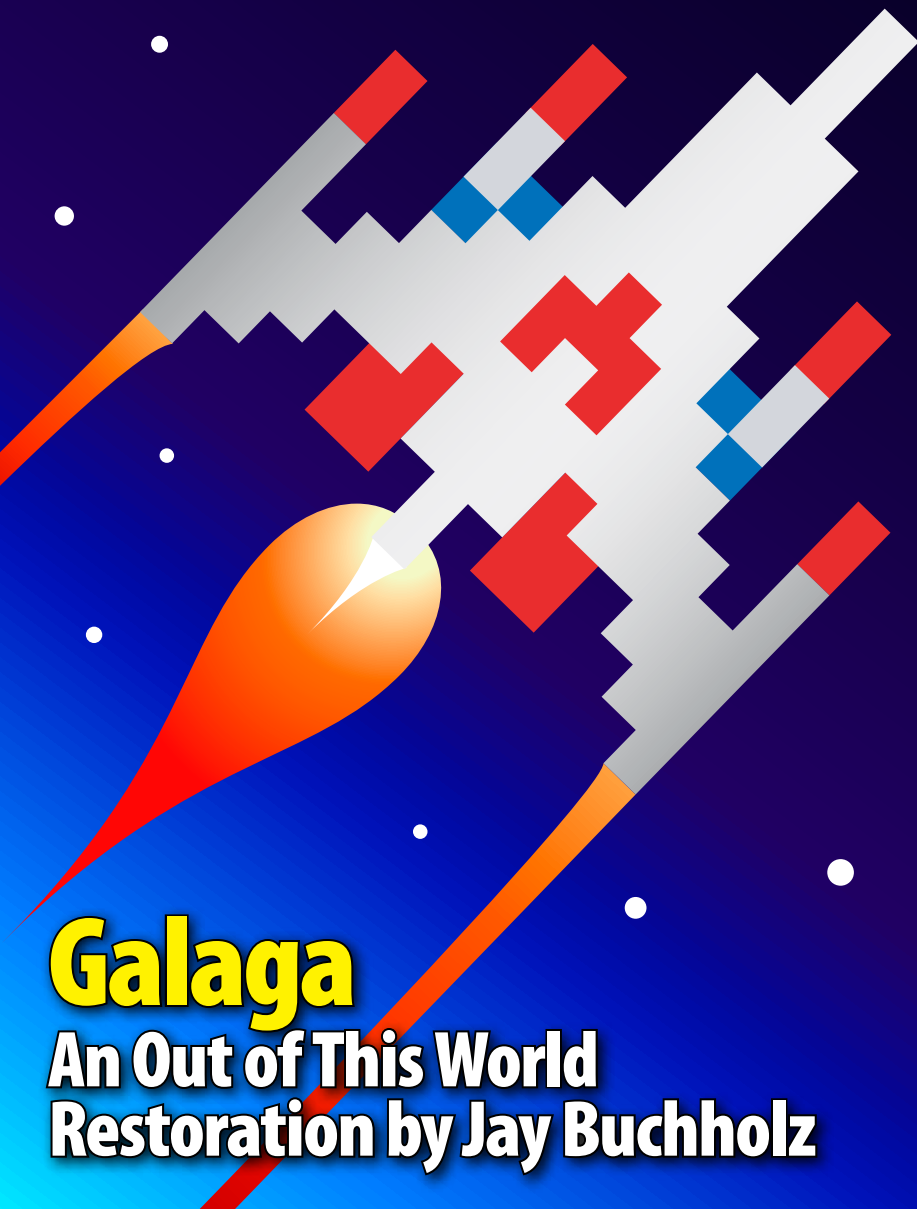


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Galaga

An Out of This World
Restoration by Jay Buchholz



Rob Craig's

Tales of the Silverball

FREE PLAY.

Bad Pinball Mojo

In pinball restoration there are days when everything goes right. The teardown goes smooth with every screw in the playfield coming out without a hitch, lamp sockets let themselves go without a fight, and every T-nut stays secured in its original place. I absolutely love teardowns like this. The time to re-birth is shorter and the memory of the process is usually a good one. But most of us run into a handful of bumps in the road. Knowing how to handle those bumps are important in keeping a good pace on the job at hand and staying motivated to put forth your best effort.

But there are days when you wonder if there is really such a thing as bad mojo—some freakish pinball curse that is trying to cause utter chaos at every attempt you make to follow through with a pinball restoration. There are a number of events that occur in succession, some of them major issues that

come with machines in poor condition, other events are self-inflicted, though surely not on purpose. Let me give you some examples of my own personal experiences when I've been infected.

I once bought a Williams *Swords of Fury* (SoF). It played well and only got the "operator's shop job" for its first few years in my collection. After I located an NOS playfield for it, I decided to put SoF on location in my mall arcade. This arcade had a fair amount of pinball machines and people willing to pay to play them. After a few months I kept finding the machine unable to start a game. A quick inspection found that a ball was missing and nowhere on the playfield to be found. I popped the playfield and found the missing ball in the back left corner of the cabinet. I scratched my head, cleaned the ball, and played a full game with no problems. A few days later, I came back to check SoF and the

ball was missing again. There it was, under the playfield in the back left corner. I cleaned the ball and played a couple of games, still unable to re-create the problem. After visually looking over every possible place the ball could roll, I found that the little trough that is located behind the upper playfield drop targets was partially broken on its mount. A ball that dropped in "just the right spot" would cause the little trough to drop down far enough to dump the ball into the cabinet. Game over, no more money to be earned, and worst of all I had possibly turned off people to the silverball. I exchanged the game with another and brought SoF back to my shop.

I had no intention of swapping *Swords of Fury*'s playfield at the time. The rough playfield was still good enough to operate for another year. But it needed new rubber and a good thorough cleaning. I had to replace the upper playfield trough and figured that

The mystery of the ball-eating black hole in the mini-playfield on *Swords of Fury* was, well...infuriating



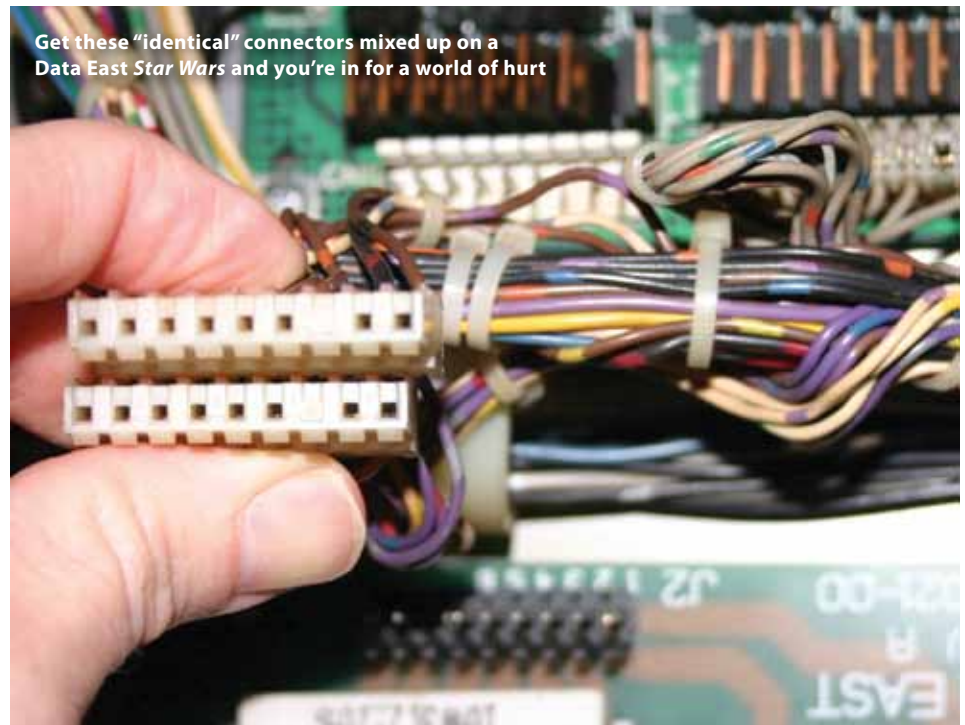
a full teardown, cleaning, and rebuild would be good practice for a later playfield replacement. This is when the bad mojo really got me. Just about every T-Nut was welded with Loctite. The first piece of hardware removed from a T-Nut broke in half. The second was the same, and the third broke the T-Nut free under the playfield without letting the screw loose. There were at least 12 more just like this. I spent hours cutting the tops of screws and posts with a Dremel tool.

While pulling a flipper mechanism to rebuild, the entire assembly fell apart in my hands and I stripped one of the coil stop screws while putting it back together. The person before me had replaced one of the post wood screws with a flat head screw. While removing it, I slipped my screwdriver off the top and gouged the playfield. I had a small piece of Mylar lifting and decided to do a precision cut and remove the lifting portion. In the process, I cut too deeply messing up the playfield artwork. Mad about this, I pulled the ugly portion of Mylar quickly and managed to lift about half of the paint off a lamp insert. Could this get any worse? Sure! A cracked coil sleeve was replaced with one that just wouldn't fit. Rapping on it with a rubber mallet caused a solder lug to break off. I'm sure there were screws that I lost and tools that walked away. With all this bad mojo upon me, you can bet that more than a few GI lamp sockets no longer worked right and a least 3 or 4 lamps blew right out of the box. It was a black cloud shop job experience to be sure.

Troubleshooting electronic problems can try even the most patient of men. But this is where I usually shine, breaking down the complex into its smaller forms and attacking the problem. Not long ago I had a top-notch electronics intern working with me in my shop. A Data East *Star Wars* was the machine on the rotisserie. Just 3 weeks earlier the two of us had collaborated on putting together a new reset circuit that shouldn't have worked without careful explanation between the two of us. Yet we were reading each other's minds and picking up where the other had left off.

The machine was running smoothly, albeit ugly and dirty. I walked the young electronics whiz-bang through the art of complete playfield tear down and re-birth. We finished the playfield in record time and dropped it back into the cabinet. We were on a roll. As I recall, we plugged up the playfield connections in record time, probably within 90 seconds. It was well after midnight and a few days break was due.

After the break, I walked into the shop



Get these "identical" connectors mixed up on a Data East *Star Wars* and you're in for a world of hurt

expecting nothing but a great playing *Star Wars* machine needing only a few tweaks. What I found was a perplexed intern pouring over PPB schematics with several blown fuses in his hand. The machine would power up, but would immediately blow a random amount of three fuses. Upon replacing these fuses, the next power up would blow another random collection of the three, but rarely the same one or two. Sure that we messed up the wiring harness, the two of us spent hours thumbing through what seemed like a billion wires. Nothing was out of place or damaged.

Yet coil tests didn't match the chart, the knocker knocked for no reason, some coils didn't work at all, everything had fallen into bizarre land. We spent several nights digging into this problem, making it much larger than it needed to be. The power supply board was removed and inspected, the PPB board was removed and TIP36C's replaced (multiple times in fact), yet nothing made sense.

Other projects were pressing and *Star Wars* was bundled up tight to be figured out another day. At the end of the intern's term, we looked over the notes one more time and I wrote "replace the relay on the PPB - we are at the last resort!" Game over, the machine is possessed, bad mojo had found me.

The darnest thing happens after you step away from a problem for a while. For me, I go through a reset of sorts. Re-visiting *Star Wars* months later, I chose not to look at any notes at all but rather to take on the possessed machine with a fresh mind and set of eyes. Random fuses blew, and the knocker pounded out its bizarre Morse Code. After

pouring over the PPB schematics again, I realized that we must have a wiring problem in the head. Within 2 minutes I had located the source of the curse. Remember when I mentioned that we plugged up the playfield wiring in under 90 seconds well beyond the midnight hour? Bad mojo abounds when the weary eyed try to rush things. And in this case, two connectors from the wiring harness had been switched. One that connects to the CPU board had been swapped with an exact sized replica on the PPB board. The delay from connecting up the playfield and power-on test had deleted any mental notes of the keyed-alike connectors potentially being a problem.

In the end, I suppose bad mojo doesn't exist at all. In the first case of *Swords of Fury*, the machine was assembled in the factory with Loctite. The other things that happened were more related to an old machine and a rushed restoration than luck. With *Star Wars*, the issue as clearly related to two friends jabbering about 'who knows what' well after alert troubleshooting hours had passed. We were tired and willing to show off our quick connecting skills instead of leaving that important job for another day. If you feel you have a case of bad mojo on your back, take a deep breath and a long break. Get some sleep and come back to the job when you're alert, clear minded, and more willing to avoid rushing things. **GR**

Feel free to e-mail your bad mojo stories to Rob at popbumper@gmail.com. He'll surely share a laugh with you!