



## Second Century

# Embracing Change in the Shack

*What is a radio? Is it any box with a microphone or key jack on one side and an SO-239 connector on the other side?*

That is both a philosophical question and a technical question. Before I answer, imagine what radio you would buy if money was no object.

My mind immediately jumps to a vintage Yaesu FT-101. I still remember the Yaesu ads in *QST* from when I was a teenager. That's not to say they were the only great rigs made — Collins, Drake, and others also come to mind. I am sure every ham has their own personal preference, and my citing the Yaesu FT-101 is not meant to be an endorsement of the FT-101 or Yaesu. But in my youth, I could see myself, at least in my mind, operating the FT-101 in my bedroom and working the world.

What drew me to that rig? The features and specifications, and, as a soon-to-be electrical engineering student, the great engineering that went into it. As you may remember from my first editorial, I am a tinkerer. I like to look under the hood.

Scientists discover physical properties in our world, and engineers build devices based on those properties. Our world is analog, and the properties scientists discovered were necessarily analog. Rigs built in the 1960s were composed of analog circuits. There was a natural correlation between the physical properties of resistors, capacitors and inductors, and signals and waves.

Now let's jump forward in time. At a recent hamfest, I was looking at a rig by FlexRadio. FlexRadio's primary product is a "software-defined radio," or SDR. Under the hood, an SDR is completely different than an analog radio. Because the world is analog, there are A/D and D/A converters and analog circuits, but the SDR is basically a computer operating on mathematical representations of signals. It operates in a digital domain. It is based on the fact that an appropriately sampled (and digitized) analog signal can represent that continuous analog signal in well-defined circumstances. While there is no natural correlation between a series of numbers and the physical world, I believe that most of us accept that an SDR is a radio.

But what struck me about the Flex was not that it was an SDR, but that the designers had separated the human interface from the receiver/transmitter back end. It was designed with remote operations in mind.

While there have been articles in *QST* on remote operating going back almost 30 years, what struck me was the paradigm shift at a major manufacturer. FlexRadio had turned the engineering problem around by envisioning a new way to operate. They had challenged my concept of what a ham shack is. The operator no longer needed to be in the same room as the radio.

While I consider myself a "guardian" of ham radio — a term we use at ARRL to mean one who respects and upholds the traditions — my engineering career has taught me to value innovation and embrace change. I like to think that Hiram Percy Maxim would agree — after all, he was an engineer and inventor before becoming a ham and founding ARRL. As a ham, he embraced change, from spark to CW, and I like to think that he would embrace change today, including SDR, remote operating, new forms of digital transmission, and pioneers with experimental licenses operating at 78 GHz. While I have written several editorials about needed change in ARRL's business operations, I believe that embracing technical change is equally important if we are to have a secure future.

Nothing in this article is an endorsement for any product or manufacturer. I encourage your comments to me at [ceo@arrl.org](mailto:ceo@arrl.org).

*Howard E. Michel WB2ITX*

### Where to Meet WB2ITX

**August 8 – 10** — Rocky Mountain Division Convention (Utah Hamfest), Ogden, UT <https://rmdc2019.org/>

**August 17 – 18** — Alabama State Convention (Huntsville Hamfest), Huntsville, AL <https://hamfest.org/>

**August 31 – September 1** — JARL Ham Fair Tokyo, Japan [https://www.jarl.org/English/4\\_Library/A-4-6\\_ham-fair/ham-fair.htm](https://www.jarl.org/English/4_Library/A-4-6_ham-fair/ham-fair.htm)