Technology and the Future of Amateur Radio

Observations, suggestions and opinions about technical advancement

By *QEX* Editor Doug Smith, KF6DX

It has been said that change is the only constant in life; certainly Amateur Radio is no exception. What changes should we make? Which should we shun? Specifically, how best can technology enhance the enjoyment and use of our resources? What recommendations should the Technology Task Force (TTF) make? How can we identify technical ideas that should be considered? As we look to the future, our charter principles and "reasons for being" serve as useful guides. I paraphrase them for emphasis here:[1]

[1]Notes appear on page 4.

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(a) Recognition and enhancement of volunteer, public-service communications, especially during emergencies or disasters
(b) Extension of technical development and testing
(c) Emphasis on education and encouragement of learning
(d) Providing a resource of communicators, technicians and engineers
(e) Promotion of international social contact on a personal level

I'd like to concentrate on paragraphs b, c and d. A complex interrelation seems to exist that needs some discussion.

Think Creatively

Many of the best inventions elegantly solve some persistent problem. Yet, some don't solve a problem, but better our lot nonetheless. How many of us knew we needed a VCR before they became popular? So let's ask two questions, first "What are the most pressing challenges facing Amateur Radio?" then dream of "What else could be?"

It's not difficult to name a few challenges: crowding on our bands, our need to coexist with other services and our desire to bring in new talent. I'm sure we can come up with others. Technology can provide some solutions, but others seem to be purely sociological.

What technical solutions can help? Which ones aid Amateur Radio growth and make it more fun? PSK31 is an excellent illustration: It requires little occupied bandwidth (reduces QRM) and has generated fresh excitement in the RTTY world. CW can occupy even less bandwidth; this mode still allows

maximum spectral occupancy. Extremely narrow DSP filtering and noise-reduction techniques boost the potential of both these modes still further.

The union of Amateur Radio with other communications media has been quite productive. APRS, HF e-mail and DX-cluster services stand as proof. I'm confident we can discover other fruitful combinations.

QEX contributors have created powerful additions to our legacy of innovation in Amateur Radio. I am certain that this will not wane. Someday I'll look back and say: "By Jove, those folks were on the ball!"

Change the Rules?

The laws governing the Amateur Radio Service provide the framework within which we operate, but the rules can be changed. The ARRL has steadfastly led the way to many sensible revisions over the years. Your input can influence the development of policy that encourages the good operational and technical skills we need to further Amateur Radio.

While not all of Part 97 deals with technical matters, you may identify areas with potential to change for the better. Look at the many recent, significant proposals put forth for examples.[2] Do you see anything hindering technical progress?

Given the accelerating pace of technology, what will Amateur Radio look like in 5, 10 or even 50 years? It is difficult to gaze into a crystal ball that deeply, but now is the time to step back and look at the complete picture.

Education

Rapid and continual technical advancement requires a concomitant and equal increase in education. DSP is an example: It is nearly everywhere in Amateur Radio these days, but how many of us really understand it? Will we be ready to learn something from the future success of digital-audio-broadcasting, auditory-psychophysics or image-reconstruction technologies?[3]

At Amateur Radio shows I'm repeatedly amazed by the many very young people who walk right up to computer-controlled transceivers and begin operating with no prior instruction. An entire generation is growing up immersed in knowledge of computing. Surely, we can draw on this to our benefit.

Information technology has its own acronym these days (IT) and encompasses ever-growing realms of inquiry and transformation, each having widespread impact on our society. The ARRL Web site and various Internet news groups have, in my opinion, enhanced the Amateur Radio experience. What else can IT contribute to Amateur Radio?

Technical education is only part of the picture. Let's find ways to communicate the *fun* of Amateur Radio. Make sure folks know how much good it does, and that it is continually satisfying its "basis and purpose." Those who spread good information about Amateur Radio help threefold: They enrich public relations and general goodwill toward the hobby. They add to the remarkable heritage of hams worldwide as volunteer servants. They fulfill our charter of increasing new operational and technical talent by stimulating interest.

Build Motivation

Many of us have mourned the dwindling technical content of other Amateur Radio magazines. I believe it is, in general, a reflection of our changing interests. Can we reverse the trend? We can't force new interest in technical topics; that interest comes from within. We can work to motivate our community. What motivates most hams? Competition, operational and technical challenges, social interaction and public service are some answers.

Consider that we enhance our pleasure and understanding by finding and fortifying the threads that unite us. An example is the growing interest in high-quality HF SSB audio. This pursuit of more pleasurable listening emphasizes technical fundamentals and encourages in-depth understanding of transceiver-design elements. By prizing low-distortion signals, it fosters interference reduction. The rules about good engineering practice and occupied bandwidth are part of the goal. This is just one example; be quixotic—find new ones.

When many of us started in electronics, things were simpler. It was feasible to study and master most of the basic concepts. Over the last three or four decades, dozens of specialized disciplines have developed; mastery of them all is daunting. The first big split began with the development of microprocessors in the early '70s. Now even digital territory is divided into several distinct specialties.

Has the diversity of our interests has led to a decline of our focus? Perhaps, but we can choose to let our diversity bring us together. Personally, I can't say what Amateur Radio will look like in 50 years, but I know hams will be active because the hobby is fun and it's necessary. They will not lack new hills to climb. Please help inspire new climbers by telling them how beautiful the view is from up here.[4]

Notes

[1]FCC Part 97, §97.1-Basis and purpose. FCC Part 97, the Amateur Radio Service regulations is available on the ARRL Web site at **http://www.arrl.org/field/regulations/news/part97/** or the US government site at **http://www.access.gpo.gov/nara/cfr/waisidx_98/47cfrv5_98.html**.

[2]For information on recently proposed rules changes, visit the ARRL Web site at **www.arrl.org/announce/regulatory/**.

[3]Further reading on these topics can be found in *The Digital Signal Processing Handbook*, ed. V. K. Madisetti and D. B. Williams (Boca Raton: CRC Press LLC, 1998; ISBN 0-8493-8572-5).

[4]TTF Web page: **www.arrl.org/news/ttf/**.