MALware Technical Report
Using a Teletype Model 43 with Gnu/Linux

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Abstract

The Teletype Model 43 is a so-called teleprinter or dumb terminal. It can be used as an interface to various other machines to provide a terminal interface. Yes, there is a direct relation between your OS's virtual terminal, ttys and these kinds of machines.

About the Author

Roel Roscam Abbing is an artist and researcher whose work engages with the issues and cultures surrounding networked computation. In an often collaborative practice he has worked on projects exploring the internet's infrastructure, diy communications systems and the politics of the radio spectrum. He holds an MA Networked Media from the Piet Zwart Institute in Rotterdam and a Fine Arts BA (Hon) from the Willem De Kooning Academy. Currently he teaches at the Digital Craft department of the Willem de Kooning Academy.

Martino Morandi researches at the intersections between technology, politics and art. His interests and projects articulate around the material conditions of technologies and their genealogies, using non-hegemonic paradigms like conviviality, semi-efficiency, dys-functioning. He collaborates with LAG in Amsterdam and Constant VZW in Bruxelles.


The Teletype Model 43 is a so-called teleprinter or dumb terminal. It can be used as an interface to various other machines to provide a terminal interface. Yes, there is a direct relation between your OS's virtual terminal, ttys and these kinds of machines. Teleprinters where once used to interface with mainframe computers once timesharing became available. Here's an in-depth article about the history of ttys and how their legacy still lives on in modern Unix based systems.

This specific model is one of the latest types to have used paper as a medium and is now housed at the Media Archeology Lab. Unfortunately it remained unused because people couldn't get it to work. So we decided to try if we could get it to work. It seemed someone had already attached a self-made cable to the machine using an old DB-25 serial connector that is not generally available on modern computers.

Opening the machine up, we found an old circuit board for the serial interface that was wrapped in bubblewrap and tape.
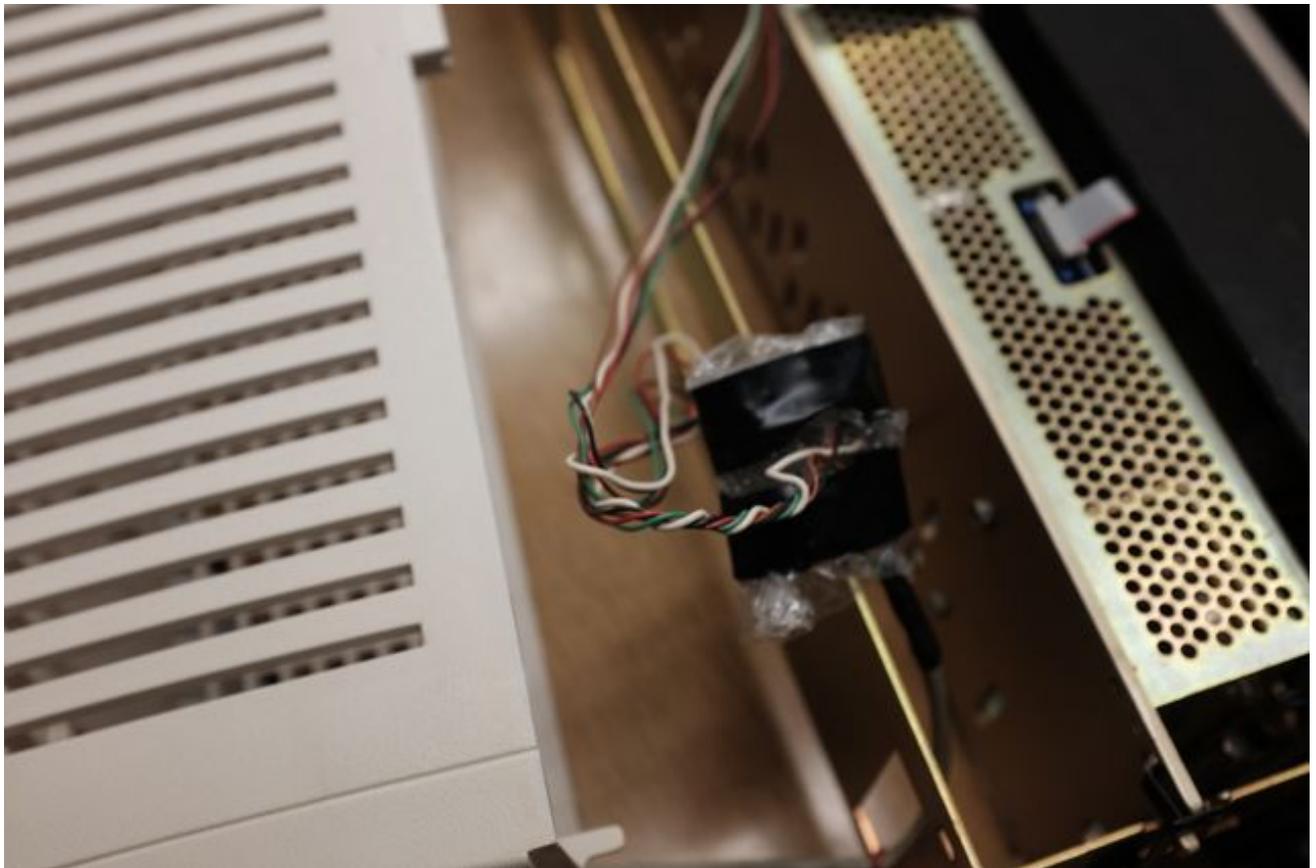
It is a bit unclear whether this is a posterior addition or an original part of the machine. Unwrapping revealed an amplifier chip (741TC) and a crystal. It also revealed that the cable was only connected using two though, (data send and data receive, white and green in the photo) the minimum required to achieve a serial connection.
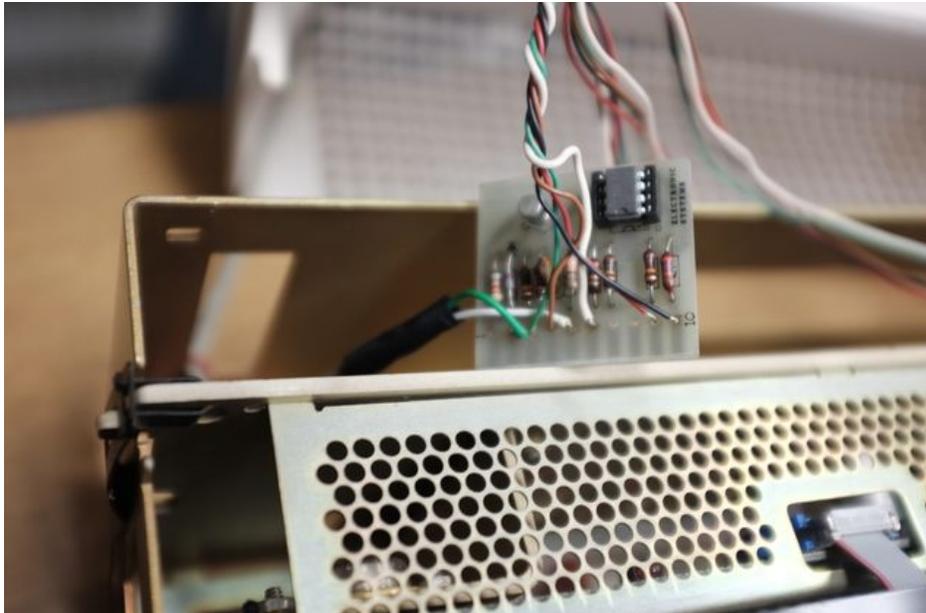

Rather than replacing the cable we opted for adding an additional cable with a DB-9 connector, soldering the two wires on the other side of the board, parallely to the existing cable.
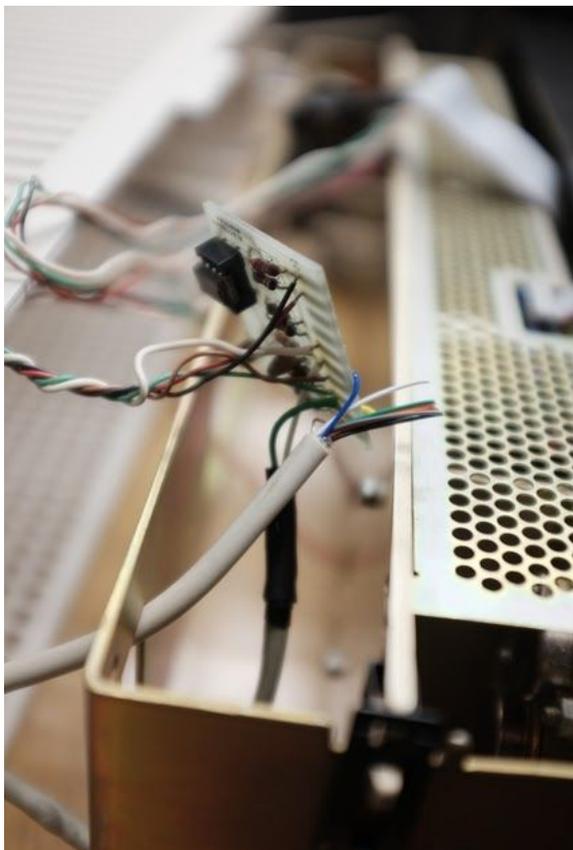
The wiring scheme of the serial adapter we obtained from the great teletype tutorial from The Linux Documentation Project and confirmed with the wiring schemes on page 4 of the Teletype technical reference. In our case, we connected pin 2 on the connector (receive data) to the blue cable, and pin 2 (transmit data) to the yellow cable.

Afterwards we restored the the original bubble wrap cover
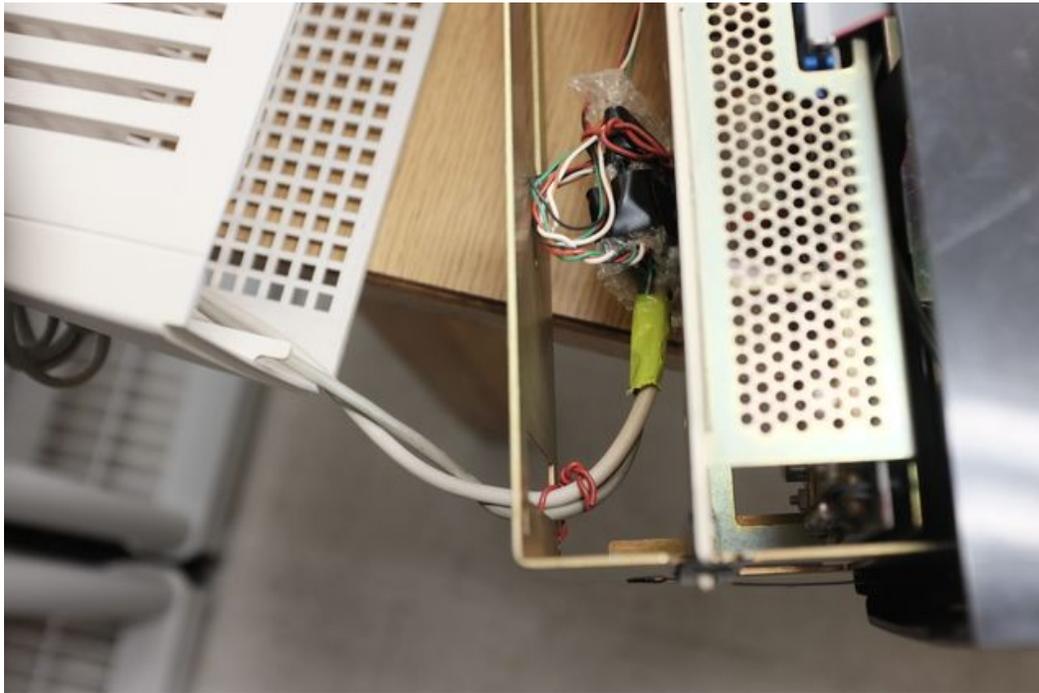
and ended up with two cables.

To connect the TTY43 to computers which don't have a separate serial port (laptops) it is possible to use USB-to-serial coverter cables.

In terms of software it is relatively straightforward to get it to work on Linux since the required drivers and packages are probably already on your system.

If you use have a serial port you can access the printer via /dev/ttyS0, if you use a USB-to-serial converter it shows up as /dev/ttyUSB0.

First set the speed at which your computer talks over that interface. 300 baud resulted in the best setting for the TTY43.
This is done on the command line with the stty commands:

```shell
stty -F /dev/ttyUSB0 300
```

After that, one should be able to write directly to the teletype, for example with:

```shell
echo 'test' > /dev/ttyUSB0
```

To launch a console on the teletype, on Linux one can use getty:

```shell
getty ttyUSB0 300
```

This launches a login prompt on the teletype, after which one can use it as an interactive terminal! Here's some video documentation: https://www.youtube.com/embed/-Ul-f3hPJQM

About the Media Archaeology Lab

Founded in 2009 and generously supported by the College of Media, Communication and Information as well as the Department of English at the University of Colorado at Boulder, the motto of the Media Archaeology Lab (MAL) is that "the past must be lived so that the present can be seen." Nearly all digital media labs are conceived of as a place for experimental research using the most up-to-date, cutting-edge tools available. The MAL – which very well might be the largest of its kind in the world – is a place for cross-disciplinary experimental research and teaching using still functioning media from the past. The MAL is propelled equally by the need to both preserve and maintain access to historically important media of all kinds – from magic lanterns, projectors, typewriters to personal computers from the 1970s through the 1990s – as well as early works of digital literature/art which were created on the hardware/software housed in the lab.

The lab is defined as much by what it is not as by what it is. It is a unique humanities lab that is not interested in scientificity. Rather than being hierarchical and classificatory, it is porous, flat, and branching. Objects are organized in any way participants want; everything is functional and made to be turned on. Rather than being an entity you need to apply to be a part of or something you can only participate in as a researcher, librarian, PhD student, anyone may participate in the lab and have a say about what projects we take on, what kinds of work we do. Rather than setting out to adhere to specific outcomes and five year plans, we change from semester to semester and year to year depending on who's spending time in the lab.

The MAL is interested in experiments with temporality, with a disruptive relationship between past, present and future, and with lab infrastructure in general. It is a place for serious play and for playful seriousness. It is an anti-museum museum, in that all of its hundreds of devices, analog and digital, are meant to be turned on and actively played with, opened up, tinkered with, experimented with, created with, and moved around and juxtaposed next to any other device. The MAL acts as a kind of meta-lab for thinking through the infrastructure of labs and how they fundamentally shape and inform what is produced, from games to history, within the confines of the lab structure. The MAL's holdings quietly show how the history of computing is anything but a neat progression of devices simply improving upon and building upon what came before. In other words, the MAL's collection itself is a disruption to a particular notion of temporality underlying another particular notion of "history". With these devices, we can understand the waxing and waning of technologies more in terms of a phylogenetic tree whereby they are altered over time, split into separate branches, hybridized, or are terminated.