

G064!

KURSE/ TUTORIALS

Assembler
Grafik/Graphics
How To GoDot

WHEELS: THE WAVE

Der grafische
Browser geht
online!

The graphical
browser goes
online!

WORLD WATCH

C64 goes
Ethernet

SCENE

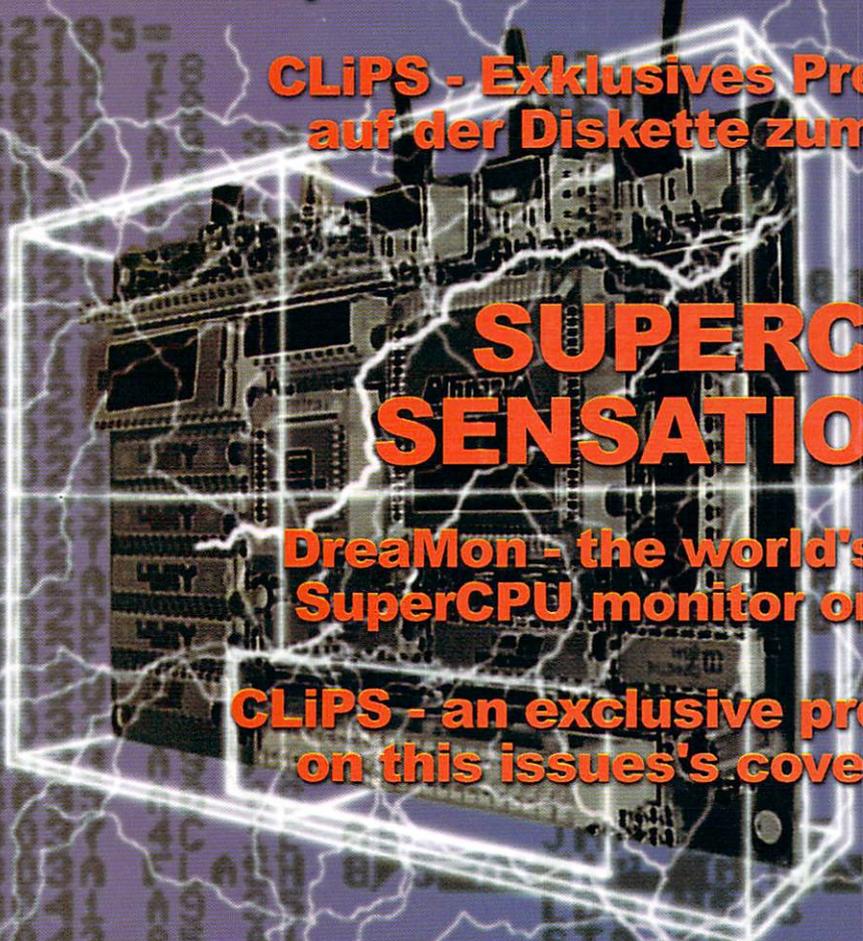
Mekka 2000
- "Expect
nothing"

COVER

SUPERCPU SENSATIONEN

DreaMon - der weltbeste
SuperCPU - Monitor auf Disk

CLIPS - Exklusives Preview
auf der Diskette zum Heft



SUPERCPU SENSATIONS

DreaMon - the world's best
SuperCPU monitor on disk

CLIPS - an exclusive preview
on this issues's cover disk

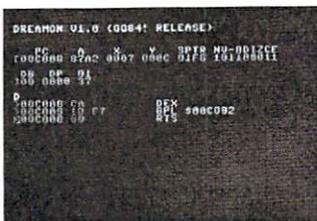
NEUES SPIELE PREVIEW AUF
DISK/NEUE GAME PREVIEW
ON COVER DISK:
PAC IT!

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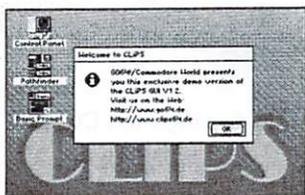
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A dream comes true



At last! The most advanced and most powerful SuperCPU monitor is here - you can find it on our cover disk. Read more about its features starting on page 7!



13 CLIPS preview!

GO64!/Commodore World readers are ahead! On our cover disk is an exclusive preview of the upcoming 16bit SuperCPU OS CLIPS. Any of you who have access to a SuperCPU with SuperRAM can now check out the future of the C64 platform. Prepare to be impressed!

22

Graphics tutorial



Deekay of Crest strikes again - he, as one of the most experienced graphicicians on the C64, is revealing his secrets of UIFLI and SHIFLI and how to achieve optimum results in mixing colors. More on page 22!



33 Classics: Archon

The year is 1983 A.D. One of the highlights in the gaming world is Archon. Simple graphics, only a few sound effects, but the game as such rocks! Yet another proof that its the idea that counts and not necessarily the visual effects. It's chess, but different - page 33!

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Preview GO64! issue 8/2000 Drives

Better not miss the next issue if you are interested in floppy drives.

Read about a compatibility review of the 1541 clone 'OC 118', which is known as the 'better 1541' amongst insiders. Also check out the review of the IDE controller, which enables you to hook up a standard IDE hard drive to your C64 (it's also SuperCPU compatible!)

Dear Readers,



would you believe, it's been nearly four years since I had my first look at the SuperCPU? In the (northern hemisphere) summer of 1996, CMD sent me a very early model of the C64 SCPU so I could use it for awhile and write a review about it. I have this knack for finding bugs, and sure enough, the first unit I received turned out to have a problem that other Commodore users never witnessed. I'd only had a day or two of using the SCPU but I'd already become "spoiled" by it. I didn't want to give it up, so I talked Doug Cotton into sending me a new unit first so I could continue using the one I had in the meantime.

In my review, I remember referring to the SCPU as a "time machine", in that it's made every day things I do with the Commodore that much faster. I still feel the same about it today. Make me do without a hard drive, without a disk drive, but there's no way I'd be without my SCPU and Commodore.

After the initial excitement of the speed of the SCPU waned, there was a period of what I can only describe as "hardware depression" that set in. I felt I'd pushed my Commodore as far as it would go, and this feeling was unsettling. The same feeling returned not long after our SCPU v2 for the C128 arrived. Initially there was excitement, then experimentation, and then that nagging feeling returned... was this the end of the road for my computer?

It's now a few years since then, and I can say with confidence that my feelings were only a fleeting negativity. In September 1999, Stephen Judd started working on a JPEG image viewer for the C64, and first created a SCPU version of the viewer. Having one of these "time machines" gave him the extra processing time to work out complex problems with the program, and by mid-October, he'd released a viewer for the C64. I'm not sure we'd have a JPEG viewer if the programmer didn't have a SCPU. This one program benefits all Commodore users regardless of their type of equipment (latest CMD attachments or stock). Since January 2000, I've been privileged to watch and participate in the development of Maurice Randall's WAVE program. One of the most exciting things I've witnessed first hand is seeing my Commodore connected to the Internet - with its own "machine name" and "IP number" - something some of the more elitist thinking folks consider a "necessity" for being a "true Internet computer". Fortunately I've never been an elitist, but now there's another point of pride in our LONG list of Commodore accomplishments.

Lately I have a new nagging feeling... that we've yet to see some incredible developments. Some of these developments may even be found further within this issue...

Cheers,
Gaelyne

<http://cbm.videocam.net.au/>

News Flash

RTL2 reports on the C64

Even the German private television channel RTL2 couldn't help becoming aware of the boom of C64 games on the Internet. They aired a report about classical games (which now experience a renaissance by the new PC emulators) on the evening news. By the way, they recounted the 80's C64 success story. Unfortunately, there wasn't time for the recent developments in the C64 scene ...

The report can also be viewed on the Internet:

<http://www.c64games.de>

(vr)



Atari 2600 cartridge sale

This might not exactly be a news item concerning Commodores, but it is of interest to all nostalgia-minded folks: an American company has bought up the remaining stocks of cartridges used in the old Atari 2600 and 7800 consoles and is now selling them at the laughable price of US\$ 0.80. The cartridges include such rarities as Ms. Pacman, Space Invaders, Centipede and Galaga--all in mint condition. For US\$16 each, you can also choose from a large assortment of Atari tee-shirts.

<http://www.oshealtd.com>

(ec/vr)



Music for insiders: "6502 ROKTEK"

In addition to hosting the EXPO 2000, Hannover in North Germany has a new attraction: In June, "6502 ROKTEK" played at the "Bei Chez Heinz" convention center, which was not their first appearance at the location. The auto-karma project--

with C64 disco sounds, analog electronics and guitar--tries to evoke "good old helicopter landscapes and experimental bleeps and tshuktshuks" (says the program ...)

Information on further concerts:

Bei Chez Heinz

Veranstaltungszentrum GbR
Lipmannstraße 7b (Fössebad)
30453 Hannover (Stadtteil Linden/Limmer)

Infotelefon: 0511/21429920

E-Mail: info@beichezheinz.de

Internet: [http://](http://www.BeiChezHeinz.de)

www.BeiChezHeinz.de



Vobis brings the C64 into television

In March, many mouths will drop open in front of TV screens all over Germany. The big computer sales chain Vobis will advertise its 25-points program--celebrating its 25th anniversary, amongst other things--with a C64. We are hoping that some advertisement victims out there in front of the TV screens will be inspired to move their old C64 from the attic to their desks ...

(vr)

KOMAdat home site on the WWW

KOMAdat, organizer of the famous C64 traders list, will have its own web site on the Internet from now on. The publication of the traders list has changed from a tri-monthly rhythm to a yearly one (each October). On their web site they also introduce their latest project: the "Encyclopaedia Commodore", a database which intends to collect all hardware, software and literature ever produced for the C64.

Information:

E-Mail: KOMA@go64.com

Internet: [http://home.t-](http://home.t-online.de/home/Martin.Kopetzky)

[online.de/home/Martin.Kopetzky](http://home.t-online.de/home/Martin.Kopetzky) (vr)

Thomas Danko's album "6581" is finished

The famous C64 composer Thomas Danko has finished his new CD, "6581". >From what we've heard, it contains progressive dance--a style of music comparable to the tunes of Robert Miles.

You can listen to some tracks on the Internet--where you can also order the CD--at this address:

<http://stage.vitaminic.se/danko> (vr)



Entering competition with the SID station: SIDSyn

Thomas Margolf--a.k.a. "Firestarter"--is developing a new monophon MIDI synthesizer based on the well-known C64 chip SID MOS 6581. The prototype has already reached the final stage of development and--once it is finished--will be offered at a extremely reasonable price (much less than the actual SID station).

E-Mail: firestarter@wtal.de

New versions of the Power Mac VC20 and the C64 emulator

The Commodore emulators "Power64" and "Power20" for the Macintosh have been further developed and improved by the designer. The latest versions can be found on the Internet under:

<http://www.auto.tuwien.ac.at/~rlieger/Power64/index-de.html>

and
<http://www.auto.tuwien.ac.at/~rlieger/Power20/index-de.html>

Contact:
Roland Lieger
E-Mail: rlieger@kagi.com
(gb/vr)

New version of 1581copy for PCs

Wolfgang Moser has released a new version of 1581copy: VO.52. The program reads and writes 3.5" disks in the 1581/FD-2000 format in an IBM-PC disk drive without any hardware modifications. The program can be downloaded from the Internet at:

<http://www.wmsr.de>
(vr)



Wanted: Hires images for CLIPS!

CLIPS, the new operating system in development now for the C64 with a SuperCPU, will come with the ability to display background images on its desktop. For this reason, Malte Mundt is working to put together an image collection and is asking our readers to help him. The images have to be in the Hires format, with a size of 320x200 pixels and two colors per 8x8 tile. All sorts of pictures will be accepted, and the best format to send the images in is Doodle's (screen at \$5C00, bitmap at \$6000). However, all other Hires formats will be accepted. (vr)

E-Mail: thunderblade@gmx.de
<http://www.clips64.de>



"Summer Games" by Kirmes

The music scene seems to have a new favorite instrument: our beloved breadbox. The electronic pop and hiphop duo "Kirmes"--from Münster, in the German federal state of Westphalia--published their second LP "Summer Games" in honor of the said Epyx game. Fans can use the PC emulator that comes with it to enjoy this and many other Commodore classics (e.g. "Samantha Fox Poker"). However, we don't know whether "Kirmes" asked for the software company's permission... (vr)

This issue's magazine disk: A game preview of PAC IT!

Jakob Voos of Protovision sent us a surprise minutes before we finished editing this issue: the Preview of "Pac it!". The Classical Games adapter allows four players to join in the fun. The complete version is supposed to be finished by next fall or winter and will accept other four-player adapters. It will consist of various levels,

Commodore Connection Line - now on the Internet as well!

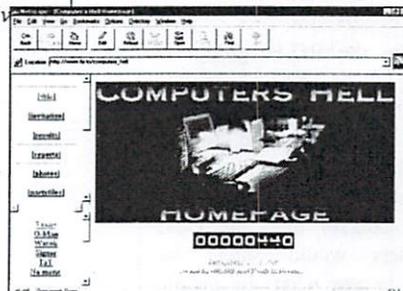
Oliver Biasin has put the Commodore Connection Line on the Internet. You can download the questionnaire on the CCL directly at <http://www.brainstorm-c64.de>, or look for pictures of various computer parties or information on the "Hobby&Elektronik" trade fair in Stuttgart, Germany.

Contact:
E-Mail: brainstorm.c64@t-online.de
<http://www.brainstorm-c64.de>
(vr)

New Computer's Hell page online!

The German capital, Berlin's own C64 scene party is now represented on the WWW. Its home site contains reports and information on the last two parties and their scores and prizes. Moreover, it offers free software to download.

http://www.fly.to/computers_hell
(vr)

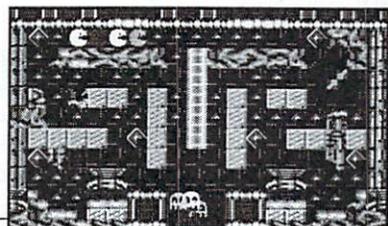


Web directory "Germany 2000/2001"

Matthias Weber's web directory "Germany" (see the "News" in our January issue) is in its fourth edition and can also be ordered in book stores. It contains the 6000 most important Internet URLs, including the domain of GO64! The directory has 700 pages at the price of DM 29.80 (ca. US\$ 13).

E-Mail: info@mw-verlag.de
Internet: <http://www.web-adressbuch.de>
(gb/vr)

including an intro, intermediate levels and a final sequence. We're looking forward to it!
(vr)



Wanted: Writers for the Disk-Mag!

The scene group "People of Liberty" is looking for English texts for its international Disk-Mag project. The first issue of the diskette magazine was supposed to hit the market by the middle of November. You can send in texts either as Voodoo Noter files or via e-mail to:

Jörg Dröge
Hofäckerstr. 7/2
69245 Bammental
Germany
E-Mail: joerg@droege.as

Further information can be found on the Internet at:
<http://www.pol-c64.de>
 (vr)

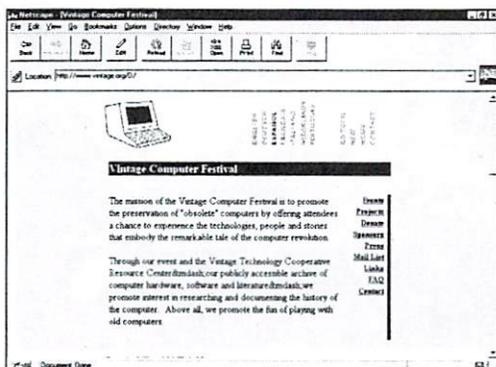


A look at the face of - The Scene!

Satyr, from the P.O.L. group, is organizing "The Scene" project which is designed to make the scene known to the wider public. To this end he wants to convert photographs of well-known sceners (only if they agree, of course) onto the C64; many users would surely be interested to see what the people behind the screens really look like.

Anyone who wants to participate should send in a picture with a short accompanying text no later than March, 31st, 2001 - that's all it takes for you to join. Photos for "The Scene" will also be taken at the "Willow Party" if you want to take part. If you want to actually help organize the project, Satyr is still looking for people to help program and convert images.

Satyr
P.O.Box 101234
06512 Sangerhausen
GERMANY
Telefon: +49(0)3464/576559
SMS: +49(0)173/7388147
E-Mail: hellbilly@gmx.de
 (vr)



Vintage Computer Festival "VCF 4.0"

The Vintage Computer Festival was celebrated for the fourth time on September 30th and October 1st at the San Jose Convention Center in San Jose, California, USA. Amongst the exhibitors was the Fresno Commodore User Group who presented lots of new developments at their stall.

Informationen im Internet unter:
<http://www.vintage.org>
 (gb/vr)



Willow Party 2000

In October 2000, we saw the revival of the Willow Party, which sadly couldn't be held the year before. The three-day computer party--which took place near Detmold, in the German federal state of North-Rhine-Westphalia--specializes exclusively in C64's. By the way: Women only had to pay a third of the entrance fee ...

Further information:

E-Mail: Floyd_Tmp@gmx.net
Post: Stefan Schauf, Remmighauser Straße 97, 32760 Detmold, Germany. (vr)

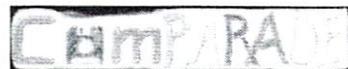
Comparade: C64 and Amiga party in Bavaria, Germany

For five years now, the Comparade party has been organized near the beautiful city of Munich in Bavaria, Germany. In October 2000, the party had reached its ninth edition and hosted up to five hundred guests in the Amperhalle convention center in Emmering near F?rstenfeldbruck, Bavaria. Demo competitions for C64's and Amigas were held, and C64 users who showed up with their computers got the tickets for a reduced price.

Further information can be had from:

Andi Brandmair
Am Eichenhain 3
82275 Emmering
Germany
E-Mail: comparade@gmx.net

Weitere Infos im Internet unter:
<http://www.comparade.de>
 (vr)



World of Commodore/Amiga USA

During winter 2000/spring 2001, preparations are under way in the USA for the "World of Commodore/Amiga". The event is scheduled for three to four days and is explicitly directed at Amiga and C64/C128 users(!). If you want to give a hand in planning and coordinating, please contact the organizers at:

Amiga@merlancia.com
www.worldofcommodoreamiga.com
<http://www.merlancia.com/woca/>
 (gb/vr)



Ruth Hackley deceased

The Commodore community has lost one of its prized members. Ruth Hackley, the wife of Ron Hackley who programmed "Fun Graphics Machine", died at the age of 77 in Roseburg, Oregon on July, 27th 2000. She was a member of the local Commodore / Amiga user group and was well-beloved all around for her friendly and competent help in various mailing lists and news groups. We will not forget her. (vr)

DREAMON

Good news for all SuperCPU-programmers! Finally there is a tool which uses the power of the acceleration card during the development of its own projects. We are proud to present to you a machine-language monitor which beats every other ever seen on the C64. Because of the high compatibility of the SuperCPU, even "pure" C64-projects can benefit from the possibilities of DreaMon. But check out yourself...

by Christoph Thelen

DreaMon is a powerful assembly language monitor for the SCPU. It requires a SuperRamCard. Some of its features are: different type of freeze-points, a comfortable scroll-mode, flexible terms, definable function keys and VDC-support on a C128.

Getting started

After you run the DreaMon a little menu appears. Here you can select the destination in the SRam. Use the cursor keys to move the bar around and press return to edit a field. To edit a number, use the cursor keys, home, clear, stop and ctrl-cursors (to move to start/end of the field). Return confirms the input. 'Code' is the position of the DreaMon itself. 'Text' is a buffer for labels and fkeys. The code must not cross a bank border. To keep an eye on this the current end address is displayed behind the input field. False inputs are denied, of course. The size of the text buffer is variable. It can reach from 2 pages up to all available SRam. An efficient size

d	from actual address on down (in scrollmode)
d a000	a single address
d a000 b000	forward from \$a000 to \$b000
d b000 a000	backwards from \$b000 to \$a000 (screen scrolls up)
d =a000	from \$a000 on backwards in scrollmode
d a000=	from \$a000 on forward in scrollmode
d a000 = b000	forward from \$a000 to \$b000 in scrollmode
d b000 = a000	backwards from \$b000 to \$a000 in scrollmode

The default numeric system for all addresses is hex.

depends on how many labels and macros you want to use. The displayed suggestion should be more than enough for beginning.

After your done, the config tool disappears and leaves a little SYS which you should keep in mind. This is the way to start DreaMon from basic.

New parameter-types

DreaMon accepts the usual 'byte' and 'word' some other parameter-types, which are

explained now. Some commands have <Area> or <Range> as a parameter, like 'd' or 'i'. <Range> is a substitute for a number of possibilities listed in table 1.

An <Area> describes a block of memory by two values: the start- and the end address. Both are separated by one or more spaces. The end address must be greater than the start address.

The default numeric system for all addresses is hex.

Commands

Assemble - Enter assembler code. The syntax is:

```
a <StartAddress> or a
<StartAddress> <Opcode>
```

The first form shows the address again in the next line where you can enter the opcode. After a line was entered the next address is shown one line below. There you can continue with your code:

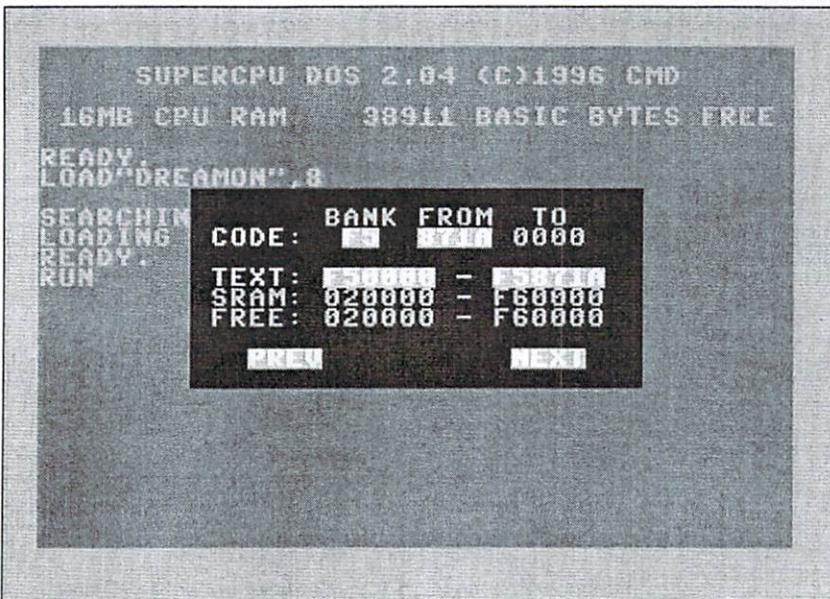
```
a c000
a00C000 a9 00 lda #$00
a00C002
```

If the 'follow Rep/Sep' is active the size of the accumulator and index registers is adjusted if one of this opcodes is entered. The M and X flags of the processor status are not altered by this. The default numeric system for all numbers is Hex.

Compare - Compare two memory areas and print the differences. If the 'verbose mode' is active not only the addresses are shown but also the different contents. The syntax is:

```
c <area> <destination>
```

<destination> is the start of the memory block which should be compared to <Area>. The default numeric system for all parameters is



This little tool copies DreaMon into the SRam. You can select where the code and text buffer should be placed. 'code' is DreaMon itself, and 'text' is a buffer for FKey and label definitions.

```

DREAMON V1.0 (G064! RELEASE)

PC      A      X      Y      SPTR  NU-BDIZCE
[00E147 8791 0000 000C 01F8 001100111

DB      DP      01
100 0000 37

```

The startup message of DreaMon.

hex.

Disassemble - Disassembles a memory area. If the 'follow Rep/Sep' mode is active the accumulator and index register size is adjusted if one of these opcodes occurs. The M and X flag of the processor status are not altered by this. The syntax is:

d <Range>

The output of the 'd' command can be edited.

Fill - Fill a memory area with bytes. The syntax is:

f <Area> <Pattern>

<Pattern> is a list of parameters separated by commas. It describes the byte pattern <Area>

should be filled with. It may contain numbers of any length (byte, word, long) and strings (which must be identified by quotation marks).

Example: The memory area from \$1000 to \$3000 should be filled with the text "hello!", which is terminated by a zero byte.

```
f 1000 3000 "hello!",0
```

The default numeric system for all parameters is

Go - Exit the DreaMon and jump to the specified address. The syntax is:

g <address>

The default numeric system for <address> is hex.

Hunt - Searches a number of bytes in a memory area. A hit is reported by the address. The syntax is:

h <Area> <Wildpattern>

<Wildpattern> is similar to the fill command's pattern. It is a list of numbers and strings separated by commas. The numbers can be up to 3 bytes long (byte, word and long). Hex, bin and oct numbers can contain '?'.

Example:

```
h 1000 1100 f?
```

...searches for all bytes which upper nibble is \$f. This is not possible with decimal values as the separate digits do not define clearly the used bits.

Example:

```
h e000 10000 "basic"
```

...searches for the string 'basic' (like in the C64-startup screen)

```

DREAMON V1.0 (G064! RELEASE)

PC      A      X      Y      SPTR  NU-BDIZCE
[00E147 8791 0000 000C 01F8 001100111

DB      DP      01
100 0000 37

>00C000 A9 00          LDA #$00
>00C002 8D 20 D0      STA $D020
>00C005 1A           INC
A00C006 STA D015

```

The default numeric system for assembling is hex. This means you can omit the 'S' before 'd015' and DreaMon will add it automatically.

```

I C000
.00C000 ABCDEFGHI[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
I C100
.00C100 ABCDEFGHI[XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

C C000 C008 C100
00C006/00C106 47/48 00C007/00C107 48/47

C C000 C008 C100
00C006 00C007

>00C010 A9 1E          LDA #$1E
A00C012

O C000 C100 "LDA"
>00C010 A9 1E          LDA #$1E

O C000 C100 "LDA"
00C010

```

The 'verbose hunt' mode affects the output of the 'compare' and 'opcode hunt' commands. In the upper examples in each case the mode is active. In this mode the compare command shows the different memory contents. \$c006 holds \$47 and \$c106 contains \$48. The 'opcode hunt' command shows the disassembled line which contains the search pattern.

h 2300 2600 ffff?

...searches for \$fff0 bis \$ffff.

h a000 c000 d, "ok", d, 0

...searches for the string return, 'ok', return, which is terminated by a zero. (This is a message from the basic rom)

ASCII and Screencode dump - Shows the contents of a memory area with ASCII or screencodes. The syntax is:

i <Range> for Ascii dump

j <Range> for Screen dump

The number of printed bytes per line can be defined with the 'pt' command.

Load - Loads a program into memory. Load works across bank borders and has no problems with files larger than 64K. During the process the current address is shown up to which the file is already loaded. The syntax is:

l "name", <Device>
[, <StartAddress>]

If the file's StartAddress should be ignored the desired one can be defined with <StartAddress>. Load can be interrupted with the stop key. The default numeric system for <Device> is Dec! For <StartAddress> it is hex.

ASCII and Screencode memory dump - Shows the contents of a memory area with ASCII or screencodes and the corresponding hex values. The syntax is:

m <Range> for ASCII memory dump

n <Range> for Screen memory dump

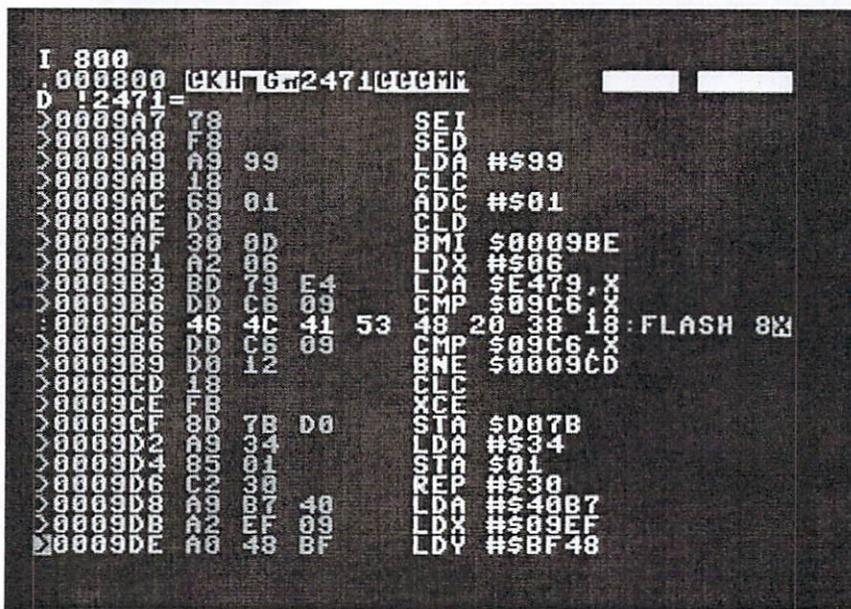
Table 3: Keys in Scrollmode

Cursor Up/Down	one step up/down
Space	one step in actual direction
Return	only in disass-mode: follow operand
←	return to address before 'follow operand'
+/-	next/previous byte
d	switch to disass-mode
i	switch to ASCII-Dump Mode
j	switch to Screen-Dump Mode
m	switch to Mem-ASCII-Dump Mode
n	switch to Mem-Screen-Dump Mode
Stop	exit scrollmode

Table 2: Ctrl+Shift-Keys

Ctrl-Shift f	follow Rep/Sep On/Off
Ctrl-Shift h	verbose hunt/opcodehunt, print a bit more info than just an address
Ctrl-Shift m	toggle accu 8/16 Bit (M flag is not touched)
Ctrl-Shift v	switch VideoMode: (Vic, VDC 2531, VDC Super6)
Ctrl-Shift x	toggle X,Y-Reg. 8/16 Bit (X flag is not touched)
Ctrl-Shift 0-9	Set \$01 to #\$3x (e.g.: Ctrl-Shift 5 is like lda #\$35:sta 1)
Ctrl-Shift +	More Lines (only VDC2531 and Super6)
Ctrl-Shift -	Less Lines (only VDC2531 and Super6)
Ctrl-Cursors	Move cursor to the screen borders (Ctrl-Down = move to last line)

Ctrl-Shift m and x only change internal flags for accu and register sizes. The M and X flag of the processor status is not altered.



The scrollmode is a feature to browse fast and easily through code. The '←' key follows the operand. For the 'CMP' opcode (at \$9b6) it shows a memory dump of \$9c6. Two lines down at \$9b9 it follows the branch opcode to \$9cd. If the 'follow Rep/Sep' mode is active the accumulator's and/or index registers' sizes are adjusted if a 'rep' or 'sep' opcode is found (at \$9d6).

The number of printed Bytes per line can be defined with the 'pt' command.

Opcode hunt - Opcode hunt combines disassemble and hunt. It disassembles every address and examines the result. If there is a hit, the address will be printed. If 'verbose hunt'-

Table 4: Possible arithmetic instructions

↑, <, >	bank-, hi-, lo-byte
mod	modulo
*, /	multiply/divide
+, -	add/subtract
+, -	positive/negative sign
>>, <<	right/left shift
@a	AND
@n	NOT
@e	EOR
@o	OR

The operations are listed by their priority, "@o" having the lowest.

Brackets can override given priority.

mode is active, the disassembled line will be printed as well. The syntax is:

o <Area> <Wildpattern>

<Wildpattern> is the same parameter as used in the hunt instruction.

Preferences - Sets some preferences.

pt <DumpLength>, <MemDumpLength>

<DumpLength> is the number of bytes per line which will be printed by the ASCII and screendump commands 'i' and 'j'. <MemDumpLength> is the same for the memory dump commands 'm' and 'n'. Only values which still fit on the screen are accepted. The default numeric system for both parameters is hex.

Registers - Shows the registers: accumulator, X, Y, processor flags, stack pointer, emulation flag, program counter, direct page, data bank, program bank and the content of \$01. The syntax is:

r

Save - Saves a memory area. Save works across bank borders and has no problems with files larger than 64K. During the process the current address is shown up to which the file is already saved. The syntax is:

s "name", <Device>, <Area>
[, <LoadAddress>]

The standard load address of the file is the start of the memory area. If the file should later be loaded to a different location it can be defined with <LoadAddress>. Save can be interrupted with the stop key. The default numeric system for <Device> is dec! For all other parameters it is hex.

Transfer - Copies a memory area. The Syntax is:

t <Area> <Destination>

<Destination> is the start of the memory block <Area> should be copied to. Transfer works also without problems if <Destination> is inside

Table 5: Additional F-Keys

C= & F1	F9	Ctrl & F1	F10
C= & F3	F11	Ctrl & F3	F12
C= & F5	F13	Ctrl & F5	F14
C= & F7	F15	Ctrl & F7	F16



Christoph Thelen, born in 1977, got his first C64 1987. Programming was his favourite activity from the beginning. He is also known in the scene as "Doc Bacardi/The Dreams". When he wanted to start developing for the SuperCPU, he missed the necessary tools for that. DreaMon was created to put an end to this situation. The version presented here is not the final one, however. Some ideas are still in Christoph's mind. If you want to support him, tell him your ideas,

criticism and bugreports via Email:
til18@advm2.gm.fh-koeln.de

```

F C000 C040 42,"E",5245,0
I C000 C040
:00C000 BEER@BEER@BEER@BEER@BEER@BEER@BE
:00C020 ER@BEER@BEER@BEER@BEER@BEER@BEER
M C018
:00C018 00 42 45 41 52 00 42 45:@BEAR@BE
H C000 C040 "BE",4?,"R"
00C000 00C005 00C00A 00C00F 00C014
00C019 00C01E 00C023 00C028 00C02D
00C032 00C037
H C000 C040 "BEAR",0,"BE",?,52,0
00C019

```

The 'fill' and 'hunt' commands accept a list of numbers and strings. The numbers may be up to 3 bytes (24 bits) long. The 'hunt' command also accepts the wildcard '?', which matches any value. It can be used as a part of a number (as in the upper example) or as a complete number (lower example).

of <Area>. The default numeric system for all parameters is hex.

<Area>. Swap works also without problems if <Destination> is inside of <Area>. The default numeric system for all parameters is Hex.

****Verify**** - Compares a memory block with the contents of a file. Verify works across bank borders and has no problems with files larger than 64K. During the process the address is shown up to which the file is already compared. The syntax is:

v "name", <Device>
[, <StartAddress>]

The file is compared from its startAddress on by default. Another position can be defined with <StartAddress>. Verify can be interrupted with the stop key. The default numeric system for <Device> is dec! For <StartAddress> it is hex.

Swap - Exchanges two memory blocks. The syntax is:

w <Area> <Destination>

<Destination> is the start address of the memory block which should be exchanged with

Exit - Exits the DreaMon and continues at the current program counter. The syntax is:

x

Manage Freezepoints - Show, set and clear Freezepoints. 'z' without any parameters shows all Freezepoints. A Freezepoint is set by

z <Address> <JumpType><Action>
[<Parameter>]

Please take a look at the Freezepoint chapter where you can find a closer description of all parameters. Freezepoints can also be set during assembly. You can find out more about this also in the Freezepoints chapter. A single Freezepoint can be deleted with

z <Address>

All Freezepoints can be deleted with

Table 6: Freezepoint-Types

Type	Needs...	Length	Condition...
J (JSR)	the vectors at \$d3xx	3	I/O must be active and the freezepoint must reside in bank 0
L (JSL)	nothing	4	none

Command reference:

Command	Parameter	Function
a	address Opcode	assemble
c	Area Destination	compare
d	Range	disassemble
f	Area Pattern	fill
g	Address	go
h	Area Wildpattern	search
i	Range	ascii dump
j	Range	screencode dump
l	"Filename" [,Device [,Load address]]	load
m	Range	memory ascii dump
n	Range	memory screencode dump
o	Area Wildpattern	opcode hunt
p		preferences
r		show registers
s	"Filename", Device, Range [,Load address]	save
t	Area Destination	copy memory
v	"Filename" [,Device [,Load address]]	verify
w	Area Destination	swap memory
x		exit
z		manage Freezepoints
£		define/use/delete Label
?	Term	show result of term
@	[#Device][command]	send DOS command / show status
>		edit disassembler output
.		edit ASCII dump output
,		edit screencode dump output
:		edit memory ascii dump output;
		edit memory screencode dump output
[display/edit first half of registers
]		display/edit second half of registers

Table 7: Freezepoint options

Type	Parameters	Actions
N (Normal)	none	just jumps to DreaMon
C (Count)	<n> (a number from 0 to \$ff)	Freezes at the (n+1)-th time (so n=0 is like 'normal')
A (Activate)	<n> (a number from 0 to \$ff)	activates the bits specified in <n>, nothing more happens
R (Remote)	<n> (a number from 0 to \$ff)	freezes if at least one bit from <n> is activated

The default numeric system for all parameters is hex.

```

£line6=400+6*!40
£Co1Line6=(£line6 and 3ff) + d800

j £line6
,0004f0 load"dreamon",8

m £Co1Line6
:00d8f0 0e 0e 0e 0e 0e 0e 0e 0e:nnnnnnnn

j £line6+4*!40
,000590 ready.

m d800+(!'^(3)
:00d108 18 18 18 18 00 00 18 00:xxxxdxxx

a c000
>00c000 a9 20 ldx #$20
>00c002 a2 27 ldx #$27
a00c004 sta £line6,x
    
```

your (hardware-) monitor. The number of lines is changed the same way as in the 'VDC2531' mode. Because both modes use the VDC chip they are only available on a C128.

Scrollmode

The scrollmode enables you to browse fast and easily through memory. After each line, DreaMon waits for a key which can be one of those mentioned in table 3. Furthermore the Ctrl-Shift keys are also active.

'Follow operand' can be used 63 times before a return address gets lost.

Default numeric systems

It always bugged me that most monitors insist on a 'S' before a hex number though no other numeric system is supported. DreaMon not only supports hex, dec, bin and oct but also has "default numeric systems". This is the numeric system which is most common in a situation, e.g. hex while assembling. This system can be used without its prefix. Instead of

```
a00C000 ldx #$c0
```

it's enough to enter

```
a00C000 ldx #c0
```

z all

keycombinations. They are listed in table 2.

The default numeric system for all parameters is Hex.

Ctrl-Shift keys

Some of the functions of DreaMon can be accessed anytime by using Ctrl-Shift-

The videomode 'VDC2531' uses the 80 columns screen of a C128. Change the number of lines from 25 up to 31 with 'CTRL-Shift +' and 'CTRL-Shift -'. The 'Super6' mode is similar to 'VDC2531' but uses another charset which is only 6 pixels high. This way more lines fit onto the screen. The maximum amount depends on

DreaMon adds the missing 'S' automatically. Hex is almost always the default system. Exceptions are the device number, where dec is default. Of course, you can select everywhere another system by using the corresponding prefix, namely "!" for decimal, "\$" for hexadecimal, "&" for octal and "%" for binary. Additionally numbers can be described by any combination of bin, oct, dec and hex as well as labels and terms. Read more about it in the chapter "Terms".

Labels

All label have to start with a '{Pound}'. A label is defined by

```
£<labelname> = <term>
```

The labelname may contain any char except one of the following: "+*-/()<&{Arrow Up}" and space. The default numeric system for <term> is hex. To delete a label just skip <Term>. Example: Define the label "border" with the value \$d020

```
£border = $d020
```

Define the label "Background" with the value \$d021:

```
£Background = {Pound}border +1
```

Delete the label "border":

```
£border =
```

Of course, the annoying spaces in these examples are unnecessary.

Terms

Whenever a command expects a number it can be specified by a term. The arithmetic listed in table 4 may be used. Example (all commands do the same):

```
m c002
m !49152+8>>2
m (8+4)*1000 + 2
```

"Enlarging numbers"

While assembling DreaMon normally selects the shortest possible address-mode. But sometimes this is not desired (e.g. if absolute should be used instead of zeropage). To specify a longer address mode than a number normally has, this number has to be prefixed by enough zeros. Example: sta \$fb should be absolute

```
a00C000 sta 0fb
```

A three digit hex number is already two bytes long and so absolute addressing is used. Logically, this will also work:

```
a00C000 sta 00fb
```

But why wasting energy on senseless things?

```
a00C000 sta 000fb
```

is no longer absolute addressing but long, as five hex nibbles need three bytes. Of course, this method of enlarging number works only for numeric systems where the number of digits clearly defines the length in bytes. That is the case with bin, hex and oct, but not with dec. If an argument consists of several numbers, the biggest enlarging is taken for the result. Note that labels can be enlarged, too.

Disk commands

'@' sends a command to the serial bus or reads the status. If a device other than the default one should be used, it can be specified by '#<Device>' right behind the '@'. The default numeric system for <term> is dec. The command to be sent can be enclosed in quotation marks, but even spaces within the command do not require this. '\$' as a command shows the directory. Before a scratch or new command is executed, you have to confirm the operation. Examples:

```
@i      initialise the actual device
@$      show the directory of the actual device
@#10i   set the actual device to 10 and
         initialise it
@ #10 i ...the same for space lovers
@#9     set the actual device to 9 and show its
         status
@#10$   set the actual device to 10 and show
         the directory
```

F-Keys

DreaMon knows more than the usual eight function keys. Eight more are accessed with the C= and the Ctrl key (see table 5). All F-keys except F16 can contain macros. To record a macro press F16 first. After that the cursor blinks faster than normal. Now press the F-key for the macro and start typing. Another hit on this F-Key ends recording. A macro may contain other macros. Example: F1 should contain the text 'm 478' and Return.

```
<F16> <F1> "m 478" <RETURN> <F1>
```

Macros are still available after a system melt.

Freeze-points

A freeze-point interrupts the running program and jumps to DreaMon. All registers of the I/O-chips are saved so you can return to the program like nothing has happened. There are two types of freeze-points which are distinguished by their way how to jump to DreaMon (look at table 6). The memory at the position of the freeze-point is saved and replaced by the jump command. So be sure not to get hit by self modifying code (see below what to do in this case)! After the freeze-point is executed the original memory is restored. While you are in DreaMon you see the original memory. The disassemble command shows a little comment behind a line where a freeze-point resides.

If a freeze-point is reached, four things can happen as listed in table 7. Activate and remote freeze-points only work in combination. They are used in cases of critical timing routines or self modification code where the other types will not work. Remote freeze-points are not written to memory if you set them. They are just kept in mind by DreaMon until the program encounters an activate freeze-point. Now the remote freeze-point is written to the memory and can be executed. The parameter for both types is a bit mask to define which freeze-point is activated. If an activate point with parameter \$15 is found, all remote freeze-points are written to memory which have either set bit 0, 2 or 4 in their parameter, e.g one with \$32.

There are two ways to set a freeze-point. Either with the 'z' command (please take a look in the chapter manage freeze-points) or while assembling or editing disassembled output. The opcode at the position where you want to freeze has to be replaced by 'z<jump type><action>' and a parameter for count, activate and remote. Example: This is the point where you want to freeze:

```
>00c018 ad 20 d0 lda $d020
```

Example 1: Now you type

```
>00c018 ad 20 d0 zjn;$d020
```

to set a 'normal' 'JSR' type (the semicolon after 'zjn' marks the end of the line. DreaMon ignores the rest behind it)

Example 2:

```
>00c018 ad 20 d0 zlc12;$d020
```

to set a 'count' 'JSL' type, which freezes after being run 18 (= \$12) times.

(ws)

CLiPS - Corner

First preview released!



Just as in every product for the 64 these days, CLiPS is being developed in the spare time of its maker. Unfortunately, system programmer, Chester Kollschen, doesn't have much of it for the time being; he's working intensively in finishing a game project for the SuperCPU, namely the game "Metal Dust", which he took over from its original author shortly before. As soon as this project is finished, he'll continue the work on CLiPS. In order to make time go by until then, he's released the first official preview of CLiPS for the readers of GO64! Commodore World.

You can run the demo version directly from the GO64! coverdisk, and of course, you can just as well copy it to a CMD HD, FD, or RAMLink and run it from there. It's not necessary to SWAP the devices; on the contrary, CLiPS needs the devices under their "real" addresses. Load and run the file called "Boot", and CLiPS' automatic hardware identification will be started. The program will stop if it doesn't find a SuperCPU and if it can't find a SuperRAM card equipped with RAM - CLiPS can't run without these. Then all present drives are checked. It also checks if there is a real-time clock anywhere to provide CLiPS with the current date and time.

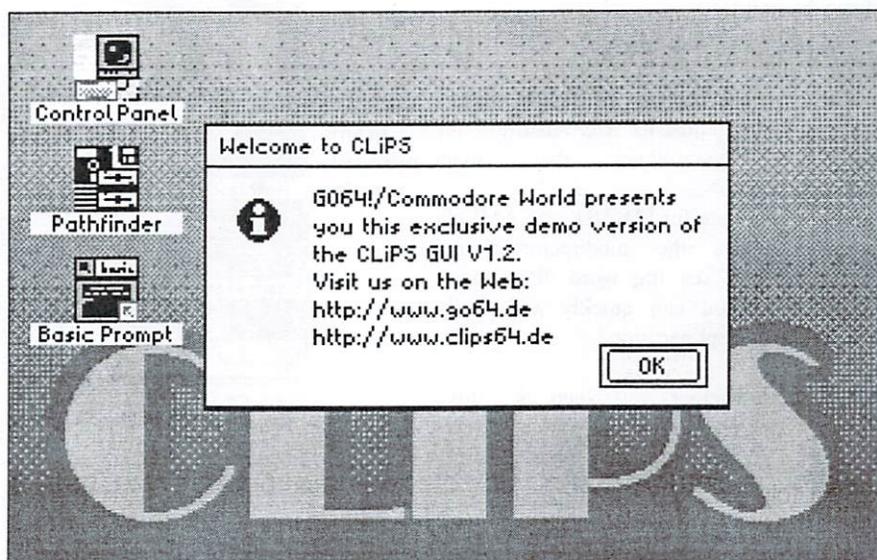
The following disk access may take a while, because it doesn't yet use any optimized fastload routines or the like. After some time, the blue CLiPS screen turns gray (the background picture); the Desktop has loaded and a window opens showing a welcome message. Click "OK" to go on. From this point on, you'll need a CMD Smartmouse or aeCommodore 1531-compatible mouse, because the demo version doesn't support joysticks and joystick mice yet.

The Desktop

Now the screen shows three icons. "Basic Prompt", the one at the bottom, is the easiest to guess; with it, you can switch into the C64 Basic mode. However, this does not mean

It is time; we're proud to present to you on this month's coverdisk the first, exclusive preview of CLiPS, the new operating system for the SuperCPU! Insert the disk into your drive and try it out!

by Malte Mundt



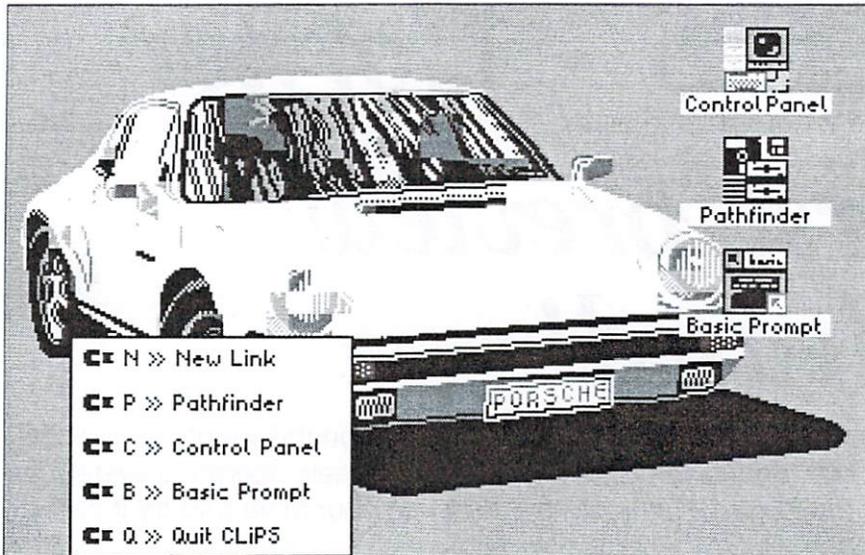
CLiPS is giving you a hearty welcome - check our cover disk!

you're leaving CLiPS! When you're in Basic mode, you can return to the CLiPS Desktop by holding the <Control> key and pressing <Restore>. This key combination works as long as the NMI vector isn't changed. This means that you can even return to CLiPS while GoDot is running. But the main reason why the Basic Prompt exists is to have a quick and easy way to work from the command line, like sending floppy commands. Later versions of CLiPS will offer a shell for such purposes.

The Pathfinder and window handling

Clicking on the Pathfinder icon will bring up an window showing all drives that CLiPS recognizes when it boots. As soon as you choose one of them, the directory of the disk or hard drive (CMD HD), or the default

partition of the RAM drive (RAMLink) will be displayed. In the upper left corner, beside the window title, you can see the little paper clip symbol which serves as a close gadget. In Pathfinder windows, the title bar shows the drive chosen. In the upper right, there are minimize and full-screen gadgets. The latter brings the window to the full-screen size. If chosen, the symbol changes its appearance, and clicking on it a second time restores the the window to its original size. Using the minimize symbol, you can remove the window from the Desktop. But don't worry - you can always get it back by using the Task Bar, which you can reach by clicking the mouse at the lower border of the screen. We'll explain this a little later. Back to the Pathfinder - the function of the pull-down menus is self-explanatory, except that most of the menu entries aren't working yet in this



Context menus are invoked with the right mouse button

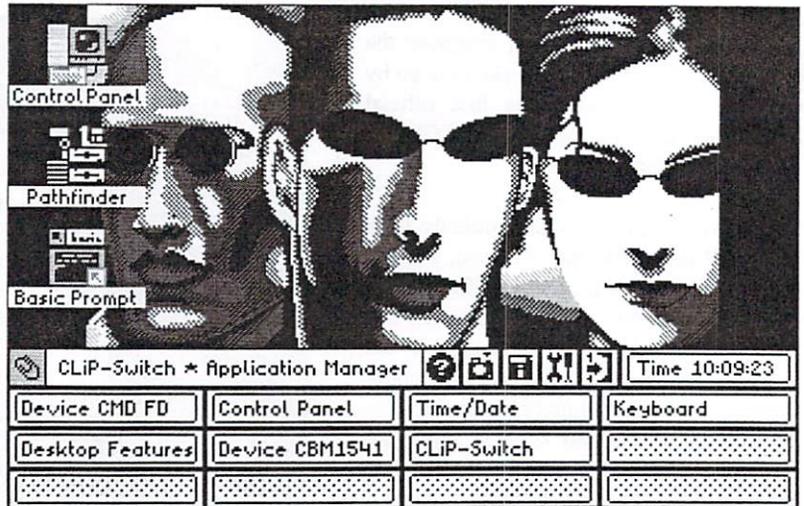
demo version.

If you drag the lower right corner of a window while pressing the mouse button, you can freely adjust its size. Also note the proportional scrollbars that adapt automatically.

An important note for FD, HD, or RAMLink users - above the subdirectories and filenames, you see the word "Partitions". From there, you can quickly and easily change the current partition.

No matter whether you keep the drive window open or minimize it, you can always click upon the Pathfinder icon on the Desktop

The Task Bar shows all programs currently running



Investigated

Competition stimulates business, doesn't it?

by Malte Mundt

Why CLiPS, some of you might ask? There's Wheels, after all. But those who've already seen CLiPS in action know its worth. However, will there be as much software for CLiPS as there is for Wheels right now? In particular, projects like The Wave...?

Develop an operating system with top performance, that runs stably, with all the software available you could wish for - that's something nobody has done yet, no matter on which platform. Either the system is more or less junk, and there are heaps of software for it; or it's a great system with no software; or something in-between. And while the PC

has a huge market and large teams of developers working full-time, people working on the 64 are working during their spare time, which is often scarce, with their enthusiasm as their only source of motivation.

So let's face the facts. Developing AND actually completing a gigantic project, like a complete operating system with a graphical interface, requires a larger effort than you might think. In my opinion, the only hope for the future lies in cooperation. We'd like to have one great OS - not several competing ones. Think of the work that was put into GEOS MegaPatch 3. And yet, today people are only interested in Wheels - and it's no wonder that the author, Markus Kanet, has disappeared from the scene. Now, CLiPS has come to reinvent not the wheel but the airplane. Yet on the other side of the globe,

to open more Pathfinder windows - also for the same drive, but for another partition, for instance. Later versions will allow dragging and dropping files to copy or move them between drives, partitions, and subdirectories.

The "Control Panel"

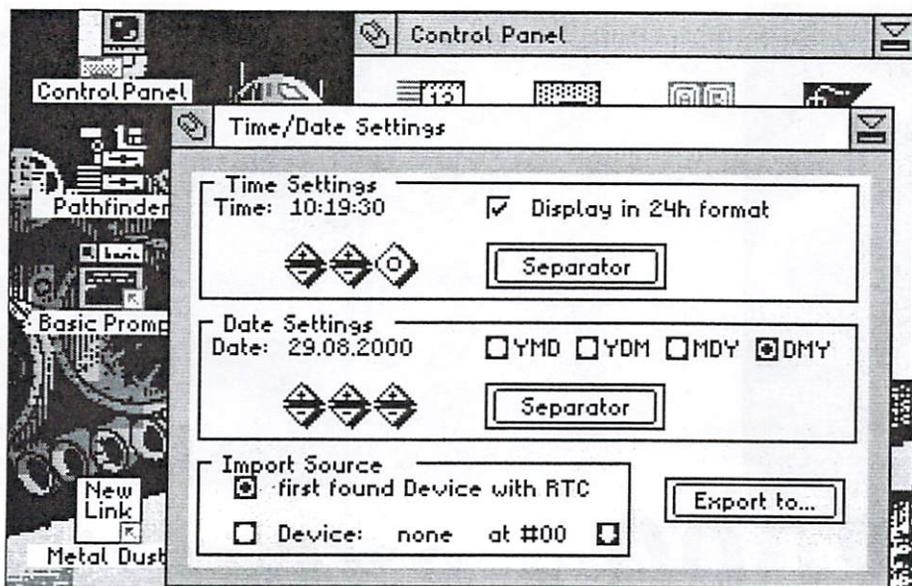
Here you can change various configurations. Under "Time/Date-Settings", for instance, you can adapt the display format of dates and times to that of your own country. Another interesting possibility is to read the time from a real-time clock and write it to another, if the system has more than one.

In "Keyboard Layout", you can select the keyboard setting used by CLiPS. Here, you can define your preferred keys for special characters and umlauts, or swap the "Y" and

there is similar work going on a system called JOS. Two ingenious minds are inventing solutions for window management, drive handling, hardware support, and much more. One of them is wasting his time. They would be much further along by now if they were working together, working on the issues each has the most experience in - which would guarantee high efficiency.

However, the human ego stands between reality and this ideal view. Any ideal product of cooperation among the authors of CLiPS, JOS, and Wheels would not be the creation of a single person, exactly fitting his own ideas. And who is willing to make compromises for a common system?

(gb)



Extensive date & time selections

According to the author, the current version is not stable enough yet for a public release. The version contained on our coverdisk doesn't yet allow moving windows beyond the screen border, and the multi-tasking is not fully working. Nevertheless, the current version impressively demonstrates the look and feel and also the performance offered by CLiPS. While you watch as the window borders are drawn by TopDesk in 1 MHz mode, CLiPS allows you to move windows across the screen with their full contents, and it's quick even at 1 MHz. This shows what you can get out of a 65816 CPU with optimized programming.

And now... Have fun with our CLiPS preview!

(gb)

"Z" keys. The key combinations using the Shift and Commodore keys can be edited as well.

"Desktop Features" is another menu entry already functional. In the current version, it allows you to load other background pictures, which have to be in Hi-Res Doodle format. The coverdisk contains some pictures in this format!

The Task Bar and Desktop

As we mentioned above, clicking the mouse button at the lower screen border brings up the Task Bar. It shows all currently running tasks; by the way, the Task Bar itself is also there, under the name "CLiPSwitch". The symbols at the upper right are shortcuts. The Exit shortcut is already active, as is the Pathfinder shortcut, just in case there are so many windows on the Desktop that the Pathfinder icon is hard to reach without scrolling a lot. The Task Bar is removed as soon as one of the buttons is clicked (if it's occupied) or the close symbol is used.

CLiPS offers context menus that can be invoked by pressing the right mouse button. You should try this on the Desktop; the "New Link" option lets you create a new link, also called "alias" on Macintosh computers. In the input line for the name, you can test the selections you've made in the "Keyboard Layout". "Browse" brings up the extended version of the Pathfinder, which serves as a file browser here.

Restrictions

This demo version of CLiPS is a relatively old but stable version of the kernel.

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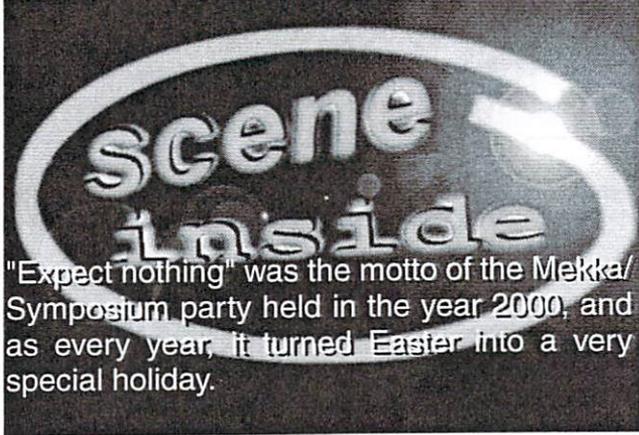
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Scene



"Expect nothing" was the motto of the Mekka/Symposium party held in the year 2000, and as every year, it turned Easter into a very special holiday.



Richard D. Oliver Berlin

Mekka 2000 - expect

by Wanja Gayk

“Better than ever” would fit just as well, because this year it went without the annoying problems of last year; at least they weren't as bad, and from the view of the C64 fans it was surely one of the best parties in recent years.

I guess that every time we report from parties such as the Mekka, there are some readers asking themselves why we make such a fuss about them. As Hannes P. Malecki, member of the group Welle:Erdball, brings it to the point: "I always thought that with a party like this there were only strange types hanging around in front of their computers, programming, and I was wondering why GO64! sacrifices so many pages on party reports. But I think you've got to get the live

experience to get an idea of what's really going on here. It's a real frenzy." Exactly! Because computer scene parties like Mekka aren't held for people to go stale in front of their computers, but for two better reasons: first, to meet with others who share the same interests, and...

Showtime...!

On parties like Mekka, competitions are held for the visitors to show their abilities. And in many cases, the winners of such competitions depart with valuable prizes: hardware, software or cash - this year on the Mekka, even flight tickets were up for grabs. Prizes, fame and deafening ovations for every outstanding demo effect, picture or tune are the reasons why the quality of the productions from the scene is constantly

rising, and are also the reasons why software companies are sending their talent scouts to those parties.

The competition entries are shown on a big screen - supported by powerful sound equipment. For two days, until late into the night, you can witness what you can get out of a computer - be it an Amiga, a C64 or a PC. You're taken on a ride into three-dimensional computer worlds, soundscapes from the scene's sound programs, still life's out of the joysticks and mice of the scene graphicicians. And only the audience decides whose work is best, not the opinion of some dubious art critic.

Between competitions

And as if it weren't enough, the organizers offered a lot of diversions to shorten the time between competitions. For instance, there was a presentation of the SID-Station, the synthesizer based on the sound chip of the C64, on which we have already reported some time ago. Daniel Eriksson, a trainee at Electron ESI, the company that builds the SID-Station, had come to show what sounds are hidden in a SID-Station, and delivered an impressive Techno concert that included many different styles.

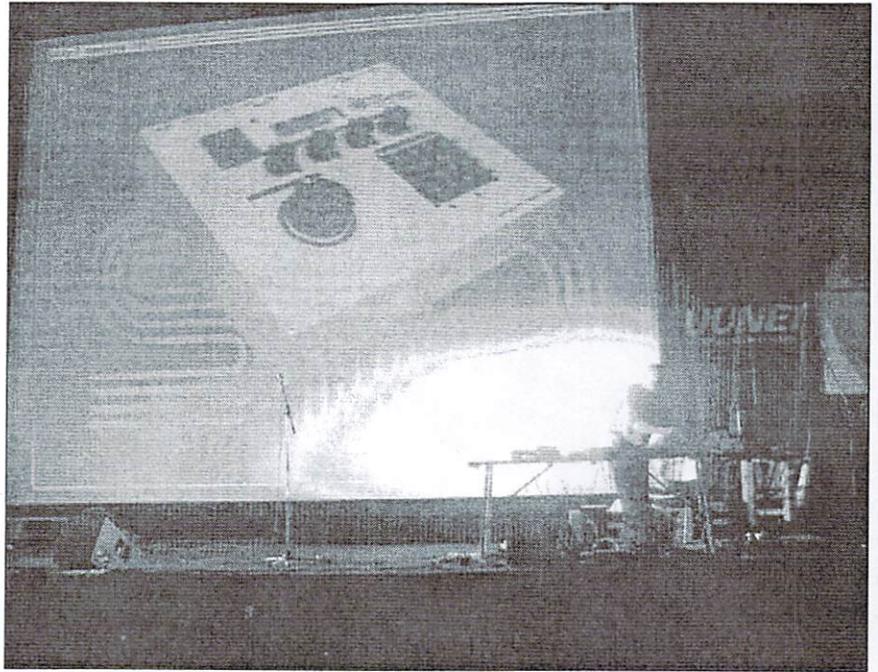
KB, musician in the groups SDS, TOM, Purge and NHDS gave another remarkable concert, but he used normal synthesizers. Instead, he drew attention with his voice, as he sang to his pieces - and not bad at all.

After that, we had to endure the "Local Zeroes", a remarkably bad punk band; but



then - after some delay - it was time for one of the party's top events, the appearance of Welle:Erdball. They showed that an SX-64 could not only be used as a mobile toy, but just as well as a musical instrument. Even better, two of their compositions were completely performed by a C64 (an SX-64, that is). It seems the cult of Commodore will never die: the audience applauded when they realized that the video shown on the screen at the back of the stage was also made using a C64. It was made up of the logos of legendary groups like TRIAD, scrolltexts made with the MDG 3D-Message Maker by Oliver Stiller, three-dimensional GigaCAD objects and much more. At any rate, the

nothing



music presented by Welle:Erdball was excellent as usual and fit to the taste of the party people - they won a lot of new fans on this party, as can be seen on the guestbook on the Welle:Erdball home page: the number of entries raised dramatically after the party. Not only did they present their brand new composition called "Starfighter F104g", but the audience didn't allow them to leave until they had given the second encore. Afterwards in the backstage room, vocalist Hannes (aka "Honey") had to fight problems with his voice; but he still paid a round to celebrate the band's seventh year of existence. Of course, we gladly joined in. The only flaw was the

long delay of their appearance, which was due to a blasted monitor amplifier.

A different kind of fun

Another competition, for the rather hardboiled visitors: sausage water crashing - a fun competition that was won by the one who was the fastest to drink the conserving water of a tin of Frankfurters. A debatable fun, but it was rewarded \$70 for the first and second place.

Markus Wiederstein, well-known for his copy-protection routines, surprised us with a

very special kind of advertisement for the RADWAR party: He and Arnd/Digital Excess went to a local brothel, and found a woman who was - in exchange for an adequate payment - willing to strip for the party visitors. Completely. At this point, I'd like to emphasize the fact that such displays are *not* usual at a computer-scene party - except the RADWAR parties, but these have always been of a different kind. Anyways, it did raise the mood of the audience, but luckily, they spared the lady any embarrassing reactions. And the fact that "Patrizia", which it seems she's called, started selling tickets for the RADWAR party, was likely another deep grab into Markus Wiederstein's box of tricks.

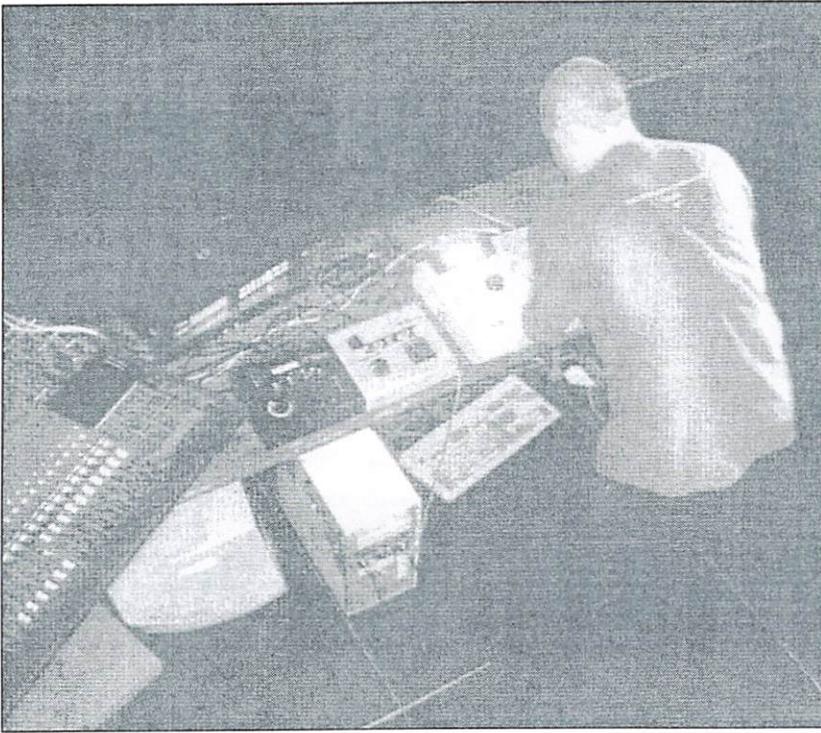
Deus Ex Machina

Describing every single competition would exceed the space available in this magazine. Also, it was clear that the party would be dominated by the demonstrations for the PC, the Sony Playstation (PSX) and the Amiga. But it was the smaller computer that gave the party its particular flair - because they were celebrations of the computer cult.

A presentation of demos running on the Sinclair ZX Spectrum was one of these celebrations - they did not match the quality of C64 demos of that time, but they still were remarkable considering the abilities of the Spectrum. But it didn't get serious in 8 bit country before the start of the C64 competitions. The high number of entries speaks for itself: after the stagnation during the past years, the Commodore scene finally



Meeting Uncle Wanja during a game session



seems to be on the upswing again. The music competition had so many entries that the organizers were forced to make a selection. Several people, the group Welle:Erdball among them, were independently invited to choose their favorite tunes, which was a hard task because there were lots of good entries, and it was very loud in the hall, as I can tell from my own experience. In the end, the favorite tunes from the preselection were allowed into the competition, which I may say lead to a very rich choice with tunes of many facets - unlike last year's music competition, which was dominated by techno.

The demo competition surprised with some excellent productions. To the delight of some sceners they were not as dominated by 4x4 pixel effects as they were in the years before. The competition was won by the group Crest and their demo called "Deus Ex Machina", featuring the finest of coding from the minds of Graham and Crossbow, and the usual

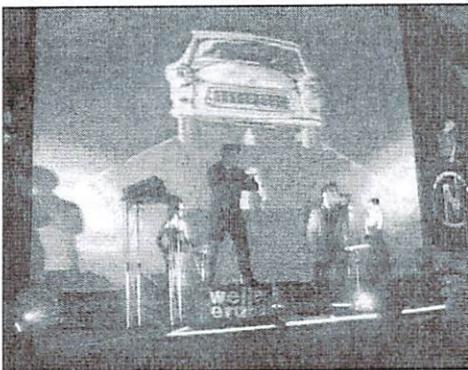
brilliant graphics by DK. On the second place was the "Y2k bug" by the group Plush, which was done almost single-handedly by Krill/Plush, and mainly stood out with the smooth transitions between the single parts - besides some nice routines, of course. The third place this year was made by Smash Designs, who won the competition in past years. In their demo, "Triage 4", coder AEG mainly reused older effects and concentrated

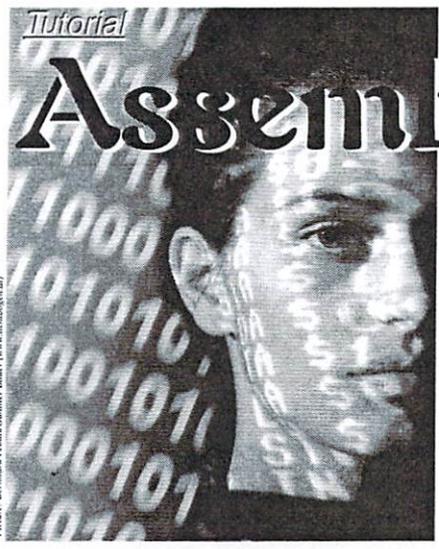
on a new revolutionary music player routine, as he says.

Just as amazing as the full-grown demos, is what coders can get out of only four kilobytes. Krill/Plush, the winner, showed some three-dimensional colour effects in his 4K intro; Allitaice/SCS-TRC made second place with his C64 painting based on the "Matrix - the movie" theme. The third place was made by the "My Vision" intro by TUM, slightly ahead of the 4Kbyter by AEG, who again showed off his new music routine.

The bottom line:

The organizers did a nearly perfect job this time. Some things that I found positive were the fact that the organizers didn't play ultra-loud jingles when they made announcements during the night, and that they used the video beamer for shows between competitions, instead of boring info screens. Positive points concerning the C64 were, of course, the increasing participation of C64 fans, the fact that the organizers took the C64 competitions very seriously, and last but not least, that the C64 scene has made a very impressive comeback. I'd like to thank the group Padua for all of this, as I think their organization work for the C64 events was a superb job. Personally, I think this was one of the best parties in a long time.





Picture: Bernhard Pöschel/Claudio Bauer (www.fotoagentur.at)

Assembly Language

by Gunnar 'Krill' Ruthenberg

Part 16

The simplest implementation of multiplication would of course be a loop that increments a counter (which has been initialized to zero) by the multiplicand for every run of the loop that runs as many times as the multiplier defines. This very unelegant Brute-Force-Method naturally is quite inefficient and slow, which is the reason why it is just mentioned here without any further discussion. Let us take a closer look at the more elegant approaches:

Multiplication with constant values

One quite usual method of multiplication is multiplying by constant values. A short and very fast algorithm is needed here. We define 11 (\$0B, %00001011) as an example constant value. Through our knowledge with binary code we are able to split this number into 2-values with different powers:

$$11 = 8 + 2 + 1 \\ = 2^3 + 2^1 + 2^0$$

Let us multiply this value by - let's say - 15 (\$0F, %00001111), so it would resemble this:

$$11 * 15 = 2^3 * 15 + 2^1 * 15 + 2^0 * 15 \\ = 8 * 15 + 2 * 15 + 1 * 15$$

What do we need all this for, some of you may ask. The answer is very simple: Every single multiplication of the term includes the multiplicand 15, it just has to be shifted appropriately! With this we can have any value in the accumulator that is to be multiplied by a constant value. It is then shifted as needed and stored temporarily; In the end all the resulting sums are added up to each other. Here is a little example code:

Now that we have increased the precision of our values, we want to work on a bit more difficult topic; multiplication. But slowly - this more complex mathematic operation can be dealt with in several ways, depending on the need for space or rastertime.

```
LDA #15      ; optional
              ; factor
STA BUFFER0  ; any free byte
              ; in the memory,
              ; 2^0 * factor
ASL          ; factor is
              ; doubled
STA BUFFER1  ; 2^1 * factor
              ; stored
              ; temporarily
ASL          ; accu is
              ; doubled
ASL          ; doubled again,
              ; that is a total
              ; of 8 * factor
CLC          ; clear carry
              ; for the addition
              ; (without
              ; overflow, it is
              ; not needed here)
ADC BUFFER0  ; 2^3 * factor +
              ; 2^0 * factor
ADC BUFFER1  ; 2^3 * factor +
              ; 2^0 * factor +
              ; 2^1 * factor
```

Simple. Oh, for simplicity reasons all examples will refer to positive 8-bit numbers, like this one. By the way, there are a couple of other "factors" that need some attention:

What you have to take care of

1. Multiplying two values results in twice the length of one of the factors, for example multiplying two 8bit-factors results in a 16bit value. This is quite obvious, e.g. with 255: \$ff * \$FF = \$FE01. Not to irritate anyone I will therefore use only small values so as not to produce an overflow.
2. The result of a multiplication with two fractions has as many digits behind the point as both the factors have together. So the result of two fixed-point-values - let's say 1 after-point byte each - will have two after-point bytes. For quadrupling the value-range this means: The result of two 16bit fixed-point values creates a 32bit value, 16bit before, and 16bit behind the point.

3. If some of the values to be multiplied are not positive, the signs have to be stored somewhere. Then the values are multiplied as if they would be positive. Later on the signs are interpreted and added the usual way: plus * minus is minus and minus * minus is plus.

Good. Multiplication in general and especially with constants can also be handled differently. The wonderword here is "tables".

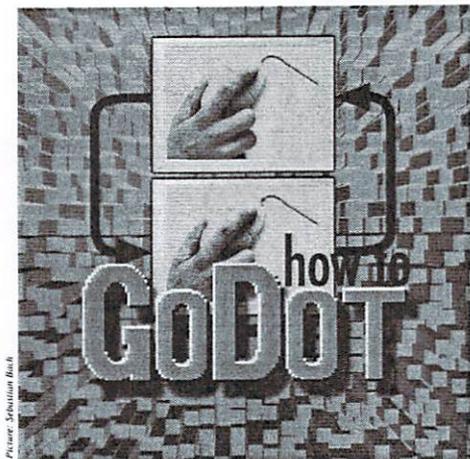
Tables?

Exactly. "Lookup-tables" to be more precise. With the help of these tables it is possible to calculate sums extremely fast, or let's better say figure them out extremely fast. Therefore we create a table once at the beginning of our program. In this case we store the multiples of a constant value, in ascending order, to the table. For the constant 3 (\$03, %00000011) the table would look like this:

\$00, \$03, \$06, \$09, \$0C, ...

This table is to be read indexed, the index-number is the second factor. The table in principle is as long as the factor's range is, e.g. 256bytes for a factor of this size. By the way, for generating this table you can very well fall back on the mentioned Brute-Force-Method. For initializations speed plays an inferior role to the length of the code.

That's it so far concerning different possibilities of multiplication. In the next article we will be investigating the most flexible way of duplication: bitwise multiplication. So long!



by Arndt Dettke

Even its development history is something out of the ordinary as it was created after being suggested by and with much help from Hugh McMenamin, USA (whom many of you surely know). It was written at two places quite far apart on our globe at the same time, so to speak. Praise to the Internet!

This time instructions and no workshop. Today, we will mainly deal with the module **mod.PixelEdit**.

It is relatively often the case that you get pictorial material which doesn't look completely as desired, for instance when you scan pictures using GoDot (like our "Lilly Croft" picture here), or convert them from other computer platforms. For a long time, it was not possible to change anything about that directly under GoDot, and you had to resort to other programs.

Now, such minor problems can be ironed out of such pictures comfortably using PixelEdit. Take the light spots in Lilly's upper lip on our image, for example. So let's get into the usage of mod.PixelEdit. First of all, you should have rendered the picture residing in the memory (using "Display" at the main screen) before calling the module. Otherwise, PixelEdit's preview function wouldn't give any reasonable output.

Working on Pictures on the Dot Level

In this issue of our GoDot workshop, I would like to go into details about a very special module, which enables us to alter images in GoDot's 4Bitmemory on a dot level. It is one of the very few modules that can be controlled by keyboard as well, which is why it requires its own instructions. This module can't be found in the GoDot manual yet, as it has been developed much later.

```
Load Replace "lilly.4bt"
Display
Inst: PixelEdit
Execute
```

PixelEdit's screen color matches the image's multicolor background color, and could therefore vary from image to image. In the case of the "Lilly Picture", it is black. The button's colors, as well as their labels' colors adjust with every change in order to ensure optimum readability at all times. Inside the module, you meet two control panels, two displays, and three action fields.

The Control Panels "Exit" and "Edit"

Via "Exit", you leave the module without any further check. Changes take effect immediately, there is no "Undo" function (I will tackle the subject "Undo" next time in "How to GoDot"). By means of "Edit", you get into the edit mode, which is also shown below the big window for you information (in addition, the "Edit" button's text changes color). You can start editing by simply clicking into the big window instead of using "Edit". The difference between the two possibilities is that a simple click onto the big window's border wouldn't activate the edit mode. If you were to click outside that field during that mode, the screen's border would flicker red as a warning. The Stop key ends the edit mode and returns you to navigation mode (more about that below).

The Action Window "Color"

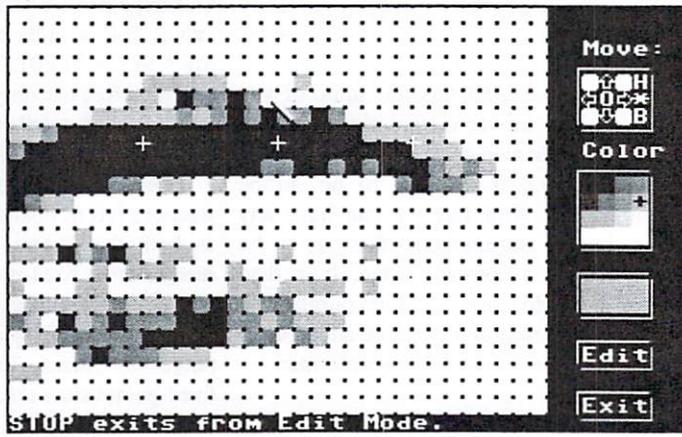
In this window, you determine in which color you would like to paint by clicking on the color. The color chosen is marked and will also appear in the display area below the color window, in our example it's medium gray. All input into the big window will now take place in this color. This action window can be reached by keyboard shortcut during the edit mode as well.

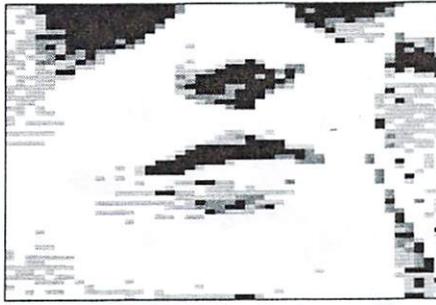
The Action Window "Move:"

The function buttons in this window move the viewport show inside the big edit window in the direction clicked at or to one of three preset positions. All positions in this window are mouse click sensitive. To the left we have kind of a wind rose. Clicking at it moves by one character at a time. The button "H" ("Home") show the upper left corner of the image, while clicking at "B" ("Bottom") switches to the lower right corner. The asterisk shows the picture's center. The button "O" is very useful. Using it, the graphics will be shown at full size. Clicking at any place inside that original view has exactly that spot enlarged. In our second screen shot, we have chosen Lilly's mouth for this example.

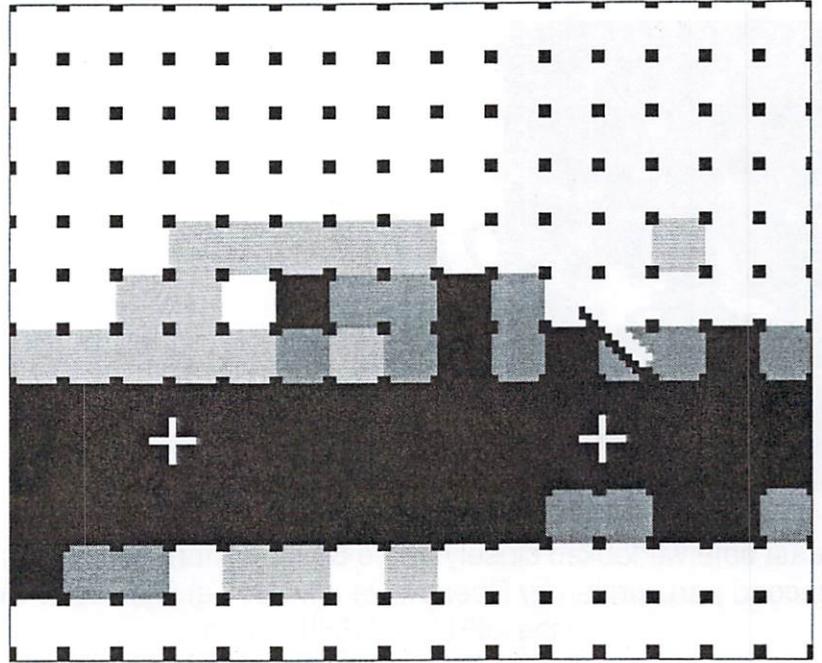
The Edit Window

The edit window shows a clip of 4x3 characters





enlarged by eight times. Each dot is shown in its real color, not the graphic screen's color. C64 graphics are limited to up to four colors per character, but GoDot allows any character to contain all 16 colors. Hugh McMenamin has added small fitting aids ??? whose color can be changed by keyboard shortcut, so that you may see where one character ends and the next begins.



CTRL Cursor key	the enlarged viewport moves in the direction denoted by the cursor key
CTRL h	the viewport moves to the image's beginning (upper left corner)
CTRL b	the viewport moves to the image's end (lower right corner)
CTRL *	the viewport moves to the image's center
CTRL o	the entire image is shown at full size (you can move the pointer inside; the mode is left by STOP, RETURN, mouse click or fire button, the display will then show the enlargement of the spot last pointed at)
Shift + or CTRL +	the card the mouse pointer denotes is buffered
Shift - or CTRL -	the card the mouse pointer denotes is replaced by the buffered one
Shift £ or CTRL £	the card the mouse pointer denotes is colored in the currently active color
Shift k or CTRL k	the grid crosses are turned on or off
Shift p or CTRL p	the active color chosen is changed (rotating through all colors)
Shift r or CTRL r	the character the mouse pointer denotes is rotated right by 90 degrees
Shift q	the grid crosses' color is changed (rotating through all colors)
(Shift) Cursor key	the mouse pointer moves in the direction denoted by the cursor key
Return	mouse click
Fire button	set dot in chosen color
STOP	leave edit mode; the rendered graphics are not adjusted; for this to happen, the module has to be left completely and a new rendering needs to be done via "Display"

When editing, you should know that GoDot gives preference to the dots in the odd columns in multicolor display, that is the right one of two adjacent dots. In the image, the pointer is placed on one such dot. If you clicked now, this white dot would turn into a medium gray one, which would also be shown during rendering. The second single white dot in this character (somewhat above the left fitting aid) can be dealt with in the same way. After that, the "impurities" in Lilly's upper lip would have been removed, as you can see in the enlargement.

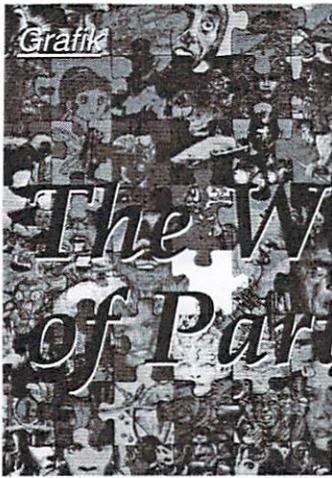
The Keyboard Shortcuts

If it wasn't for the keyboard shortcuts active during the edit mode, a constant clicking back and forth between color choice, navigation window and edit window would be necessary. Thanks to Hugh, things are much more comfortable now. Using the keyboard shortcuts, working on an image becomes pure pleasure:

Thanks for this job well- done, Mac!

The two color choice commands are still too fast when running under a SuperCPU at full speed, the next version will make this more user-friendly.

Yours, Arndt



The World of Particles

Part 8



Last time we looked closely at the 50:50 mixture of colors. In the second part, written by Deekay, we now look at finer, color-mixing in the UIFLI and SHIF formats.

by Daniel "Deekay" Kottmair

Okay, now we have nice, 50:50, mixed colors. It would be stupid if we didn't use these "new" colors and mix them like the way we normally do. Altogether, we get 136 colors when mixed 50:50, and we get an amazing 9,316 colors when we mix these (for the sake of mathematics, the formula to calculate the number of colors is: $(n^2-n)/2+n$ or $(n!/(n-k)!)/2+n$). Of course, a lot of these flicker extremely, but there might still be about 2,000 usable ones! Of course, there are 9,316 if you regard at least two pixels as one mixed color, which we can do because the VIC blurs hi-res pixels a bit.

25:75 color mixing

The examples illustrate all the possibilities using technique 4 from the 50:50 mixing explained last time. If your favourite 50:50 technique is another one, bad luck! Make it up yourself, i.e., use your own technique. To sum it up, techniques 1 to 4 show all four ways to mix in a 2x2 block (avoiding continuous lines). What we do is distribute 2 pixels of a solid color onto a plainly colored 2x2 area, this in two interlaced screens (fields), making a total of 8 pixels.

Important - generally, the best way to avoid flickering is to emphasize the colors equally in both picture fields! So, one color in one field (one picture half) and the other color in the other field (technique 1 in the previous part) is as wrong as putting one 50:50 mixed color (both pixels) in one field and have a solid color in the other (technique 1 in 25:75).

Software on Disk:

Mentioned in the previous issue, the UIFLI editor and the example picture for the color mixtures is now on our disk! Have fun while trying it out!

What we try to achieve is to distribute the 50:50 color by splitting it up into 2 halves in both fields (1 pixel in each). We have 3 ways to do this, either technique 2 - make the 2 pixels form a horizontal line of alternating pixels (in a 2x2 block, the line below would be solid-colored) - but this is still bad, because you can see the lines. Better yet is technique 3 - making vertical columns of alternating pixels (again the following column would be solid-colored). However, still the best in my opinion is technique 4 - making the 2 alternating pixels form a chessboard instead of a line. This technique makes the color more solid, because it actually covers the whole 2x2 area and not just a line/column. What this basically looks like is line switching, but that's only due to the fact that the monitor tends to blur more in the horizontal direction. Actually, it is as much line switching as column switching.

Unfortunately, you have the same problems with this color now, as described with technique 5 in part 1 - badly suited for details, smooth curves, or steep lines. However, since (if used in a color transition) the step to the next color is so subtle, you won't actually see it too much! It's a must to use these colors in a color transition; it would be stupid if you

didn't use these when working in UIFLI/SHIF.

Actually, you could go even further and mix the colors even more. Sometimes, if the color differs a lot in brightness compared to the next one (e.g. from orange to light red), this should be done. What we do now is distribute only ONE pixel in a 2x2 area. You can put that anywhere you like; it hardly makes any difference! Only be careful that you don't put ALL these pixels (when coloring a bigger area in this color) into one field! Remember to distribute them! Be aware that you can see the pixels in this stage of mixing now for the first time really, as well as horizontal lines. However, it still adds to the smoothness of the picture.

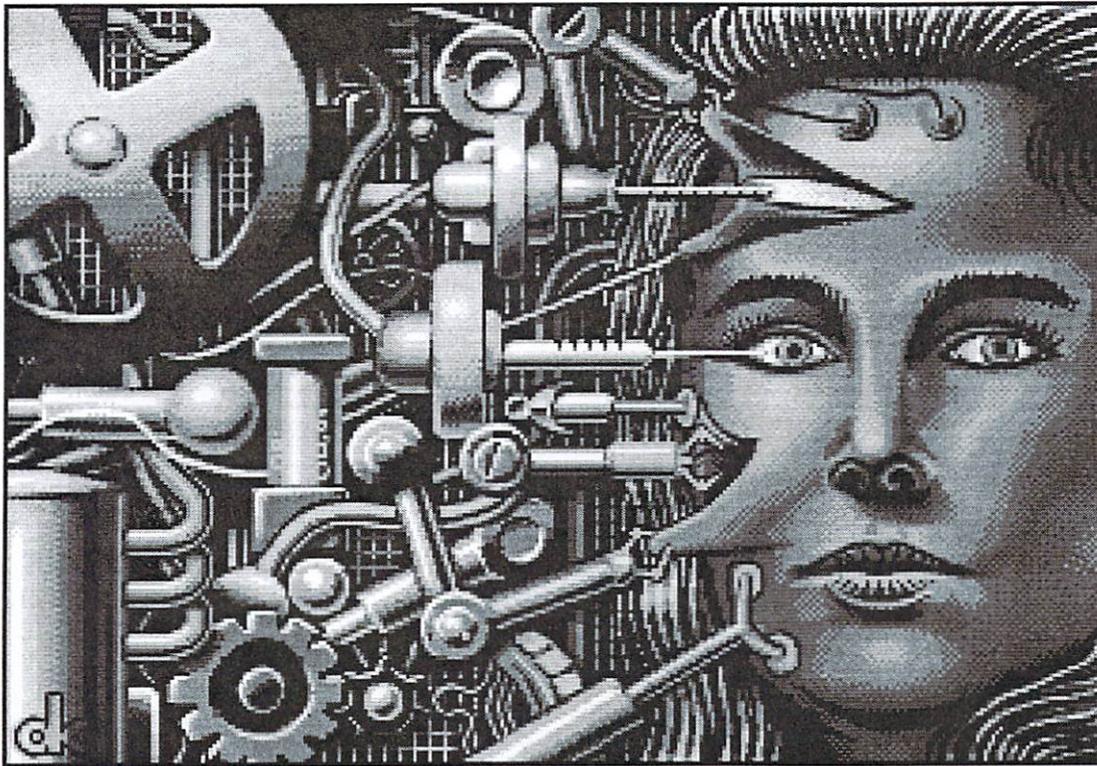
That's about it! There's really not much more to it; it might be confusing in parts, but if you read through this a few times, you will understand. Start practicing a little; you'll discover amazing things!

Wish or reality?

I did not mention the mode/editor specific stuff here concerning UIFLI/SHIF, but if you follow these basic rules, you will never be wrong.

To conclude, I would just like to give you some more facts that should make you think. I have thought a lot about interlace. Basically, it is twice the picture information, which could be seen as

a) higher resolution, either 320x400 or 640x200 (because 640x400 would be four times the picture information) or



"Top graphics" by Deekay in Crest's 'Deus Ex Machina'

at how I work these modes, though there isn't really too much to it once you understand the above-mentioned principles!

Signed,
Deekay

The original text was published in "Particle Worlds" in the disk magazine, "Newspress", issue 19. Thanks for the friendly cooperation.

b) more colors (9,316).

Both of these approaches are right AND wrong! You have more detail, so it is kind of a higher resolution, though the screen still only shows 320x200. There seem to be more colors, because the screen nicely blurs them through interlacing and through rasterizing. Still, there are only 16 basic colors!

Depending what you are working on, you have to follow one method or the other. When you need detail, make use of the doubled picture information by putting more stuff in (detail works just so much better in UIFLI/SHIF than in IFLI!), because you have REAL, hi-res pixels, not just faked ones with a blurry Sd016 shift. When you need more colors, just mix them as described above, and you'll get the smoothest color transitions! Actually, you can even mix the most crazy colors together, which then do not look like the basic 16 anymore at all. But to be honest, I have no clue how to work a color that is red/purple in one pic and has 2 pixels of brown and blue in the other! I've already intensively thought about new editors, and there are some useful ideas already, but they have to be programmed.

With this little workshop, I hope I've helped some brave people who want to take the challenge and sparked interest in others! I felt like sharing my knowledge, 'cause no one else does, and people always seem so amazed

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The unofficial CMD website - A review

<http://www.cmdweb.de> is an unofficial CMD website, available both in English and German. It's made up of three parts; pages describing CMD's products, a page describing CMD itself, and a section with programs to download.

by Peter Karlsson

Product descriptions

This is the first thing you see, since the links are placed nearest the top. You can find pages describing all of CMD's major products, the SuperCPU, the FD series, the HD series, JiffyDOS and RAMlink. Unfortunately, the pages don't go so deep in their descriptions, and tend to look like product advertisements.

For those that are not very familiar with the products, this will however describe what the products do. But then again, so does CMD's own pages. There are nice pictures of all products, though.

About CMD

This section - or rather, this page, as it is all on one quite big (30k HTML) page, contains some interesting background information on CMD. It mainly consists of two re-printed interviews, one from Zine64 originally published in early 1997, and one from Commodore Faction published in late 1999, both with Charles A. Christianson. There's also some pictures of the CMD people, the CMD racing car (!), and other related things, and some background information borrowed from the official CMD website.

Downloads

This is the most useful part of the website, containing software related to CMD's product line. Most of it, if not all, is available for download elsewhere, but here they are collected. Currently nine programs available, not that much, but the number seems to be increased regularly.

There's also some animated banners available, for those of you who like them.

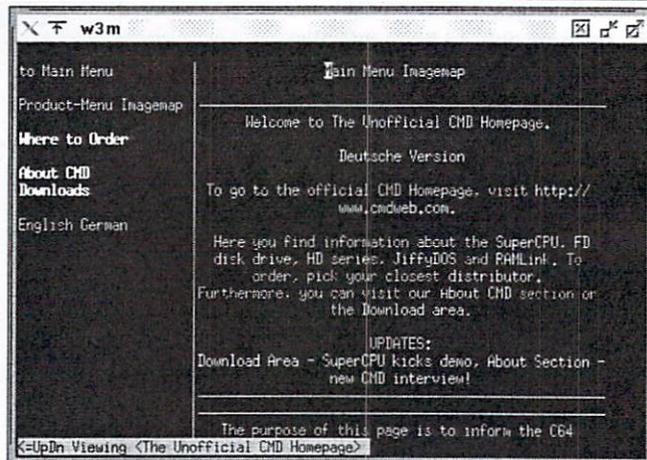
My thoughts

If I didn't know this was an unofficial site about CMD's products, I would have guessed it being part of an advertising campaign from CMD.

browsers. It does not have any alternatives to its frames, making it look bad in Lynx. w3m does a lot better here, though, and for its defence I'd like to point out that all pictures do have proper ALT tags. When it comes to graphical browsers, I had problems with Opera 3.60 (some JPEGs that wouldn't render), and older Netscape (PNG images). But with the latest Netscape, it works quite well.



The unofficial CMD website



The material doesn't go very deep into the subjects covered, and besides from the download section, there isn't much that would attract people who already know much about the products. And for those who don't know them, I would rather see more in-depth descriptions than this.

Browsers

The site is not very forgiving to different

As my English is better than my German, I mainly read the English version. You can find a few minor glitches in the language, but nothing big, and not worse than you will see on any other page not written by a native speaker of the language.

(ak)



SUPERCPU

CORNER

And that my friends is the key word! At the heart of the system is the C128 or C64. The SuperCPU is nothing but a box of electronics, worthless without the computer. So here we have an enhanced Commodore. Will it still run our software? YES! Most software gains an added advantage running at 20 MHz. For some, especially games the speed can make playing almost impossible. There are SCPU patches being developed on a consistent basis for a lot of the older software.

It has been said by some Commodore purists that once you plug in a SuperCPU into your machine, it is no longer a Commodore. Of course this is pure bunk, as our 8-bit machines were designed to be enhanced.

by Tom Gosser

The real good news for SuperCPU owners today is the new software being developed for exclusive use with the SCPU. Two come to mind right away, the WAVE by Maurice Randall and CLiPS, the new SCPU graphical operating system for 64 users by Chester Kollschen. The WAVE of course is the new Wheels based graphical web browser for the Commodore 64 and C128. Some disgruntled Commodore users are quick to criticize Mr. Randall for taking what they call a Bill Gates approach to the WAVE. By that they ask why does the WAVE have to have Wheels to work? So in order to use the WAVE you must buy his other product, Wheels.



What is wrong with this? Why should Mr. Randall have to cater to those that refuse to bring their equipment and software up to date? The Wheels GEOS upgrade is a vast improvement over GEOS 2.0. Many things have been changed in the Kernal to take advantage of the new hardware that we have. So it only makes sense that any new applications for the GEOS environment is Wheels compatible not GEOS 2.0 compatible. What other software company today supports older outdated versions of their software? None of them!

So what does all this mean? It means that if you want to surf the Internet with your Commodore 64/128 you need the WAVE. To run the WAVE you need Wheels and a SuperCPU. And what is the downside to all this? CMD makes another SCPU sale and encourages them to continue supporting us, and Maurice Randall is encouraged to keep creating wonderfully innovative software. Not much of a downside in my book. Well enough rambling on...I have

conducted some performance tests with the SuperCPU and select software titles. What follows is the results of those tests.

With the advent of the SuperCPU for the Commodore 64 and the 128 version. People are wondering about software compatibility and performance. This article was written using the SCPU 64 as its test subject. There is no reason to believe that the SCPU 128 will not give similar results. As a side note, if you have Roger Silva's MaidStone Quest or Russian Wyatt's Quest 4 Adventure, you will find that the SCPU 128 makes these BASIC 8 80 column games much more playable and enjoyable! Now these tests were not extensive nor did they cover a wide range of software. This is just a sampling of what is compatible and how fast some of the software performed. The test software was loaded from a 1541 disk drive unless otherwise noted:

Maverick... Super CPU and RamLink installed and enabled. No Boot [jiffyDOS on or off]. CPU disabled: Boot up Ok [jiffyDOS on]. Boots with SCPU in normal mode only.

PrintShop... Normal mode to boot up. Switch to Turbo when programs up and running.

PrintMaster+... Turbo mode compatible. Even during boot up.

Music Construction Set... Boot and turbo Ok. Normal mode for accurate input however.

Digimaster... Boots up in turbo mode. Screen tends to trash, sound output is diminished. Recommend using normal mode. Conversions in turbo mode are greatly sped up.

Fun Graphics Machine... Boots up in turbo mode. Disable FGM fast load if jiffyDOS is on. FGM runs super fast! A great performer with



the Super CPU.

CKIT94!... 1541 to 1541 RAMLink partition. With DACC partition and jiffyDOS on. Compression: 1541 BOA time at 20MHz, 624 blks, verify "off". Limit none, time= Not Compatible! Normal mode= 3min. 51.79sec. Compressed to 584 blks. In turbo mode 1541 initialization is incompatible. Turn turbo off at Begin Job Requestor, turn on for accelerated Verify.

HandyScanner 64... The clear memory option upon boot up is not Super CPU compatible. It will lockup the system if activated. Scrolling is very smooth and responsive in turbo mode. Translation after an image has been scanned in is very fast. Turn off turbo mode when you are ready to save the image. Turn turbo back on before scanning.

The following speed trials were conducted under the enhanced Super GEOS kernel, from a RAMLink, times are approximate:

GeoPaint Preview

20MHz: 2,05 sec 1MHz: 8,45 sec

Scrolling Left to Right

20MHz: 0,73 sec 1MHz: 7,26 sec

Open Document

20MHz: 2,10 sec 1MHz: 5,30 sec

Fill Screen

20MHz: 1,73 sec 1MHz: 33,53 sec

GeoGIF from RL to RL

20MHz: 21,1 sec 1MHz: 8 min 42,45 sec

RAMLink to HD GIF conversion

20MHz: 59,33 sec 1MHz: 9 min 31,17 sec

As you can see the Super CPU enhances the performance of GEOS considerably. By the way the parallel cable is not supported by the GEOS operating system. However the Wheels upgrade to GEOS remedies this problem. Which speeds up Hard Drive access under the GEOS system. Geopublish really performs in turbo mode. The page updates so fast that if you blink your eyes you've missed it. Scrolling is very smooth and responsive especially if you are working from the RAMLink. Rippling text takes no time at all, and you can go from Preview to Zoom mode in an instant. In essence the Super CPU and the Super GEOS patch, along with Wheels and/or MegaPatch 3 make working with Geopublish a pleasure. This is one little Plymouth Valiant souped up to a Hemi 'Cuda! The difference is that remarkable. (ad)

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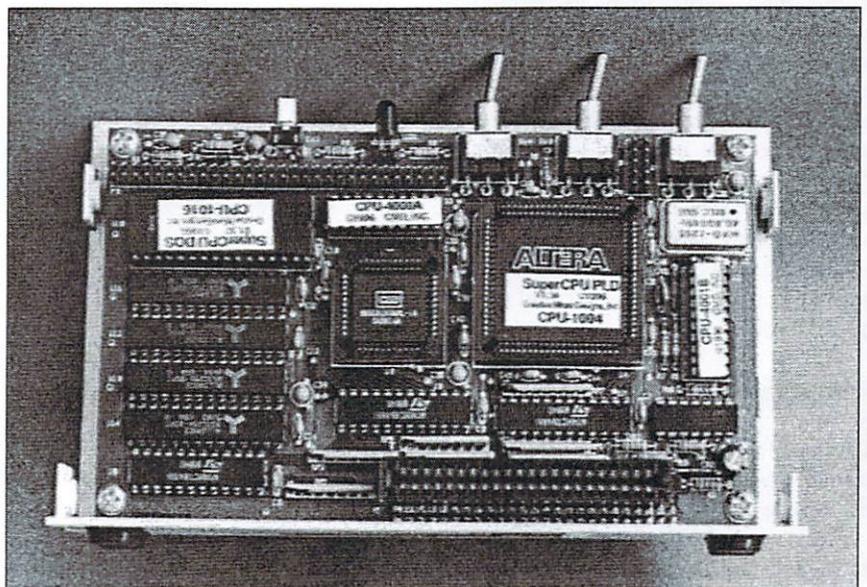
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WORLD WATCH

by Rainer Buchty
This month:

C64 goes Ethernet

HELLO WORLD,

The first point on the Christmas wish list of quite a few C64 fans is surely an Ether card for connecting their C64 to a local network. Most network adapter chips cannot be used in 8bit systems. But luckily, there are some exceptions...

Dernier cri

A mention of the "Embedded Ethernet Project" [1] on the newsgroup comp.sys.cbm's home site aroused a lot of interest. For the first time, a method was presented to connect a special network adapter chip, the CS8900A produced by Crystal Semiconductors, to common 8bit micro controllers. This chip is comparably old and therefore has an interface for use in 8bit systems.

So what could be easier than using this chip for a C64 project? The "EtherCart Project" [3] was quickly called into action, with the goal of developing a network adapter for the C64, based on the CS8900A. The huge advantage of this chip, apart from its easy-to-use interface, is its internal buffer memory. It permits transferring data between the Ethernet and the C64 not via DMA (a somewhat problematic procedure because the hardware requires constant VIC interrupts) but instead via polled I/O (PIO) or controlled by Interrupt. Thus, if you are a little more than averagely talented in assembling hardware bits and pieces, the project shouldn't present any real problems and could even be called a piece of cake, based on [1].

Resonance

Shortly after, a discussion started as to whether C64s were even fast enough to be able to cope with the data stream provided by a 10Mbit network. This question might be a little hard to understand for laymen, as on first

thought the network adapter seems to solve this problem. In general, this assumption is correct: The C64 is not responsible for the actual data transfer but nevertheless, it controls the data flow. This means that it has to collect data packs from the network adapter or delivering those packets to the adapter. The adapter itself will accept arriving data packets and send them to other locations. Problems arise when the C64 does not deliver any data, or does not deliver on time. In the latter case, the receiving machine will send an error message requesting the delivery. But if the C64 does not cope with collecting data packets on time, the network adapter will not accept newly arriving data and will answer with a 'Not ready' message.

Each of the mentioned cases will cause increased network traffic because in addition to the control data the actual user data have to be sent various times without actually being used every time. But will this ever happen? Unfortunately yes, as a normal C64 without speed enhancement is not fast enough - under full network load - to collect the data packets when they are delivered. You can see this in the following example of a program loop. It starts on the assumption that the routine is called up in the interrupt and the newly arriving data can be read via an auto-increment register. To make it simpler, we also assume that the packets transferred are only 256 Byte each.

```

                                ;clock cycles
irq: LDY #0                      ; 2
loop: LDA status                 ; 4
      BEQ eol                     ; 3/4
      LDA data                    ; 4
      STA (buf),Y                 ; 5
      INY                         ; 2
      JMP loop                    ; 3
eol: RTI                          ; 6

```

Only one run, i.e. the transfer of only one byte, takes up 37 cycles including the return, equalling approximately 37 μ sec, on the C64. However, the net transfer of one roh byte (10

bit consisting of the starter bit, 8 bit of data and the stop bit) at a data rate of 10Mbit/sec takes only 1 μ sec. So the aforementioned problem of increased network load is inevitable as an unenhanced C64 is not able to collect or send the data fast enough and thus the delivery or transfer of data will be repeatedly demanded.

So what do we do now?

We have to ask ourselves if this is of any importance at all. The objection made above in fact does apply to 10Base T-networks because all network users share a single (coaxial) cable for the connection. However, this network topology has long since been replaced by 100Mbit/sec networks as fast connection technologies require star networks, thus making it impossible for blockages to appear anywhere except between sender and receiver, so they cannot hamper the network transfer for other network users. The transfer between the 10 and 100Mbit/sec segments is executed by a so-called switch or switching hub, or simply by an old PC with two network adapters.

But even if you used a 10Base T-network talking about the matter would probably be pointless as the amount of data that have to be processed with C64s is too small to cause serious problems of congestion due to multiple transfer in regular network use.

C64 users can expect approximately the computing speed of a good parallel speeder - in an ordinary C64 system this could be called a completely acceptable data transfer speed.

Talking software

That much about hardware, so now let's talk about software. Unfortunately it isn't enough to send unprocessed data. Data transfer via the network uses a so-called ISO/OSI protocol that is subdivided into different levels. The lowest level is the hardware transfer; on the next level we have the bit transfer. The network chip is responsible for running these two levels. The following levels must be operated by the software. The third

level constitutes the Transmission Control Protocol (TCP) and the fourth level the Internet Protocol (IP), both of which are often falsely mentioned in one as TCP/IP. The additional data on these two levels contain information on sender and addressee or information on the protocol used (Telnet, FTP, HTTP). If you want to know more, take a look at source [3].

The only thing left to do now is to implement this on a C64, preferably in a manner conforming to system requirements: The ideal way would obviously be to be able to access the Internet as usual, via the commands OPEN and CLOSE. Ludo "Groenteboer" Gorzeman has been giving some thought to a similar project [4], but without really coming to a conclusion - possibly also because of a serious hardware deficiency of his C64,

whose VIC has kicked the bucket.

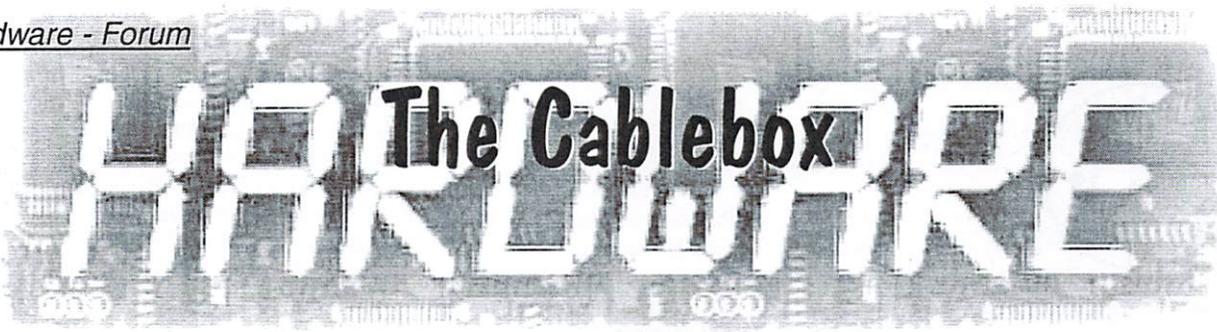
Conclusion

"There's a lot to do, so let's get started!" The EtherCart Project with all its different fields of tasks is waiting for someone to get it started, as we should be aware that in all probability no software company will live up to the challenge anymore. The market for C64s has become too small and thus, any commercial developments will never be profitable. But nevertheless, the goal is rewarding: unenhanced C64s will never be the next best thing for working with networks but the possibility of hooking up our beloved bread boxes to the network without any deviations (SLIP/PPP or shell account with modem connection respectively) is definitely interesting.

Sources:

- [1] **Embedded IOBaseT Ethernet**
<http://www.embeddedethernet.com>
- [2] **Commodore EtherCart Project Homepage**
<http://www.vsgcom.net/ethernet>
- [3] **Rechnernetze nach OSI**
Helmut Kerner, Addison Wesley, 1993
ISBN 3-89319-632-3
- [4] **Groenteboer's Commodore Center**
<http://www.students.cs.uu.nl/~lgorzem/project.html>

Hardware - Forum

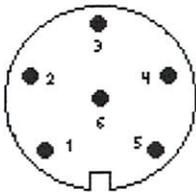


Most of the cables for our computer system are not available in the shops for a long time. But, as many of us own a soldering iron, we may make them ourselves.

by Niko Malecki

The right plugs belonging to the cables are standar in trade, so it should not be a problem to get them. The connection-numbers from the pins are nearly always printed at the solder side (but sometimes they are on the plug side).

Serial Connection, e.g. floppy to floppy: 6 pins



The shielded round cable is connected 1:1, the

shield of the cable ends at the GND-pin (pin 2).
Printercable (Centronics), connection between userport and centronics socket at the printer:

Userport-Pin	Centronics-Pin
A	16
B	11
C	2
D	3
E	4
F	5
H	6
J	7
K	8
L	9
M	1

Only shielded round cables should be used, I advise you against flat cables. The shield from the round cable is soldered at one of the GND-pins of the userport, pin A, N, I or 12.

Parallel cable, connection from userport to floppy. It is used with some (mainly older) copy-programs and speeders (f.e. Speed-DOS):

Userport-Pin

- B
- C
- D
- E
- F
- H
- J
- K
- L
- 8

Floppy 1541/1, Steckplatz UC3, IC 6522, IC-Pin:

- 39
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 18

Userport-PinFloppy 1541/2, Socket U6, IC 6522, IC-Pin

All cables are identical with the 1541/1. Attention, very important: In the 1541/2 you have to cut the connection between pin 1 and pin 2 of the IC 6522 (you may use a knife to cut it).

Userport-Pin	Floppy 1571 (single floppy), Socket U20, IC 6526.
B	18
C	10
D	11
E	12
F	13
H	14
J	15
K	16
L	17
8	24

Monitor with 2 RCA
Plugs:
 Video-Socket
 Audio-Socket
 Ground

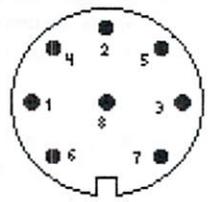
Monitor mit Scart-Plug:

Pin 20
 Pin 2+6
 Pin 4+17

**Monitor or TV with
 Scart-Socket and
 SVHS**
 20
 4+13+17
 2+6
 15

fine, but in most cases it does not.

Monitor with 8-pin socket RGB/TTL:



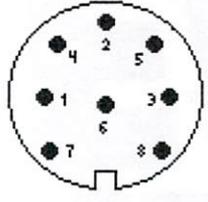
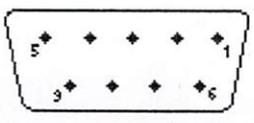
This connection-table is valid only for a single 1571 and for the C128D in plastic. It is not possible to use parallel cable in the metal boxed C128D.

Monitor Cable:

40 characters display C64/C128, 8-pin plug at the computer:

80 characters display, at C128 9-pin SUB-D-Socket:

C128-Pin	Monitor-Plug-Pin
1	6
3	2
4	3
5	4
6	5
8	7
9	8



That is all for today, even though there are for sure a lot of other interesting cables for different uses. If you are in need of a special configuration then you may send me a request, but please do not forget to include a labeled and stamped envelope for the answer.

My address:
 Nikolaus Malecki,
 Am Knollenberg 1,
 42553 Neviges,
 Germany.

In case I see there is a major need for further cables then there will be a "Cable Box Part 2" soon.
 Yours Niko

Plug-Pin	Monitor with 3 RCA Plugs:
1	yellow/Luminance
2	ground
3	white or black (audio)
6	red/Chrominance

SUB-D-Socket-Pin <-----> Monitor with 9-pin SUB-D-Socket C128 or plug:
 Generally all pins are connected 1:1, but there are quite a few monitors that get the synchronization either on pins 8 and 9 or on pin 7. You have to try wich of these two possible connections leads to success. If it is on pin 8 and 9 then you should cut pin 7 and the other way round. Sometimes a normal, standard SUB-D cable with all 9 pins connected works

I have just discovered a small error occured in the DAC pcb layout, the "top view" or component side.

Y to 9 and Z to 8

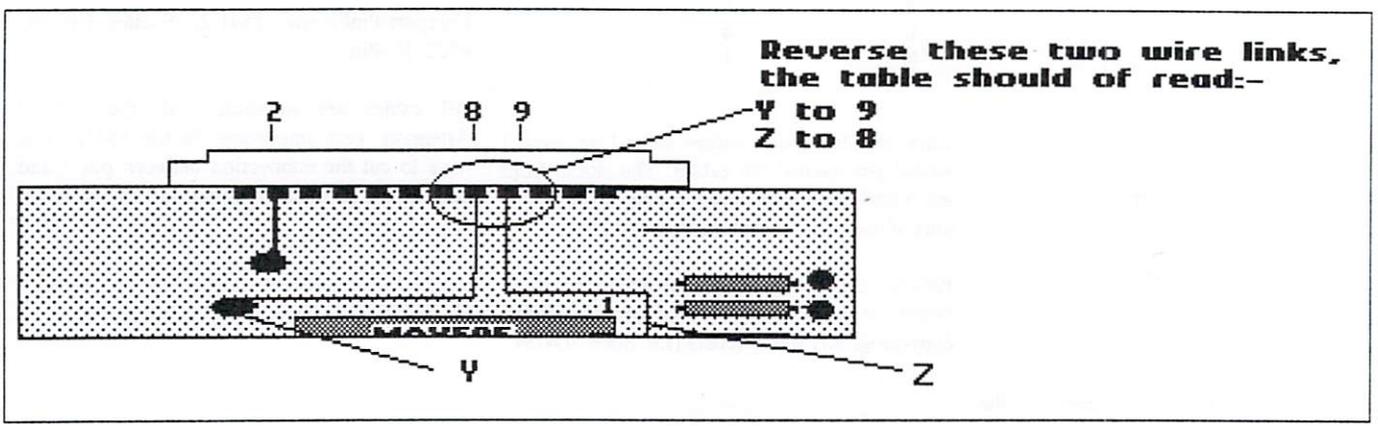
developed for a much better sound.

Two of the wire links on the top of the PCB that go to pins 8,9 on the User port connector should be reversed as in the diagram.

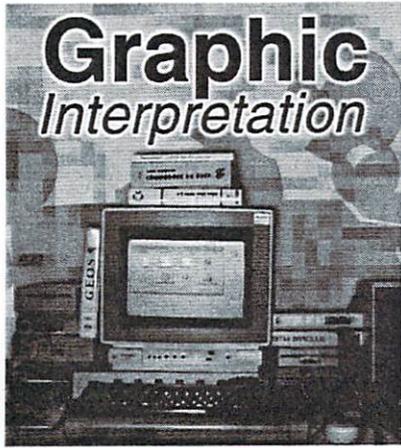
No damage would of occured to the computer or the MAX505 before this error was found.

Also on the cover disk is a small Basic programme that Nate used to check his design.(Colin J. Thomson/gb)

As a note a new version of Modplay64 has been released, and a new driver which uses the SuperCPU (if you have one) has been



June 15, 2000 - A Date to Remember



by Bruce Thomas

Wow!

I'm sitting here tonight opening my snail mail and find that it contains my copy of CD-ROM Commander 128 from Dale Sidebottom. So Cool! I've had a CD-ROM Drive sitting beside my CMD HD for about 6 months now and I can finally put it to use. I have a CD already (the ftp.funet.fi files) and plan to order a couple from Australia that Gaelyne Gasson has recently offered for sale. Plenty of GEOS files on these CDs.

I turn to my computer and open my e-mail and read that Maurice Randall has just had success with The Wave 64 browsing websites online, GRAPHICALLY. His thoughts also headed down under and he visited Rod and Gaelyne's Videocam site (<http://videocam.net.au/>) with a little side trip to Colin Thomson's web page (<http://videocam.net.au/~colinjtl/>). So very cool indeed (and neat for these people to be linked to this historical moment!)

I have also recently had the opportunity to test a patch by Werner "The Patch King" Weicht for geoCanvas (Nate Fielder's awesome geoPaint alternative). This patch lets geoCanvas operate under Wheels by modifying the RAM Bank geoCanvas uses. Werner tells me he is hoping to make it work under MegaPatch3 also. While I was able to open geoCanvas (and 3 files at once) under Wheels 64 there were still a few problems and Werner is working on it some more.

All of this coming just a couple of weeks after I received an update from the TIFCU (The Internet For Commodore Users) Mailing List containing a link to the web site of Roy and Ronny Bachmann. This site (http://members.tripod.de/r_bachmann/) announces a CD-ROM Driver for the Gateway that actually lets you open D64 files directly off of the CD. While the link to download the program wasn't working when I

initially checked I do plan to locate this demo driver and test this baby out.

What a year Y2K is turning out to be for us die-hard Commodore GEOS fans! It seems like things just keep moving along.

Something for Everyone

Now, some people may argue with me that the amazing advances I mentioned above are not really for ALL Commodore GEOS users because each of them requires additional products above and beyond the basic system. This is true.

Not everyone has a CMD Hard Drive to daisy chain a CD-ROM off of. Not everyone has a CMD SuperCPU, which is a requirement to run The Wave. And definitely not every GEOS user uses Wheels or The Gateway.

But, these developments mean there is still life in the computer that we all use and love. This means that the useful life of the computer keeps getting extended. That is good news for every person who uses a Commodore Computer and who wants to continue to explore new territory with it.

These developments are also no threat to the person who is happy with their Commodore system without expanding it. Each and every one of us can still use the original GEOS package to do things that the Commodore couldn't do as easily before.

Leading from the back of the pack

Take a look at the world around us. Everywhere, things come and go. They become popular and then fade away only to return, years later, as people seek a little bit of the past in a nostalgic moment.

This recurring cycle happens with clothes and cars and furniture. It will also happen with the Commodore Computers (and it has

already started - driven by the easy-to-shop-at auction sites on the Internet) and it will happen later in this article.

With the increased interest in the Commodore Computers there may be an increased demand for neat new hardware and software. Since you already have a Commodore Computer you are way ahead of the game (and you thought you were behind). There are a number of things that you can do to stay ahead of the game.

Three steps to success!

First, get yourself an Internet e-mail account. I have a good time writing these articles and I get some enjoyable feedback from numerous readers. If you want to stay on top of the news, however, there is no faster way to communicate than e-mail. Participation in a number of mailing lists (that is how Maurice quickly spread the word of his Graphical breakthrough) will almost guarantee that you get your news while it is hot.

Second, Participate. An old saying states that necessity is the mother of invention and this is very true in the world of computers. There is no greater loss than to have an idea and not share it with someone. If you have a need for a program then you need to ask a programmer (there are lots of people who are very grateful that Dale Sidebottom asked Maurice Randall to write PostPrint). Conversely, if you use a program provide the programmer with some feedback on why it is useful or make some suggestions on what it may be lacking. By getting more involved in the Commodore world your computing experiences will be richer and everyone else will benefit in the end.

Third, overcome FUD. Back in late 1992 I read a PC magazine editorial that proclaimed it was FUD-Free. I took this train of thought and turned it into an article for our User Group Newsletter in which I proclaimed that

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by Gaelyne R. Gasson

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every Commodore user was FUD-Free. I am afraid that is no longer the case.

What, you are asking, is FUD? For many years FUD lived exclusively in the Consumer Domain of the PC World. FUD is starting to invade the Commodore world. Users develop a Fear of buying something (out of a belief it is too expensive or that it will be out-dated soon). This Fear creates Uncertainty in the Consumers' mind and that

Uncertainty leads to Doubt as to which way they should lean in regards to their computer system, peripherals and software.

Once you overcome your FUD you will find that all of the wonderful things I mentioned at the start of this article start to have meaning for you and your Commodore will become more enGEOyable.

If you have any comments on this article, or

anything else related to GEOS, please feel free to drop me an e-mail to: rbthomas@edmc.net.

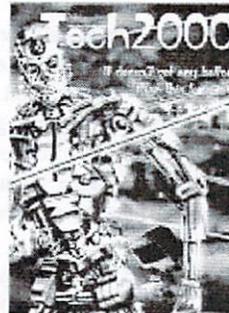
Until next time, enGEOy your Commodore.

(me)

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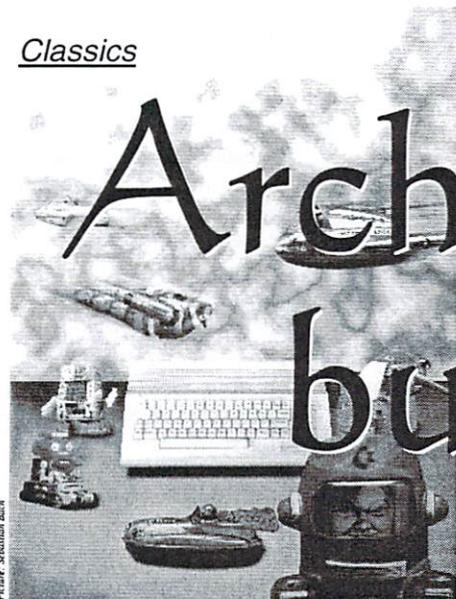


Photo: Schuster Bild



Archon - Chess but different

by Helmut "Katakis" Bieg

In the year 1983 chess was invented again. Though for the first sight the classic Archon may look like just a clone of the common board game, the game has much more in stock than first assumed. It is one of the entertaining games there are, but can as well bind the player to the monitor for hours. Who succeeded in missing this game for the past 17 years should read on for sure. Games like this cannot be found within the range of new releases anymore.

Archon was released to the market by the tiny software house Free Fall Software, in association with Electronic Arts. Caused by its early release date the graphics have a pale first impression nowadays, and sound exists seldomly as effects and the title tune. Anyway, this first impression should not be considered a fixed opinion for during the first plays Archon will surely become an addiction.

Beginning is the hardest thing:

The playfield is constructed like a chess-field,

also the figures' placing is similar to the game with the kings. However, they have completely different features and looks. In the playfield there are five energy fields that catch the eye immediately, they are immensely important for the outcome of any match.

But from the very beginning. After the player or the players chose either the dark or the bright side and the first time cycle is defined (more to that later on), the battle for the field begins. The opponent can be the c64 or a second human player. Besides the outlook, Archon has not got many similarities to chess, for during the game play it occurs that it is not dedicated to calm natures like its ancient brother.

By the first glance the bright side differs from the dark one through different figures that also have different names and partly different features. Each side has stronger and weaker fighters. Just like in chess there are eight weak knights or goblins, that are used mostly as cannon fodder or for occupying energy fields. Stronger creatures like trolls, stone giants, unicorns, basilics, a dschinni and its dark counterpart, a dragon, and archers join these parties. The dschinni's and the dragon's features are similar: and the lich: both are very strong and relatively fast and differ only in their shots, while with phoenix and mutator two fully divergent

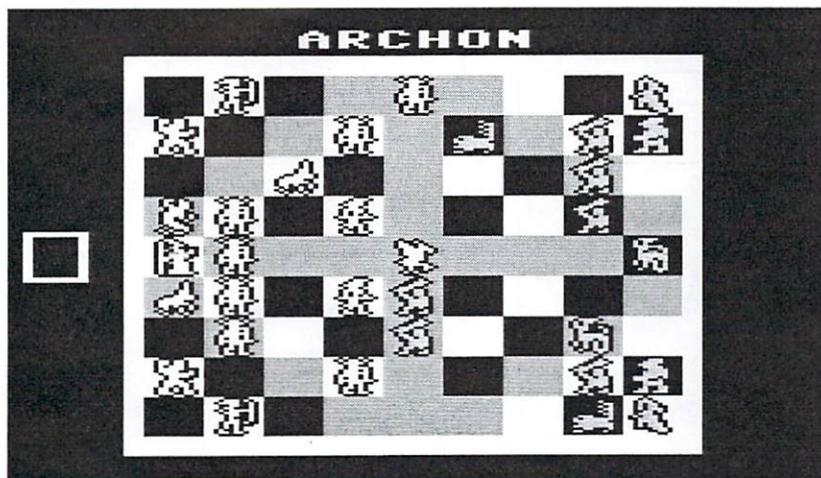
creatures are facing each other. The leaders are the wizard on the one side, and the witch on the other. Both have a number of special casts to spell, like healing or revive that can be used even on

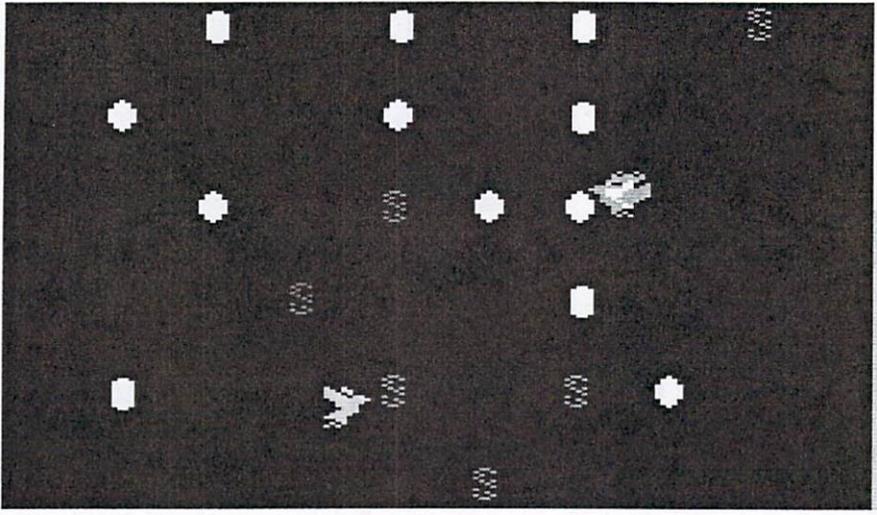
dead creatures or that can cast summon elements. The effect of energy fields show up here: figures placed on energy fields are immune against any magic spells.

One way, one aim:

The object of the game is to eliminate all opposing creatures or to occupy all five energy fields. Naturally not only the opponent makes trouble, but also the playfield. Besides black and white fields, there are fields that change the color after each turn, from white over numerous other colors to white and back - that's the above mentioned time cycle and it can be shifted by the leaders once for every game. The colors of the fields effect the game play gravely: When a dark fighter is standing on a dark field he has an energy-bonus if it comes to a confrontation, it's vice versa with bright fighters. A confrontation is the following: unlike chess, creatures are not just hit if they meet, but a joystick-controlled battle between them decides who falls. Hereby the given circumstances play a big role. If a simple white knight meets the dragon on a dark field, he is nothing more than a supper for the dark figure. In contrast to this, a fast but weak basilic on a darker field like e.g. blue has some chances against a strong but slow golem.

This way totally different confrontation-battles come to play, all following the same pattern: the game field changes into a battle arena where randomly set obstacles pop up from time to time, these can as well be used for shielding the opponent. When a creature launches its shot, bites, just activates its personal attacking method, it cannot attack until a bright sound is heard (for the bright player) or a dark one for the dark player.





Qualities of the Game:

Still to mention is the role of the wizard and the witch. They are the strongest creatures in the game, even though their energy is not as enormous as the dragons or the djinnis. The game is not over on the loss of one of the creatures. In the beginning both leaders are surrounded by mates, standing safely on an energy field. Their magic spells are enormously important for the outcome of a game, losing the leader too early may decide the whole game. Generally the wizard and which are the creatures that survive to the very end when lead by a skilled player.

Another very interesting figure is the mutant that is unequally stronger than the phoenix on the other side. The mutant always transforms into the creature that confronts him or that he confronts. So he is a very tactical element, but

that does not mean the dark side is all in all stronger than the bright one. Good tactical players on the bright side know to overcome the mutant or at least to decrease its influence.

Concept and Realization:

Looking at the above description, you can foresee it has got quite a complex concept, but still Archon is very easy to understand and can lead to exciting matches after a very slow period of learning. Especially with two human players the changes within the game cannot be guessed, which makes it even more entertaining. The most exciting moments are those where a weak creature destroys a valuable fighter, which through cunning tactics can happen quite often.

About the realization:

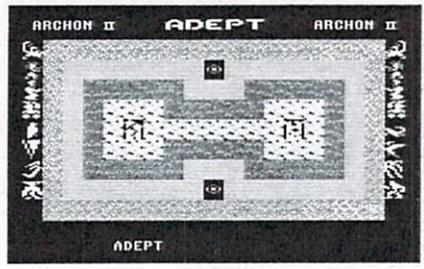
Such an innovative concept cannot really end up in a bad conversion, that should have become obvious already while reading. Graphics and sounds run on minimum requirements, without decreasing the fun in playing it. Probably even enhancing it by the so-gained clear arrangement. 1993 there was an advertisement for "Archon Ultra" on PC, a game spoiled through a graphical overkill and some half-finished functions. Through the plain arrangement in the battle arena a gaming feeling is achieved that really keeps the player in action. Such a battle can last just a few seconds, it can develop to a long war for positions, you just don't know. These fighting-scenes limber up the game essentially. As well the battles against the computer are, after finding the individual tactics, not at all an unattainable task and on the way to it do not end in frustration but a new challenge.

Briefing up you can say that Archon is one of the milestones in gaming history. Such an innovative, exciting and every time again entertaining game can rarely be found. I want to close this article with something you don't experience that often. I have shown Archon to a befriended PC-freak. After he had run down the graphics and sound a lot, lots of exciting battles between us two followed. There can't be a better example for the timeless game play of Archon.

The follow-up and its Trouble

Still in the same year, the follow-up "Archon - Adept" was released, that had no disadvantages to its predecessor and that presented some nice new features. There were lots of new figures like the sirene, not equipped with any weapon but her deadly voice. Also they parted from the classic chess-field and designed a landscape, divided to the elements of fire, air, water and ground. Each with different conditions. Missing this part is not for true Archon fans. "Archon III - Exciter" in contrast to this was a cheap remake with a sluggish game play, and motivation approaching zero.

(vr)



Product name	Archon
Producer	Electronic Arts / Free Fall
Release year	1983
Source of supply	used market
Tested with	C64, 1541, Joystick
Alternatives	Archon II, Archon III

Minus ...

- plain graphics
- just a classic title tune and sound effects

100

88%

- innovative gaming concept
- timeless realization of an ingenious concept
- high long-time motivation
- short and long matches possible
- quite strong computer-opponent
- most exciting in 2-player-mode
- different characters with different features

... and Plus

0

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