MCCC News

Fort Worth | March 2020 | Dallas

Questionable Decisions

I have some sad news to relay, brought to my attention by Eric Hill of Amigalove.com on the passing of Greg Tibbs. Veteran members may remember Greg from the early days of the Dayton group, back when there were the two Amiga groups, AFIT and Amiga-Dayton. He was also a talented hardware engineer whose best-known Amiga product was the 'Rejuvenator' board, an expansion for Amiga 1000 systems to bring them up to spec with their newer A500 and A2000 contemporaries. Mr. Hill was working to revive this product, and thus was working to contact Greg previously, which leads us to our current unfortunate news. Greg Tibbs will be missed, and the Amiga community as a whole is diminished by his loss.

As 2020 is the 35th anniversary of the Amiga's debut (in the form of the A1000), I have been motivated to look over the Amiga and its history, and have been posting tidbits roughly chronologically on Twitter under the #Amiga35Years hashtag. I have been working through it starting with its inception as Jay Miner's dream concept at the start of this year, and as of this writing I'm still only at around 1986. Perhaps the density of information will drop somewhat once I get past 1994 or so—only time will tell.

In my reading and research on the Amiga and Commodore's history, you find several points where a choice was made that affected all going forward, and wonder what might have been if a different path had been taken. People often talk about Commodore's inept marketing or short-sighted decision-making, but there are other more subtle or obscure choices that may have had just as profound an effect on the Amiga as a whole. Here are but a few.

When the early Amiga team was developing the operating system, along with the Exec multitasking kernel by Carl Sassenrath and the Intuition user interface from RJ Mical, there was to be the layer between them, called CAOS in-house, for Commodore Amiga Operating System, which would handle the file system, memory usage, and pretty much everything else under the hood. This part was lagging behind the other components, and it was determined it would not be finished by the already overworked programmers in time for the projected launch of the Amiga. Even worse, the third-party commissioned programmers upped their price once they learned the Amiga company had been bought by Commodore, causing negotiations to fall through. A replacement OS component was found in TripOS by Dr. Tim King and MetaCom-Co, quickly rewritten to become the original AmigaDOS 1.x we know today. The downside was TripOS/AmigaDOS lacked the resource tracking facilities of the original CAOS design specs, which affected the overall stability of the OS. I wonder what might be if CAOS had gone forward instead, either by allowing the needed time and delaying the Amiga's release further, which might have given more market share to competitors like the Atari ST, or bringing it in as a replacement to TripOS ASAP for OS version 1.1 or 1.2. That would presumably break the earliest Amiga software, but hopefully would lead to a stronger and more stable OS and software base going forward. Maybe even stem the tide of Amiga instability-bashing its detractors liked to harp on. The Amiga's OS was so ahead of its time upon its debut, it's just too unfortunate circumstances prevented it from being that little bit better.

Shortly before parting ways with Commodore after being asked to locate to Pennsylvania from California, Jay Miner was working on designs for the next Amiga following the A1000, a set of specifications, concepts, and prototype boards code-named "Ranger." These included an enhanced custom chip set with more colors and speed. Based on reports, the Ranger chipset offered more than the OCS/ECS chips, but not as powerful as the AGA system. A Ranger system would use either a 68010 or 68020 CPU and required pricey high-speed Video RAM (not sure if this was for display memory only, like a video card, or shared CHIP RAM like Amigas we know) which is part of why Commodore rejected the design in favor of its own updated design from in-house and the German branch, which would become the Amiga 500 and 2000. It's clear a 'Ranger' Amiga would be a much bigger leap over the A1000 than the more incremental 500 and 2000, but those cost-reduced designs were Commodore's most successful and best-selling Amiga systems overall—the A500 especially—while a Ranger-Amiga would almost undoubtedly be substantially more expensive than the A500 and have perhaps less mass-appeal. On the other hand, the Ranger pushed the Amiga chip set tech forward more than Commodore ever did until the A1200 and A4000 in 1992, and conceivably could have kept the Amiga line ahead of the PC systems graphically longer than it did, especially if that momentum was held. It's a hard outcome to predict.

Finally, there was one big decision from Commodore's management. Shortly after the release of the Amiga 1000, former Pepsi manager Thomas Rattigan was installed as Commodore CEO, replacing the lackluster Marshall Smith, and inheriting a company that

was hemorrhaging money after buying, finishing, and launching Amiga, along with less well-advised Commodore products. Having little choice, Rattigan ruthlessly cut budgets, staff, projects, and products to bring Commodore back into the black. He also allegedly recommended the Amiga line be split into low and high-end systems, which would become the Amiga 500 and 2000. He basically wrestled Commodore into its most successful period since the height of Jack Tramiel and the C-64, but he wouldn't stick around to see it. Apparently chairman Irving Gould wasn't happy with Rattigan, believing he was being too high-profile about his role, so when an outside consultant, whose name happened to be Mehdi Ali, recommended firing Rattigan, Gould was happy to do so, even though it resulted in a breach of contract lawsuit. We know the rest, with Irving Gould and Mehdi Ali presiding over Commodore's slow spiral into the dirt. It would be interesting to know what would have happened if Thomas Rattigan had been allowed to serve out his full five-year contract, or better yet if Irving Gould got over whatever weird hate-boner he had for Rattigan and kept him on for the duration. Thomas Rattigan's track record in other businesses shows he was hardly infallible, but his brief tenure at Commodore was competent, fiscally responsible, and appeared to show a decent understanding of how to sell the Amiga and grow its user base. He also seemed to be good at trimming projects that were superfluous or unlikely to pan out. While it's possible nothing might have prevented Commodore or Amiga from falling to Windows PC dominance in the long run, with Rattigan at the helm, it looks like Commodore probably could have held out longer, and in better overall shape, wasting less money on side projects (wasting less money overall) and focusing harder on what worked. While we can never know exactly what quantum results these alternate, presumably smarter decisions would have produced, we can only assume the world would naturally be a better place if it meant a few more, and more powerful Amigas were in it.

…Eric W. Schwartz

From the AmiTech Gazette, February 2020

YouTube Links

Amiga Ireland 2020 Show Report
https://youtu.be/Py4j8GZSOtI

Retro Recipes: Amiga 500 vs. Modern Mac, Chess Match
https://youtu.be/qN8AbHpCRF0

…Links courtesy of Eric Schwartz

Raspberry Pi's Need for Speed

Since we first launched Raspberry Pi, an SD card (or microSD card) has always been a vital component. Without an SD card to store the operating system, Raspberry Pi is pretty useless! Over the ensuing eight years, SD cards have become the default removable storage technology, used in cameras, smartphones, games consoles and all sorts of other devices. Prices have plummeted to the point where smaller size cards are practically given away for free, and at the same time storage capacity has increased to the point where you can store a terabyte on your thumbnail.

However, the fact that SD cards are now so commonplace sometimes conceals the fact that not all SD cards are created equal. SD cards have a speed rating—how fast you can read or write data to the card—and as card sizes have increased, so have speed ratings. If you want to store 4K video from your digital camera, it is important not just that the card is big enough to hold it, but also that you can write it to the card fast enough to keep up with the huge amount of data coming out of the camera.

The speed of an SD card will also directly affect how fast your Raspberry Pi runs, in just the same way as the speed of a hard drive affects how fast a conventional desktop computer runs. The faster you can read data from the card, the faster your Raspberry Pi will boot, and the faster programs will load. Equally, write speed will also affect how well any programs which save large quantities of data run—so it's important to use a good-quality card.

The speed rating of an SD card should be printed either on the card itself or on the packaging.

The 32GB card shown below is Class 4, denoted by the 4 inside the letter C – this indicates that it can write at 4MB/s.

The 64GB card shown below is Class 10, and so can write at 10MB/s. It also shows the logo of UHS ("ultra high speed") Class 1, the 1 inside the letter U, which corresponds to the same speed.

More recently, speeds have started to be quoted in terms of the intended use of the card, with Class V10 denoting a card intended for video at 10MB/s, for example. But the most recent speed categorization—and the one most relevant to use in a Raspberry Pi—is the new A (for "application") speed class. We recommend the use of Class A1 cards (as the one above—see the A1 logo to the right of the Class 10 symbol) in Raspberry Pi—in addition to a

write speed of 10MB/s, these support at least 1500 read operations and 500 write operations per second. All the official Raspberry Pi microSD cards we sell meet this specification.

A new tool for testing your SD card speed

We've all heard the stories of people who have bought a large capacity SD card at a too-good-to-be-true price from a dodgy eBay seller, and found that their card labeled as 64GB can only actually hold 2GB of data. But that is at least fairly easy to spot—it's much harder to work out whether your supposedly fast SD card is actually meeting its specified speed, and unscrupulous manufacturers and sellers often mislabel low quality cards as having unachievable speeds.

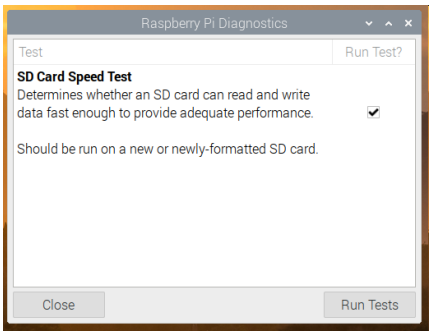
Today, as the first part of a new suite of tests which will enable you to perform various diagnostics on your Raspberry Pi hardware, we are releasing a tool which allows you to test your SD card to check that it performs as it should.

To install the new tool, from a terminal do

sudo apt update
sudo apt install agnostics

("agnostics"? In this case it's nothing to do with religion! I'll leave you to work out the pun...)

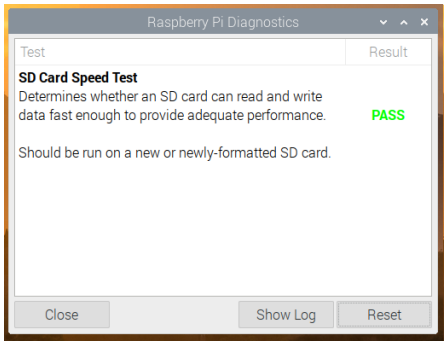
Once installed, you will find the new application "Raspberry Pi Diagnostics" in the main menu under "Accessories", and if you launch it, you'll see a screen like this:



In future, this screen will show a list of the diagnostic tests, and you will be able to select which you want to run using the checkboxes in the right-hand column. But for now, the only test available is SD Card Speed Test; just press "Run Tests" to start it.

One thing to note is that the write performance of SD cards declines over time. A new card is blank and data can be written to what is effectively "empty" memory, which is fast; but as a card fills up, memory needs to be erased before it can be overwritten, and so writes will become slower the more a card is used. The pass / fail criteria in this test assume a new (or at least freshly formatted) card; don't be alarmed if the write speed test fails when run on the SD card you've been using for six months! If you do notice your Raspberry Pi slowing down over time, it may be worth backing up your SD card using the SD Card Copier tool and reformatting it.

The test takes a minute or so to run on a Raspberry Pi 4 (it'll take longer on older models), and at the end you'll see a results screen with either (hopefully) PASS or (if you are less fortunate) FAIL. To see the detailed results of the speed test, press "Show Log", which will open the test log file in a text editor. (The log file is also written to your home directory as rpdiags.txt.)



We are testing against the A1 specification, which requires a sequential write speed of 10MB/s, 500 random write operations per second, and 1500 random read operations per second; we run the test up to three times. (Tests of this nature are liable to errors due to other background operations accessing the SD card while the test is running, which can affect the result—by running the test multiple times we try to reduce the likelihood of a single bad run resulting in a fail.)

If the test result was a pass, great! Your SD card is good enough to provide optimum performance in your Raspberry Pi. If it failed, have a look in the log file—you'll see something like:

```
Raspberry Pi Diagnostics - version 0.1
Mon Feb 24 09:44:16 2020

Test : SD Card Speed Test
Run 1
prepare-file;0;0;12161;23
seq-write;0;0;4151;8
rand-4k-write;0;0;3046;761
rand-4k-read;9242;2310;0;0
Sequential write speed 4151 kb/s (target 10000) - FAIL
Note that sequential write speed declines over time as a card is
used - your card may require reformatting
Random write speed 761 IOPS (target 500) - PASS
Random read speed 2310 IOPS (target 1500) - PASS
Run 2
prepare-file;0;0;8526;16
...
```

You can see just how your card compares to the stated targets; if it is pretty close to them, then your card is only just below specification and is probably fine to use. But if you are seeing significantly lower scores than the targets, you might want to consider getting another card.

...by Simon Long
https://www.raspberrypi.org/blog/sd-card-speed-test/

Apollo 11 Guidance Computer vs USB-C Chargers

It comes as no surprise that the guidance computers aboard the Apollo 11 spacecraft were impossibly primitive compared to the pocket computers we all carry around 50 years later. But on his website, an Apple developer analyzed the tech specs even further and found that even something as simple as a modern USB charger is packed with more processing power.

Forrest Heller, a software developer who formerly worked on Occipital's Structure 3D scanner accessory for mobile devices, but who now works for Apple, broke down the numbers when

it comes to the processing power, memory, and storage capacity of Google's 18W Pixel charger, Huawei's 40W SuperCharge, the Anker PowerPort Atom PD 2 charger, and the Apollo 11 guidance computer, also referred to as the AGC.

It's not easy to directly compare those modern devices with the 50-year-old AGC, which was custom developed by NASA for controlling and automating the guidance and navigation systems aboard the Apollo 11 spacecraft. In a time when computers were the size of giant rooms, the AGC was contained in a box just a few feet in length because it was one of the first computers to be made with integrated circuits. Instead of plopping in an off the shelf processor, NASA's engineers designed and built the AGC with somewhere around 5,600 electronic gates that were capable of performing nearly 40,000 simple mathematical calculations every second. While we measure processor speeds in gigahertz these days, the AGC chugged along at 1.024 MHz.

By comparison, the Anker PowerPort Atom PD 2 USB-C charger includes a Cypress CYPD4225 processor running at 48 MHz with the twice the RAM of the AGC, and almost twice the storage space for software instructions. There would be some challenges when it comes to making all of the software powering the Apollo 11 spacecraft work on modern equipment, but on his site, Heller lays out the case for why he believes that just four of Anker's USB chargers could have potentially helped take astronauts to the moon and back.

However, going to space is not exactly a smooth ride. A rocket blasting off the pad is a much different experience to flooring the gas pedal in a finely tuned sports car. Astronauts, and the equipment that took them to space, were not only subjected to intense G-forces (Apollo 11's top speed was over 24,000 miles per hour as it orbited the Earth before heading to the moon) but leaving Earth's orbit also exposes them to radiation and other challenges not experienced back on the ground. In other words, while a modern USB charger might have more processing power than Apollo 11's guidance computers, it's doubtful they could survive that trip.

...by Andrew Liszewski
https://gizmodo.com/developer-finds-usb-chargers-have-as-much-processing-po-1841598560

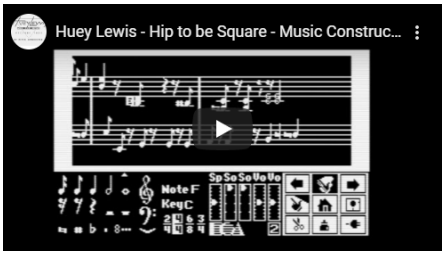
For Forrest Heller's full analysis, go to:
https://forrestheller.com/Apollo-11-Computer-vs-USB-C-chargers.html

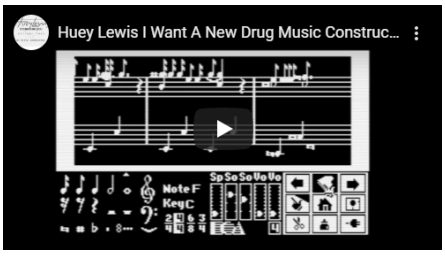
Huey Lewis Covers On a C64

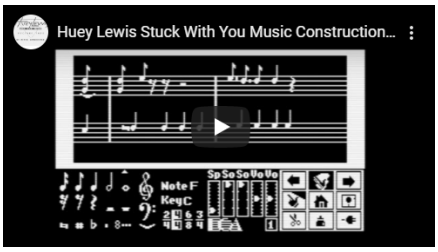
A man who was really obsessed with Huey Lewis and the News as a teen discovered all of the old chiptune-esque covers of his songs he created on his Commodore 64 with the "Music Construction Set" program and uploaded them to YouTube.

According to BoingBoing:

> As a teenager in 1985 and 1986, I used my trusty and the "Music Construction Set" program to create computer versions of a slew of songs by the greatest musical artist of all time: Huey Lewis and The News. Only Huey songs, that was the only artist I did. I recently (Feb 2020) was able to access my 35 year old C64 disks, many of which survived, including the ones with the songs I'm uploading to this channel. Some of the songs sound better than others, but these are the original unedited files.







...https://digg.com/2020/huey-lewis-covers-commodore-64

March Calendar

March 14 — MCCC Meeting
2:00 PM — Burleson Public Library
248 SW Johnson Ave., Burleson

March 14 — Board of Director's Meeting
Approximately 4:00 PM — Location TBD

April 1 — Newsletter Deadline — 8:00 AM