

Blog

Adventures in Teletext Recovery

7 May 2019 | Updated 29 May 2022

Before I had Internet access at home, I used to use teletext to get my fix of Digitiser and chess pages. Sometimes a horoscope for my amusement. Using it was as simple as a telephone: type in a 3 digit number, wait a bit and up popped the page of text. It was not a fast medium, and prone to interference, but it worked well. Later on, I would use Freeview's MHEG-5 digital text to revise for my GCSEs.

I always thought that the pages I'd seen were lost to history. After all, there is no official archive of teletext pages, and I always thought video recorders cropped off the relevant lines from the picture. (Pressing text while watching a videotape does nothing, you see.) But that's not correct! The teletext lines are indeed recorded onto tape, but the fidelity of VHS isn't high enough for the teletext decoder to work out the data.

Thanks to modern PCs, TV capture cards and most importantly of all Alistair Buxton's [vhs-teletext software](#), it is now possible to capture the teletext lines from VHS tape and recover the pages. My nostalgia compels me to try and get some history!

This post is going to be part what-I-did and part tutorial for anyone else looking to do the same.

Installing the Software

vhs-teletext needs Python 3, VBI recordings (the part of the picture with teletext data), and ideally Linux. I decided to install Ubuntu 19.04 as it had the latest version of Python, supported my capture card, and worked on the computer I was intending to capture with.

After installing Ubuntu and cloning the repository from Github, installing the software needed the following commands:

```
sudo apt install python3-setuptools python3-numpy python3-scipy python3-opengl
sudo python3 setup.py install
```

Getting a Capture Card

Attempt One: Compro C100 [SAA7134]

I already had a capture card with a Philips SAA7134 chip, so I thought I'd try that first. The VBI device `/dev/vbi0` was available, and I could see the video picture itself via mplayer. However, all my attempts to record VBI data with this card failed. I suspect it's down to a configuration issue, and I might've been able to modify the SAA7131 file to work with my SAA7134 until...

Attempt Two: Pinnacle MiroVideo [bt848]

I decided to get my hands on a Brooktree 848 based capture card. Alistair uses a bttv card, so this seemed to be the easiest way to get up and going. I bought it, removed the Compro C100 and inserted this one.

The card also exposed `/dev/vbi0`, but I could not get a picture at all through mplayer. It was just a green screen. I learned through `dmesg` that the bttv driver was attempting to autodetect the card I have, without success. Luckily, it is possible to tell it which one I have with a configuration file. So, in my installation of Ubuntu 19.04, I created a `bttv.conf` file with these contents:

```
options card=1 tuner=0 radio=0
```

One reboot later, I had a picture and VBI data as well. I switched from using composite video to S-Video in order to get a sharper picture. Although my VCR does not transmit any colour information through S-Video, teletext doesn't use it. It improved the results considerably.

Capturing the VBI

Use this command to start recording the VBI data to a file:

```
teletext record -d /dev/vbi0 > your_file.vbi
```

(If you have more than one capture card installed, the device might not be vbi0.)

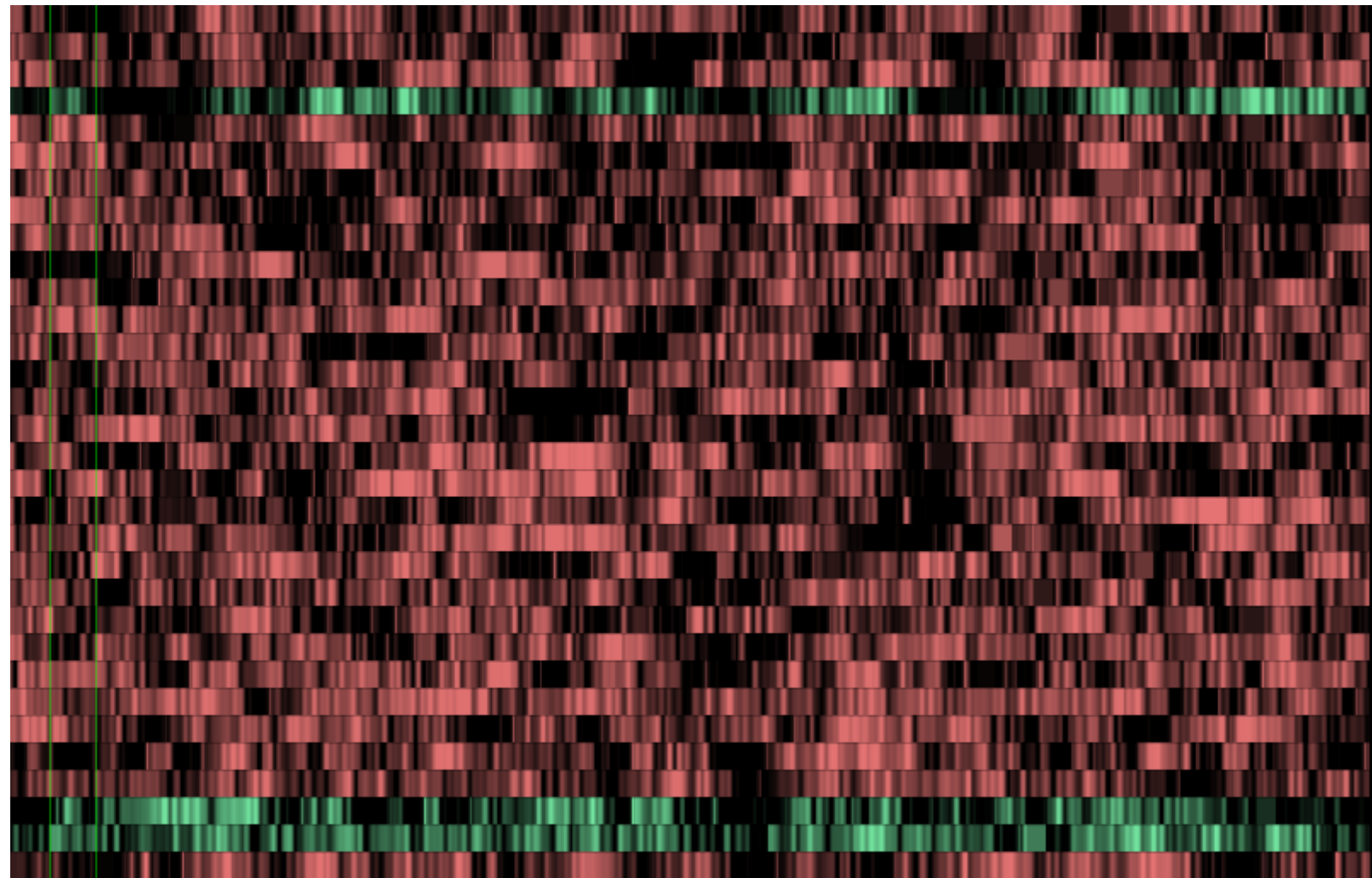
It's a good idea to capture a few seconds, then inspect the file to make sure you are actually getting something. CTRL-C stops it. You can inspect the recorded VBI data with the command:

```
teletext vbiview your_file.vbi
```

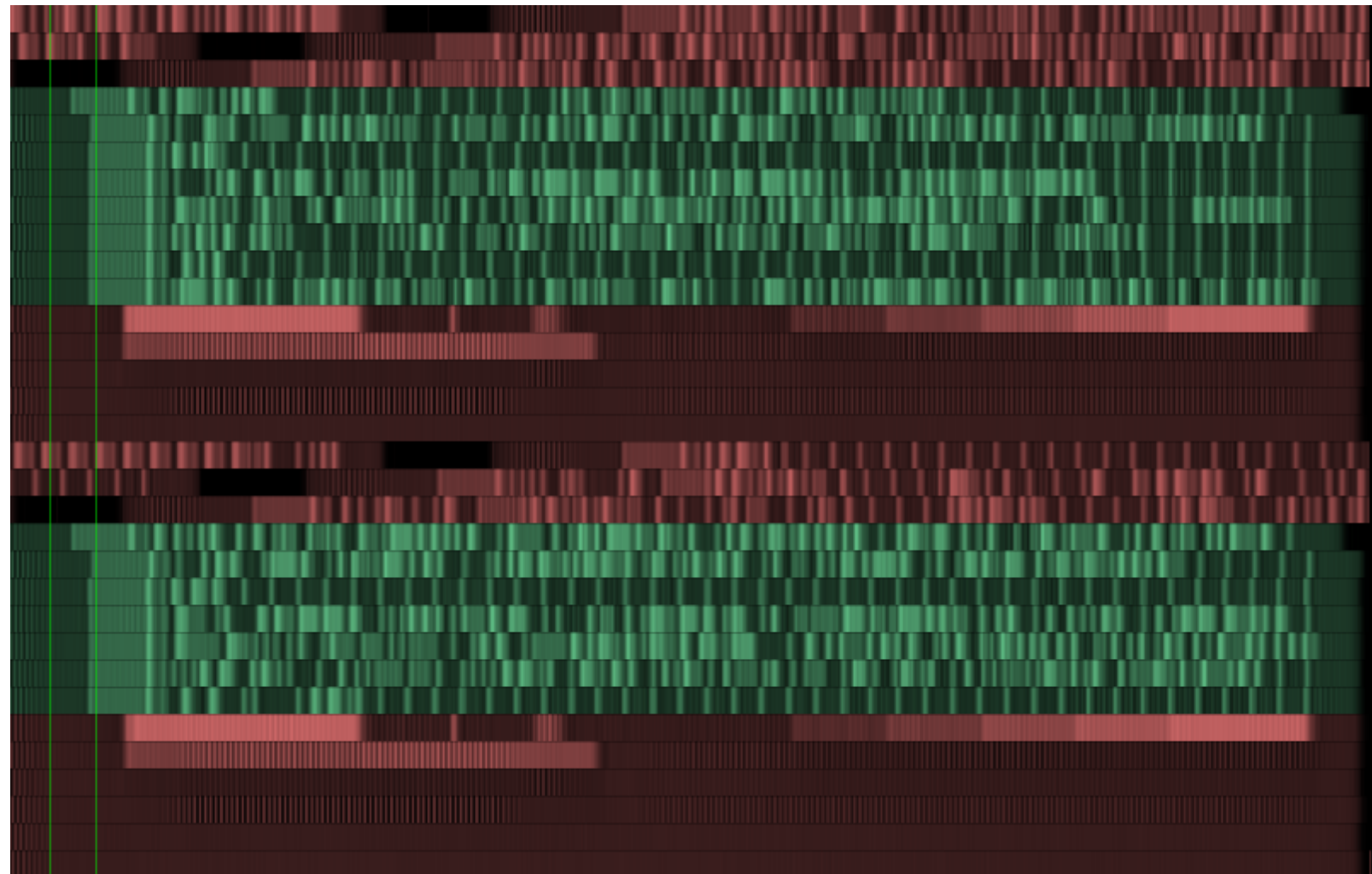
This will bring up a window that shows you the recorded VBI lines, two fields at once and stretched vertically for easier viewing. Areas highlighted in green are recognised as potentially being teletext data, red is not. Here are some examples from my recordings:



Blank. There are several possible explanations for this: a problem with the capture card, the input source is wrong, or the video tape you're capturing doesn't have any teletext on it. (e.g. a recording from Freeview.)



Teletext data is possibly there, but the signal is all over the place. Check the main video - you will probably find it is noisy. Make sure the tape is OK, the heads are clean and the tracking is correct.



Better, but still not quite right. One of the heads is not reading that bit of the tape perfectly. If you attempt to decode this, you will not get any complete pages.



The data is there and all aligned correctly.

If all is good, then you can make a longer capture. Although even a few seconds can yield a whole bunch of pages (one half page per field at 50 fps can add up fast), a 10 minute capture is a good minimum. Recording the whole programme might help the decoding process even more, at a larger time cost.

Decoding the Pages

Once you have the VBI file, decoding the data can be done with this command:

```
teletext deconvolve your_file.vbi > your_file.t42
```

Be warned, this is the slowest part of the whole process. It seems it can be sped up with a CUDA compatible graphics card, but I don't have one.

When the decoding is done, you can try to make the stream more accurate. Teletext pages are repeated over and over again. By comparing all given instances of a particular page, a "most likely" version can be generated. This is why a long recording can be better. The command to do this is:

```
teletext squash your_file.t42 > your_file_squashed.t42
```

If you want to get an overview of the pages within your decoded t42 file, you can filter out all the first/header rows:

```
teletext filter -r 0 your_file.t42
```

And to view a page, you can use:

```
teletext filter -p 100 your_file.t42
```

Every single version of the page within the stream will be shown.

Interesting Finds

Here is a selection of some pages I thought were amusing.

Teletext

670 Apr02 20:37:11

Digitiser

FACT BUCKET	671
Resident Evil 64?	
GAME 99	672
The Phantom Menace revealed	
GAME 99	673
Game-oh Figure-oh	
THE LETTERS	674
THE TIPS	675
THE CHARTS	676



www.teletext.co.uk/digitise.htm

Win a Pentium II Notebook PC!! p622

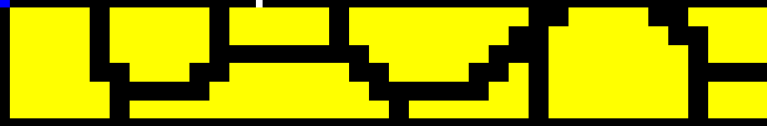
Facts

Game99x1

TV Plus

Club140

Game 99



PREVIEW

■ STAR WARS: THE PHANTOM MENACE PC/PS

The Phantom Menace is unlike any other Star Wars game thus far. Viewing proceedings from a top-down perspective it's a 3D action-cum-adventure game. Adhering to the events of the movie, players take control of four characters: Obi-Wan Kenobi, Qui-Gon Jinn, Amidala and Captain Panaka.

Each character has their own strengths and weaknesses – the two Jedi being particularly move-packed, flinging battledroids around with the Force, and deflecting laser bolts with their magic kitchen strip lights.

3/7

I, say! 674 Madam! 675

GOODNESS ME! p480

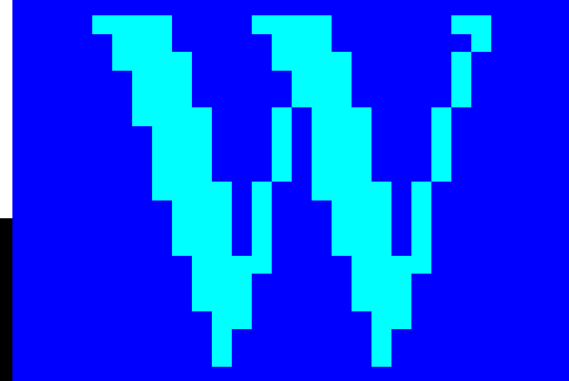
Game99x2

Letters

TV Plus

Green

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LOCAL PROGRAMMES	630
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More follows>>>

westcountry text

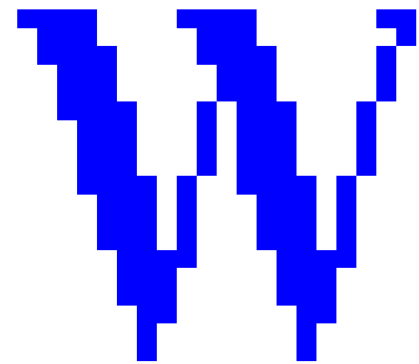
Local Pgms Other Pgms Main index Today

BIRTHDAY PEOPLE X X X

ADDRESS

X

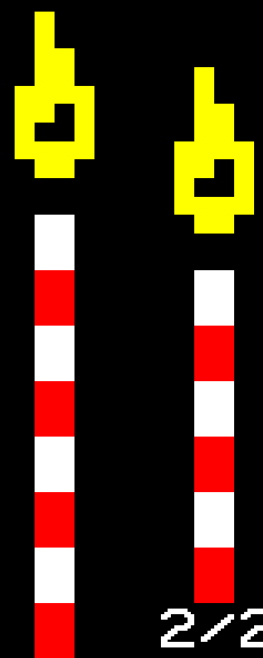
HAPPY BIRTHDAY X X X



If you would like a birthday mentioned on BIRTHDAY PEOPLE write to the address below at least 2 MONTHS prior to the date. Include name age and town where you live:

Birthday People
Westcountry Television
Langage Science Park
Plymouth PL7 5BQ

Please include a stamped self addressed envelope if you send a photograph that you would like returned.



2/2

Local Pgms Other Pgms Index Today

I completely forgot about the old ITV Westcountry region branding and idents.

Telfax

NEW DIET
CLINIC

A diet clinic is being held at the Lifestyles Gym.

On offer at the clinic are:

a free health check
weekly weigh-in
nutritional guidance and seminars
personal service by qualified consultants

Subscription for gym members: £9.00;
non members: £29.00. For full details, ring TC 61534.

TELFAX WEST LONDON INFORMATION

Telfax

STOP & SEARCH PROCEDURES

The revised Stop and Search procedures authorised by MDNTel have now been implemented.

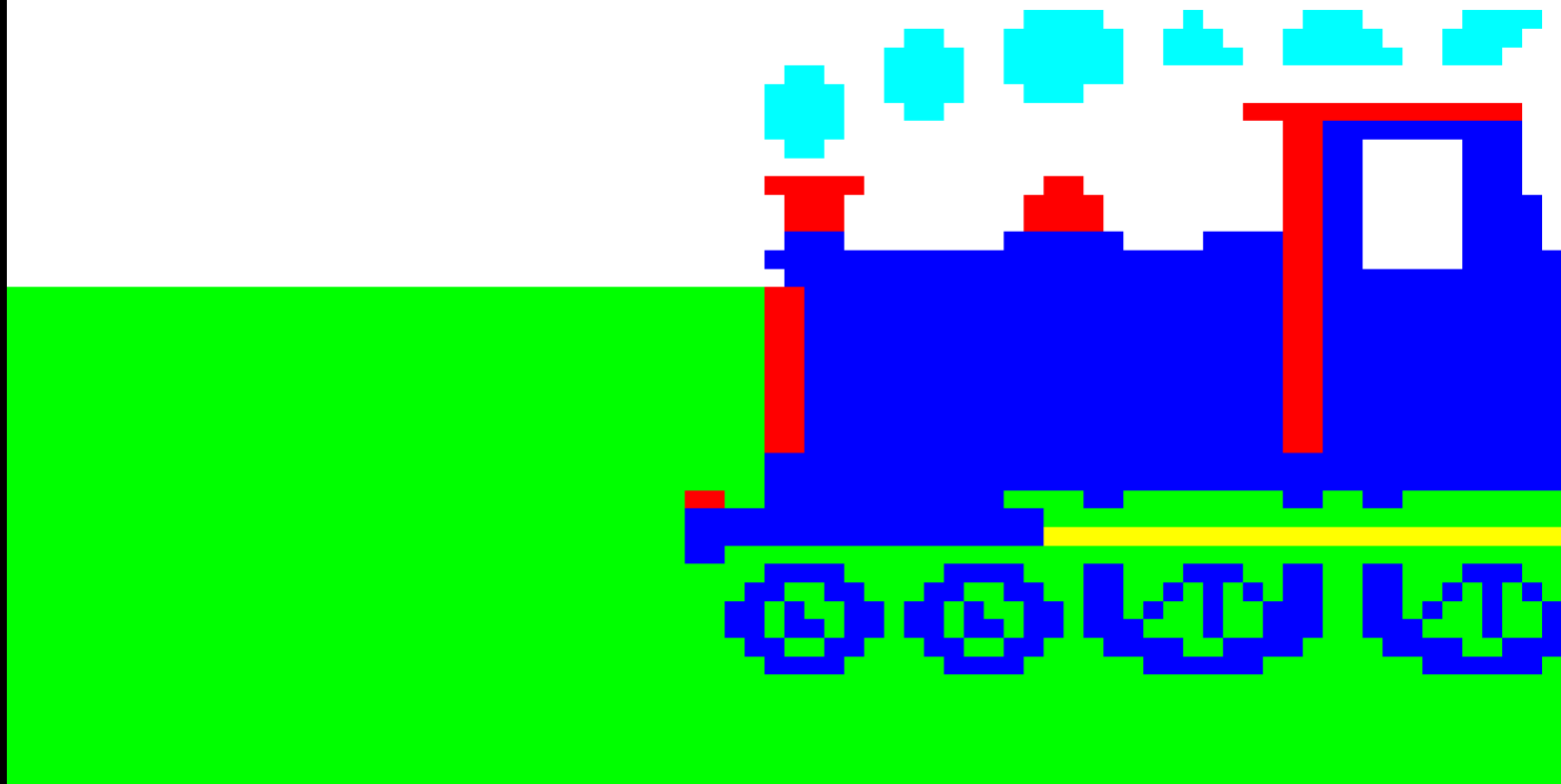
Drivers entering and leaving BBC premises may be stopped and asked to co-operate in a search of their vehicles.

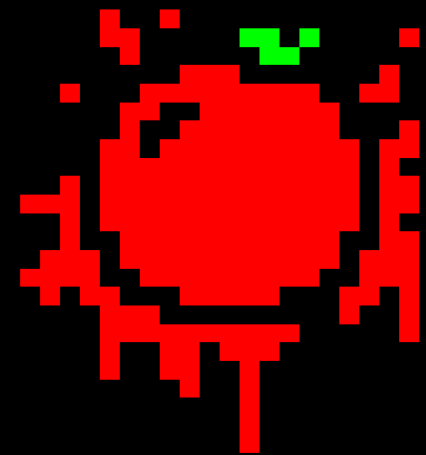
These searches are NOT intended to imply suspicion of any individual.

They are random checks aimed at preventing the unauthorised removal of BBC property.

TELFAX MAIN MENU: 100 - 103

TEST PAGE





SAUCE

- 151 ■ KETCHUP
Gywnnie's got her claws out
- 152 ■ HEL 'N' TEL
Has Tel let himself down?
- 153 ■ DON'T MISS
Ant 'n' Dec
- 154 ■ MY TOWN
Norwich, heart of East Anglar

Ace music guaranteed 180

ARE YOU PLANNING A NIGHT IN OR OUT?

GO TO www.teletext.co.uk/pinpoint

Daily

Diary

Don't Miss

Planet

Preview

1/3

BABYLON 5
Shadow Dancing
18.05-19.00 Tonight

Series 3 is nearing its conclusion, as Channel 4 continues to give a world premiere to the last five episodes.

This long-awaited and much-anticipated episode unites the White Star with a military force from the Non-Aligned Worlds, as they finally square up against the Shadow forces.

In the meantime on Babylon 5, Franklin feels the need to expand the spiritual dimension of his life...

■ Subtitles 888 ■ NICAM stereo ■

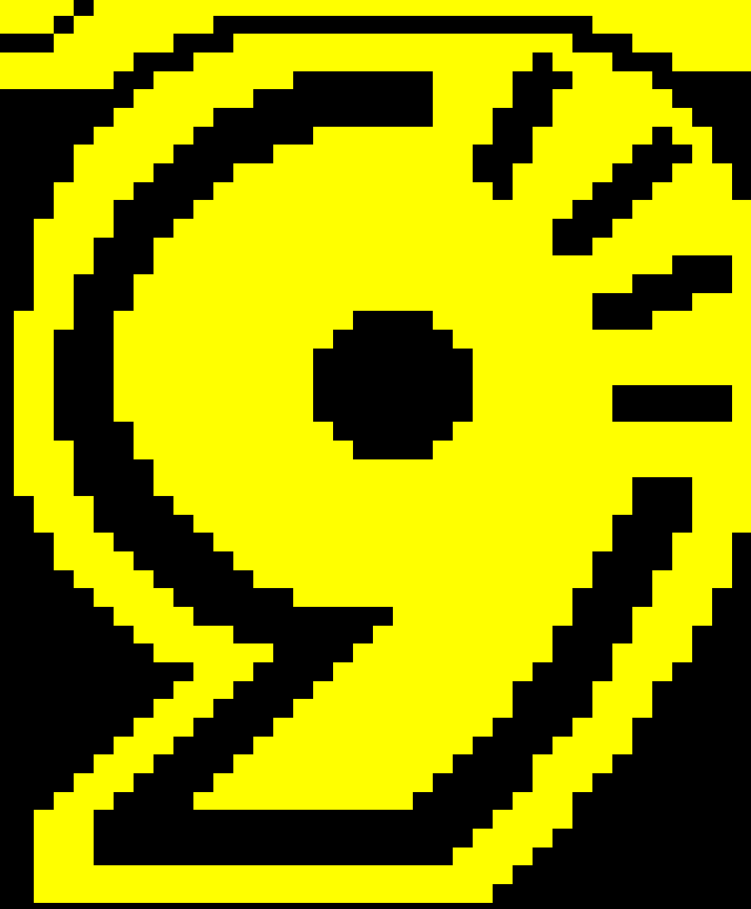
Films on 4: see pages 306 and 307

Next preview C4 Today Films BigBrekkie

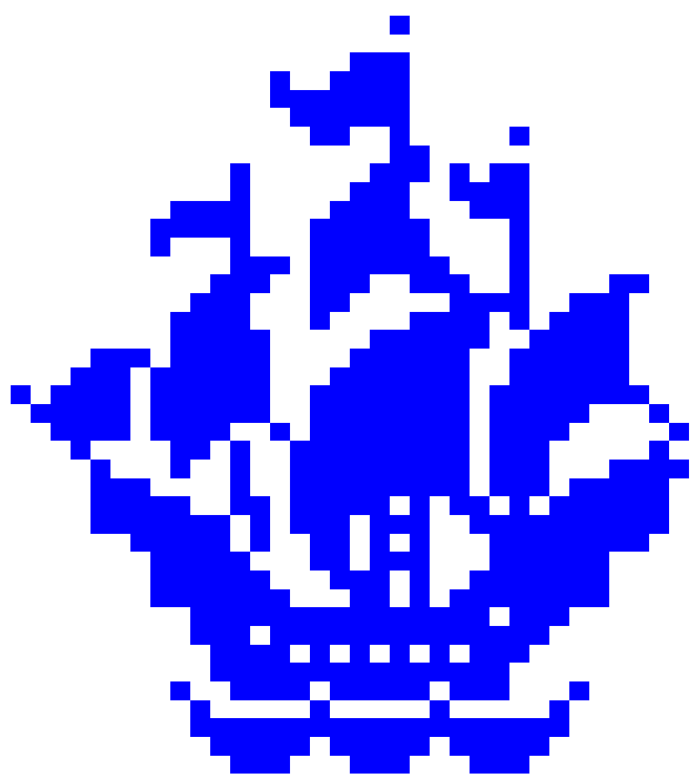
STUDIO

Latest CBBC
news and
comps...535

SORT IT! _____	521
NEWSROUND EXTRA	522
HOME COMP _____	523
SHORT CHANGE _____	524
BLUE PETER _____	525
LIVE & KICKING	530
IT'LL NEVER	
WORK? AWARDS _____	532
GET YOUR OWN	
BACK INFO _____	534
SUNDAY CBBC _____	536
DYNAMO _____	538
CBBC INDEX _____	539



Blue Peter



MONDAY	526
WEDNESDAY ..	527
FRIDAY	528
"NEW FUTURE"	
APPEAL INFO	529
■ Weekly Ceefax	
competition	507

CBBC Text 500 Buzz 502 Studio 9 520
 BP Mon CBBC Text L&K SWestTV

CBBC: Studio 9 and Blue Peter.

All teletext page contents are © their relevant owners (BBC, Oracle, and Teletext).
 This was a nostalgic experience, and there are at least 400 more hours of tape to sift through. Even the gaps between two different recorded programmes can uncover lost pages, so everything must be watched. I might revisit this topic with more screens in the future.

Updates!

I originally wrote this article in 2019, when I was still relatively new to teletext recovery. I have checked over the instructions, and they are still valid for the current version of vhs-teletext.
 I have also added a few more screens to this page, but you can find lots more from a wide variety of services in [The Teletext Archaeologist's archive](#).