

Example of reducing isolationism through communications research paper

[Sociology](#), [Communication](#)



Abstract

After several unsuccessful attempts in preceding years, the first successful transatlantic cable installation was successfully installed and commissioned in 1866. This giant step in global communications was the first of many cable installations that gave the United States the technology to break away from the physical and intellectual isolation from Europe and the rest of the world. Starting with the telegraph, followed by the telephone and most recently the Internet; the government, business sector and finally the general public were given access to increasingly accessible and affordable bi-directional and interactive communications. The technology of telecommunications has provided a most efficient and pervasive toolkit for ending isolation by delivering tools for communication and collaboration.

A History of Telecommunications

The technology of telecommunications has been a significant factor in the ending of isolationism in the United States. Of paramount importance has been the ability of technologies to deliver tools of communication and collaboration. Starting with the telegraph, then the telephone and finally the Internet; the two-way communication between the U. S. and the rest of the world started and continues to be facilitated primarily through physical cabling.

First started with the successful linking of a cable in 1866 between Ireland and Newfoundland, Canada, the first successful installation of transatlantic cabling linked the telecommunications systems that were being developed

on both sides of the Atlantic. In the United Kingdom, the first telegraph considered to be commercially viable and electrical was built by Charles Wheatstone and William Fothergill Cooke. The first application for this telegraph was over a 13 mile stretch of the Great Western Railway on April 9, 1839. Meanwhile, in the U. S. an inventor by the name of Samuel Morse in cooperation with his fellow American Inventor, Alfred Vail were developing their own version of the electric powered telegraph and almost one year earlier had successfully sent messages over a three mile cable on January 6, 1838. Their second public demonstration was a successful transmission over 40 miles between Washington and Baltimore on May 24, 1844.

By 1851 their patented telegraph system was being implemented across the country (Reis, Rocha, Gameiro, & Carvalho, 2011). The early history of telegraph in the U. S. was one of support to internal expansion. Travel, communications and trade, especially through the westward expansion of the national railway were being aided and accelerated through the use of this early telecommunications technology. The technology kept the growing nation connected and protected to some extent from regional isolation. Through to the modern age, telecommunication lines follow long distance rights of way such as the railways.

As America was growing through immigration in the 19th century there was not yet an idea or political movement of isolationism in the country. Most everyone by this time came from somewhere else in the world or were descended from immigrants. Rather, the country experienced isolation primarily from difficulties in communication with the rest of the world. This

paper focuses on the physical and intellectual isolationism that resulted from limited methods of communication to the rest of the world.

After over 25 years of expanding through America and separately through Europe and the rest of the world, it finally became possible to send a telegraph message across the Atlantic Ocean. On July 27 1866, the first successful transatlantic cable between Europe and North America became. Beyond the clear advantage to communication and co-ordination between national governments, the private sector benefited immediately. Taking around 10 days by ship to trade securities between markets in London and New York, the sudden availability of almost instant transactions brought together financial markets in an unprecedented manner (Hoag, 2006). The close connection between the end of isolation and delay in transatlantic financial markets brought by the installation of cables is celebrated in financial jargon of the time. To this day in foreign exchange markets, traders sometimes refer to the British pound/U. S. dollar exchange rate as a cable (Snellgrove, 2008). As with most technological innovations, the honeymoon period is short-lived and new and better solutions are demanded. Another major step in telecommunications technology after the telegraph happened a few years before the telegraph cable was completed. This next big thing was the result of work done by two inventors: Italian Antonio Meucci and Scotsman Alexander Bell. While Bell invented the telephone in 1857, Meucci invented a device that allowed the electrical transmission of voice over a cable in 1849. These inventions brought together allowed for the first commercial telephone services to start operations in 1879 on both sides of

the Atlantic. There were some attempts to establish commercially viable telephone service over the existing transatlantic cables over the next decades, but it was not until 1927 that the use of transatlantic cables were abandoned temporarily in favor of radio waves. A Scottish inventor, James Lindsay, gave the first recorded demonstration of wireless telegraphy in 1832 in a classroom. He was able to present a more impressive demonstration 23 years later when using water as a transmission medium he sent a message two miles. It was not until 1909 that an Italian, Guglielmo Marconi that a wireless communication was established between Britain and the United States. Eight years later radio-based telephone service was operational across the Atlantic. It was not until 1956 that a transatlantic cable supporting telephony was operational. This first telephone cable provided support for 36 lines (Reis, Rocha, Gameiro, & Carvalho, 2011). Additional cables added more lines, but there were still less than 2000 by the mid-1970s. Two cables were installed in 1976 to 1978 which added 8000 more lines on installation. It was not until the late 1980s that capacity started to significantly increase with the introduction of fiber optic cables.

Continuing on through the 1990s, capacity was still relatively low and contributed to high cost of transatlantic communication. The U. S. government and corporations were able to benefit from the heightened communication with Europe: Decisions and profit making were getting less and less isolated. The 1980s was the decade of multinationals and the 1990s saw the formative years of globalization. However, it was not until the first decade of the 21st century that exponential increases in transatlantic

capacity for telecommunications and the U. S. led liberalization of the industry taking hold in Europe. With the growth of the Internet and the availability of low cost telecommunication to the masses, we saw isolation ending for most.

As we have seen the physical barriers to ending isolation have been breaking down for centuries. The European Americans started arriving five centuries ago with the advent of sailing ships. This globalization and expansion of influences from Europe through transatlantic communication evolved from sail power and then steam powered shipping. Then facilitated through the telegraph, telephone and now the Internet (Wolf, 2001).

A jump in capacity utilization for transmitting messages started in Europe in the 1930s followed in the late 1950s in North America. Western Union started in 1958 with a nationwide U. S. communications network using teleprinters. These teleprinters as they were known could send messages from one to another. One of the uses for these systems such as that built by Western Union was for Teleprinter Exchange (TELEX). The efficiency of the system at the time was a great leap in expanding telecommunications capacity. It was possible to send two dozen messages across one phone line at a time. This indeed was a jump in the volume of communication that could be sustained over transatlantic cables compared to telephone calls.

Technology related to this story took another leap in 1940 when American inventor, George Stibitz configured the first mainframe, or centralized computer (Reis, Rocha, Gameiro, & Carvalho, 2011). Through the 1950s and

1960s mainframe computing using remote terminals connected to centralized computers flourished. However, for the purposes of supporting omnipresent communications a less centralized solution was required. The next move was a great leap towards the global Internet as we have it today. This new telecommunications technology is called packet switching. It allows data to be sent between multiple computers without having to be processed by a mainframe computer. One month before the start of a new decade, a small network was developed and started in 1969. Connecting the four Universities of California at Los Angeles, Stanford, Utah and Santa Barbara, this fledgling network became known as the Advanced Research Projects Agency Network (ARPANET) project and became the core of what grew into the global Internet. By the dawn of the 1980s this network had expanded to 213 nodes including connections to other similar projects in Europe. To connect and communicate between these packet switching networks a standard protocol was introduced. The Transmission Control and Internet protocols were standardized. TCP/IP as the set of protocols became known, provided the rules of telecommunications for the Internet. Suddenly, universities and governments between the U. S. and Europe were able to communicate using a new protocol known as the Simple Mail Transfer Protocol (SMTP). This allowed academics and public sector workers to send emails for the first time in history. The late 1980s and early 1990s saw the new Internet expanding into the private sector. Initially, the uses for this new network beyond email for companies and individuals seemed elusive. This really started to change in 1996 when a new protocol was added to the

TCP/IP set of protocols. Hypertext Transfer Protocol (HTTP) started the Web as we know it today (Reis, Rocha, Gameiro, & Carvalho, 2011).

During the developments in telecommunications that packet switching networks enabled, the expansion in capacity for transatlantic phone calls was growing exponentially. This was achieved through replacement of copper cables with fiber optic. Called the 8th Transatlantic telephone cable (TAT-8), it was the first fiber optic cable to span the Atlantic ocean. Installed in 1988, its capacity was measured in tens of thousands of phone lines rather than the 100s provided by copper cable. This was followed by six more TAT series fiber optic cables installed between 1992 and 2000, all of which were installed and funded by consortia of American and European telecommunications companies.

Meanwhile, there was a need to accommodate the bandwidth requirements of the ever growing Internet. Rather than being measured in the number of telephone lines they supported, these fiber optic data cables are categorized by the data transmission capacity they can manage. With the growing demand for communication afforded by transatlantic telecommunications, there does not seem to be a limit on the requirements for capacity. The last copper cable was decommissioned in 2008, however there are currently eight fiber optic cables in use across the Atlantic providing almost 10 terabits per second of capacity. Currently there are two major new transatlantic cables being installed. These will be capable of handling capacity measuring in the 100s of terabits. However, the quality by which data transmission will be measured is less about capacity, and more about latency. Latency is the

measure of how long data packets take on a round trip between two computers. Where a typical round trip time between the U. S. and Europe is measured in hundreds or thousands of milliseconds, the new cables, including one being installed by Hibernia Atlantic, to support their financial network clients, will offer latencies of less than 60 ms (Anderson, 2010).

With technology providing unprecedented access to communications between the U. S., Europe and the rest of the world, there is little blocking all Americans from experiencing and learning about people, culture and politics outside our borders. However, there has been much work done outside of the technical achievements which has made the telecommunication channels across the Atlantic available to the population at large. Led by the U. S., global telecommunications markets have been going through tremendous change and liberalization.

Much of this has been achieved over the past decade through the enforcement of legislation that opens the markets up to increased competition. Laying the groundwork for further liberalization in the U. S. and competitive legislation in European countries was the U. S.

Telecommunications Act of 1996. Prior to this Act the telecommunications industry was highly regulated. As such prices were high and access to markets were restricted and therefore monopolistic. A significant effect of this legislation was a drastic reduction in prices for long distance communications. The monopolistic control of AT&T was broken by this Act, with the result that their market share in long distance calls went from 100% to 53% by the end of 1996. The spirit of competition and consumer

protection spread to Europe, when a proposed merger of WorldCom and Sprint was stopped by both the United States Department of Justice and by the Competition Committee of the European Union (Economides, 2002/2003).

Telecommunications has opened up the globe to all Americans. Where individuals as well as organizations have broken down the boundaries imposed by isolation through use of the technology; government and private enterprises need to continue the focus and drive towards international collaboration in governance and business. Global threats to the environment and to political stability have been battled through continued reduction in isolationist ideas. Empowered by the technology of telecommunications the average American now has access to unprecedented amounts of information and tools of communication.

We have seen that the technology of telecommunications has been a significant factor in the ending of isolationism in the United States. Starting with the transatlantic telegraph cable in 1866, of paramount importance has been the ability of technologies to deliver tools of communication and collaboration. Today the telegraph is dead, but it has been replaced with sophisticated digitized telephony that allows us to make low cost telephone calls across the Atlantic. However, unless you know someone in Europe you are not likely to use the phone.

Instead as an American, even if you live in a small isolated town in the heartland, you can turn on your computer and swan around the Internet to

learn more everyday about the rest of the world beyond your borders.

Thanks to technology and the legislations that protect you as a consumer, you have the ability and right to explore beyond the borders of the United States.

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