

I don't know if this is a story about car repair, the evil men do, or the poor choices I make.

Ever since Dad got me started as a kid with a mini-bike, I've prided myself on fixing my own vehicles. I'm not a kid anymore, and have been an auto owner for 46 years. My cars have been used, modest and Japanese, almost never went to a mechanic, and saved me a bundle. If most folks took my approach to cars, millions of salesmen, mechanics and finance clerks would be out of work.

There are other benefits to being a car nut. I rarely get stranded. I've hired a tow truck like twice in my life. I can sense a problem with a car before it breaks down. I never travel without my toolbox and stethoscope. I don't need warranties. I don't need AAA. And buying a car for sale by owner is easy, even fun. I swap cars frequently. I **almost never** get burned.

Three months ago, I tried to do a favor for my son who delivers pizzas. His Matrix was reliable, economical but crappy. One day his car needed repair, so I lent him my Camry while I fixed the Matrix. He really liked the Camry, so I traded him. A day in the Matrix reminded me how much I too liked that Camry. I sold the Matrix and headed to Denver for another Camry.

I quickly negotiated purchase of a Camry from Ari, a delightful Afghani. But instead of immediately sealing the deal, I honored my promise to go look at Eddy's daughter's Scion tC. The tC is a sporty three door version of the Camry. This one was really clean and sweet. Scion buyers are, on average, the youngest car buyers in the USA. This thing tugged at my youth. It was a little blue pill with wheels. It ran beautifully. But it had a nasty tick in the engine. Eddy couldn't explain what the noise was, or what had caused the car to make the noise. He pleaded ignorance, said the car had been in the family for four years and always ran great. There was something disturbing about his words. My stethoscope indicated valve lash ... maybe.



I offered Eddy a low price. I just wanted to return to Ari and the boring safety of Camry ownership. When Eddy countered, I didn't budge. I told Eddy I was driving 30 minutes to buy the Camry, and he could call if he changed his mind. Five minutes later, the phone rang. After much whining, Eddy took my offer. I felt bad paying him so little; almost as bad as I felt disappointing Ari on the Camry.

As I was about to hand Eddy the stack of \$100 bills, I wish I'd received a wake-up call to the mistakes I was making:

- cheating my son out of buying his own car, a rite of passage to manhood;
- arrogant overconfidence in my diagnostic skills; and
- forgetting that the average Scion buyer, at less than half my age, has more important things to do than check her oil.

There was a bigger underlying problem. I've bought 34 cars in the last 46 years, only two new. No one needs a different car every 15 months. Eventually the law of large numbers will catch up with you. The 16 motorcycles I bought over the same time frame simply accentuated the problem. I didn't need another car. I needed a twelve-step support group where I could admit my powerlessness over ride-flipping. In alarming contrast, my wife Becky and I have been together for the last 35 years. What's up with that?

Returning to my foolishness, we stepped inside Eddy's garage to count money. As we walked up the driveway of his McMansion, we passed a US-assembled Chrysler-era Mercedes sedan, a gigantic US-assembled BMW SUV, and a GMC Yukon. At the risk of offending my readers, these three cars were shining examples of way more money than sense. Luxurious, overpriced, notoriously unreliable gas guzzlers. Apparently Eddy didn't know cars. Then we opened the garage door, and my jaw dropped. Three 1950s classic cars, in Smithsonian condition with to-die-for paint jobs. Now I understood why his other cars were out in the weather. But what was a seeming car ignoramus doing with these collectible classics? I would soon learn who was the real dummy. Confused and exhausted, I gave him the money, signed the papers and left.

When I drove the Scion home the next day, the alleged valve problem began sounding like something other than valves. I measured them and found them to be perfect. Uh-oh. I took it to an old Italian mechanic with a good reputation. Tony listened, drove it, listened again, and then put his arm around me and said "Don't worry. It's not the rod bearings. The engine isn't blown. Replace the timing chain tensioner, then the valve timing actuator, and then the timing chain if that doesn't work. The problem is in the top of the engine, not the bottom".

I sought a second opinion from another excellent mechanic. He thought he was hearing a piston hitting the head, or a valve that was bent. I decided to pursue Tony's advice, if for no other reason that it was actionable.

Replacing the tensioner took a day and didn't help. Replacing the actuator took two days and didn't help. The engine work was excruciating. This was a full-sized Camry engine shoehorned into a coupe's

tiny engine compartment. There was no room to work. My hands were like hamburger from working in close quarters. I had to unbolt the engine and raise it and lower it with a jack to reach bolts. Tony's next suggestion, the new chain, was going to be a nightmare due to lack of space. I was going to be hysterical if all three of Tony's commands failed to solve the problem.



I started thinking out of the box. I drained the engine oil, filtered it and found tiny pieces of metal. I cut open the oil filter and found larger pieces of metal. I dropped the oil pan and found yet larger pieces of metal that I could move with a magnet. This was looking bad. I dug around in the glovebox and found a Jiffylube receipt from a few months back with a note that the car had come in with a severe oil leak. Had Eddy's daughter run it out of oil? Eddy did not reply to that text. I spent two evenings pulling the head, and found two pistons slopping up and down on their ruined rod bearings. Tony was wrong. The engine was blown. Fixing it was possible but not practical. I may or may not have been screwed by Eddy,

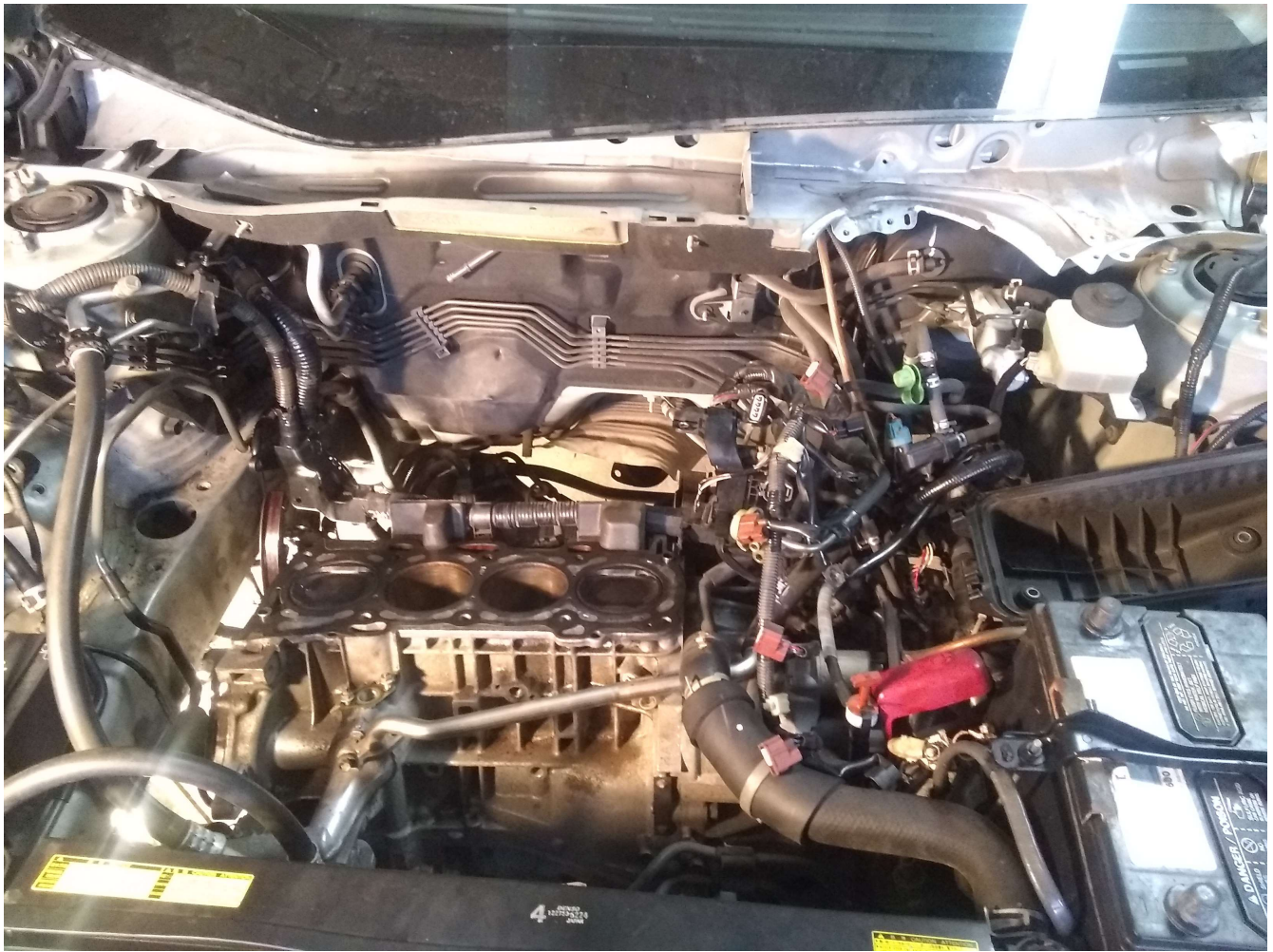
but I was definitely screwed.



It then occurred to me I was harvesting some long overdue karma. Up until 15 years ago, I'd believed in buyer beware, and had been less than full disclosure when selling my used cars. Then a girl brought one back to me that was making noise. She was not happy. I fixed it and gave her some money back. I promised myself that, from then on, I would err on the side of providing too much...rather than too little...information about the flaws in the cars I sold. That policy has been good for my conscience and my sleep. Eddy, if you're listening: may the Car Gods blow your head gaskets if you lied.

It was time to buy a used engine and throw this engine away. Or throw this car away. I could sell it for a fourth of what I had into it, or put in more money and many hours of labor to produce a car worth far less than my cost. Heads I lose, tails I lose. But I was getting an education, and a mega-dose of humility.

It took me weeks of angst to make my decision: I would replace the motor myself with a used, not rebuilt motor. Doing so would be like taking the final exam in my life-long DIY auto mechanics course. Either I would flunk and throw the car away, pass and fall in love with serious car repair, or pass but say goodbye to greasy hands, busted knuckles and the mechanical phase of my life. It was only time and money, and I had both.



It had taken me nearly two months to figure out what was wrong and how I would fix it, which made me wonder if this nightmare would ever end. At that dark moment, it was easy to imagine even worse luck, like installing a defective engine, or losing a finger in the install. Yet I felt much better, because there were no more decisions and no more uncertainty.

An engine popped up for sale 50 miles away for a great price. Even better, it was still in the wrecked vehicle, so I could actually listen to it and compression test it before committing. And better yet it was in an SUV, not a car that youngsters like to street-race. This added an element of risk, because I didn't really know what surprises would surface transplanting a jackass's heart into a racehorse. I felt the odds were so heavily stacked against this amateur trying to do his first engine swap, that a little extra complexity wouldn't matter. I just wanted to finish. In hindsight, I was still making bad decisions.

I borrowed a truck and hurried to the junkyard. It was on a hill in the prairie. A sea of collision corpses. Most interesting, the perimeter was ringed with primitive sheds, manned with greasy laborers. These guys were mining the junkyard like slum-dog millionaires. One shed was dedicated to harvesting transmissions. Another was doing engine swaps. Another was recycling catalytic converters. A beehive of free enterprise, and I was the only gringo.



Cesar got me some keys and a jumper battery. Before starting the donor to listen, I checked the oil. There was none. Uh-oh. I threw in a few quarts of god-awful sludge from the recycle barrel. Then I had to crawl headfirst through the passenger window to gain access. But miraculously the engine started instantly and ran beautifully. Then the compression test revealed a low cylinder, which might have been serious, or simply a stuck ring from inactivity. Some haggling with Juan quickly reduced the price, and I agreed to the purchase.

Now I would witness the miracle. It would take me three days to carefully remove the bad engine from the Scion. Cesar and Loy, the yard's engine removers, would extract this Rav4 engine in an hour. They grabbed some really nice tools and a forklift. They set a tire on the ground underneath the engine compartment. They loosened about a dozen bolts, sliced through steel motor mounts and chopped every wire, hose and pipe connected to the engine. Oil and antifreeze and refrigerant went everywhere. In moments, the forklift raised the car, and the engine was magically sitting on the tire on the ground. They set the Rav4's carcass aside, cut out a seat belt, tied the seat belt to the engine, set the 370 pound engine onto a wooden pallet using the forklift, then lifted the pallet into my truck. All in an hour of laughing and joking, and all on a handshake. I paid Juan and tipped the boys and headed home with my prize. It had taken about six hours from finding an engine to having it in my driveway.

As I drove home, I felt grateful to have Mexicans as our southern neighbors.

Now I had a borrowed truck that I couldn't return because there was an engine in the back. Using my van and a trailer, I was able to quickly borrow a massive engine hoist from a nearby friend, unload the engine and return the truck. It was transplant time.

In some ways, an engine swap is simple. Disconnect everything that attaches your old engine to your car. Lift the engine out. Move parts around until the new engine is configured like the old engine. Lift the new engine into place, then reverse the disconnect steps until everything is hooked up. Replace the fluids, turn the key, and go. Simple, yes, but the devil is in the details. It took about 50 hours over a week's time. The greatest challenge: the engine was 20 inches wide, the engine compartment 20.5 inches net of the transmission. It took me six hours to position the new engine to install the first bolt between the engine and transmission. After that it was easy, except for overestimating the quality of my aging memory. As I'd removed each part and bolt, I saw no reason to take notes or make pictures. While I eventually figured it all out, there were many moments of reassembly confusion, and to this day I have a small collection of bolts and brackets that never made it back to where they belonged.

The worst part of the transplant was the nagging feeling that it was the wrong engine. Every source on the Web said it would work, as long as the fifth character of the engine ID was an E. But it was a D. Every time something seemed not to fit, I got that feeling of dread. When I attempted the final electrical connections, I ended up with two engine sensors that wouldn't plug into the car's wiring harness. And it took twelve hours of triple-checking for the transmission to mate with the engine.



You may be wondering how this story ends. As I made the final connection, I was wondering too, and anticipating the worst. An old fool was attempting a new trick that involved a zillion opportunities for mechanical, fluid, electrical and electronic things to go wrong. It wasn't a question of whether anything would go wrong, but how many things, and how badly.

I turned the key. It started. And ran perfectly. Better, faster, quieter than the old engine. No warning lights, no funny noises, no leaks, no smells. Granted, I had a heart attack when I hit the speed limit on the Interstate and a mudflap came loose. But other than that, I am the luckiest idiot who ever held a wrench in his hand.

Male American culture has fostered an expensive love affair with our cars. For some of us our cars are almost phallic extensions. Today the Scion is my...baby. It's a metaphoric monument to my overconfidence, bad decisions, trust, perseverance and serendipity, invoking both pride and shame. I know her inside out. I think I'll keep her.

