Bob Inderbitzen, NQ1R, rinderbitzen@arrl.org

## Second Century

# Radio and the Ecosystem of Innovation

*A fundamental purpose of amateur radio is the "Expansion of the existing reservoir…of trained operators, technicians, and electronics experts" [FCC Rules §97.1 (d)]. Amateur radio is an ideal breadboard for discovering how radio works. ARRL Product Development Manager Bob Inderbitzen, NQ1R, shares his perspective about using ham radio to find and prepare future radio technologists.*

During months of working from home, I've taken closer notice of how much of my everyday life is interconnected by devices and networks that transmit and receive radio signals. The wireless router in my apartment is connected to laptop computers used by two working parents and a college student. This is also the hub for radio-connected "smart" devices including lightbulbs, thermostat, outdoor weather station, portable speakers, and streaming TV adapters. Smartphones and our wearable fitness trackers accompany us from room to room and anywhere we decide to venture.

Today, radio is a commodity. Invisible signals and tiny hidden antennas can mean the presence of a radio is altogether overlooked by the device's user. Yet radio technology plays a central role in our lives and across many fields: communications, transportation, energy, medicine, robotics, and artificial intelligence (AI). This ecosystem of innovation requires a regular supply of academics, technologists, and engineers — and students pursuing careers in the same fields. The world needs people who know how radio works, now more than ever.

We radio amateurs are uniquely positioned to be stewards of radio. ARRL's research finds that among the primary reasons for getting involved in amateur radio is expanding one's interest in electronics, communications, and related technologies. Our goal, then, should not be a rush to ham radio licensing as an end. Rather, we want to introduce new entrants to ham radio and its broad capability as a means for developing interest, knowledge, and skill in radio technology and radio communications. It's one of the reasons we recently added a digital edition of our technical journal, *QEX*, as a benefit for all members.

I've spent a lot of time at fairs and conventions working alongside ARRL member-volunteers in our endeavor to grow interest in amateur radio. Radio clubs often organize exhibits at air shows, Maker Faires, and for professional and educational science and technology conferences. I usually spend time in the aisle, catching attendees as they wander from booth to booth. "Do you know how radio works?" I'll ask the question hundreds of times during an event. What I've learned is that few people in the general public have any understanding of radio. The role of describing to someone the phenomena of creating, propagating, and receiving radio waves is like wearing the hats of both magician and professor. Hams can, and should, introduce radio to others with the same enthusiasm as an amateur astronomer who brings to life the night sky to an untrained observer.

College radio clubs are most directly contributing to the development of future radio technologists. These groups serve as both a student activity and, at some colleges, academic instruction in practical radio technology. Over the last months, volunteers for the ARRL Collegiate Amateur Radio Initiative (CARI) have held monthly online conferences, inviting students and campus club organizers to network with one another. Follow the CARI Facebook group at **https://www.facebook.com/groups/ARRLCARI** for details. A recurring theme in these meetings is how amateur radio opens doors for students. I know many hams who attribute their chosen career path or job to a connection they made within the amateur radio community.

Journalists often ask how amateur radio could remain relevant in a world dominated by smartphones and internet-connected devices. I respond that so long as there is radio, there will be radio amateurs. And so long as there are radio amateurs, there will be people who know how radio works. That should instill in us a great sense of purpose.

*Bob Inderbitzen, NQ1R*
*ARRL Product Development Manager*