

## **ACT III: ON COMMUNICATION**



Fig. a. PREVIOUS FACING PAGE:  
**Site Plan 1934-1940. Self. April 2018.**

This axonometric drawing illustrates the expansion of the original structure of the Wireless Station. The WAMCATS relocated the antennæ to Whitney, and moved some of their operations into Anchorage, at the future site of the Federal Building.

Fig. b. CURRENT PAGE:  
**Station 4. Self. March 2018.**

This watercolor shows the fourth of twelve stations on the journey to the Wireless Station, the beginning of the ascent to Government Hill.

*Once the AEC had set up their camp at Ship Creek, they began clearing the route for the railroad. The first important infrastructure was a telegraph cable system that would connect Seward, the southern terminus of the railroad, and Fairbanks, the northern. This system would be able to connect to the larger system the WAMCATS had developed in the previous decade. The WAMCATS incorporated both radio and telegraph stations across Alaska, but the AEC only possessed telegraph equipment. They strung cable along wagon roads and dogsled trails, like the Historic Iditarod Trail, that were crossing the State at that time, and improved many of them to become the railroad path. The system grew to include radiotelegraphy, and could communicate through the WAMCATS to Washington, D.C., directly. The AEC laid telephone lines through Anchorage, and improved the telegraph service by rerouting the lines along the railroad, instead of through the mountains. Once the WAMCATS took over the Anchorage Wireless Station, they were able to*

*update its technology to receive radiotelephony. The first two decades of the 20th Century witnessed large investment from the military to bring communication to the Last Frontier.*

Storytelling is a method of preserving history, heritage, and changing communities. Ancient civilizations relied on individuals, usually elders to maintain this record. They created songs to memorialize events, and painted glyphs or wove textiles to use as tools. These were the records of their civilizations, on which they relied for consistency. Many place names of the Dena'ina reflect stories associated with those sites. Contemporary storytelling has become more entertainment than informative, but still functions as an important tool for connecting communities. The shared experience of listening and telling stories binds individuals together, and preserves the interpersonal relationships on which neighbors rely.

Radio revolutionized storytelling, because now it could occur over entire nations, and across borders. There is still something remarkably powerful about hearing the voice of a correspondent reporting from a war zone, or an opera performed at Carnegie Hall, all in the comfort of a living room. Today, telephone, Wi-Fi, and LTE communications join these signals in the ether, carrying stories and sounds through every object and space. No place is sanctuary from the constant signals, and instead of building infrastructure for creating and capturing these, people desire places that block them out. The telegraph was an important leap in communications, but radiotelephony was truly a modernizing medium. Between

those technologies was radiotelegraphy, and both media developed almost simultaneously, but radiotelegraph infrastructure was easier to erect and operate. The difference is apparent in the name. Radiotelegraphy transmits and receives Morse (or International) Code whereas radiotelephony broadcasts voice and sound.

## POWER OF RADIO

Guglielmo Marconi had developed the first radiotelegraphy at the turn of the 20th century. He built on the work of early pioneers like James Maxwell and Heinrich Hertz. Marconi sent the first radiotelegraph message across the Atlantic Ocean, from Massachusetts to Dover, in 1901, setting in motion the 20th century. The revolutionary technology changed communications and the world forever. Radio was responsible for saving the Eiffel Tower, inspiring modern architects to create “an architecture not dissolved by the electromagnetic spectrum but aware of its relationship to it”, and creating a more global world.<sup>i</sup>

In real time, communication could occur over thousands of miles. It was an “electronic dissolution of space”. This created a new field of territory that governments were quick to claim and control. The BBC was the most successful in this respect, broadcasting colonialism to the far reaches of the Empire.<sup>ii</sup> In the United States, commercial enterprises quickly erected communications systems. However, the telegraph was still the preferred medium. Radio seemed too expensive and inconvenient for domestic use. The Federal government recognized its importance, however, and quickly trained the U.S. Army Signal Corps to operate

radio equipment. The Navy were the first major users of radio, and coordination of ships could happen much swifter, and more efficiently.<sup>iii</sup>

## SOUTH WELLFLEET STATION

To explain briefly a radio station at the time would benefit this Thesis, because it was the first devoted architecture to communications. The first large-scale station in the U.S. was Marconi’s South Wellfleet Station on Cape Cod. It originally had a circular array of masts, but a storm destroyed them in 1902. The following year the new station began transmitting. Its original call letters were CC (Cape Cod), but eventually became WCC when standardization of call letters occurred in the first decade of the 20th Century; all stations to the west of the Atlantic began with W, and everything to the east began with E.<sup>iv</sup> For this reason, Anchorage was WXE.

Radio stations had an antennæ, the transmitter room (or house), the operating room, and the powerhouse, plus any domestic buildings for the operators. The antennæ had two portions, the ærial and the ground. Marconi’s South Wellfleet Station had four towers with four cables strung between. A conical web of lead-in wires connected the ærial to the transmitter. This arrangement changed over time, but the concept was the same. The antennæ required a ground to establish an electromagnetic field. Some soils or ionized water allow conductance through the soil (the origin of the term), but the South Wellfleet Station used a buried counterpoise, an array of wires laid parallel between the towers.<sup>v</sup> Counterpoises that are more contemporary are elevated above the ground for ease of

i. Reference: “Dot Dot Dot”. Jacob. 2011.

ii. Reference: “Dot Dot Dot”. Jacob. 2011.

iii. Reference: “Connecting Alaska”. Jessup. 2007.

iv. Reference: “A Technical History”. Lohr. N.D.

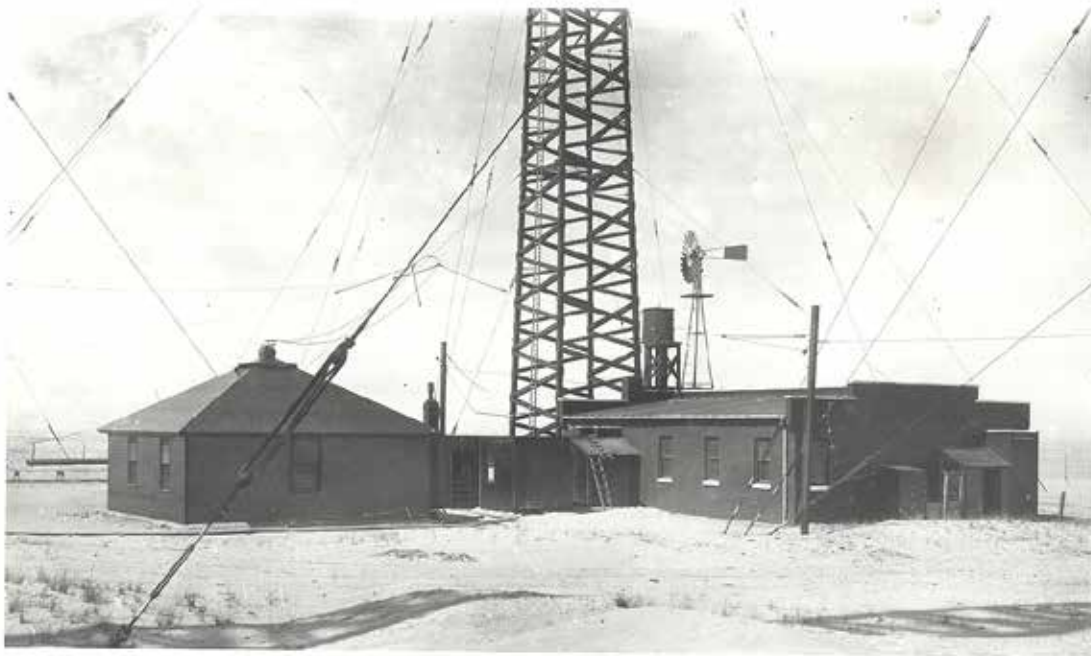


Fig. c. CURRENT PAGE:  
**Marconi Wireless Station  
 Buildings. Ukn. N.D. Courte-  
 sy of NPS, Cape Cod National  
 Seashore.**

The South Wellfleet Station on Cape Cod. None of the structures remain as the sea eroded the cliffside inland. Notice the similarity of the Transmission House to the Government Hill Wireless Station.

construction and maintenance, but this allows possible theft of the copper or difficulty reaching the mono- or dipole antennæ.

The transmitter house was a small, square building that contained a condenser (or capacitor) that connected with an oscillating and tuning inductance coil. The spark-gap rotor transmitter, which was the literally the “heart” of the operation, was in the middle of the building and translated the electric signal of the telegraph key into a radio signal. The operator’s room was immediately adjacent to the transmitter house, to allow the operator to register a response on the rotor. The operator used a mechanical telegraph key because

the voltage was so much greater than telegraph. The powerhouse contained both an AC and DC generator to power both the station and the operation.<sup>vi</sup>

## ALASKAN RADIO

Like the Marconi station, the Anchorage station had a small short-wave transmitter for ship-to-shore communication, equipment not updated during the AEC years. Instead of four towers, the Anchorage station had dipole antennæ with two masts 400’ apart. The buried counterpoise stretched from the station building to both masts, and spread 30’ across. The location of the equipment is not clear, but it appears that all of the transmitting apparatus was in the same building as the domestic rooms. The generator may have been the only exterior equipment, likely in the tent pictured to the east of the building. The two KW transmitter would not have been as noisy as the 30 KW spark-gap, but would still have generated considerable noise and danger.

The first radio system used between U.S. Army bases occurred in Alaska. The WAMCATS implemented radiotelegraph infrastructure across Norton Sound in 1903. All private companies had balked at the task of connecting Western Alaska to the rest of the world with telegraph, and the ambition of the Arctic countries to string a continuous line from Russia to Alaska, through Canada, was explored. Given the lack of private interest, the U.S. Signal Corps formed the WAMCATS to connect Alaska to the Canadian system. Eventually cable ships laid cable from Southeast Alaska to Seattle to create an all-American system.<sup>vii</sup> This simultaneous

occupation of Alaska and development of radio was formative for the State and its peoples, and forever changed its place in the world.

## BUCKMINSTER FULLER

Buckminster Fuller was obsessed with radio, and believed that he had a cosmic connexion with the technology. He reported that he came of age with radio, being born in the same year as the invention, and worked as an operator in the Navy. He believed that the technology had the power to erase borders and connect the globe, and his early sketchbooks are full of images of radio towers and arrays. Additionally, he felt that radio would disperse the city and that architecture would accelerate radio. Fuller took inspiration from Le Corbusier and looked at the radio arrays on boats, as well as at the Eiffel Tower. His early concepts, like the Dymaxion House, employed both the technology and form of radio towers. Radio, he believed, had created a new context for design.<sup>viii</sup>

## TRANSCENDING SIGNALS

Fuller's literal translation of the space-making qualities of radio inspired me to think fourth-dimensionally about this Thesis, and the Wireless Station. The messages from the station had literally occupied the space and ground around Government Hill, and enhanced the site. The air and ground were new territories for design. The messages transmitted and received from the station had occupied these spaces. Radio waves pass through the air, but also buildings and bodies. Fuller conceived that one day all life systems could equally be broadcast over wireless signals.

The dematerialization and reconstitution of forms that Star Trek's transporters performed, radio did the same for sound.

In some way, the walls of the Wireless Station and the ground of the site must have absorbed some of these radio waves. As the electromagnetic radiation passed through the materials and structure of the buildings, they left imprints and exchanged energy. The radio waves entered the earth, but its density prevents them from continuing, or returning. The energy of the broadcast dissipated into the soil and rocks, leaving only traces behind. Nevertheless, this energy radiates from the earth, perhaps in a different form, but radiates nonetheless, like heat leaving a stone.

Radio broadcasts places as well. Each transmission carried a signature of the room in which it occurred, as well as those that created it, through the air. The transmission became a form of transportation. Radio communication connected two spaces that were physically separate, and could transport the receiver to the broadcaster. Merely hearing another person over radio gave the impression that that person was in the room.

Additionally, radio did not connect two presents, but a present and a past. There was a measurable time difference between the translation of sound into electromagnetism, thence to radio signal, back to electromagnetism, and finally to a sound again. Before radios became digital, and operators relied on ground antennæ, they would have to anticipate the future in their broadcasts. The

v. Reference: "A Technical History". Lohr. N.D.

vi. Reference: "A Technical History". Lohr. N.D.

vii. Reference: "Connecting Alaska". Jessup. 2007.

viii. Reference: *Buckminster Fuller Inc.* Wigley. 2015. This Thesis can not give enough space to devote to the work of Buckminster Fuller or his obsession with radio. However, Mark Wigley's biography offers very interesting perspectives on the designer and thinker. Although many of the conjectures seem far-fetched or forced, some coincidences are thought-provoking. What is an interesting note is that Tatlen's monument does indeed have a radio tower at the top, so perhaps Wigley's idea that the entire tower is for broadcasting, and that this radio architecture inspired Fuller, is not so fantastic.

Fig. d. FACING PAGE:  
*Government Hill Wireless Station, Colorized. Self. April 2018.*

BBC is famous for the “pips”, six tones played at the top of the hour. The final pip is the longest, and occurs at minute zero, and American audiences often hear it before a BBC newscast. When the BBC transitioned to satellite broadcasts, however, the pips, once timed to anticipate the signal delay, occurred too early. Although current technologies allow nearly simultaneous communication, there is still a delay. The message heard is the message spoken from the past. Not only can radio connect people across space, but also across time.

## CONCLUSION

Aside from the infrastructure, communication is a task necessary for building communities and cultivating understanding. The radio transcended geographic and political boundaries to connect separate populations. In so doing, the broadcasts transported individuals and places through time and space, much as stories have the power to evoke memory and provide an escape from reality.



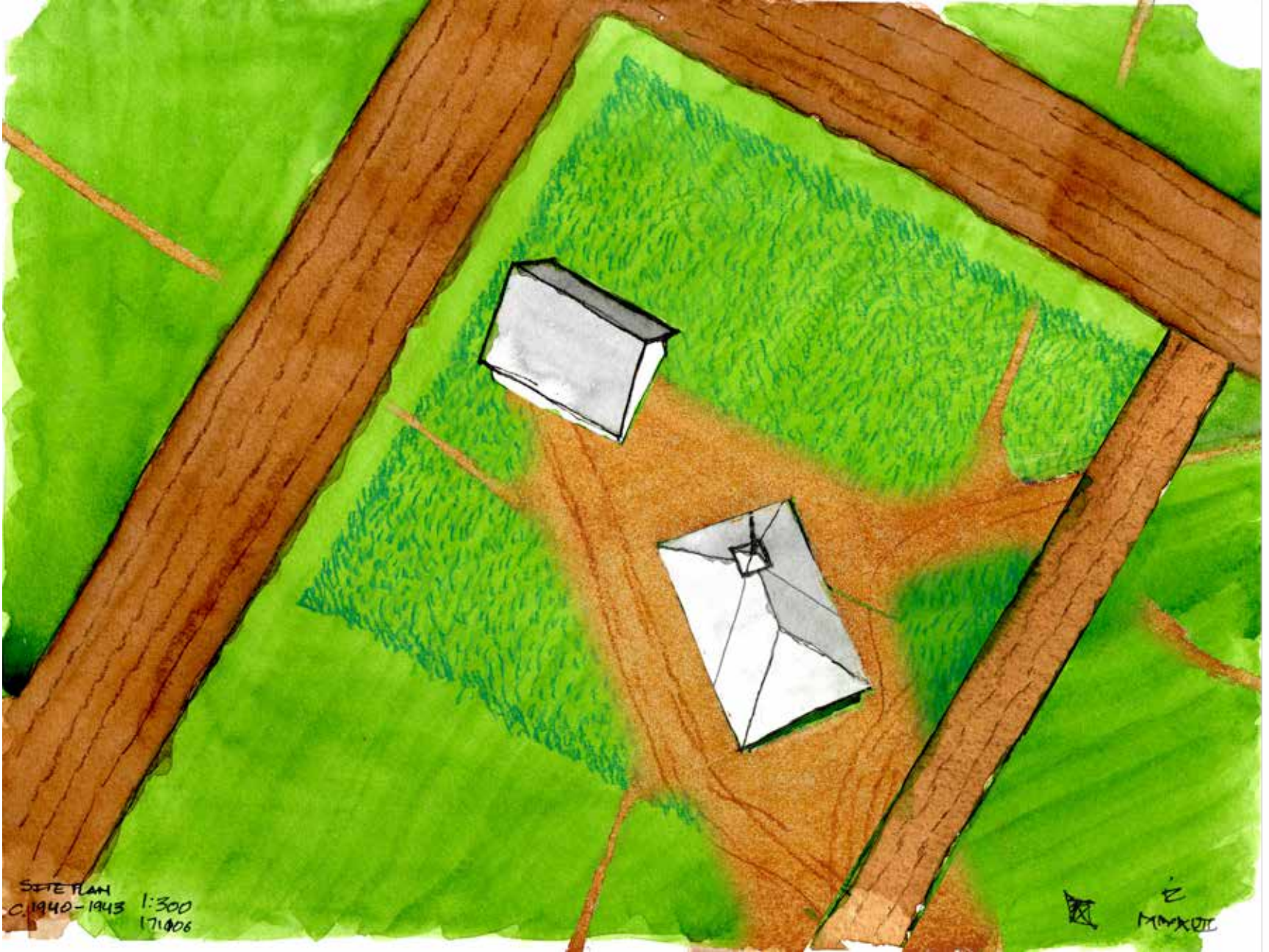
H.C.H.

N.E.C. WIRELESS STATION. ANCHORAGE ALASKA. DEC. 22-1917.

E.T.G. 2

A.E.C.  
-28-





SITE PLAN  
C. 1940-1943  
1:300  
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MARKET