

Every discovery and invention intended to solve one of society's problems also has some unintended negative consequences. While this statement might seem to be too broad to be universally correct, it has proven true in almost every discovery or invention throughout history. The example I am going to examine is Guglielmo Marconi's invention and discovery of wireless communication. Some unintended negative consequences of his invention are the issues of wireless security, frequency overlapping, and wireless connection stability.

While security was never of much concern when running a wire from one telegraph to another, the open nature of the airwaves provides obstacles to secure wireless communications. Though Marconi's inventions started a revolution of mobile communication, it also raised a series of issues. With the information traveling through the air, how can you secure a sensitive message from wireless listeners? As early as World War I, Marconi's company was ordered to build devices to intercept transmissions and track down German radio sets<sup>1</sup>. As time went on radio interception was used for less desirable objectives, necessitating the beginnings of research on wireless security. However, despite continuing research and today's complicated wireless encryption protocols, it is still extremely difficult to be completely sure a wireless communication is secure<sup>2</sup>.

Another issue with wireless communication is the potential interference with other wireless users. Marconi himself recognized this issue and invented a device to selectively tune to different frequencies. As radios became more prolific and complicated the number of

---

<sup>1</sup> Museum of the History of Science University of Oxford Marconi Exhibit  
<http://www.mhs.ox.ac.uk/marconi/exhibition/worldwarone.htm>

<sup>2</sup> NIST Wireless Security Report [http://csrc.nist.gov/publications/nistpubs/800-48/NIST\\_SP\\_800-48.pdf](http://csrc.nist.gov/publications/nistpubs/800-48/NIST_SP_800-48.pdf) page 38

available frequencies shrunk. Today the airwaves are so crowded that there is a division of the Federal Communications Commission dedicated to licensing devices using wireless technology.<sup>3</sup>

Virtually everyone in today's world has experienced the instability of wireless signals. Marconi experienced it while trying to perform the first wireless communication across the Atlantic and engineers are still working on the issue today. In today's world we experience it in having 'dead spots' in your home WLAN or cellular provider's network, or a static filled overseas call. The greatest advantage of wireless communication, as with many technologies, is also its greatest weakness.

A brief look at the invention of wireless communication allows us to confirm that that it did come with its share of unexpected negative consequences. Wireless communication has opened new doors for convenience and safety, but it is not without its disadvantages, namely security, interference, and stability. As technology proceeds we can only hope the rate of progress currently being made on the issues continues, for the future of technology seems to lie primarily in mobile devices without wires.

---

<sup>3</sup> <http://wireless.fcc.gov/>