

SQUELCHTALE



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Editor

Cross my palm with silver...

"and I will predict your future," the lady told me. The sign outside of the odd looking house said "Fortune Teller," and between us sat a large crystal ball. I never put much stock in these mysterious arts, but I was oddly drawn to this house. Besides, I had a column to write, and I needed some information.

"I don't want to know *my* future," I said. "Tell me the future of Amateur Radio."

She gave me a funny look (all of her looks were funny), and I thought she mumbled something that sounded like "geek," but I couldn't be sure. She agreed to try. Turns out "cross my palm with silver" was just an expression. It would have taken a lot of quarters. She wanted lettuce. I'd expense it, so what the heck.

She went into a kind of trance for a few minutes, staring into the ball and slowly waving her hands over its surface. All I saw was gray mist, but just before she spoke again, I thought I caught a whiff of ozone mixed in with the incense she was burning.

"I see lightning. Big flashes of lightning! Quick flashes... on and off, on and off... And I hear buzzing. It's very rhythmic."

"Sparks! You're seeing spark! That's not the future, that's the past!" I was going to add "you fraud," but how could she know about spark? And anyway, I was getting excited.

"Sparks," she repeated, "yes, they are sparks, generated by some ancient apparatus. But don't worry. Sometimes the ball has to work its way through history to reach the future. Be patient."

I wished I could see what she was seeing. What was it really like to make a spark contact? To operate radios without calibration or tuning dials? To barely understand the technology, the physics that allow me to hear those raspy signals from so far away. Oh, wait, that last part still applies today.

She was moving on. Time appeared to be flying. "I see a warm glow, and the buzz is getting clearer, a tone, a pure tone, still on and off..." Tubes! Cw! "And I see angry, red faces. Arguments! Yelling and writing of letters to the editor of something called *Q..S...T!*"

She was seeing ham radio, all right. The transition from King Spark to cw was not pretty. Some of the hams were progressive and adopted the new technology eagerly. Some, who had a lot of money, time and understanding invested in their spark station, opposed the change vigorously. But spark was a spectrum-hog. Eventually the government had to force them off the air by making spark illegal.

"I hear voices!" Seems like someone in her business should be used to hearing voices, but she had adapted quickly to the rhythm of copying code. Now she must have been hearing the first AM phone contacts. "Excited voices... but more red, angry faces. Something about 'this isn't real Amateur Radio.'"

"I still hear voices, but I can't understand them. They sound more like a Donald Duck cartoon!" Single Sideband. I wanted to tell her to turn on her BFO, but I didn't know if the crystal ball had that option. Wait, it must have! She was able to copy the cw. Tuning the sideband was tricky, though, so she switched back to AM just in time to hear an angry voice complaining about the "end of Amateur Radio."

She had reached the era of ham radio where I got my start, the transition from AM to SSB in the 60's. My first station was AM, a Heathkit DX-100. Older hams were complaining about having to share the bands with that duck-squawk. I got sideband gear as soon as my teenage finances allowed.

"What's 'ker-chunk, beep' mean," she asked? The FM boom of the early 70's. Here's where I really had a ringside seat. Friends had introduced me to FM while we were still using converted commercial rigs, and the first repeaters were just being built. In just a few years, radios appeared for the Amateur market, mostly from the Japanese manufacturers. Repeaters were built everywhere. Hams developed frequency coordination to allow them all to work together.

"The faces aren't angry and red this time... they're *laughing*. And saying something about 'a bunch of sea-bee'ers ten-four.' It's all very strange. But I see a lot of people with little radios on their belts and in their cars, walking around and driving and talking. They are having a great time, while the people laughing are just sitting in their attics and basements looking at a wall of equipment with static coming out of their speakers."

She frowned and whapped the side of the ball. I think a few sparks flew around it. "What's wrong?" I asked.

"It's stuck. No, wait... time is still passing. People are getting older, but not much is changing. I'm still just seeing your cw, SSB and FM. Oh... the radios are getting smaller, while the people are getting larger." I sucked in my gut a little. "And look! I recognize those things. Computers! All you ham-people seem to be getting them. Some of you are connecting them to the radios and typing."

We were approaching the modern era, and I couldn't wait to sail on into the future and see what is to come.

"It's stuck again!" Whap, more sparks. "I've lost the connection. I'm seeing something else. Police cars, fire trucks... Ah, there's a geeky engineer-type with a screwdriver in his shirt pocket. He's explaining something about *trunking*... I don't see any elephants nearby. Oh, I see! He's putting in a fancy new radio system for a city."

A *trunked radio* system, I tried to explain. Trunk like tree, not trunk like elephant. But either way, ham radio didn't adopt the technology. We stayed with stand-alone VHF and UHF repeaters. We linked a lot of them, though. She ignored my defense. The fortune-teller was absorbed by the ball. I was thinking about signing her up for the next ham class.

"Now everyone has a radio on their belt. Oh, they're not ham radios, they're cell phones! And there's someone walking around saying 'can you hear me now?' Everyone is saying 'digital' this and 'digital' that. Let me try to pick up your hams again. They must be very advanced by now..."

Operating the crystal ball must be a lot like operating receivers back in the spark days. Make some mysterious motions around the apparatus without knowing exactly what works and what doesn't, and sooner or later something happens.

She frowned again. "It must have gone backwards. All this change, and your hams aren't doing anything different."

CONTINUED ON PAGE 59



I cringed a bit. Her crystal ball was showing the present, and I knew that we were a bit behind the times. Ham radio had been at the leading edge of technology for a long time, but it seems like today we are trailing. Our cw, SSB, FM, and even packet and PSK are fun. They serve our needs and wants. But they are getting old. And so are we! Fewer kids are becoming hams. They have newer, shinier toys to play with. Are we doomed to become an anachronism?

I couldn't stand it any longer. I grabbed the crystal ball and twisted it around so I could look in her side. It was like a touchscreen! Sort of. She protested, but it was too late. The future was being revealed.

But not all that clearly. The screen was shrouded in a kind of mist. But I was watching an HF operator using a new digital radio. His contacts were clear and noise-free, like the FM we use on VHF. There were a bunch of these digital signals clustered at one end of the band, and they were narrower than the SSB signals just down the band. I could tune in the sideband better than the fortune-teller (I'd had a lot of practice). Someone was complaining about the racket in his speaker from the digital signals. It was "the end of Amateur Radio."

I went searching for VHF and UHF, and almost missed it. The activity had jumped up the spectrum, to the microwaves, bands we almost lost to commercial interests because we weren't using them. What a mix! Hams at home using broadband digital signals from their computers, sending voice, text, graphics, even video back and forth. The connections were quick, and worldwide. It looked something like today's Internet, but it was totally wireless, and all on ham radio bands.

Hams in their cars were using radios that looked like today's FM rigs, but they were connected to the audio end of this big network. Looks like they hadn't yet invented cars that could drive themselves while the drivers played with their computers.

Everyone seemed to be having a great time, until I zoomed in on a guy running an old FM rig talking on two-meters. His face was red with anger. "The end of ham radio..." he fumed.

The crystal ball went dark. The fortune teller held the power cord that she had pulled from the wall. "You've seen enough of the future," she said. "You must now go help make it happen."

The future is brought to you by...

This future is brought to you by several things. The 802.11b based "Hinternet" that the ARRL has been promoting, Alinco's dual-mode analog/digital HT, the HF digital system that the guys at TEN-TEC have been testing, the guys experimenting with IRLP and Echolink, and a concept that Icom has been developing in Japan

that they're just springing on us here called D-STAR.

D-STAR is a system that combines analog FM, narrowband and wideband digital linking at 10 GHz (see the diagram, below). This stuff is about to be on the market here. It isn't on Icom's web site (at press time), but they introduced it to the US at Dayton last year, and at the Charlotte hamfest this year. Be the first on your block to get one.

Before you run screaming that you just plunked down \$400 for a new dual-band mobile, you can relax. Our current modes will be around for a long time. We won't even start calling them "legacy" modes for another five, maybe ten years.

But single-channel, individual user digital is around the corner, both for HF and VHF. Engineers are figuring out how to compress the signal into less space. On HF, it provides the user with FM-like audio and less interference with the same spectrum as SSB (about 3 kHz), and eventually less. On VHF/UHF, you get a "full-quieting" signal until the signal is gone, and then it just disappears. And it will require less spectrum, too. They'll both likely have some text messaging ability in addition to voice. The radios you'd use for these modes will look and operate a lot like today's radios. I expect they'll be dual-mode, analog and digital, for a long transition period. And internet-like wideband networking is probably not far behind... IF we're willing to build the systems.

SERA's place in the digital future

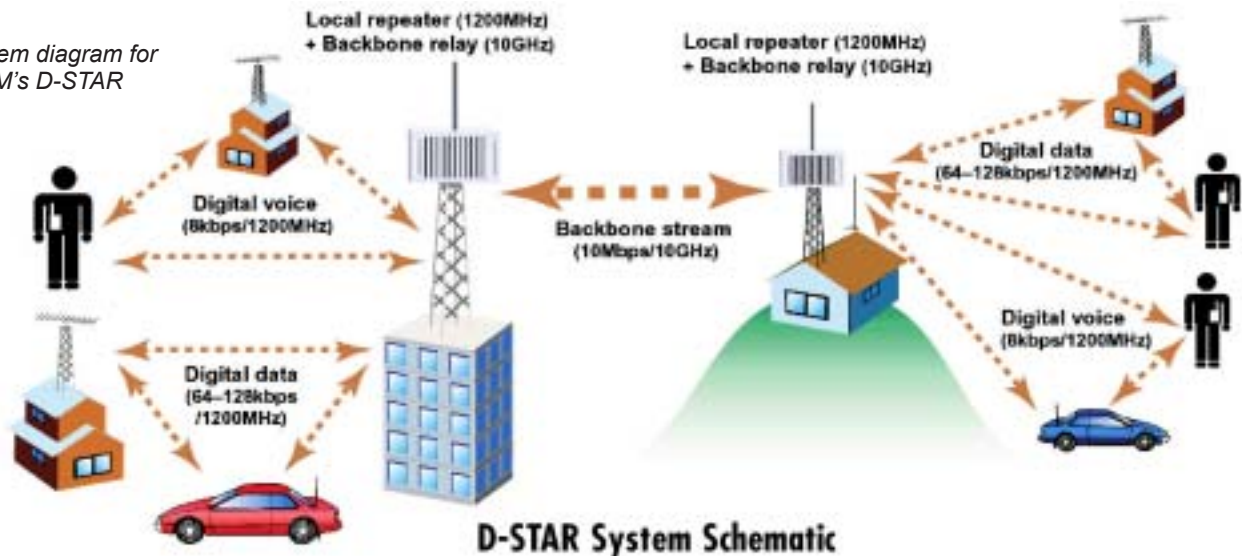
The Icom system uses bands with lots of elbow room. The experimenters setting DX records between mountaintops with 10-Gig Gunnplexers probably won't mind the company. But integrating digital in our lower frequency spectrum will be more of a challenge. One that SERA will face in coming years.

On HF, individual digital signals, carrying voice, with maybe a text add-on in the 3 kHz space of SSB, will compete for spectrum in the phone bands. It won't sound pleasant coming out of a speaker on an SSB receiver. The HF bands can be pretty crowded, and making space won't be easy. I can imagine fights breaking out here and there. Pretty similar to the AM/SSB transition.

On our VHF/UHF bands, SERA's concern, it might be even trickier. The analog FM repeater channels are pretty full, and there's a serious incompatibility in "sound." That's what keeps packet off today's FM repeaters. Voice repeater users in city A wouldn't be too happy having the digital audio from a co-channel repeater in city B 100 miles away spill into their speakers. That audio is pretty harsh in an analog receiver.

Fortunately, SERA has band-planned generous spectrum for packet on most VHF and UHF bands, with wide-band channels (100 kHz) on the 440 MHz bands. Packet isn't using much of that spectrum, and it's a logical choice to begin locating other digital

System diagram for ICOM's D-STAR



modes as they come along. A few more years, though, and we'll have to begin accommodating a transition from old to new on current analog FM channels. Sooner or later, probably later, it will happen on *your* repeater.

Will you be participating? Some of you will, and I hope you'll share your early experiences with us at the *Repeater Journal*. Hmm, do I see a name change somewhere down the line?

One big reason some hams seem like Luddites is that this new stuff can be expensive. We buy our own equipment. No corporate profits to fall back on when it's time to upgrade the infrastructure. And many hams pinch pennies until they are flatter than the ones I used to put on railroad tracks to be squished by commuter trains when I was a kid. Many of us get stuck in the era that we became hams. We think that the way things are when we get in is the way they have always been, and the way they should always be.

But some of us will jump into new technology as soon as we can. And new hams, young ones, will be pulled to the new stuff, especially when the prices become competitive with the old stuff.

It will all be very exciting, I'm sure. I don't suppose it will make us more interesting individuals, though. We'll still be using it to complain about traffic on the way to and from work. And how it is the end of Amateur Radio.

War

During this *Journal* cycle, the US has initiated and won a war with Iraq. I'll admit that I lost some *RJ* production time to watching the events on the tube.

The *Repeater Journal* didn't have an embedded reporter, and the politics are pretty much outside our arena. But ham radio does have a role in homeland security, and we will see Iraqi hams return to the air (along with hams with the military and press and relief groups who are getting on the air now). So it's not like we're not paying attention.

I want to thank our troops for doing a tough job, and offer my condolences to families who lost soldiers.

Field Day Tour

I'm planning another North Carolina Field Day Tour this year, a tradition started by our former NC News columnist Gene Fegley K3EJG. I keep wanting to call it the "Gene Fegley Memorial Tour," but Gene is still alive, so that really wouldn't be appropriate.

Last year I had a great time touring Field Day sites in eastern

NC. This year, I plan to head west. If your club is hosting a Field Day operation anywhere between Raleigh and about Asheville, let me know. I'll try to stop by, take some pictures, and immortalize you in the pages of the *Repeater Journal*. E-mail kn4aq@sera.org with directions. Sorry to leave out all the other SERA states. I'll get to you as soon as SERA acquires it's corporate jet!

That's it for another quarter. See you this summer! ■



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