North America. My first experience with Q-Link wasn't a good one from the financial (and administrative) side of the coin: I unsubscribed but the company kept billing my bank account. Later, I used the system as

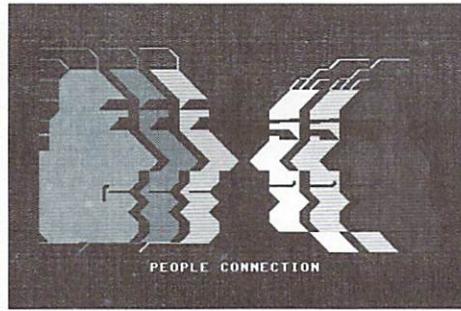
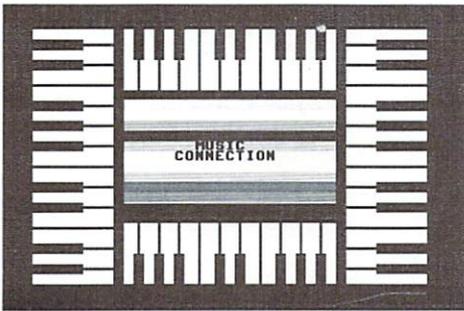


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the Q-Link librarian for my user group. When I think of it today, I have to admit to a feeling of nostalgia for Q-Link. There were message and files areas for every type of Commodore involvement possible, and this was where I spent a good deal of my time collecting information and software for my user group. Q-Link also had several chat, games, and news areas. There was even an online shopping area. One of the most popular places was the Music Connection or SuperQ area where QDJ's played SID tunes that everyone heard on their own computers. A very remarkable experience, and I'd probably missed out on knowing about it if one of my fellow user group members wasn't a QDJ. I know of at least one couple that met on Q-Link and are still married today. The users of Q-Link helped to finance what is now one of the largest Internet providers, AOL. This is something that most Q-Linkers would rather not reminisce about. Steve Case, then president of Q-Link, asked members to help him with his startup by purchasing "Lifetime Memberships". This was the beginning of AOL, and the beginning of the end for Q-Link. Support for the Commodore side was given lower priority, favoring the AOL (PC) side, and when the mainframe computer that held the vast Commodore files for download started corrupting files, it was never repaired. Considering there were thousands of files that were online and not all were recovered, it is indeed a loss. One of the file directory books published by Quantum Link was about the size of a phonebook - several hundred pages thick. Those files are now in the big bit bucket in the sky. Q-Link officially turned their modems off on Halloween (31 October), 1994.

Fidonet has also had an influence on my perspective of Commodore computing. Fidonet is unique, in that Bulletin Boards around the world receive messages in areas known as "echos". The BBS's run on various hardware, operating systems and BBS software, but a message sent from Australia still eventually arrives on Bulletin Boards in other parts of the world. There are three





Commodore Fidonet echos: CBM, CBM-128, and CBM-GEOS. People visit these message areas and share their Commodore knowledge. There are less Fidonet BBS's available today, but there are several such boards that are available via the Internet, and on some Internet providers (such as videocam.net.au), the Fidonet messages are available as newsgroups. There are also web-based "BBS" systems that have the Fidonet message areas available too.

What about Commodore Bulletin Boards? While the Internet has had an effect, and there are less callers and fewer boards than there have been in the past, you can make a sysop very happy by giving a bulletin board a call today. In the sidebar, I've included a few phone numbers for BBS's that are run using Commodore systems, and a pointer on where to find current lists of Bulletin Boards. It's very important to keep this aspect of Commodore telecomms from becoming "just another nostalgia item", as Bulletin Boards perform an important role in keeping us informed about news and in touch with other users. One of the most important roles a Commodore BBS serves today is in showing what's possible with our computers. I've lost count of the number of times I've read in messages areas "I didn't know you could do that on a Commodore!"

Way back in 1994, Commodore World editor Doug Cotton asked me to find out about this "WWW" or "World Wide Web" thing and write an article about it. I can hardly believe it's been six years since then. Back then, having a text browser was the norm, and there were only a handful of Commodore related web sites. In 1994, I wrote about the advertising aspects of the web, and how neat it was that companies could make their information available to the world and if someone were interested they could visit the site to find more information. I wish I could go back in time and invest in some of the companies that have made it big because of the Internet and the web.

This is Now

Looking back is nice, if only to see where we've been. However, it's important not to live in the past. We may use computers from the 80's, but we sure use them differently today. Soon (possibly even by the time you read this article), we will be accessing the web using Maurice Randall's "The Wave" program. As I type this article, people have been beta testing the Wave and using it to connect to ISPs that in the past we couldn't connect to because they only allowed PPP connections. Maurice Randall has made this a reality. Another Commodore program, HyperLink 2.5 is nearly completed too. HyperLink 2.5 only requires a UNIX shell account, you can surf the web with your Commodore AND view graphics online. There are so many Commodore web sites it's nearly impossible to keep track of them, and friends who first met on Q-Link or BBS's now send each other Email and participate in mailing lists.

For those who use PC's but still love their Commodores, there's even an online radio station (KDVS) with a weekly SID show. The DJ sometimes stops in the #c-64 IRCnet (Internet Relay Chat) channel before or after the show to chat. It's not quite Q-Link, but it's great to know that many of the aspects of Q-Link lives on today, albeit in different format. Be sure to check the sidebar for places online where you can find more information about online resources for all things Commodore - past, present and future.

Gaelyne R. Gasson is the author of The Internet for Commodore C64/128 Users. You can find her online at <http://videocam.net.au/gaelyne/> (ad)

The following are links to information mentioned in the Carrier Detect column.

The Official Novaterm Website:
<http://www.exitlight.com/~voyager/novaterm/>
 JohnD39's Q-Link contact/memories page:
<http://sillious.net/qlink/>
 QLink Load Screens:
<http://www2.ari.net/jpurkey/qscreens.html>
 QLink Sids Archive:
<http://www.replayer.com/sids.html>
 Q-Link's Club Caribe:
<http://www2.ari.net/jpurkey/caribe.html>
 Remembering QLink (Quantum Link):
<http://www2.ari.net/jpurkey/qlink.html>
 Uncle Al's QLink site:
<http://members.aol.com/uncleal2/qlink.htm>
 CBM-Fidonet-Echos:
<http://cbm.videocam.net.au/cbmfido.html>
 Telnet BBS's (Lists all known BBS's available via telnet):
[http://www.thedirectory.org/telnet/Maurice Randall's website \(Wave and Wheels\):](http://www.thedirectory.org/telnet/Maurice%20Randall%27s%20website%20(Wave%20and%20Wheels):)
<http://people.delphi.com/arca93/>
 The Wave News:
<http://videocam.net.au/~colinj/t/wave.html>
 HyperLink 2.5:
<http://www.armory.com/~spectre/cwi/hl/web.html>
 CBM Forums and Webboards List:
 Includes the most current information on Commodore IRC channels.:
<http://ftp.videocam.net.au/cbm/info-txt/cbm-forums-webboards-list.txt>
 IRC Primer:
<http://www.gnt.net/Help/faq/ircprime.htm>
 Genuine CBM Bulletin Boards:
<ftp://videocam.net.au/cbm/info-txt/cbm-bbs-list.txt>
 CommNet BBS's:
<http://www.geocities.com/SiliconValley/Drive/4936/spdl2.html>
 Commodore BBS Programs:
<http://www.zimmers.net/bbs/OMNI-World-Germany-Mailbox:>
http://www.muc.de/~bigchief/owg_uk.html
 Special Delivery BBS:
<http://www.geocities.com/SiliconValley/Drive/4936/spdl1.html>
 Color64/128 and Centipede BBS Info:
[http://www.mindspring.com/~dynamite/KDVS Tuesdays, 8:00-9:00pm \(USA, Pacific Time\):](http://www.mindspring.com/~dynamite/KDVS%20Tuesdays,%208:00-9:00pm%20(USA,%20Pacific%20Time):)
<http://www.kdvs.org/>
 VideoCam Services Links Database:
<http://cbm.videocam.net.au/index.php3>
 Clinks, CMD's Web Links:
<http://www.cmdweb.com/cbm/clinks/>
 Cocos Commodore Search Site:
<http://www.aniston-park.de/cocos/>

Cover story



Our host for this evening - Andreas Escher

Today's topic is not the title of a new Oprah Winfrey offshoot for bored housewives. Neither is it the latest creation of the makers of 'MTV's Real World' even though it also deals with five strangers in one house, whose private lives are recorded on video tape. The star graphics artist Andreas Escher ('Katakis', 'Turrigan') gave us an invitation for pizza and cake and allowed us to torture him with questions.

by Volker Rust und Helmut Bieg

GO64!: Hi Andreas! Let's start at the very beginning: When did you first come into contact with the C64? Did you know Manfred (Trenz) by then?

Escher: Manfred first brought me into contact with the C64 in 1987. That was shortly before I started working at 'Rainbow Arts'. We had been childhood buddies for a long time. We met on a meadow in Burbach (in Germany) when we were 11 or 12 years old. They later built a mall there. Manfred was busying himself with a stone and I was of most helpful 'support' to him.

GO64!: In 1988, 'Katakis' was released. Was that your first work together?

Escher: Yeah, that was the first game we designed together. We both loved various of the arcade 'shoot'em up' games and we wanted to prove that such things were possible on the C64, too.

GO64!: So what was your favorite action game back then?

Escher: Back then - 'R-Type' and 'Darius', no doubt about it. They're the real McCoy ...



Helmut and Andreas together with business bunny Lilly

GO64!: And then you moved to Gütersloh and joined 'Rainbow Arts' ...

Escher: That's right. However, Manfred had started working there half a year before I moved to Gütersloh. But most of the time I slept at the company's offices ... Later on, I shared a flat with Chris Hülsbeck and Ramiro Vaca. Chris was cool, we had a great time together.

GO64!: Are you still in contact with your former flat mates today?

Escher: Manfred and me, we sometimes phone each other and I still meet Ramiro time and again. By the way, Ramiro is now working mainly as a graphics designer. Contacting Chris is a little difficult right now, as he's living over in the States at the moment (grrrr...).

GO64!: Shortly after being released, 'Katakis' was taken off the market and later on sold under the title of 'Denaris' and with a change in one level. What was the reason for this business policy?

Escher: At that time, Activision had bought the royalties for 'R-Type'. 'Katakis' had already been released earlier on, and naturally we had taken our favorite model 'R-Type' for remote orientation. So various minor similarities were more or less imminent which led to some strains with the company. As a compensation, we had the C64 version of 'R-Type' finished in only six weeks.

GO64!: Manfred's next project was 'Turrigan'. Why didn't you take part in this project, at least at first not?

Escher: That was because at the same time I was doing another project, 'X-Out'. I didn't join Manfred until at a final stage he began having difficulty with the deadline for 'Turrigan', and then I only gave a little support. But 'Turrigan 2' was a joint project once more - the 'old team' together again ...

GO64!: Factor 5 liked to pose as the 'inventors of Turrigan' after the huge success of 'Turrigan'. What do you think of this claim?

Escher: We weren't really happy about the way



Nosy questions and their consequences - Andreas Escher (right) muzzles Catweazle 6510

things developed. Factor 5 earned themselves a sack of money with the Amiga version and games console sequels of 'Turrigan' without acknowledging that 'Turrigan' is Manfred's product. I only fully worked on 'Turrigan 2'. It has to be admitted that Factor 5 was responsible for the Amiga version, but even there, I was responsible for the graphic design, and the idea for the game and the production was completely up to Manfred and me.

The same thing happened with 'Katakis'. Manfred and I designed it, but shortly before we released the C64 version, Factor 5 introduced their production 'Nutrilizer' for the Amiga. We didn't have enough time to finish an Amiga version of 'Katakis', so instead they took 'Nutrilizer'. The original, however, has always been the C64 version.

GO64!: A lot of innovations outside the game scene are also due to Manfred, for instance the interlace paint program 'Fun Painter II'. What was his most admirable production, as far as you're concerned?

Escher: Let me think ... In fact, Manfred once



Andreas and Volker discussing the history of 'Rainbow Arts'

managed to represent nine sprites in one grid line. That was when we were finishing off 'Turrican II'. Unfortunately we couldn't use it in the game because we didn't have enough time left to adapt everything else to it. And as we've never released any other C64 games together (sadly enough), there never has been an opportunity to implement the thing. Which is quite sad, it would have added a lot of action.

GO64!: But he's the only C64 coder who ever managed to do that until today! Did you ever find out how he did the trick?

Escher: I've no idea. You're asking the wrong person ... but I could ask Manfred, maybe we could publish it in the GO64! mag ...

GO64!: Okay, we're going to take that as a promise! A different subject: Parties. Last year you showed up at two of the 'Out-of-Order' parties. Did you know that the C64 is still so important for so many people?

Escher: I was aware of the fact that C64s have not been forgotten completely. However, I surely hadn't expected so many people and so many activities. I had expected to meet a certain fan scene, but not such an excessive party ... Moreover, it was interesting to see how the scene has developed over the years and what new improvements there are today. Seeing all those new ideas, C64s upgraded to 20 MHz or the 3D mazes integrated into the demos, I still remember that it was hard to imagine such things on the C64 10 years ago.

GO64!: In May, the old scene is supposed to gather at the 'Radwar' party. Are you going to be there, too?

These were the games Andreas Escher designed or co-designed after the C64:

- Amiga:** Turrican II
- PC:** Panzer Elite
- Genesis/Megadrive:** International Superstar Soccer, Mega Indy (unfortunately, it was never published)
- SNES:** Super Turrican
- Playstation:** Rebell Assault 2
- Gameboy Spiele:** Animaniacs, Probotector 2
- GameBoy Color:** Amorines

Escher: I'm definitely going to be there and I can only recommend the party which is organized by Markus Wiederstein. There's more information on the party on the Internet under 'www.radwar.com'. Manfred is going to demonstrate his 'Turrican 3D' there. The original idea of the 'Radwar' parties has always been to unite game designers and scene people so that they could get to know each other without the help of a computer. Thus, it turned into a meeting point of software companies and illegal coders. Many of the coders were recruited at the parties from the cracker scene.

GO64!: Have you already seen parts of the 'Turrican 3D' project? What can we expect, the usual 3D shooting stuff as in some of the indexed games or is it something completely new - fans of Manfred Trenz always can expect something completely new, can't they?

Escher: Unfortunately, I haven't seen much of it because I didn't have the time. Of course I'm also looking forward to seeing what the game has in store concerning action. As far as I know, it is going to be a 3D game with Turrican reminiscences. I'm sure it is not going to be a simple remake, because Manfred has programmed his own 3D engine for the game.

GO64!: So what are your projects for the moment?

Escher: I am currently working on the graphics design for a Gameboy Color game by Similis. They mostly do things for the Playstation. Unfortunately I'm not allowed to talk about the game yet, the only piece of information I can give is this: all those of you who liked my former graphics will surely like this game, because we take the Gameboy Color to its limits.

GO64!: Finally, we have one last question that we share with many fans of 'Turrican': Who



The graphics designer and his 'office'

was it that spoke the cool sample in the intro of 'Turrican'? Was it Manfred after a sleepless night spent coding?

Escher: No, it was Markus Wiederstein. He intended it to be a joke, and Manfred decided to distort it and put it into the intro of the game.

GO64!: Many thanks for the interview, see you at the 'Radwar' party!

Andreas Escher has set up an e-mail address where you can ask for information, have a chat with him or ask any questions that have pestered you for a while. The address is: **katakisae@aol.com**

Further information on the internet under:
<http://www.similis.de>
<http://www.radwar.com>

Many thanks also to Caroline and Christoph Dietmar Oehm for their assistance.

Back to the roots - Andreas and the game that started it all



Nostalgia: A portrait of Rainbow Arts



Somewhere over the Rainbow...

There was one German software producer that dominated the world of the C64 for years, and, while releasing one hit game after the other, prepared the fundamentals for high-quality game production in Germany. In spite of their huge economic success, the productions from the "Rainbow Arts" house mainly stood out by being more than just simple entertainment: these games had a heart and a soul.

by Volker Rust

A rotating platform falls from above, to land in the middle of the screen. A writing in rainbow colors lights up on it. Suddenly, three little men come running from the left: a blue, a yellow and a red one approach the platform in lovely animated phases, and come to rest on it: even in these early times, "Rainbow Arts" knew how to brush up their appearance with this intro by Manfred Trenz.

It began with serious application programs

The history of the German software house began in 1985, when the label was founded by young Marc Alexander Ullrich. They first published some applications like "Multivokabel", "EMS" or "Disk-Kopfjustage" ("Multi Vocabulary", "Drive Head Alignment") for the C64 and Amstrad CPC, before they became a GmbH (Ltd.) located in Gütersloh, to concentrate mostly on producing games. Ullrich made this step because Germany offered phantastic conditions at the time (at least from an economic point of view): there was a large potential of programmers, graphicicians and musicians, and a large number of computer owners - but no software company that could be taken serious - the market was dominated by products from the UK. In these early times, two games appeared, called "Halls of Gold" and "Der blaue Kristall" ("The blue



The bone of contentation: Nintendo was not amused by this advertisement

Crystal"); both of them can be considered rare pieces.

The talent forgery

It was also in these early times that Rainbow Arts was joined by some great talents, whose names are still famous today. In these early times, Chris Hülsbeck was the man who literally struck the right notes, contributing the music to almost all productions during the first years. In spite of this "assembly line" work, he made some fantastic compositions, like the music to "Madness" (1987) for example, a nice platform game in the style of Mr. Robot, to which he gave an industrial atmosphere. Programming was done by Arthur Wystub, who had already published the game "Planet of War" together with Hülsbeck in 1985, under the "Atztec Software" label.



Nothing for mothers-in-law: manners of a Danger Freak

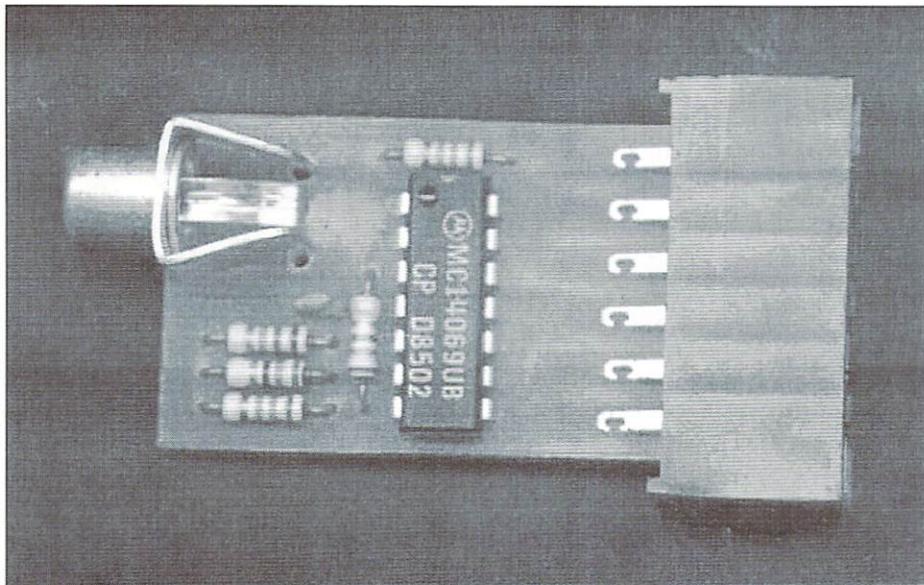
Hans Ippisch is another "man of the first hour". Later, he became well-known for the games "Danger Freak", "Kangarudy", and his C64 conversion of "UGH!". His first work, which was about the fate of an english "soldier", became a victim of the "Bundesprüfstelle für jugendgefährdende Schriften" (a federal commission that can forbid sale of a book, movie, CD, or computer game to minors if they consider it unsuitable for the young). However, this happened only once during the history of Rainbow Arts. Later, he could distinguish himself through his work on "Bad Cat". The title theme to this game was one of the first musics on the C64 to feature digital samples. By the way, the PC version of the feline olympiad was the very first game for IBM compatibles that came from a German company.

"Bad Cat" launched Rainbow Arts' big offensive into the game market. Productions like "Jinks", "Antics", and "Street Gang" were published at roughly the same time, followed by, among others, "Around the world in 80 days", which was adapted from the story by Jules Verne. Also, Chris Hülsbeck tried his luck as a game designer: "To be on Top" - even though the gameplay wasn't on top, it was just right for all his fans, as more than ten musics were already integrated in the game, and the player could build his own new pieces in an easy way.

Manfred Trenz from Saarbrücken, although famous for his high arts of programming, started working as a graphicician for Rainbow Arts in 1987, and first contributed to "The Great Giana Sisters" and "Down at the Trolls" (1988). "Giana Sisters" was perfect in every respect, and on the German market it became such a success, Rainbow Arts, together with ASM magazine (Aktueller Softwaremarkt/current software market) raffled a day with Giana, a luxurious car, chauffeur and all charges included. A less known fact is that "Giana Sisters" was only in stores for a few weeks. The reason was that U.S. Gold, the english distributor, used the game for an aggressive advertisement campaign against Nintendo's "Super Mario Brothers", which was the model for "Giana Sisters"; so aggressive that Nintendo finally had Rainbow Arts take the game off the market for being too similar.

Rainbow Arts: One name, many labels

Besides their main label, Rainbow Arts, which itself was only part of the "Softgold" imperium, the Düsseldorf-based software company used many sub-labels, including *Time Warp Productions*, the *Golden Goblins* and *Reline Software*, each representing a separate array of products.



The adapter for CD players that came with the First Edition

However, Giana's triumph could not be stopped: via software piracy, it soon became one of the most popular games on the C64. And the name of the game coder, Armin Gessert, became immortal through the well-known cheat mode.

The perfectly decent "Danger Freak"

In 1988, Rainbow Arts moved to Düsseldorf and enlarged its staff to 20 permanent employees. Project manager Thomas Hertzler, however, left the company, and in the same year, he and a colleague founded "Blue Byte", another very successful software company. Also at the time, Hans Ippisch presented "Danger Freak", a very funny stuntman simulation, and his his best game to date. It was most diversified and came with an outstanding soundtrack by Chris Hülsbeck. A little detail: The title screen shows the hero holding out his middle finger, but on the original packaging of

the game, he shows his fist. Maybe they were afraid of outraged parents at that time...

The trouble about Katakis, Denaris and R-Type

Graphician Manfred Escher joined Rainbow Arts, to team up with Manfred Trenz and present the game "Katakis" a short time after. A detailed report on this game was found in our special on arcade games; just let us state again that until now, no equal game has appeared in the category of horizontal scrolling shoot'em'ups. But this game, too, experienced complications when it was published on the english market: Electric Dreams, who had bought the rights to the "R-Type" coin-op, complained about the second level of "Katakis" being too similar. They came to an unusual agreement with Rainbow Arts: Manfred Trenz and Andreas Escher were to produce a C64 conversion of "R-Type" within 6 weeks, and



Here's what a CD for the 64 looks like!

succeeded gloriously. "Katakis", on the other hand, got a new second level and was re-released in 1989 under the name of "Denaris". As a note, the Amiga conversion of "Katakis", which was done by Factor 5 (see the interview with Andreas Escher in this issue), was so frugal Rainbow Arts used screen shots of the C64 version on the packaging.

The music to the C64 conversion of "R-Type" was also done by a new man in Rainbow Arts: Ramiro Vaca, who showed with other games like "Garrison" and "Starball", that he was on par with Hülsbeck.

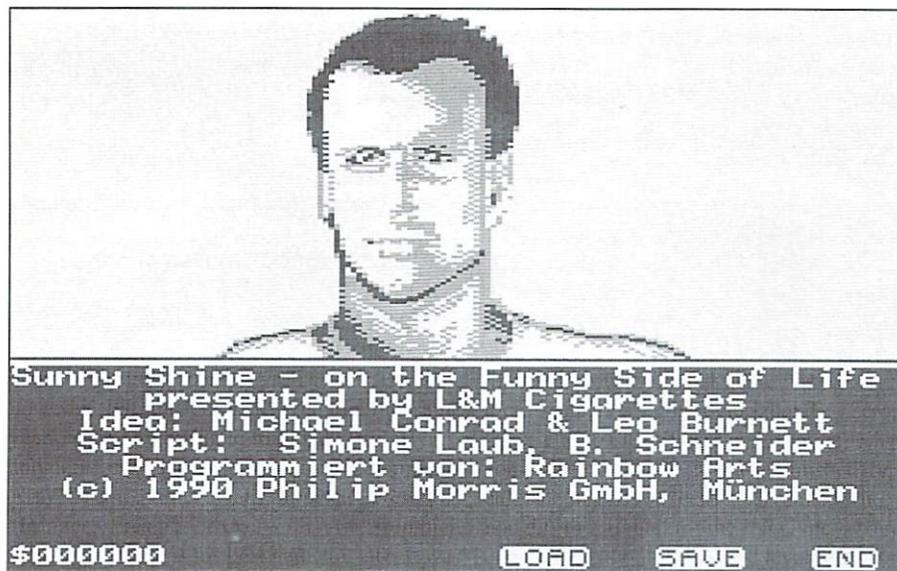
Unusual products

The same year brought two productions that were rather uncommon for the guys from Düsseldorf: The "Volleyball Simulator" was released under the Time-Warp label. It was more of a try than a real sport simulation, as its graphics were so extremely slow the game wasn't fun to play. With "Bozuma", Rainbow Arts took their first step into a new genre: an adventure game set in the early 20th century in which you took on the role of a private investigator. The game stands out with its large number of locations, the phone directory that comes with the package, and its size of more than four disk sides. As a note, it was also released in English as "Mystery of the Mummy".

The year of the sub-labels

In 1989, Rainbow Arts mainly trusted in related sub-labels. The "move-crates-to-the-right-location" game "Oxxonian" was released under the Time-Warp label, while four products were released at the same time under the newly founded "Reline" label: "Dyter-07", a chopper arcade game; "Oil Imperium", an enormously successful economics simulation; "Hard'n'Heavy", a jump'n'run game, and "Hollywood Poker Pro", an entertainment game of cards, which for the first time used interlaced graphics on the C64.

Don't miss part II of this story in your next issue of GO64!/Commodore World Magazine!



Always sunburned and always smoking - Sunny Shine



WORLD WATCH

by Rainer Buchty

This month's focus: **Computer games**

HELLO WORLD,

the first computer game I had was one of the well-known TV video games: Tennis, Football, Squash and Pelota were the games to choose from, and in fact the only difference was the number of rackets shown on the screen. And yet, back in these times I'd spend hours playing them.

Blocks and beams

Sure, the first video games were primitive. But - they had a certain something, especially as you could play them with a friend. So who cared about the graphics (which consisted of a beam for each player, and a quadratic block for the ball)? And even the fact that it was just black and white did not really matter.

It wasn't much later that I met with the thing that should change my life: a Donkey Kong arcade machine. Besides being the foundation stone of today's Nintendo imperium, this machine also aroused an ungovernable wish in me to have such a thing at home. Alas, my parents didn't share this enthusiasm at all, which meant I didn't get one of these hot VCS2600 consoles, or even a Colecovision. Instead, they directed their son's technophile tendencies into more "computerized tracks" - after the first, tender contacts with a Sharp MZ80K (1981) and a Rockwell AIM65 (1982) turned out

successful, they were followed by a ZX81 in 1983.

Well, okay, it wasn't in colour, and the graphics really weren't so convincing, but I still spent hours playing Scramble and Space Invasion (wistful, nostalgic greets go to the company PROFISOFT).

And there was light...

...and sound. In the beginning of 1985, I gathered all the money I had saved and got myself a C64 with a disk drive. The games were sheer madness: Falcon Patrol, Fort Apocalypse, and, of course, Jeff Minter's legendary games, first and foremost "Attack of the Mutant Camels" - who hasn't spent countless hours in front of the screen with that game. Fort Apocalypse was particularly addicting, and was outranged only by Ghostbusters and Impossible Mission, and even more, Paradroid.

All those games had one thing in common: they were all based on an intriguing idea. Since the abilities of a C64 are very limited (from today's point of view), it was even more crucial to develop intelligent and attractive games, if the player was to play through it more than once, without losing interest after five minutes. Sure, Shoot'em'ups are a fine thing - but unfortunately, most of them are also very static: take Rambo II and Green Beret as examples - if you completed these games once you'd know where and when the enemies would appear.

And today?

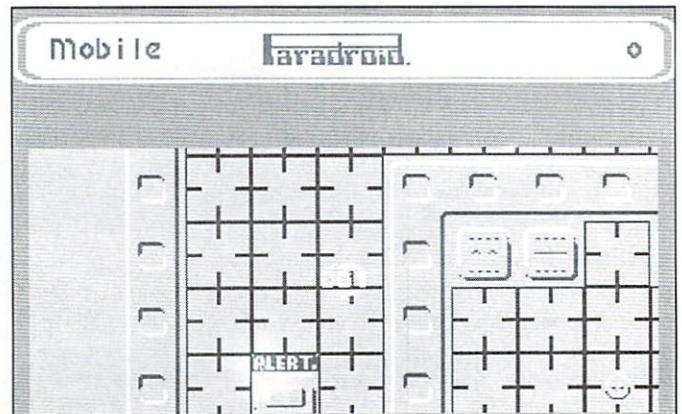
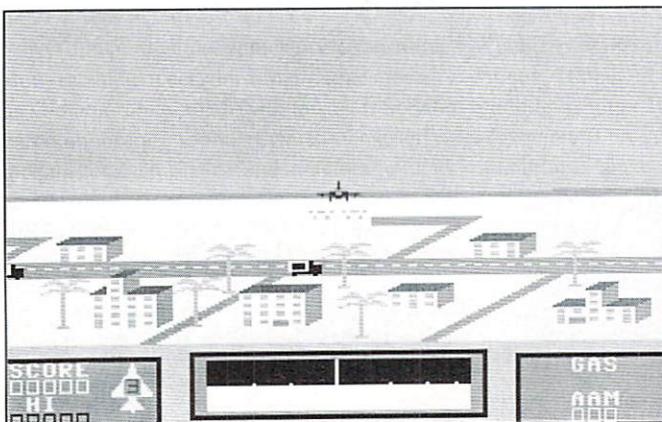
It's an irony that just the PCs, being developed as office machines, are now used as high tech game consoles. Honestly: nobody needs an Athlon running at 1 GHz and a GeForce256 just to do word processing...

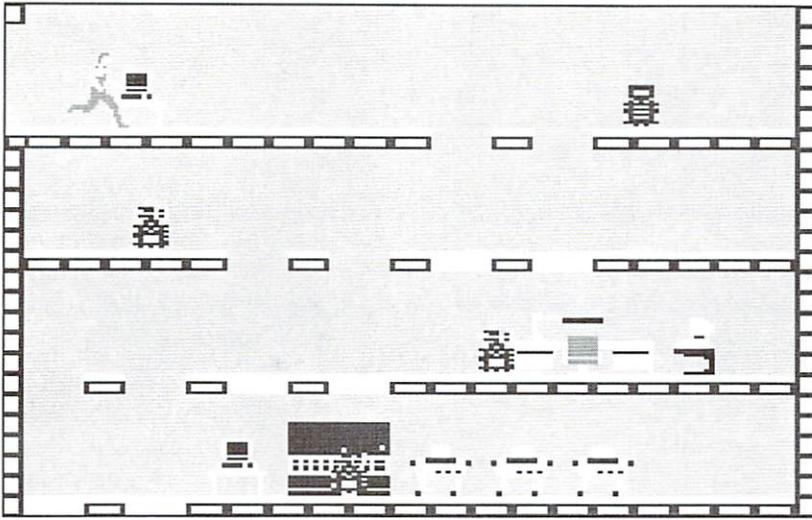
But unfortunately, the quality of the games has dropped significantly. I admit they're technically brilliant - showing off an amount of incredible effects and a realism you'd only see in expensive movies some years ago - but all this doesn't hide the fact that the wide area of computer games has more or less focused on ego shooters like Doom and Duke Nukem. Also, modern car race simulators have mostly the same content as their great-grandfather "Pole Position" - they just look that much better.

In fact, not even one of today's games for the PC could capture me the same way as some of the good old games on the C64 still do today... Only the multi player modes in some of the arcade games offer some fun, since playing against four, eight or even 64 players simultaneously - no, that's something we couldn't have 15 years ago... - while we are at it, let's talk about

Violence in computer games

The discussion on depictions of violence in computer games is as old as the games themselves - and that's why the "Bundesprüfstelle für jugendgefährdende





Schriften" (BpjS) introduced the so-called "index" of computer games. The BpjS is a federal commission in Germany that maintains the "index", a list of books, CDs... - and computer games that may neither be advertised, nor be sold to minors. The sense or nonsense of such restrictions is a constant theme of debate: in fact, it would even make people (certainly not just me) regularly check out the list of indexed games, and try to get them somehow. Besides, it had ridiculous side effects: take the game called "Commando" for instance, which was renamed to "Space Invasion" for the German market - the player has to shoot ball-shaped white aliens instead of men in brown clothing.

Currently, there's another hot debate on whether and how the nearly photorealistic graphic violence in today's computer games might stimulate violent behaviour in youths - caused by the recent events with disturbed persons running amok. Personally, I doubt that they got their maladjustments by consuming such games - if that were the case, we'd already have crowds of blood-thirsty video game zombies roaming our streets.

Isn't it more likely because computers are used as practical babysitters today that replace the personal devotion in a family?

The old times were better!

Why is it that the games were incomparably more intriguing in earlier times? I suppose it's due to several effects:

Take a look at the music market: once a trend has been established (boygroups, for instance), it's exploited to death. When a song is successful, it's covered until you don't recognize it any more. This is just the effect that you can see more and more clearly on the game market: space games are merely

clones of Wing Commander, shoot'em'ups always appear as graphically intensive ego-shooters - and yes, even adventures aren't safe from this trend, as you can only find the typical Lucasfilm style - with increasing technical perfection, of course, and with higher and higher hardware requirements, but in the end it's always the same.

Recently, I found out why those games all look the same even though they come from different companies, when I visited a press conference given by NxN: a company that makes so-called game generators. Old news for 64 users, the Shoot'em'up Construction Kit (SEUCK) has been around for more than a decade - and even the much-praised level editors aren't exciting news since the Racing Destruction Set came into existence.

But, all games created this way always have one thing in common: that is, their basic layout. No matter how creatively you worked with the SEUCK - the resulting game always had some typical characteristics and limitations that identified it as a SEUCK product. And it's the same with today's generation of game generators... One of the

most irritating things in this respect is the fact that the game industry requires that the games look identical on all systems - that's why the z-plane-buffering errors in the Playstation version of Tomb Raider (which is likely the most successful game on that platform), caused by a limitation of the Playstation hardware, found their way to the PC version. Even though the hardware responsible for the bug is not present in PCs, the specifications said it had to be emulated...

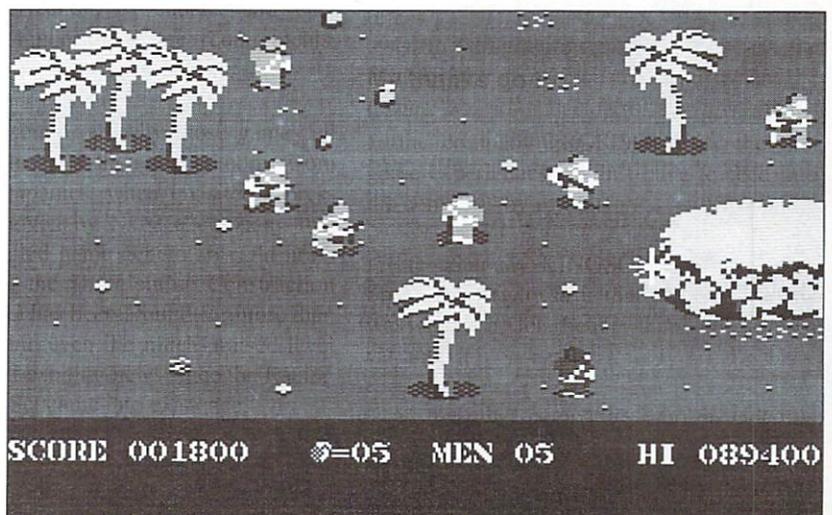
But why is it that nobody changes this trend? Where are the creative heads from earlier times? Gone, I guess... Because today, it takes more than a small team of programmers, or even a single programmer, to realize a good idea for a game - it's not likely that there are many people who have those two to ten million dollars at hand that it takes to produce a game today. And woe, if the final product doesn't show a never-before-seen hyper-bump-buffer-whatever effect.

My thanks go to...

... the company PROFISOFT for the first game experiences I didn't have to feed into the computer by myself

... the company KINGSOFT for producing Space Pilot (why is it that the C64 version was such a lot better than the Amiga variant?)

... all the other companies who provided us with countless hours of real gaming fun - and let the few survivors of this golden area of computer games find their way "back to the roots".



Uncle Wanja's Mailbox

Many readers do own one and many are thinking about buying one. I am speaking of a PC. The reason is simple: Surfing the internet is so much easier with a PC. I received a letter dealing with this topic a short while ago, and I think it is worth printing it...

Hi GO64! Team,

Lately I've been thinking a lot about my C64's future. It surely is good enough to serve my purposes, but I don't have access to the Internet. I could say good-bye to the C64, take it to the flea-market and just buy a PC.

But for the moment I have my eye on the Web.it C64, and that is the starting point for lots of problems: You are offering this machine for DM 799 (ca. US\$ 400), but unfortunately without further specific information. The Web.it can be used for surfing the net, editing texts, for data administration, and playing three games - that's what I read in the GO64! 10/98, but I don't really feel thoroughly informed. The Web.it would be perfect for keeping the C64 the faith. You also wrote that a detailed test would be coming up but there wasn't one till this day. The interesting points to know would be these: What possibilities do I have apart from the programs already installed? Is it possible to connect a CD-ROM drive, what kind of CD-ROM drive, can I install a mouse driver? Touchpads are disgusting! And, most importantly, the printer. Can I change the driver just as I like? Is it possible to connect the Web.it to a real C64? Is there any literature on the subject? I am really in need of information! You should write one or two pages on the Web.it. Maybe the production has been stopped

Are there any requests, suggestions, complaints, or comments about the GO64! Commodore World Magazine, or do you just feel the urge to chat a bit with our own "uncle Wanja"? Just send us those letters, before Wanja's mailbox starves!

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D-71364 Winnenden
Germany

brix@plush.de

Wanja's homepage: www.plush.de/brix

by now? I don't want to buy a pig in a poke! Well, as I mentioned before, those are my thoughts. Last fall I saw the C64 Internet computer at MediaMarkt (German chain of electronics stores) in Hamburg where they sold it for DM 799, too. I was told it didn't sell well because it was too expensive.

Yours sincerely,
 Rudi M.

Hi Rudi!

The first thing I want to tell you is this: Don't sell your C64! It still is a lot of fun, even after many years - modern PC games often don't have any atmosphere anymore, and for me, a game of 'Paradroid' is much more fun than games like 'Descent' that show off with 3D graphics but become boring in the end. As to the Web.it: There weren't any requests concerning the machine, so we did not see any necessity to write a more detailed report on it. Anyway, it is easy to resume the most important points in a few words. In line with our first assumptions, the emulator does not work fast enough with the hardware and the colors are wrong. Rumor has it that the latest machines come without the emulator from the start, which more or less makes the Web.it uninteresting to us (it wouldn't have anything to do with the C64 any longer). The machine does not have a mains plug, so every time the thing crashes - and the version we have suffers from this problem quite often - you have to pull the mains cord. I'm sure you can connect it to a second C64, provided you can find the appropriate software on the Internet and that you solder your own cables, but the producers certainly won't help you - they referred us to the Internet when we first spoke to them. Probably you could connect a Commodore floppy via an XE1541 cord together with the program 'Star Commander' to the Web.it, but you don't even have to waste time thinking about it: The hardware is much too slow for the emulator anyway. The web browser installed on the Web.it is an outdated Netscape version for Windows 3.11 - new Internet techniques such as HTML 4.0 or Shockwave are too much for the software. In my opinion, the price of DM 799 is in fact much too expensive and thus makes the machine interesting only to freaks who are passionate about collecting C64 stuff, which is why we are offering it. If you want access to the Internet, you have mainly two possibilities: With a C128/C64 (C128 works better because of the 80-sign mode), the Novaterm software and a Turbo232 interface you can surf the

Internet (text only), send and get e-mails, take part in newsgroups, chat in the IRC or use Instant Messaging with MICQ via a shell account with your provider. Gaelyne Gasson explains how it works in our 'Carrier Detect' series.

The second possibility would be to buy a used PC. It doesn't have to be one of the latest series, a Pentium with 120MHz (or anything similar) has everything you need for surfing. The CCS64 emulator does not really work fast in combination with it, but such a PC is enough for other emulators. A processor which is a little faster, i.e., about 200 MHz with at least 32 megabyte RAM and a 33.6 modem would be very useful to guarantee that the emulator and surfing the net work smoothly. Nowadays, they practically give you such PCs for free. They are decidedly cheaper and, apart from that, much more powerful than a Web.it!! You should look for a used PC either in a second-hand computer store or in the small ads. You can connect a C64 floppy to it via an XE1541 cord and the 'Starcommander' software, just like any PC. 'Starcommander' runs with Windows95 (in the DOS mode). And even if you should buy a PC: better don't sell your C64, because no emulator is perfect, hence only real C64s can offer the true C64 feeling - as you will surely notice the first time you use an emulator.

Hello GO64!

I don't know how you do it, but your magazine is the coolest of them all! I'm 28 and have been in the C64 scene since the very beginning! All the best from the south of Germany and good luck!

Bye Ingo

Well, I don't know what to say ... I'm touched! Thank you buddy! Keep on standing up for the C64, then hopefully you won't come to see the end of this era! We both still have about 60 years time for keeping the C64 alive, then at the latest we will have forgotten the last mnemonic, due to Mr. Alzheimer ...

In the hope that Alzheimer's disease doesn't come to soon, I'll now go on waiting for your next letters.

Yours
 -Uncle Wanja-

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SuperRAM-Card DM 169



RAMLink

DM 439

Superschnelles optional akkugepuffertes RAM-Laufwerk für den Expansionsport. Einfache 30 PIN SIMMs bieten bis zu 16 MB Speicherplatz. RAM-Port für REUs oder GeoRAM vorhanden, 2. Steckplatz für Multifunktionsmodule. RAMLink erlaubt den parallelen Anschluß der CMD-HD Festplatten.



CMD REU

DM 260

Die verbesserte Version der alten Commodore REUs. Kleiner, handlicher, stromsparender und doch zu 100% kompatibel. Die CMD 1750 XL bietet 2 MB RAM als extrem schnellen Zwischenspeicher, der DMA Chip sorgt für blitzschnellen Datentransfer (1 MB/s!) zwischen der RAM-Erweiterung und dem C64/C128.



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DM 520

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Platteneinbau
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DM 389

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Wo?

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