

PERSONAL ROBOTICS

UNDERSTANDING, DESIGNING & CONSTRUCTING ROBOTS & ROBOTIC SYSTEMS

■ BY VERN GRANER

EVOLUTION OF A ROBOTICIST

RECENTLY, THE GOOD FOLKS AT *Nuts & Volts* asked if I would take on the monthly Personal Robotics column. I was quite flattered. I don't have any formal training as a writer, but I've been writing in the technical arena for many years. I regularly participate on various Internet forums and mailing lists, and my "day job" entails writing RFQ responses, crafting white papers, and building detailed instruction documents for customers. In the few articles I've written so far, I've tried to keep a conversational (and sometimes confessional) tone, including all observations, good or bad. I feel that most projects are not just about the destination, but the journey to success. Sometimes the details about *what* went wrong, *why* it went wrong, and what was done to recover from the failure can be just as interesting (and useful) as the finished project itself.

PLEASE ALLOW ME TO INTRODUCE MYSELF ...

So, with that said, let's get to the point. Hi! My name is Vern Graner. You may remember me from such articles as "The Creation of the Thereping" (*Nuts & Volts* 4/06), "The Train Saver" (*Nuts & Volts* 7/06),

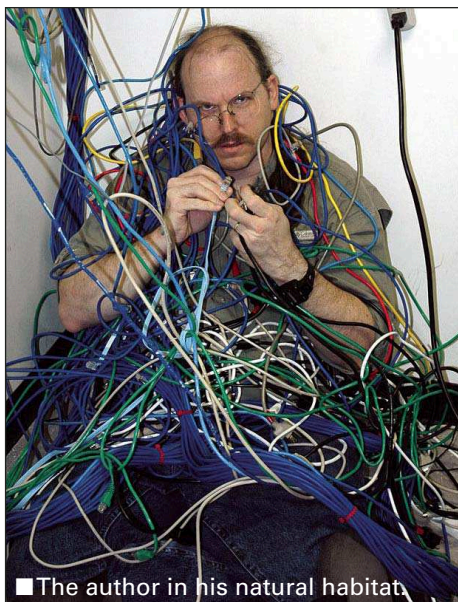
"Recovering our Technical Literacy" (*SERVO* 8/07), and most recently "Evolution of the Boogiebot" (*Nuts & Volts* 10/07). I live in Austin, TX with my wife Kym, two children Nicholaus (age 11) and Samantha (age 5), a dog named Bit (she's black and white), a cat named "Purrrbot" (self explanatory), and another cat (ironically) named Mouse. I'm currently the President of The Robot Group, Inc. — a non-profit corporation based in Austin with a fine heritage building robotic contraptions dating back to the late 1980s.

My entire life has hinged around electronics and technology since I was old enough to wonder why a flashlight bulb wouldn't stay lit when you removed the glass globe surrounding it. My mother gleefully recounts how, when I was only eight years old, she received a note from my teacher asking her to "frisk" me in the mornings for motors, batteries, light bulbs, etc. (turns out the small, clumsily wired devices I brought in were distracting the other kids).

I've been an avid reader of electronic hobby magazines and

reference materials (thank you Forest Mimms for the Engineer's Notebooks!) and tried to understand, imitate, and innovate on many of the circuits and schematics depicted in their pages. I have personally reveled in the hard won glow of a working project and have been present (and sadly responsible) for the death of many a component. Have you ever noticed that the "magic blue smoke" released from a reverse-wired, popped electrolytic capacitor has a distinctly different aroma than that of say, burning enamel wire in a shorted power transformer secondary? Then you might be a tech nut ... But I digress ...

Like many of you, I cut my teeth on the requisite build-it-yourself kits offered in those very magazine pages. I built "color organs," assembled Heathkit radios, wound wire around margarine tubs to make crude metal detectors, annoyed my folks (and the neighbors) with PAiA synth kits, and owned every RadioShack "<x> in 1" electronics kit from the 65 all the way up through 200. And then came computers.



■ The author in his natural habitat.

REMINISCING ON THE REVOLUTION

Computers changed the face of the electronics hobby. I watched firsthand as the "personal computer revolution" stormed the beachhead once securely held by the electronics hobbyists. When I started in electronics, reading schematics and point-to-point wiring was de rigeur. Along came the IC and the printed circuit board and soon enough we had real computers to deal with. The first computer I used was an Apple II at my high school in 1980. I hacked together a keypad from an old calculator to the game port DIP socket on the Apple motherboard to make a rudimentary joystick (my teacher almost had a heart attack!). The implementation was ugly, but it worked. Using computers with my electronics projects from then on was pretty much a given.

Ultimately, the rise of the personal computer led to the rise of the personal robot. I drooled over robots like TOPO, RB5X and, of course, the Heathkit HERO series. As a student with a part time job at a RadioShack, I only managed to own a RadioShack Armatron at the time. Later, I managed to scrape together enough cash to get a Maxx Steele robot, which would eventually don a tuxedo and serve champagne at my wedding

in 1987. But was Maxx a "real" personal robot?

WHAT IS A "ROBOT?"

When I was asked to write the Personal Robotics column, I figured it would be useful to start with a definition of "robot" — i.e., what exactly (other than a popular 1980's dance move) constitutes a "robot?" On the surface, this would seem to be a simple question but I've found it can cause heated debate among hobbyists and professionals alike.

To some, the awe-inspiring, spark-spewing electro-mechanical "Battlebots®" are a perfect example of a robot. Yet some argue these robots are just big radio controlled bumper cars. They contend that a common household dishwasher is more of a robot since it performs automated and reactive functions using microcontroller operated mechanical systems. Still others (the general public, for example) might identify a robot as being anthropomorphic i.e., something like Robby (*Forbidden Planet*), B9 (*Lost In Space*), or even Commander Data (*Star Trek, The Next Generation*). As the author of this column, I guess I need to at least provide my perspective on the issue.

For me, robotics encompasses things people create that sometimes incorporate mechanical mechanisms,

automation, electronics, or computers and are perceived by the creator as being robotic in form or principle. As experience has shown, we are unlikely to achieve consensus on the definition of robot; I think maybe we should focus on the "personal" portion of the title.

I'm hoping that as a personal robotics columnist, I can write about — and for — you. I want to write about the ideas and projects people like you and I create on our workbenches, at our offices, and in our garages. I want to share stories that might interest and inspire you to build something yourself. Maybe begin (or even finish!) that project you've been doodling on napkins and thinking about for the last few months (years?). Entice you to share ideas with others and/or seek out a group of robotics enthusiasts in your area (or on the Internet). Get out there and see what's happening!

END PROGRAM

So enough about me. It's time to hear from you. Please feel free to let me know what you'd like to see in the coming months. I'd love to hear your feedback on what I've written and ideas on what you'd like me to write about. Send your emails and ideas to vern@txis.com. In the meantime, I have an article to prepare. See you next month! **NV**

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