Old Commies Emulation

Simon Goodwin checks out another mixed bag of emulators.

AFCD23:-In_the_Mag-/Emulators

ON THIS MONTH'S CD

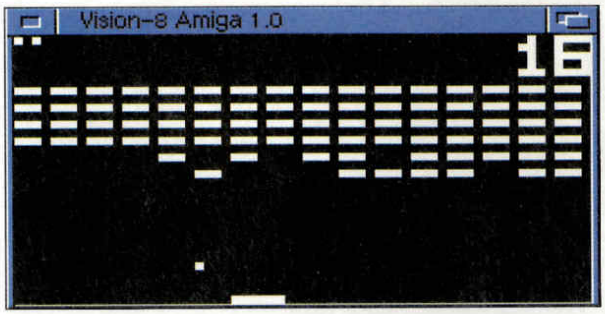
This month we test emulators for lesser-known Commodore home computers – the VIC-20, precursor of the C64, and the Plus 4 and C16. We also examine emulators for Vision-8, BK0010 and the ColecoVision console.

OLD COMMIES #1

Commodore's VIC-20 sold millions worldwide, thanks to a good keyboard, passable sound and reasonable graphics. Though limited to just 23 lines of 22 characters on the screen, the small number of character cells in a complete screen meant programmers could obtain fast pixel-addressable colour graphics by redefining characters. At that time, rival systems were stuck with preset character shapes or mono bitmaps.

The name VIC-20 is not auspicious. The 20 refers to the internal memory, but the majority of that is fixed ROM code, derived from the earlier PET. Only 3K is available for the user. The emulator offers the option of 3K, 8K or 16K expansion memory, enough for virtually all of the available software.

The letters stand for Video Interface Chip – the C64 equivalent is labelled VIC-2 – but sounds distinctly rude in countries which pronounce the letter V as an F. Caught out before with the Commodore PET (Personal Electronic Transactor, or 'Commodore Fart' to Francophones, infringing a Philips trademark for good measure), you might expect CBM to choose names more carefully. But it's not just computer firms that run into name translation problems. The Rolls Royce



Vision-8 is a minimalist emulator, in every sense

Silver Mist slid down the pan in Germany, for similar reasons!

The Amiga VIC emulator is pretty good, though the documentation leaves something to be desired. It runs from an icon and has a conventional close gadget. A configuration file sets up system ROMs and RAM expansion.

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You get two versions, one for old 68000 Amigas, inevitably pretty slow, and one for 32-bit systems, which runs at a quite acceptable speed given a little fast RAM for the CPU emulation. The VIC's 6502 processor is easy to emulate, and the small display means it runs well on anything from a 68030 upwards.

CONTACTS

This *AFCD* includes Vision-8, the embryonic Coleco emulator and the more useful combination of FMSX 1.4 and Mission. There's the C16 and Plus 4 emulator A4, an updated 1541 disk file system, and version 0.65 of the VIC emulator, with system ROMs and Cosmic Cruncher. VIC-20 games appear on FTP sites and the commercial *Flash ROM* and *Emulation Unlimited* CDs.

Console emulators continue to advance rapidly, with six updates on the CD – two very early Super Nintendo (SNES) emulators, two improved NES ones, plus AmiMasterGear and a new port of VGB with better Amiga integration.

FTP SITES

CBM +4, C16 & VIC emulation:
nic.funet.fi /pub/cbm/

Coleco:
ftp.komkon.com

VIC-20:
ftp.hrz.uni-kassel.de /pub/machines/vic-20

WEB SITES

Coleco:
http://www.gamepen.com/gamewire/classic/classic.html

Mission:
http://www.komkon.org/~dekogel/mission.html

VIC-20:
http://www.geocities.com/SiliconValley/Way/1038/

Vision-8:
http://www.komkon.org/~dekogel/vision8.html

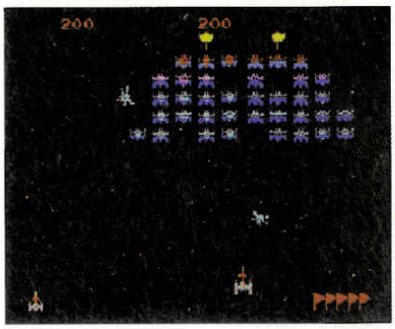
Commdore's VIC-20 introduced the C64-style box.

***Sargon* was the first micro Chess program to play a reasonable game.**

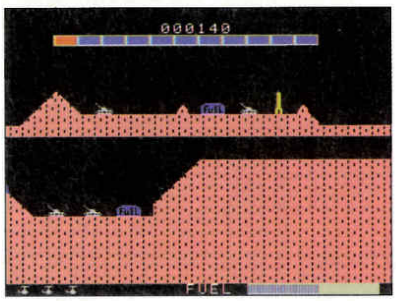
The VIC screen means a rather squashed *PacMan* maze.

Our Ben honed his keypad skills on a ColecoVision console.

COLECO VISION



The Coleco version of *Galaxians* looks pretty authentic.



Coleco *SuperCobra* running – just about – on fMSX and Mission.

The screen is ther narrower an it should be, cupying only out half the miga display area a PAL screen.

Quick Amigas ust be slugged to in programs at a roper speed. ommand line guments set the te of keyboard and screen access, but I eeded to clobber my Cyberstorm with PU NOCACHE to render games layable. The default updates one reen frame in four, which is fast but ther jerky. The tooltype SCREEN=0 osts redrawing to full speed, and is uite efficient as a delta buffer seems to e employed.

Sound is reasonable but you only et pure, rather clicky, notes because it cks support for random noise.

Keyboard handling is authentic but ther irritating as the cursor keys don't ork as normal.

Just like a real VIC or C64, you must ress SHIFT to move upwards or left, nd the Amiga key that normally scrubs ut the last character zooms the cursor isconcertingly to the top left corner of ie display.

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TRANSFERS

ou can transfer programs via the VIC ser port and a cable to the Amiga arallel port, although you need both achines in the same room to do this, nd must type in a short program at ach end to manage the transfer.

Amiga C and 6502 assembler source provided. If you can read eight-bit OMs then it's easy to transfer cartridge ames. Indeed, many of the games on mulator CDs appear to have been oved in that way.

Another neat way to move programs via the 1541 disk format, given some IC software already on old CBM iskettes. The venerable C64 drive was eveloped for the VIC-20, and can be onnected to the Amiga and accessed ith PD handlers written for C64 mulators. The CatWeasel add-on disk controller can access these via a 'standard' 5.25 inch floppy disk drive, with its own 1541 handler.

The original author, Pieter van Leuven, is having problems with his Amiga, but he has passed the source to Milan Polle, who has taken time off from his PPC developments to work on the next version, with a GUI, better sound, graphics and compatibility. He's eager to hear from existing users.

PLUS 4 AND C16

Flushed with success after the Commodore 64, the follow up to the VIC-20, Commodore produced some peculiar low-cost variations which were less successful, although mass produced in large numbers in the late eighties. Like many eight-bit machines, these were based on Chuck Peddle's minimalist 6502 processor.

The C16 was an economy version with the main selling-point of the C64, the 64K memory, slashed to 16K. ROM cartridges and special versions of simpler C64 games were produced for the C16, and for a while it was well-supported with budget cassettes. However, the addition of extra ROM holding an editor/assembler and much-improved BASIC wasn't enough to bring it out from under the C64's shadow.

Another attempt to cut costs brought forth the obscure C116, a re-packaged C16 with the typewriter keyboard supplanted by wobbly calculator-style keys. C16 software also runs on the C116 and on the expanded Plus 4 variant.

Plus 4s have 64K memory like C64s, and the extra ROM of the C16, packaged in a slimline black box with 32K of additional 'business' software on ROM. The name comes not from Edwardian trousers but from the inclusion of four productivity programs in the ROM, making the Plus 4 a rival for integrated business bundles like Sinclair's QL, or so Commodore hoped. Unfortunately the built-in software was too feeble for serious use.

A4 is the Amiga's emulator for Plus 4, C16 and C116 computers. It has reached version 0.2 and is stable and quite usable in BASIC, but needs more work on the keyboard and graphics emulation. I tried some Plus 4 programs from the FUNET archive, which also holds the necessary ROMs, and found that the scores and text messages appeared correctly, but not the graphics.

The AmigaGuide is not very helpful, merely telling users "Don't use the GRAPHIC command", at least until version 0.3, and promising updates for colour and sound.

The registered version of A4 costs a mere $5, and can load and save to Commodore disk drives as well as files on Amiga drives. You must know the name of the file you want to load, as there's no way to load a directory yet and the demo cannot save to any drive.

A4 runs on a private screen in PAL, NTSC or VGA mode. It requires Kickstart 2 and at least a 68020 with fast memory. It's noticeably faster and more stable than version 8 = 232 the initial PD release, but still needs a lot of work.

COLECOVISION

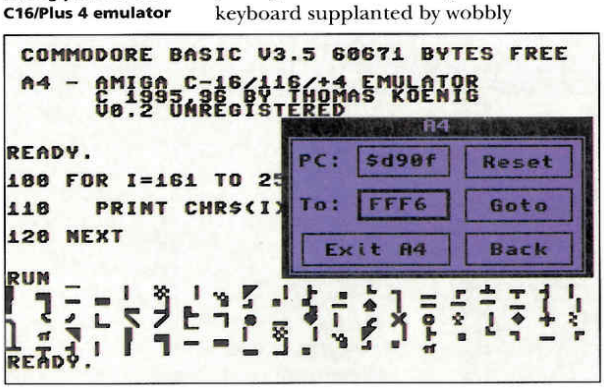
ColecoVision consoles came from the toy firm behind the Cabbage Patch dolls and sold six million in two years. They're based on the same Texas graphics chip as the TI-99/4A, Britain's Memotech and Einstein, and Japanese MSX micros, with reasonable sprites but no hardware scrolling. A later computer version, the Coleco Adam, added a printer and some 'floppy tapes'.

The story of Coleco emulation on the Amiga is rather sad. The emulator on Aminet is unfinished and was released without the knowledge or consent of its author. It's more effective to use double-emulation, running Coleco software on top of MSX emulation as Coleco hardware is closely related to MSX.

Aminet's ColEm.LHA is an unfinished port of Marat Fayzullin's Coleco emulator for Unix boxes. The Unix ColecoVision emulator was based on fMSX, substantially rewritten for the Amiga by Hans Guijt. Hans set about adapting fMSX into a Coleco emulator,

Continued overleaf ➡

Graphics are not the strong point of the C16/Plus 4 emulator

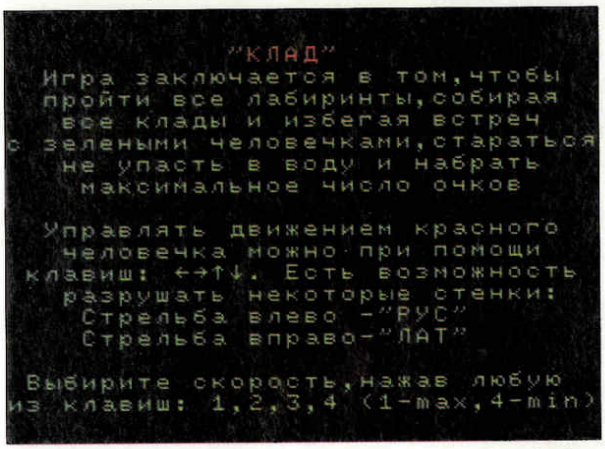


but gave up because it didn't work, except on games that already ran (in their MSX incarnation) on fMSX. He could not pinpoint the problem without a real ColecoVision, and he'd never even seen one.

Generous soul that he is, Hans offered the unfinished sources to four other coders, on the promise that they would not release the buggy code. However, someone broke this agreement, and now he gets several messages each month asking why his emulator doesn't work. ColEm should never have been released.

Hans is considering building Coleco emulation into fMSX, but this is not a priority. Meanwhile Mission, a Coleco emulator for MSX, has arrived. This runs via MSXDOS on Amiga fMSX. It's not perfect, but it runs better than ColEm ever did. It's a long way round, but so far is the best option.

Meanwhile Juan Gomez's MSX2.4 was intended to include Coleco emulation, although I could find no sign of it in version 2.51, which lacks any documentation. Development of Juan's emulators was always sporadic and is slowing because he's got a new job, but Coleco emulation is certainly on his 'to do' list.



KLAD-1 has simple instructions – in Russian of course.

KLAD spawned the inevitable souped-up sequel.

VISION-8

The prize for smallest programs must go to Vision-8, which emulates CHIP8 systems. These were very simple games written in a portable pseudocode for old micros and Coleco consoles. The Vision-8 emulator also runs on MSX, MSDOS and Unix. Full C source code has been provided.

Programs are selected from a standard requestor after clicking on the icon. The eight sample games total a little over 2K of code, and include sliding block puzzles, bat and ball games and a sub-*Invaders* shoot-em-up, rendered in uncompromising chunky monochrome, *TellyTennis* style. There's even a beep, although just the one.

Vision-8 runs in an Amiga desktop window, or optionally under the Amiga version of X-Windows. It requires Workbench 3 and a 68020 or better.

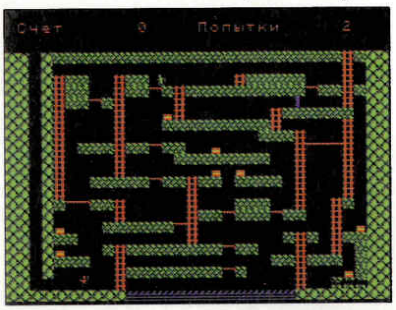
Documentation is scant and control is minimal. Amiga joysticks are not supported so you must used a preset rectangle of keys to emulate a 16-key matrix keypad. Vision-8 is a curio, fine as far as it goes, but that's not very far.

OLD COMMIES (2)

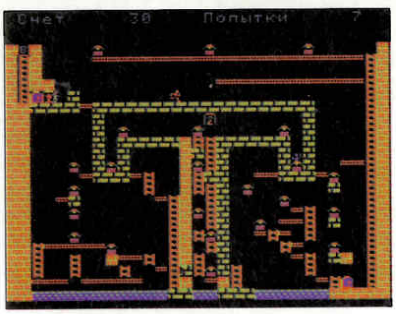
BKemul is perhaps the most bizarre emulator to arrive on Aminet in recent months. It does a great job of emulating the BK0010, a Russian-made computer with home micro-pixel graphics and a rip-off minicomputer processor.

The BK0010 was launched in Moscow in 1985, the same year as the Amiga 1000. More than a million were made between then and 1993. They're not particularly fast, perhaps a quarter of a MIP with a following wind, but they're exceptionally easy to program in 16-bit CISC assembly language.

The processor is a PDP-11 clone, based on DEC's minicomputer design,



Platforms and ladders, Russian-style.



> *The last 18 months of eager emulation activity has brought a dozen or more major updates to emulators...*

perhaps the most elegant processor ever made. I cut my teeth as a professional assembler coder writing CAD software on a PDP-11, and it led me, among others, to the 68000, even though Motorola's processor isn't quite as orthogonal as its DEC inspiration.

Apart from obscurity, there's little to fault about BKemul. It's fast, free and friendly. It comes with well-written assembler source code and good documentation, in the form of HTML pages for any Web browser, which look better than the usual AmigaGuides, with neat tables and diagrams.

BKemul uses an Amiga PAL custom screen with an invisible close gadget, with 256 lines of mono or RGB colour and 512 or 256 pixels per line. The 4K geometric and plasma demos supplied are surprisingly good. The real thing drives two monitors simultaneously, one in mono and one in colour, from the same bitmap. On the Amiga, the HELP key toggles the displayed mode. Graphics cards are not supported.

Half of the 64K address space is occupied by an old-fashioned but comprehensive 23K BASIC interpreter and an 8K monitor ROM, with another 32K split between graphics and programs. Keys can generate Roman or Cyrillic characters and are toggled using left and right ALT. The original cassette interface is diverted to use the Amiga file system.

BKemu requires at least Workbench 2 and a 68020 with 1Mb RAM, and a 40MHz 68030 is recommended for full speed. The series of KLAD platform games supplied were too fast for joystick control on my 68060, though they were playable from the keyboard.

This is one for emulator, processor and Cyrillic enthusiasts, because I can't imagine that many *AF* readers have ever heard of a BK0010, let alone used one. But it is very well done, and will amply reward the curious.

NOW WHAT?

This is the ante-penultimate part of this record-length *AF* series. Now I've said it. The end is nigh. But the next article may be the most interesting of all. Next month, we check out UAE and Fellow, emulators that claim to run Amiga software on alien hardware.

We know that PC emulation is a challenge for Amigas. Even the fastest Amiga makes a sluggish PC. But is the reverse true? Is it realistic to abandon Commodore's hardware and run your favourite programs on an Intel box?

We'd be shirking our responsibility if we did not give the same scrutiny to emulation of the Amiga that we've shown to emulation on the Amiga, especially as Cloanto have launched a commercial Amiga emulation package, 'Amiga Forever', with the blessing, and licensed ROMs, of Gateway 2000.

The last 18 months of eager emulation activity has brought a dozen or more major updates to emulators previously reviewed, and some of them have been utterly transformed since I first looked at them.

There are several loose ends that need to be cleared up, like the prototype SNES emulators, vintage CP/M, TI 99 and pure CPU emulators which deserve brief mentions. After all this effort, we'd hate to miss anything.

The ultimate part of this series will fill in the gaps and look back over recent progress. The fat lady's on the horizon, but she's not singing yet...