

## OUT OF THE ETHER



VK3SN (call-sign of Stephen Warrillow) talking via linked repeaters to amateurs in the UK from Mt Nelse on a winter XC ski trip in the Victorian Alps



Operating from a remote igloo on the Bogong High Plains in the Victorian Alps (VK3SN holding the mike)

Ever since seeing my very first crystal set, radio has held a captivation for me. The concept of sending signals through space without the physical connection of wires seemed wonderful and almost magical, even if it could be explained by the laws of physics. As a youngster, listening to voices from far-off places fade in and out over the hiss and crackle of static on old short-wave receivers was perhaps the first time it was apparent to me that there was an amazingly wide world out there that held all sorts of possibilities and adventures. Since those early experiences, I have continued my interest in radio and explored the rich realm of possibilities it provides.

As with most pastimes, my interest in radio started small. Having tinkered with broadcast receivers and building crystal sets for a while, the prospect of actually sending, rather than just receiving signals, was very enticing. Amateur radio was a hobby I had heard of, but at the time it was not quite something I was ready for. Instead, I built small, simple kit transmitters that could transmit a few hundred metres on low power. These were a great way to learn many technical skills such as soldering and also to understand the basics of electronics, physics and computing. Later still, I graduated to Citizens Band (CB) radio using bits of second-hand gear passed on by friends. CB was a lot of fun, but the limitations of low power, few frequency options and being permitted only to use commercially built transmitting gear made it less than completely satisfying. Also, because no licence was required, anyone could use it (which is

good) and could say just about anything (which is potentially bad). Listening to CB for a bit can certainly broaden one's 'vernacular' vocabulary!

For a while, though, CB had to suffice, as more attention was required to complete school and then university study. It was not until internship that I was in a position to properly pursue radio studies. Through the phone book, I was able to track down contact details for the Wireless Institute of Australia (at 100 years old in 2010, it is the world's oldest national amateur radio society), which put me in touch with a local radio club. A short time later I was booked in for their novice course and subsequently passed my exams in theory, regulations and morse code. With further work, I was able to successfully pass the intermediate level exam, but then got sidetracked for a while by preparations for the FRACP written and clinical. It was only while doing a stint of advanced training in the UK that I finally reached advanced level by passing the final hurdle—the 'full-call' morse exam at 12 words per minute.

Most readers will at least have heard of amateur (popularly referred to as 'ham') radio. The hobby is regulated under federal legislation administered by the Australian Communications and Media Authority (ACMA) and all operators must undergo training and examination before being licensed. In this context, the term 'amateur' is genuinely being used as per its original meaning—'lover of'. A look inside the 'radio-shack' of most amateurs quickly dispels any misconception about their approach being 'amateurish'. I am sometimes asked, 'Why bother with a radio when a mobile phone or the

internet lets me talk anywhere I like anyway?' Aside from amateur radio being free and available in places that are far beyond mobile phone and internet range, there is a deeper, truer response that would resonate well with anyone who loves fishing. It is obviously easier, more convenient and more reliable to buy a fish from the local shop than it is to go and catch one in some distant stream. However, to ask an avid recreational fisherman (or fisherwoman) why they don't just buy the fish they expend so much effort on catching misses the point entirely. Fishing is about so much more than just the act of actually landing the fish (or indeed eating it!). It is the acquisition of knowledge and skills, the practice of technique and the opportunity to be in wonderful environments that fires the passion of recreational fishers. Similarly, amateur radio is about far more than the act of communication—it is the chance to acquire specialised knowledge and skills and apply them in a practical manner. Operators experiment, create, invent and build hardware and software. Amateur radio has more access to the radio spectrum than any other group (excluding the military) and has contributed much to modern communications technology through experimentation and development. A community of over three million amateur operators communicate with one another around the world and have done so for decades prior to the development of satellite and internet technology.

Like all great hobbies, there are niches and subcultures. Amateurs share a common love of radio technology and



Home amateur radio station with computer control and logging system



Portable set-up on Fafa Island in Tonga

communicating, and have come up with a broad array of techniques which enable them to explore the fullest extents of both. These range from using small portable hand-held radios to talk across town through to high-powered transceivers that communicate across the planet. Amateurs will bounce signals off planes, clouds, satellites, meteors, the ionosphere and even the moon to achieve effective communication. Some use ultra-low power (equivalent to less than that of a small pocket torch) with very small antennas and can still cross continents. Others crank out several kilowatts to beam out from large towers. Frequencies range from a few kilohertz (lower than the broadcast AM band) up to several gigahertz (higher than a microwave oven). Some even work in with light and can beam signals over hundreds of kilometres with modified LED sources.

Modes of communication include voice, morse code, digital data and television, with each one having a series of sub-modes that are suitable for varying applications. Clubs will often build and maintain extensive repeater systems and deploy satellites which offer communications facilities that are free for all licensed operators to use. Amateur radio operators are permitted to build and modify gear and it is normal to have various projects at different stages of completion on the workbench at any given time. Amateurs also make important contributions to emergency services support and provide backup communications when all else fails in major disasters (a recent example being the 2010 Haitian earthquake (see [www.youtube.com/watch?v=JqaKzIkyBug](http://www.youtube.com/watch?v=JqaKzIkyBug)).

In most jurisdictions, amateur radio organisations have formal links into the local disaster plan and emergency service providers.

The richness of amateur radio has brought me a lot of satisfaction. Being able to communicate with people in any part of the world, no matter how remote, is truly exciting. I have had the opportunity to take portable gear to many countries and operate under reciprocal licensing arrangements from Europe, North America and the Pacific. Operating locations have included igloos, thatched huts, tents, beaches, mountain summits, trains, boats, cars, cable cars and bicycles. Without exception, every amateur I have ever 'worked' has been keen to learn about where I am and also to share a little about their own locality. On any occasion when I have been set up in a particularly remote or austere location, they have been extremely helpful in providing communication links to home and weather updates. The variety of people involved in amateur radio is remarkable. In a busy afternoon, it is possible to work a retired engineer at home in New York, a scientist working on a base in Antarctica, a volunteer food aid worker in Afghanistan and a cosmonaut on the international space station. Exotic and distant stations have an undeniable appeal, but some of my favourite contacts have been with friends or family who simply happen to be overseas. It was wonderful talking to my brother (also licensed) in London whilst out skiing on the Bogong High Plains using a hand-held miniature radio—free!

It is particularly rewarding to use low-powered, ultra-light gear that can be

deployed anywhere and still be able to communicate long distances. During extended hikes or when on back-country ski trips, I always take radio gear and have often found fellow amateurs the only means of communication with the rest of the world for days at a time. These situations demand more than just technical knowledge of equipment. There is something of an art to 'reading' the band conditions and being able to draw out faint signals from the ether to complete a successful contact with stations thousands of miles away. Detecting the intelligence within a 'Donald-Duck' sounding single sideband (SSB) transmission or hearing the words within morse code rather than 'dits' and 'dahs' takes practice. Each trip also brings the opportunity to refine the design and construction of the gear to make it more effective, reliable and lightweight. Usually planning for the next adventure has already commenced before returning home from the last.

People have always sought to overcome barriers of distance to achieve effective communication with one another. Amateur radio facilitates this very human drive by pushing the development of technology in a very personal and accessible way. Whether it is talking across town, across the world or into space, amateur radio operators will find a way to get through. If the energy and drive of the last hundred years of amateur radio are anything to go by, the hobby has a bright future.

**Stephen Warrillow FRACP FCICM VK3SN**  
Staff Specialist in Intensive Care  
Austin Health