A Century of "Open Source" Electronics

Back in September, I attended the "Open Hardware Summit" in New York City, a gathering of leaders in the open source movement. The idea behind open source hardware (detailed in KB3TAN's October "Makers" column) is that—like the more familiar open source software—designers of tangible products share their design parameters and construction details with "the community," inviting others to build their own versions and to make modifications and improvements, providing those changes are shared with the rest of "the community."

If this sounds familiar to you, it should be. It's what we hams have been doing for more than a hundred years, and that's no exaggeration. As you'll see on page 13, this month marks the centennial of amateur radio licensing and regulation in the United States. Even before the dawn of regulation, though, radio experimenters designed and built new gear, or improved on existing designs, and shared what they'd learned with "the community." The primary means of sharing project designs among radio amateurs has been and still is what you are reading right now—a magazine. While the earliest magazines to carry radio circuits and designs, such as *Electrical World* and Hugo Gernsback's *Modern Electrics,* covered more than just radio, they created that "community" of like-minded people who learned together, taught each other and built on each others' successes; a community of people united by shared interests rather than geographic proximity. The community of electrical experimenters grew and became more specialized, and one branch became the worldwide amateur radio community of which we are a part today.

Today's "makers" and "open source" software and hardware developers are the spiritual (if not actual) great-grandchildren of those early 20th-century experimenters. Some of them may think they've discovered something new, but in reality, they are simply continuing a now century-old tradition of sharing innovations in electricity, electronics and "wireless." The thread of continuity from 1912 to 2012 has been the radio amateur, and in particular, the magazines through which each generation of experimenters and innovators shared with "the community."

This connection was not lost on at least some of the people attending the Open Hardware Summit. Several of the leaders in this community are hams themselves. For example, one of the summit organizers was Bill Ward, KD4ISF, and one of the featured speakers was Bre Pettis, K2BRE, the CEO of MakerBot Industries, one of the biggest players in the open hardware marketplace.

The summit featured more than 20 exhibitors as well as a full program of speakers, and one thing I noticed among them that is not commonly found in non-ham-radio technology gatherings was the near universal respect for they had for hams and ham radio.

"I love my ham friends," said Russian entrepreneur Alexander Chemeris, who has developed a low-cost ultra-wideband SDR transceiver to help provide cell phone coverage via the internet in underserved areas. "They have helped me so much with the RF parts of this project." In fact, he's currently looking for help—perhaps from the ham community—in designing a low-cost, highly-efficient, non-linear GSM amplifier. *(Anyone interested, contact me and I'll put you in touch with him.)*

Shyu Lee, a young man from Shanghai who has developed the Lophilo Project, a computing platform for building your own internet-connected devices, was actually a bit nervous to be meeting someone from a ham radio magazine. One of the projects on his drawing board now is a

general purpose software-defined radio (SDR) that can link to his platform and sell for around $300 US. He hopes to have it ready to market late next year, and is looking forward to a version specifically for hams.

One of the summit's main goals was to talk about how to handle the beginnings of commercial success in the open-hardware marketplace. As long as most everyone was basically designing and building for each other within "the community," then the complete sharing model made sense. Now, though, companies like MakerBot with its 3D printers are actually starting to make money and find their revenue being undermined by clones which they have encouraged … until now. It seems that sharing everything may not be that great a business model.

Bre Pettis of MakerBot talked about making only certain segments of a product open-source, while keeping other parts proprietary. David Currier of Parallax, which manufactures the BASIC Stamp, spoke on "The Limits of Open Hardware." And bringing us back to the ham radio connection, one other speaker highlighted the open-hardware licensing model of Tucson Amateur Packet Radio (TAPR) as an example of how to share technology without giving away the store. We have much in common with the folks in the "maker" movement. We need to encourage the integration of amateur radio into the maker world and vice versa. It's a good match with a century of shared heritage.

One other area of congruence between the technological worlds of 1912 and 2012: A century ago, *Electrician and Mechanic* magazine noted that among the hundreds of radio amateurs applying for licenses at one particular federal office, "there have been no women in the line." During a break in the Open Hardware Summit in 2012, while standing in line to visit the men's room, I overheard two women who came out of the ladies' room and looked around. One said to the other, "Someday, there'll be a long line outside this door, too … and that'll be great." We all need to do more to make that happen, and to encourage young women as well as young men, to pursue their natural curiosity about science and technology.

FCC Licensing Proposal

The FCC has quietly released a Notice of Proposed Rule Making that could bring about significant changes to amateur licensing and renewal procedures. Among other things, it proposes to permit former hams to regain their licenses (but not necessarily their previous call signs) without retesting; to shorten the grace period for renewal after expiration without losing your call; to reduce the minimum number of volunteer examiners at a test session from three to two, and to permit remote exam administration in hard-to-reach areas. This month's "Riley's Ramblings" column (p. 36) has some additional details, and K4ZDH plans to look at the proposal in more depth next month. Meanwhile, we encourage you to read the actual NPRM (WT Docket 12-283) and file comments to let the Commission know your views.

Happy Holidays!

Whether you celebrate Christmas, Chanukah, Kwanzaa, the winter solstice or anything else this holiday season, we at *CQ* wish you all the best. We hope you get to start the new year with new ham radio toys. And as always, we thank you for being part of our "family" and for inviting us into your home each month (and can we have one of those cookies? Please?).

73, Rich W2VU

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