

Software Preservation



Phil Pemberton

For Wakefield RISC OS Computer Club, March 2021

Key points

- Now is the time to recover your discs!
 - They're 30+ years old, and not getting any younger!
 - Save history before it's too late!
- We (ABUG/APT) can help
 - Handle delicate or damaged media respectfully and carefully
 - Required to avoid damaging the media even further
 - We can usually recover something - even if not everything
 - We can also advise on DIY options, where appropriate
- Spread the word!
- Contact details at the end

ABUG Acorn Preservation Team (APT)

- About APT
 - A project of ABUG (Acorn and BBC User Group)
 - Started by members of the Stardot forums (<https://stardot.org.uk/forums/>)
 - ABUG has held in-person gatherings since 2014 and online Zoom meetings since 2020
- Previous APT work
 - Successfully archived ~300 RISC OS discs (with more in the pipeline)
 - Recovery of BBC game source code from damaged discs (more later!)
 - BBC Micro source code release
 - MASM Assembler 1.15, MOS 1.2, BBC BASIC, DNFS v3, 6502 TUBE ROM
 - 65Host/65Tube emulator v1.0 (and 65Turbo emulator)
 - <http://4corn.co.uk/articles/65hostandmos/>

Software preservation in a nutshell

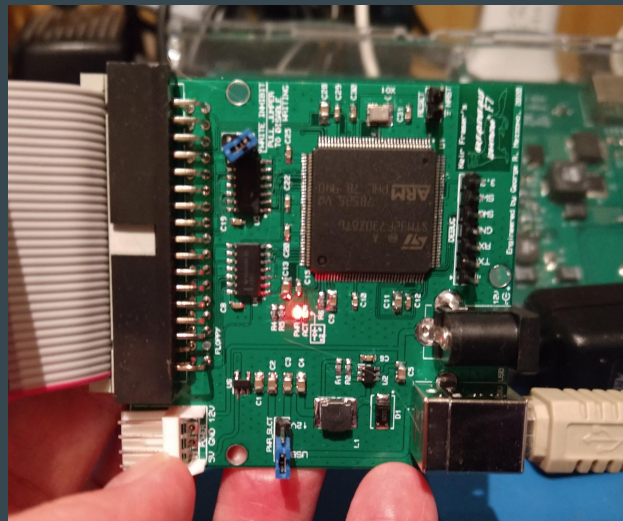
- It is what it says: preserving the history of our platform for the future
 - Specifically the software - games, applications, utilities
 - Without the software, the data is useless
 - Lots of innovative software which in some cases pre-dated equivalents on other platforms
- Image floppy discs (diskettes) and CDs
 - Floppies: [Greaseweazle](#), [DiscBeast](#), [DiscFerret](#), Kryoflux
 - CDs: A CD/DVD/BluRay drive, 'dd', 'ddrescue' and 'cdrdao'
- Scan manuals, keystrips, code sheets, other paper materials
 - Watch out for photocopied paper and labels in plastic wallets...

What next?

- Clean up scans and images
- Repair damaged discs
 - Viruses, bad sectors, copy protection (e.g. install credits used up), ...
 - Merge several bad images into one good one
- Remove any user data
 - Sometimes hard to identify 'user' data from tutorials (having the manuals helps!)
- Identify hidden, potentially interesting or useful data or metadata
 - Mastering data (TRACEBACK) - date of duplication
 - Fragments of other software (dev tools, mastering) or files
- Convert to open, accessible formats
- Make the results available (where possible)
 - Locating copyright holders, securing distribution permission

Archiving your own disks - getting started

- Hardware:
 - A PC
 - Greaseweazle USB disk reader
 - “Blue Pill” version can be DIY’d for around £10
 - Assembled F7 V2 (£25) and F7 Lightning Plus (£55) available from:
<https://www.facebook.com/groups/2537777852974487/>
 - Good quality floppy drive and cables
 - Sony MPF520 or MPF920 (pre-2001)
 - Panasonic JU-257A606P
 - 5V+12V Power supply
 - Most 3.5in drives only need 5V power



Assessing the condition of the disk

- Damage to the outer jacket (dented, deformed, brittle, ...)
 - Can replace the jacket with one from a donor disc
- Disc surface dusty, dirty or mouldy
 - Cut the disc jacket open (carefully!) and clean the disc inside
- Poor quality media (e.g. Wabash)
 - Requires special techniques
 - We're looking into this!
- ABUG/APT is happy to advise and assist!

ABUG successes: Source Code Recovery

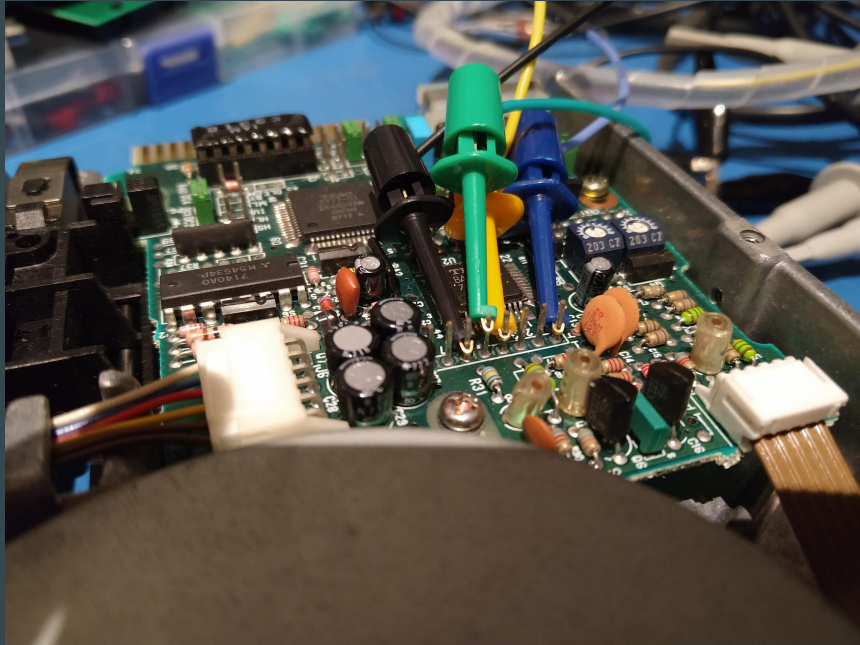
These disks contain the source code to several BBC Micro games. Sadly a few were unreadable.

... but we're not giving up that easily!



ABUG successes: Reading the disc below digital level

Reading the data from a disc at the analog level

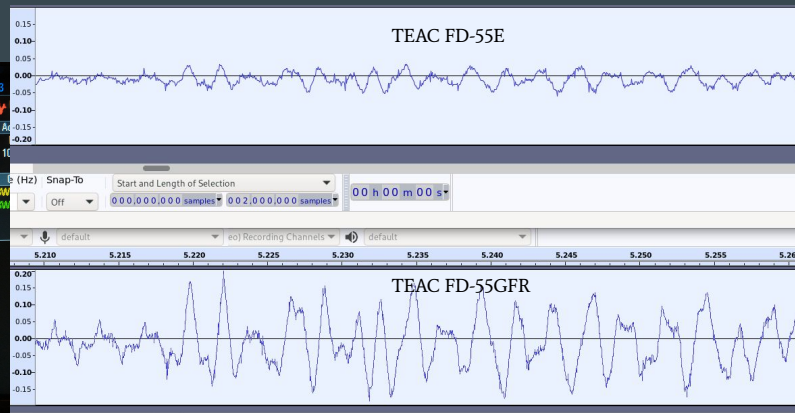
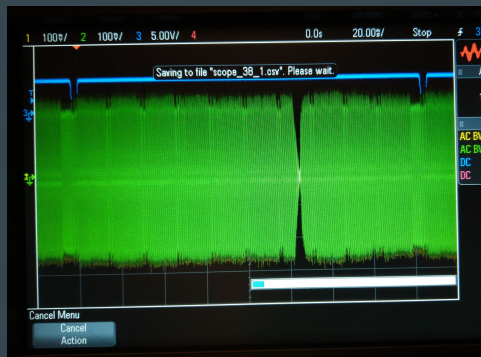
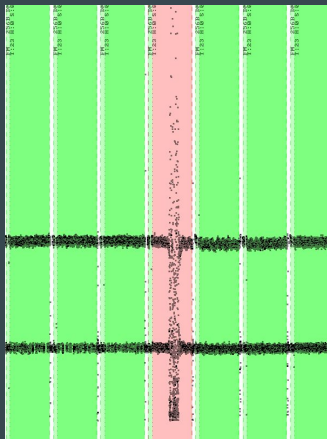


A successful recovery: The Living Daylights source code

Analog data recovery using an oscilloscope,
Greaseweazle and software post-processing

Hardware work: Phil Pemberton

Data processing: Chris Evans (scarybeasts)



```
Acorn DFS
BASIC
>*.
DAYLIGHTS (84)
Drive 0
Directory :0.$
Option 0 (off)
Library :0.$

B.ANIMA L B.BACKA L
B.CHOPR L B.CTRLM L
B.ENEMY L B.FIGHT L
B.FIRES L B.FOREA L
B.FOREB L B.INRUP L
B.LEVEL L B.MOVES L
B.QROOM L B.RANDY L
B.ROCKS L B.SCRN2 L
B.SCROL L B.SMALL L
B.SNIPE L B.SPRIT L
B.TITLE L

>*INFO B.SCRN2
B.SCRN2 L 003000 003000 005000 0DA
>_
```

Recent and ongoing ABUG APT research

- Low-level recovery work
 - Recovery of data from physically damaged BBC Micro disks, using analog capture technique
 - More on this at the ABUG talk Saturday 6th March:
<https://stardot.org.uk/forums/viewtopic.php?t=21919>
- Evaluating disk drive performance
 - Not all drives are made equal...!
- Cleaning and recovery of poorly-stored and low-quality disks
 - Safely cleaning dirt and mould from disk surface
 - Methods for reading disks with “shedding” issues - Wabash and similar
- Automated processing pipeline
 - Detect viruses, user data, copy protection, ...
 - Have we seen this disk before?

How you can help

- Take a look in those old disk boxes - maybe you have something we don't?
- Duplicates are good too!
 - Useful for fixing errors and undoing modifications (registration, high scores, viruses ...)
 - Might be a different version which hasn't been archived
- Maybe you know someone who wrote software in the 'old days'?
 - Put them in touch with us!
 - (Even if they just want it archiving and not released)
- Talk to us!
 - Stardot forums: <https://stardot.org.uk/forums/> (Software Preservation board)
 - Discord: <https://discord.com/invite/pRy44Wz> (#software-preservation channel)
 - Email: philpem@gmail.com or dave@bbcmicro.com

Thanks!

Slides downloadable from
www.philpem.me.uk

Twitter [@philpem](https://twitter.com/philpem)

Email philpem@philpem.me.uk

