

2018 Week 15: The Week Ending Saturday, April 14th

Paul R. Potts

Sunday

We had a great podcast recording session with our friend Chris Travers. You can find the show blog post [here](#).

A Working Audio Setup

I finally got the audio setup working properly, but I wasted a lot of time screwing around with it. Apparently Google Hangouts, running on Safari, just won't send audio out the FA-66 outputs when you set the FA-66 as its "speaker out." It will send the audio through the the US-2000 outputs, or through the built-in headphone output on the computer. It will get audio *in* from the FA-66 inputs. Other software will send audio out the FA-66 outputs just fine. I have no explanation. So in desperation I set up a workaround, where the remote audio "mix minus" going to the Google Hangout is going out one output of the US-2000 into one input of the FA-66, but the remote audio *from* the Google Hangout is going from the headphone jack of the Mac Mini, into a Radial J-4 box (this box takes unbalanced stereo audio, boosts it, and changes it to +4dBu balanced outputs), with the left XLR output of the J-4 going into a mono TRS input of the US-2000 as the "from Google Hangout" audio.

This is so damned complicated... all because of the way you can't arbitrarily select input and output channels for things like Google Groups audio. But it worked!

Can I Simplify It?

After sleeping on the problem, it occurs to me that I might be able to do it all with the US-2000, by using input and output 1 for the Google Hangout audio, leaving input and output 2 unused, and moving some channels around to free up inputs and outputs 1 and 2.

There was some kind of problem while recording where I was hearing an slight echo or doubling of my voice track, in the control room mix going through the headphone amplifier. This couldn't have been caused by the input monitoring on the FA-66, since I wasn't even using the FA-66 output 1. It was not audible

on Grace's input, and hers was set up the same as mine, just on an adjacent channel. So I have no idea what was going on. I just have to hope that after rearranging channels and rebooting everything again, it will go away.

The US-2000 has enough inputs to do what I need for the podcast, but I'm finding that the microphone inputs seem to clip really, *really* easily compared to the FA-66, and it's not a soft clipping that I'm hearing. It's a nasty digital clipping. But this is happening even though the signal level getting recorded is very low — nowhere near clipping. I have to have the preamps turned *way* down to avoid this. This means I have to add a *lot* of gain in post. How could that audio level be clipping anything?

Even if I hit them very softly, the inputs just don't seem to sound quite as good as the FA-66 either. Even if I add a suitable amount of gain to the track before feeding it into the Renaissance Vox plug-in instances, they seem to sound slightly dull by comparison, lacking a little "air."

One of the inputs is coming from my JDV direct box for electric guitar. The metering on the front panel of the US-2000, and in Logic, shows the level coming in as quite low. But transients seem to clip it like crazy, even when it doesn't seem like they should be anywhere near loud enough.

I don't have a good explanation for it, except that maybe the FA-66 and Ensemble were more tolerant, or had built-in limiting. Could this be a *driver* issue? Or do I have a unit with a hardware problem? (I did pick it up used). Maybe its internal power supply has capacitor rot, or something like that?

I haven't really thought of the FA-66 as having great-sounding preamps, compared to the Ensemble, because they have more unpleasant noise when I turn the gain up high, but they do seem to sound noticeably better than the US-2000, and they seem much more forgiving. Maybe if I was using outboard preamps and compressors prior to hitting the US-2000 inputs, I could avoid clipping the inputs. But I just don't have any budget to introduce more hardware into my little podcast studio at present. And if I had budget to start updating hardware, I'd get a better interface. (And it already takes eight devices plugged into AC power to record the podcast!)

After adding gain back in, in post-production, the resulting file doesn't sound *dramatically* different, but I've gotten very used to how the FA-66 sounds, and so even if it's not clipping, I'm inclined to hear any change in our recorded sound as a negative thing. Maybe I'll get used to it.

It seems like I should be happy about the prospect of freeing up the FA-66, but unfortunately I can't do much with it, since none of my other computers have FireWire.

Is there a version of the FA-66 with a lot more channels? (Nope.) Do I need to track down an old FireWire MOTU interface? (It seems ridiculous to buy FireWire interfaces in 2018...)

The Five Doctors (1983 Doctor Who Fan Edit)

We finished watching the fan edit of *The Five Doctors*, the serial from 1983. This is one of the odder serials. The five doctors are Hartnell (played by Richard Hurndall, since Hartnell had died), Troughton, Pertwee, Baker, and Davidson. There are puzzling “side quests” with Baker, which don’t make a lot of sense; he’s never in scenes with the other four. It turns out this is because he is “included” in the serial only because the producers used some footage from the unfinished serial *Shada*.

The Master is played by Anthony Ainley. It was a little weird watching Ainley’s version shortly after watching *Terror of the Autons*, since his face looks quite a bit different. The character doesn’t actually accomplish much in this show. And there are Cybermen, but they don’t seem to accomplish much either, other than getting blown up by the Raston Warrior Robot.

It’s a bit confusing. It has some nice scenes, though. The “action figure doctors” are wonderfully strange. The scenes where the different companions interact are funny, and in some cases, where they appear as visions, and then disappear, their scenes are disturbing. The climactic scene at Rassilon’s tomb is also quite creepy, and helps a lot to make up for some of the duller scenes. But overall, even in the sped-up fan edit, it’s still pretty confusing and messy.

Monday

The Dangerous Case of Donald Trump Continued

This morning at breakfast I read a bit more of *The Dangerous Case of Donald Trump*, but there’s not a lot that I feel strongly about; the book continues to be mostly as I’ve described it previously. There’s an essay examining whether Trump is “crazy like a fox” or “crazy like a crazy,” that discusses delusional disorder. Essays discuss cognitive impairment and the issue of mental incapacity, the 25th Amendment, James A. Herb’s lawsuit in Florida, and a claim that electors had a duty to be faithless. These recent chapters focus on the idea that Trump is suffering from dementia, or some other form of incapacitation — but none of this really suggests much that readers can *do* about it, other than engage in more of this kind of speculation. I’ve finished part 1, so I’ll see if part 2, titled “The Trump Dilemma,” has anything more to offer.

Tuesday

It’s been a difficult night and morning. I got home quite late Monday night — we had a series of meetings at work, and so I never really was able to get my thoughts together and get work done until everyone else had gone home. Then I stayed late to get some things done. The kids had left the trash bins facing the wrong way. We had roast chicken and green bean casserole for dinner. Then I had to dive into kitchen cleanup, and although the kids had loaded the dishwasher, no one had started it, so we were backed up on dishes.

Grace had scheduled the water turn-on for this morning, so she needed to get out at about 8:00 a.m. So we struggled a bit to figure out just how we were going to do that. The plan we finally settled on was to leave the older kids in charge for a few hours, then have me come home early. So that's what I did. This morning I discovered that the kids had left both the front and back doors of the garage ajar. This keeps happening, and I've begged them not to do it, since we really don't want opossum or other animals nesting in our boxes of clothes. I also discovered that Grace's truck was *very* low on gas. So that was stressing me out. I dug out the gas can and followed her to the gas station because I thought there was a very high likelihood she wouldn't even make it that far. (She did.)

Low Tires

In the drive in, I noticed that my tires seemed soft. I check them periodically, but they seemed even softer than usual. So when I got to the office parking lot, I checked them. They are supposed to be 32 psi in front and 34 psi in back. They were all 25 and under, and one was barely 20. So I took the Element to Discount Tire and got them topped off. One valve stem cap was missing. This makes me wonder if the kids were playing with my tires. Which made me wonder if they might have been playing with Grace's tires as well. So I asked Grace to stop at Discount Tire in Saginaw.

I came home about 12:30 and brought my work laptop, signed on to the VPN, and did a few more hours work at the dining table while the kids watched videos in the bedroom. Grace will not be back until late.

Tuesday Evening

Another Pottscast Audio Experiment

OK, I have figured out how to make my podcast setup slightly simpler and stop using the FA-66 altogether. I thought I might have figured out a way to stop using the extra audio output from the Mac Mini as well, but no.

I first rearranged a few inputs. The TASCAM US-2000 now has the Rode NT-5 for acoustic guitar on input 3, with phantom power turned on for the 3/4 pair. The host microphones on inputs 5 and 6, with phantom power turned on for the 5/6 pair. The Radial JDV direct box for my electric guitar is on input 7, with phantom power turned off for the 7/8 pair. This is one of those times when it would be nice if I could turn phantom power on and off on each separate input. If I could do that, I could put everything into the back panel and leave the front panel inputs 7 and 8 unused.

Now I've freed up inputs 1 and 2, with phantom power turned off on the input 1/2 pair. With these inputs freed up, I can use them for the "microphone" audio going into the Google Hangout, and have the Google Hangout configured to use the US-2000 right alongside Logic.

I also moved the control room outputs (that go to the headphone mixer) from outputs 1 and 2 to outputs 3 and 4. This frees up outputs 1 and 2 so that the “speaker” audio coming out of the Google Hangout can go out these outputs.

I have to use inputs 1/2 and outputs 1/2 for Google Hangouts, because as with most Mac programs that let you route audio, all you can do is choose the audio interface to use. Sometimes you can choose separate interfaces to use for input and output (fortunately you can in Google Hangouts). But most programs just default to channels 1 and 2 as a stereo pair and there’s no option to change it. You could have a 512-channel interface and you’d still only be able to use the first two outputs.

Google Hangout audio is mono, which gave me an idea. If the Google Hangout only sent audio out channel 1 (the left channel) of the stereo pair, and only listened to audio coming in on the left channel, I could do some clever looping. I could “criss-cross” channels 1 and 2:

- Output 2, not otherwise used, could carry the “mix minus” audio.
- I could route this around to input 1, the “microphone input” for the Google Hangout.
- Then, for the “speaker output” I could do the opposite: I could send output 1 to the not-otherwise-used input 2, where it would get routed into the control room mix.

Then I could just configure Google Hangouts to use the US-2000.

But this doesn’t work. It almost works, but because Google Hangouts sends audio out both channels, and mixes the left and right inputs, this approach leads to a gradual build-up of feedback. It’s “gradual” because the software does a pretty good job of eliminating some of it. But if I let it run for a while, it starts to build up.

Struggling with “Mix Minus” Routing

If I had even one extra mono output on the US-2000, say an output 5, to use for the “mix minus” to send to the Hangouts “microphone” input, I could make this work. I could route output 5 to input 1, leaving input 2 unconnected. Then I could route output 1, the Hangouts “speaker” output, into my input 9, where I feed it into the control room mix so Grace and I can hear what our guests are saying (and avoid routing it back out to the Hangout). But I don’t have even one more. So the interface is a little lopsided. Six outputs would be great.

What I’m doing now is to use the Mac Mini headphone out for the Google Hangouts speaker output. That goes into a Radial J+4, then I run just the left channel (because the Hangout audio is mono anyway) into input 9, the “listen to the hangout” input. Then because the Hangout isn’t using output 1, I take over output 1 for the “mix minus” and send it to input 1, the Hangout “microphone input.”

If I have a chance to pick up a better-sounding USB interface with six outputs, I can get rid of the extra routing for the Google Hangout speaker audio. That would be nice.

This would probably be easier to explain with a drawing. It may be time to bust out the ASCII art.

Level Problems

I haven't exactly solved the electric guitar level problem, but I determined that even with the preamp at its lowest setting, the JDV output can clip the input, unless I engage the pad. So, probably I should be using a line input instead of a microphone input. To do that properly I want an XLR female to TRS male cable of the appropriate length, so I don't have to connect cables to cables or use cable adapters. So maybe I'll order a couple of those. I still have spare inputs — remember that “lopsided” input and output configuration.

Last week I talked about my ideal audio interface for this application. If I give up the idea of routing digital audio into or out of the interface and focus entirely on the analog, that could simplify things. In the current setup, I'm using 3 microphones that actually need mic preamps. My input 1 doesn't need it, but it doesn't seem to hurt anything when turned all the way down; it is gained up a little bit, but it doesn't clip.

I'm presently using a total of six inputs. Input 1 (the Google Hangout “mic input”) and input 7 (the JDV input) could just as well be line inputs. So it would be nice if a couple of these inputs used combo jacks and could be used as either mic or line inputs, as the mic inputs are configured on the FA-66. So let's add that requirement.

- 8 XLR (mic)/TRS (line input) combo inputs.
- Phantom power available on each input, configurable independently.
- Let's just skip any guitar inputs; I'll use a direct box.
- 6 TRS outputs.

For this application, I don't need anything else. This would let me leave 1/2 for the required Google Hangout left/right input, but not have to skip inputs for the 5 signals currently going in (3 mics, the JDV, and the Hangout monitoring). I'd still have a spare for another host or a second mic for acoustic instruments. So who makes *this*? Or the closest thing to it?

Audio Interfaces that Might Work

I've written enough for tonight, but here's a list of interfaces I found on Sweetwater that might meet my requirements:

- Focusrite Scarlett 18i20
- Focusrite Clarett 8Pre USB 18x20
- PreSonus AudioBox 1818VSL

- PreSonus Studio 1824
- TASCAM US-16x08
- TASCAM Celesonic US-20x20
- Antelope Audio Discrete 8

Both Focusrite boxes only allow phantom power control per bank of four inputs.

The Presonus 1818VSL uses combo jacks in what looks to be a very useful way. But it has the same limitation on phantom power control.

The Presonus 1824 has *one* control for phantom power that affects all the microphone inputs. I really don't like that. I might be able to work around it; currently the only actual microphones I'm using do require phantom power. For a couple of line-level inputs, I could probably get by using different cables that did not terminate in an XLR female connector. So I'd have to acquire some new cables. But if I ever wanted to use a ribbon mic alongside the others, I'd be in trouble, unless I added another Cloud Lifter or similar device. It just seems like a needless lack of flexibility.

The TASCAM US-16x08 is pretty similar to the US-2000 I have now. There are no combo jacks, but there are extra line inputs, and extra line outputs. This would do the job I can't quite do now without using that extra output from the computer. This would probably be the simplest and least expensive "side-grade," although I'm not sure it is any better at all, audio quality-wise, and might even be worse, than the US-2000.

The TASCAM Celesonic US-20x20 looks very usable but it's a USB 3.0 device, so I'm going to have to disqualify it because it wouldn't work with any of my older computers including the Mac Mini I'm now using for the podcast.

The Antelope Audio Discrete 8 looks pretty nice, but because of all the extra clocking and digital I/O on the back, the 8 line outputs are on a DB-25. I'd probably want to break them out to a racked patch bay. That would be inconvenient, but it's not necessarily a deal breaker.

Wednesday

Full Circle (1980 Doctor Who Fan Edit)

After dinner I watched a couple of old *Doctor Who* serials. I was curious about the origin story of Adric, so watched *Full Circle*. It's really not that good, although there are some moments that achieve real creepiness and uncaniness. The plot in this story is quite complex. The degree of complexity is almost up there with some of the epic science fiction novels that cover centuries, like the *Helliconia* trilogy by Brian W. Aldiss. I'm not actually claiming that this show was written with the same degree of care and research that Aldiss put into that trilogy, but just that it has considerably more back-story and world-building than one usually sees in a *Doctor Who* story (or any television story of the era, honestly).

The net result is that I finished watching the show with the feeling that the *story* deserved to be a miniseries and it deserved a higher budget; it would benefit from a presentation that relied less on cheesy horror tropes and more on dialogue. It doesn't work all that well for *Doctor Who* because, for one reason, there's not a clear villain; everyone has a back-story that makes them sympathetic to one degree or another. I'm reminded a bit of *The Starlost*, Harlan Ellison's show which suffered greatly (his story of the way small-minded producers ruined the premise is the stuff of science fiction legend, really) in the transition from screenplay to screen.

You can read the whole plot summary here. As usual, we watched the fan edit. I'm sure that made it more watchable, but I think the editing might have obscured some of the world-building. This story is the first of a loose trilogy called the "E-Space trilogy." The TARDIS has passed into a parallel universe. This involves some hand-waving and techno-babble. I'm honestly not really sure what the point of it is.

***Logopolis* (1981 *Doctor Who* Fan Edit)**

Then, we skipped right to the end of Tom Baker's tenure as The Doctor, and watched *Logopolis*. This is quite a weird and fascinating *Doctor Who* story but I think I might want to watch it again before I try to fully review it. There's a lot going on, good and bad, in this serial. This makes it, I think, quite fitting as Baker's send-off story.

I've downloaded the fan edits of *State of Decay* (a 1980 *Doctor Who* serial, the second part of the "E-Space trilogy") and *Warriors Gate* (a 1981 *Doctor Who* serial, the third part of the "E-Space trilogy"). I'll watch those as time allows.

Thursday

I didn't wind up anything at all on Thursday, so I'll try to recall what happened. I got home about 7:30 and we had dinner guests. Grace had made stuffed shells, and they were very good. So we wound up socializing until after 10, and then it was mostly cleaning up dishes until I collapsed into bed.

Friday

Just like on Thursday, I wasn't able to get anything written on Friday. It was an early morning and a busy work day. I got back from my Friday evening grocery shopping about 8:30, and the kitchen was a mess, so I had to do quite a bit of clean-up just to get the groceries put away and get dinner on. Dinner was our usual Friday evening salmon from Costco, and a salad kit.

Assembling the Kano

The Kano computer kit I ordered the previous Friday arrived. So after dinner, I helped the kids put it together, and now they have a Kano Raspberry Pi-based

computer up and running.

It's supposed to be possible for kids to assemble it, but I discovered that the pieces don't really fit together as cleanly and easily as billed. In several places the instructions talk about "snapping" the parts together, but they don't "snap." They are just press-fit.

Without tactile feedback it's hard to figure out just how much force to apply. In some cases you have to push on printed circuit boards covered with parts. It is not necessarily that clear to a child where one can push safely without damaging parts. Also, there are a number of micro-USB plugs that don't fit into the sockets quite as far as you might expect; they are designed to fit into the sockets when inserted through holes in a device's case. When there is no case, it doesn't seem like the plug is going far enough into the socket — but that's as far as it will go without damaging it.

So it's actually not at all hard to put together, but I think it's a little optimistic to claim that a child can do it easily. Maybe an older child.

The Kano kit cost \$250.00 and I have warned the kids that if they fight over it, or break it, that's it. As I write this, Benjamin is throwing a screaming tantrum, so I have asked them to shut it down and bring me the device. It's time to take a break.

The Kano hardware is a bit of a strange compromise. The clear plastic case seems quite robust. The innards are probably made just about as well as most consumer electronics hardware, whis is to say, it's all made in China. There are no fussy, fragile ribbon cables. All the connectors are USB, 1/8" TRS, HDMI, or USB micro. These are all nice open standards. These are fine for the internal connectors, but I do wish that the external USB micro connection for the power adapter was something bigger and less fragile.

The whole file system is on a micro SD card. It comes with a customized Linux distribution. That's really impressive, but I'm not sure a micro SD card is really a sturdy file system for Linux. A more robust setup might invove an external SSD.

The trackpad on the included keyboard is pretty awful, and the kids were complaining about it. So I loaned them one of my wireless mice. That worked immediately with no setup required, which was very nice. The keyboard itself is scaled down, which makes it bizarrely difficult for an adult to use, but they have not complained about it.

So far I have not gotten a chance to try out this distribution. But already it seems far more responsive and child-friendly than the vintage Windows 7 laptops the kids were using.

I have not yet figured out how to get this machine to use only the proxy server for HTTP. That might take some digging. As soon as I got the three Windows laptops working nicely with the proxy server, the kids managed to break the

second and third ones and so we returned them all to their school. (To be fair to the kids, one or two of them may have just failed because of failing hard drives or other components; but they were certainly hard on the laptops.)

Saturday

Elysium Fire by Alastair Reynolds

This morning I started reading *Elysium Fire* by Alastair Reynolds. This book is a sequel to *The Prefect*. Recent editions of *The Prefect* have been re-titled *Aurora Rising*. (Reynolds is perfect en-titled (hahaha) to do this, but I don't see the point; I think it's just an invitation to confusion.)

The Prefect was set in the Revelation Space universe and it is basically a police procedural. I think these constraints on the storytelling actually had the effect of making it one of the tightest and most exciting of Reynolds' novels. It's one of my favorites, although I have to admit that it's been a few years since I last read it, and I don't remember the story all that clearly.

I read the first three chapters of *Elysium Fire* this morning and we're diving right in to a fast-moving story. The character at the center of the story is Thalia Ng, from the previous book. Dreyfus and Aumonier are involved as well. There's political plotting. There are ancient and powerful families. In style, it's somewhat reminiscent of his standalone novel *House of Suns*. It looks like it's gonna be a good one. In books like these Reynolds really does space opera very well. The only question, as far as I'm concerned, is whether you enjoy space opera. These stories may not be eternal classics, and they may not be that deep or important, but they are damned entertaining, and ought to be ranked up there with the best mystery novels or detective novels.

It's the Weekend and I'm Weakened

I wanted to be up cooking by 9:00 a.m., but just had too bad a night's sleep. So I had to sleep a bit later. Then I took a bath and read those three chapters. Then, kitchen cleanup, and cooking. I made corned beef hash on the griddle. Grace helped clean up and prep eggs, and so we made a couple of frittatas (she doesn't attempt omelettes anymore) with the leftover salmon. We put some English muffins slathered with pesto butter under the broiler and made a pot of coffee and a pot of tea.

I was just looking at my Facebook feed on this laptop, and it suddenly shut down. The battery isn't dead. I powered it back on and it started up normally. There were no error messages after booting up, or the usual "Windows has shut down unexpectedly," and no offer to report the problem to Microsoft.

I just paid off the computer on my credit card. I hope this isn't a sign that it's going to be unreliable. And I hope this isn't just Windows 10's approach to forcing me to install updates (which, as I've discussed before, are *broken* anyway!)

I accidentally left my reading glasses at work this weekend. So I'm squinting.

Tomorrow is looking like an extremely busy day, so if possible Grace and I will record and produce the podcast tonight. I'm afraid that means it will not represent our best work. But sometimes we get lucky and a show that we weren't able to plan very well turns out to be pretty good anyway.

Old House News

There's news about the old house. It's complicated, but the upshot seems to be that it still might be possible to complete a sale in the next month or so, but I will need to borrow even more money (\$25,000). I think that's about my limit. If we can't make it work by losing half the purchase price, it's time to just hand over the keys to the bank and let them sue me, smash my credit rating, or whatever it is that they want to do; whatever it takes to get us out from under paying the mortgage, heat, water, and being on the hook for all repair expenses.

One aspect of our whole Saginaw adventure I've talked about before is just how hard it is to find reliable people to do any kind of work on the house. Not just contractors, but anyone. We paid a family friend to replace the door in the basement. He cashed our checks and never did the work. Grace is still trying to get him to follow through. This is just one example of many.

I'm going to wind this up and start trying to piece together the outline of a podcast. And then very soon we will need to start working on dinner.

Books, Music, Movies, and TV Shows Discussed This Week

This list does not include books, chapters of books, or other works that I only mentioned briefly in the text above.

- *The Dangerous Case of Donald Trump: 27 Psychiatrists and Mental Health Experts Assess a President* by Bandy X. Lee et al.
- *The Prefect* (now re-titled as *Aurora Rising*) by Alastair Reynolds
- *Elysium Fire* by Alastair Reynolds
- *The Five Doctors* (1983 *Doctor Who* Fan Edit)
- *Full Circle* (1980 *Doctor Who* Fan Edit)
- *Logopolis* (1981 *Doctor Who* Fan Edit)

Pittsfield Township, Michigan

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