Learn from my mistake

I recently spent the better part of a day upgrading the external modem on my Mac from a faithful—but now slow—V.32bis/14.4-kbps unit to a V.90/56-kbps unit. (Please, don't tell me about how far behind the technology curve my system was!) Why did this simple swap take so long? Simple: an oversight and shortsightedness on my part.

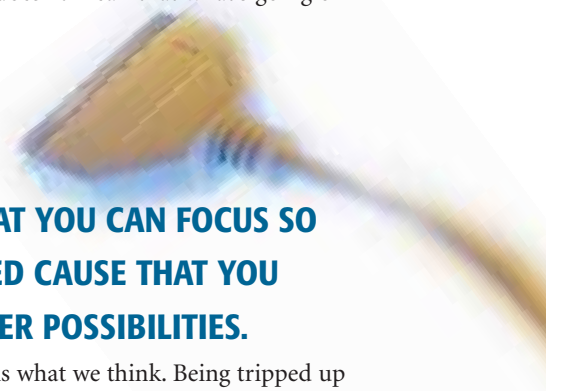
Briefly, here's what happened: I unplugged the slow modem, replaced it with the new one, and made no changes to anything else. My strategy was that I should at least be able to verify the basic operation of the new modem, at the slower speed, simply by swapping the old with the new, just as you would change a light bulb. Yet, when I tried to get the modem operating, it only sort of functioned. I could dial a bulletin-board system or my Internet-service provider and connect successfully, but I couldn't get data to flow, either from the high level of a Web browser or from a basic, low-level terminal-emulation package. By looking at the indicator lights on the modem front panel, I did have a *feeling* that the modem was at least receiving data from the outside.

I took out the user manual and carefully studied the setup and troubleshooting sections. Most of the sections deal with possible configuration and initialization problems, which you control with the Hayes-compatible AT-command set. Being a hardware-oriented fellow, I assumed that the problem was with pesky software or setup protocols; after all, hardware is much more clear-cut, and what could have failed just by changing modems? I spent a few hours studying and relearning the Hayes commands and trying innumerable permutations of command strings. I noted that the manual says to be sure to set up the modem for request-to-send/clear-to-send (RTS/CTS) hardware handshaking, and I set my drivers accordingly. Nothing worked. I was ready to send the modem back, insisting that it was not working. But my intuition said that the fact that the modem dialed and successfully connected indicated that it was not defective.

I put the project aside, then started all over again. In addition to the modem, software, and power adapter, the package came with an RS-232 cable, which I had assumed I didn't need to use because I already had one that worked. Then I noticed that the manual says that the supplied cable includes the RTS/CTS hardware-handshake lines. Oops—the LED in my head flashed on! I quickly tried the new cable and everything worked fine, even at the highest speeds.

You can learn several lessons from my tale of woe, brought on by my own incorrect assumptions. Don't assume that an upgrade requires nothing new if you are going to run it in the mode of the older unit. In this case, the new modem needed hardware handshaking and the cable to support it, but the older one didn't. Don't keep hitting your head against the wall for too long only to follow the wrong path at the fork in the road. I should have stopped playing variations of the Hayes-command-set theme much sooner than I did. Walk away, re-examine everything, and see what unspoken assumptions you have made that may be incorrect. Examine your biases: I assumed that, because the cable I had was not defective and because it supported my modem, all the hardware in place was fine, and therefore the problem was in the initialization parameters. I could not have been more off base. Finally, look back at what you have learned. In this case, I got reacquainted with the AT-command set as it applies to 56k modems.

We all make these kinds of obvious-in-retrospect mistakes, and it's good to have them periodically hit you over the head. Such mistakes remind us that just because we think we know what's going on doesn't mean that what's going on is what we think. Being tripped up by a basic cable is a humbling experience, and the experience tells you that you can focus so rapidly on one presumed cause that you close your mind to other possibilities. Many years ago, when I was troubleshooting a nonfunctioning prototype of a µP-based system, I spent an entire frustrating morning taking data and making scope measurements at many points in the circuitry. No consistencies or patterns existed, and my notes gave me no clue as to what was not working or why. After a lunch break, I restarted my investigative efforts from point zero and immediately found that the power supply, which I neglected to check, was dead. I never made that mistake again, ever!



EXPERIENCE TELLS YOU THAT YOU CAN FOCUS SO RAPIDLY ON ONE PRESUMED CAUSE THAT YOU CLOSE YOUR MIND TO OTHER POSSIBILITIES.

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