On The Rediscovery of Forgotten Things:
The Historical Roots of the Snowden Revelations

Jonathan Reed Winkler
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The intent of my address will be to argue that the overlooked and perhaps more essential component to understanding the recent revelations about the National Security Agency's enormous ability to monitor global communications in multiple ways is the steady development of the global communications grid with the United States as the center. Snowden's revelations were as astonishing in their clarification about the *scope* of the NSA's interceptions and the *reach* of its arrangement with other security services, as they were in the *volume* of the interceptions.[1] But the scope, reach, and appetite of the NSA could only come through the constant engagement with a very large volume of material passing through U.S. hands. Few journalists or commentators seem to take this into consideration—their accounts frequently begin *a priori* with the assumption that it has always been this way, that the NSA has always sat atop a large quantity of communications data. Well, how *did* it get to be that way?

In asking this question, I do not mean to explore the developments of the last fifteen years. Since the late 1990s, we have seen the exponential growth of the internet, the proliferation of digital devices and computer networks, email, social media, and everything

[1] The revelations by Edward Snowden stemmed from reporting by Glenn Greenwald of information given to him by Snowden and published in *The Washington Post* and *The Guardian* in June 2013. Subsequently, several other newspapers have published information developed from the materials that Snowden, a former employee of a contractor working for the National Security Agency, had obtained before fleeing the United States. Greenwald subsequently published a book-length treatment of the story, *No Place to Hide: Edward Snowden, the NSA, and the U.S. Surveillance State* (New York: Metropolitan Books, 2014), and other accounts are forthcoming.

else that made online banking, Tweeting, and yes, even Instagram selfies possible. Instead, I want to go back further. After all, it is not as if the U.S. unleashed these things from nothing in the 1990s. Instead, we must range across the full 20th century to wonder how the U.S. came to adopt what Daniel Headrick has called the "tools of empire," or more precisely, the tool of electrical communications.[2] How is it, to compare the 1890s or the 1930s with the 1990s and the present day, that the United States moved from being on the periphery of global communications to the figurative as well as literal center? Did it happen by accident or design? Was its development interactive with the Cold War, or independent of that enormous geopolitical event? Was it the natural consequence of the U.S. being after 1945 the political and economic superpower, or were there more deliberate steps taken along the way? These are not easy questions to answer, and sustained exploration of the topic has made it clear to me that historians have only touched upon parts of this complex story.[3] Nonetheless, answers are in demand among our profession and the public, struggling as they are to make sense of what is now possible under the aegis of the National Security Agency. Thus this address will explore more what we need to know rather than what we already know.

In searching for answers, the easy if incomplete ones come from the histories of technology, economics, and business. In them, we will see that successive generations of

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[2] For the early part of this story, see Daniel Headrick, *The Invisible Weapon: Telecommunications and International Politics, 1851-1945* (New York: Oxford University Press, 1991); the phrase 'tools of empire' comes from his earlier work, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981).

[3] My own work, *Nexus: Strategic Communications and American Security in World War I* (Cambridge, MA: Harvard University Press, 2008) explores just the first part of this in the beginning of the 20th century; on the extent to which foreign relations historians have integrated technology into the study of U.S. foreign relations and international history, see my "Technology and the Environment in the Global Economy," in Frank Costigliola and Michael J. Hogan, eds., *America in the World: The Historiography of American Foreign Relations since 1941*. Second edition (New York: Cambridge University Press, 2014): 284-307.

enterprising individuals and companies adopted new technologies and used them to construct complex technological systems that provided services to other companies around the world and here at home. Thus companies such as Western Union created national and then international telegraph networks, while conglomerates such at ITT brought together under a single corporate shell multiple technologies and companies with global reach. Successive evolutions of those technologies meant that the telegraph companies such as Western Union, unable to keep up, faded from the scene, while AT&T, RCA and others using new coaxial cables, transistorized telephony, Telex and satellites were able to thrive. Ultimately these technologies gave way to the internet-based networked computers that we have today. Circling around the edges of this story are the laboratories and innovation centers, such as Bell Labs and Silicon Valley. Some of these companies remain, such as AT&T or Motorola, while others have vanished in the successive waves of corporate evolutions. Few here today remember ITT (save for its role in U.S.-Chilean relations, perhaps), or that it was once IT&T. Fewer still would remember the corporate parts that this corporate behemoth picked up along the way. We do have good history here, if incomplete, and no doubt we will see more of it.[4] But problems remain. Some of the corporate and technological story has been forgotten, the relevance as dimly remembered as the basic way that the companies operated or the technology itself functioned. Some of it will never be recaptured, the archival materials for the company or for the technology

[4] Standard histories of the companies involved include Robert Sobel, *ITT: The Management of Opportunity* (New York: Times Books, 1982); Philip L. Cantelon, *The History of MCI: 1968-1988: The Early Years* (Dallas, TX: Heritage Press, 1993); Leslie Cauley, *The End of the Line: The Rise and Fall of AT&T* (New York: Free Press, 2005). On the larger significance of the telecommunications transformation, see Richard R. John, *Network Nation: Inventing American Telecommunications* (Cambridge, MA: Belknap Press of Harvard University Press, 2010).

vanished or deliberately closed off from historians' eyes.[5] But even if the full technological or business history was available, exclusive focus on these aspects alone does not explain adequately the causation of how the U.S. came to be at the center or how the NSA could possibly have exploited that centrality. We must continue to add to the picture.

The better answer emerges when we add back in the state. This is, of course, not especially surprising at first. Beginning in the late 19th century, as the telegraph wires reached across the continent alongside the railway lines, a complex regulatory and legal structure emerged at the federal level to oversee the domestic, internal communications industry. The Interstate Commerce Commission, and then later the Federal Radio Commission and ultimately the Federal Communications Commission each in different ways defined how different companies in the telegraph, telephone, and radio industries could behave, what tariffs they could charge, what profits they could make, and how much any one of them could control of the whole industry.[6] Also important, the FCC allocated demand for radio spectrum among the non-governmental users in the United States, aligning international agreements on the service assignments of different portions of the spectrum with domestic U.S. demand from corporations large and small that would make use of radio. Essential for understanding the history of federal power, the regulatory state,

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[5] The corporate records of the companies that came together under the ITT umbrella, including All America Cables, Commercial Cable Company, and Federal Radio, have apparently vanished. The Firestone papers are at the University of Akron, but restrictions by the company on historical access to the materials relating to the company's activities in Liberia prevent historians from examining the Firestone company's radio communications subsidiary, a partner of the U.S. Navy in the 1920s and later. The MCI records at the Hagley Museum & Library in Wilmington, Delaware have much on RCA and Western Union International in the early years.

[6] On the Interstate Commerce Commission, see Ari and Olive Hoogenboom, *A History of the ICC: From Panacea to Palliative* (New York: Norton, 1976) and Richard D. Stone, *The Interstate Commerce Commission and the Railroad Industry: A History of Regulatory Policy* (New York: Praeger, 1991).

labor history, and the anti-monopolist traditions as well as of telecommunications in the United States, the actions of these regulatory bodies are opaque, not entirely exciting to most historians, and generally not very well understood outside of the work of specialists.[7]

What is it about adding back in the domestic state that matters for our inquiry? There are several areas where the state really matters for this, but two in particular are worth noting: on spectrum allocation, the division of the scarce resources of radio frequencies among commercial and government radio users, and the mergers of telecommunications companies doing international business.

These two topics, spectrum allocation and the corporate mergers, are important because these are points where foreign policy and national security concerns enter the picture. The problem, however, is that historians have largely avoided examining either topic from the perspective of national security. Spectrum allocation is a particularly intricate topic, but one not especially exciting to most. The division of that portion of the electromagnetic spectrum usable for radio transmissions has occurred again and again since the first decision to assign frequencies for safety-at-sea following the *Titanic* disaster. As the demand for spectrum increased, as the kinds of radio transmitters evolved, and the uses of the spectrum expanded, the governments of the world increasingly realized that they needed to come up with agreements on how to divide up this resource in ways that would avoid damaging interference. This is a hidden, yet vital, story in international affairs,

[7] There is no official history of the Federal Communications Commission, for example, and a request by the author for historical information from the FCC staff themselves yielded a two-page document describing the current commission and its members. They did not respond to further inquiries.

and one far beyond what we'll talk about today.[8] But the United States was from the beginning at the center of this activity, attempting to structure the world's use of the radio frequency spectrum in ways that served U.S. national security needs. In particular, the U.S. pushed at the important 1927 Washington, D.C. conference the division of the international spectrum along a plan originally proposed by the U.S. Navy, to make the spectrum available to all and divided by use (rather than assign piecemeal frequencies to individual countries, as the British had proposed).[9] That system remains in place today, serving not only U.S. companies but also U.S. military needs. Significant conferences following from the Washington one continued every five years or so, including major ones at Atlantic City in 1947 and the 1963 conference in Geneva that considered the frequency demands of space communications and exploration.

But how important was this allocation of spectrum? Critical, in the eyes of successive administrations, for ensuring that U.S. companies could compete with major European commercial rivals. Critical, in the eyes of successive administrations, for ensuring that the U.S. military could communicate globally—particularly given that for a generation after World War II, virtually all international military traffic went by radio. Critical enough that Congress granted the executive branch in the 1934 Communications

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[8] Works that cover the U.S. participation in international agreements on spectrum allocation from a historical diplomatic perspective (rather than other scholarly perspectives) are few in number. See, for instance, Mildred L.B. Feldman, *The Role of the United States in the International Telecommunications Union and pre-ITU conferences* (privately printed, 1975) and Hugh R. Slotten, "Satellite Communications, Globalization, and the Cold War," *Technology & Culture* 43 (April 2002): 315-350; and *idem*, "The International Telecommunications Union, Space Radio Communications, and U.S. Cold War Diplomacy, 1957-1963," *Diplomatic History* 37:2 (April 2013): 313-371.

[9] On this, see Winkler, "The Role of the United States Navy in the Formulation of the International Radio Spectrum in the Interwar Period," paper presented before the 2007 Naval History Symposium, United States Naval Academy, 19 September 2007; see also Philip T. Rosen, *The Modern Stentors* (Westport: Greenwood Press, 1980); and Captain Linwood S. Howeth, *A History of Communications-Electronics in the United States Navy* (Washington, D.C.: Government Printing Office, 1963).

Act the power to seize such parts of the spectrum as needed in the event of a national emergency—a power that could be expanded today to encompass the entire Internet.[10] And critical enough, in the eyes of successive post-war administrations, that the Soviet Union's continued requests for spectrum and its repeated instances of jamming in violation of the international agreements risked hampering the West's development of international communications. As Dr. James Killian, Eisenhower's science advisor, warned in 1958,

> The useful portion of the radio spectrum allocated to this country is an important national resource, and its thoughtful and effective use is of paramount importance in the economic and cultural life of the nation and in its defense program….Should war eventuate the military will have to commandeer far more of the spectrum than it now has. Current planning in just one area, defense against electronic countermeasures, must contemplate wide usage of bands now assigned to non-military groups. The military does not need these bands in peacetime, but it must know and plan on the frequencies it can use for our defense in war. [11]

Yet if a review of presidential papers from the 1920s to the 1950s is any indication, presidents took less and less direct notice of these conferences or the policy issues discussed at these conferences. Were they not important? Or, were they important at a lower, more systemic level where, because it largely worked, has largely escaped historical notice? The truth lies somewhere in between. Records from the Eisenhower library, for

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[10] Executive Order 13618, issued 6 June 2012, succeeding similar earlier executive orders in 1984 and 2003 and continuing similar practices enacted since 1934, granted the Department of Homeland Security responsibility for ensuring continued government communications over private, commercial lines.

[11] Pressure on the spectrum became more pronounced as the domestic uses proliferated, from police dispatch to taxicabs and the new technology of broadcast television. Indeed, the rapid expansion into the Ultra High Frequency bands in the 1950s caused trepidation in the late 1950s that this would crowd out the military needs for transmissions in those bands for missile telemetry and the detection radars for defense against ICBMs. Forcing the civilian market to change rapidly would have enormous fixed costs, because of the enormous number of sets already sold to the public with the frequencies (that is, channels) fixed in the dials, as well as political costs. See "The Need for Restudy of Radio-Frequency Allocations," 14 August 1958, no author given but likely Dr. James Killian, Folder "Telecommunications [May 1956-July 1959](2)," Box 16, White House Office – Office of the Special Assistant for Science and Technology, and Minutes of Cabinet Meeting 15 August 1958, Cabinet Series, Papers as President (Whitman File), Eisenhower Presidential Papers, Dwight D. Eisenhower Presidential Library.

example, indicate that administration officials repeatedly lamented the lack of coordination and understanding of spectrum issues and national security among senior decision-makers. At the same time, there are a great many documents dealing with the spectrum issue that remain classified in these collections, more than sixty years later.[12]

The second topic, that of communications mergers, is also important for national security reasons. The regulatory and legal structure governing communications companies through the late 20th century anchored on the need to minimize the danger of monopolistic behavior. Monopolies could be avoided or at least restrained through rate setting and market control. This objective, understandable within the context of the late 19th and early 20th century political struggles against monopolies, became a liability for those in the companies and in the federal government considering the international position of the United States. By the end of World War II, a slow-rolling crisis had emerged. By this time, the telegraph industry was in decline, beset by competitors and afflicted with an aging infrastructure. During World War II, Congress and the FCC had granted Western Union, one of the major firms, the opportunity to purchase its domestic rival, Postal Telegraph, so long as Western Union gave up its international business, the submarine telegraph cables in the North Atlantic. Western Union would be trading its international business for the chance to be a well-regulated, genteel domestic monopoly gently fading away. This would

[12] Diplomatic historians have paid very little attention to these conferences, the preparation for them or the outcome. Among the few are Rosen, *The Modern Stentors*; James Schwoch, *The American Radio Industry and its Latin American Activities, 1900-1939* (Urbana: University of Illinois Press, 1990); and Slotten, "International Telecommunications Union." On the continued importance of spectrum and dominance of the spectrum by the military, see for example the recent article by Brendan I. Koerner, "How America's Soldiers Fight for the Spectrum on the Battlefield," *Wired* ThreatLevel blog, February 2014, http://www.wired.com/threatlevel/2014/02/spectrum-warfare/ (last accessed 10 July 2014).

be better, from everyone's point of view, than having both companies go out of business and the telegraph industry rapidly collapse across the U.S.

To many historians, this might appear to be merely a domestic policy or economics question, but it had national security implications that were both important and irresolvable. The issue was what to do with the international cables, and whether consolidation of the industry or all communications companies into a single firm would ensure continued independent communications links with the rest of the world. There was no shortage of ideas about what to do with the companies, and the arguments put forward by military, political, and commercial leaders all revolved around ensuring that the United States not come out the other side of this domestic merger worse off in international communications at a time when the role of the U.S. in the world had drastically increased. This was more than just preservation of commercial opportunity—it was about ensuring that diplomatic, military and especially now intelligence traffic could move around the world and back to the United States largely if not entirely through U.S. hands. Some suggested that IT&T or AT&T acquire total control of the nation's external communications, organized by geographic reach or types of communications technology. Still others thought that perhaps the U.S. government should control it all. With the matter unresolved at the time of Franklin Roosevelt's death, the new Truman administration had to begin all over again in divining the opinions of the various departments and then sounding out Congress on special legislation for the disposition of what all recognized were very important national assets.

Fraught with complex political and diplomatic issues, it proved too complicated to resolve. No plan could succeed without financing, and no financial support would

materialize for what was in effect the creation of a monopoly. Only with legislation could it occur, but no one could agree on how to balance the national security desires against the fears of monopoly power. Twice similar efforts began in the Eisenhower administration, motivated again by national security fears, but neither yielded much beyond committee reports pronouncing that great danger loomed close if something was not done to impose order over the telecommunications companies. With the advancement of technology (AT&T's new coaxial submarine cables) and the development of satellite communications, fears arose among U.S. officials that ruinous competition among the companies in the scramble for space satellites would cause the U.S. to lose out to others. The desire to avoid either industrial collapse or reinforcement of AT&T's prominence led to the development of a government-sponsored corporation, COMSAT, and regulatory restrictions preserving multiple international carriers, as a way of avoiding the merger problem altogether.

From the 1920s to the 1970s, then, national security concerns about preserving U.S. global communications links and the possible use of monopolies to achieve this collided with regulatory traditions opposed to monopolies and wedded to the preservation of market competition. The exact narrative here is not entirely clear—no historian has yet laid it out effectively yet though I'm trying to write a lengthy book about it—but it appears that in the absence of a clear, decisive national security policy on communications mandating consolidation, a pluralistic collection of international communications firms continued to survive in a regulatory environment relaxed enough that new rivals could emerge, rivals that would eventually absorb their dying predecessors or offer a comparable service.

Thus, inactivity actually yielded what those worried in 1940 or 1950 or 1960 actually desired but thought required direct intervention: continual, reliable international communications networks connecting the U.S. to the parts of the world that had political, diplomatic, military *and* commercial significance. As the companies constructing this expanded, contracted, merged and transformed, the network they collectively created anchored on the United States. In some instances this meant that traffic going around the world passed through the United States even if neither party was actually in the U.S. With the advent of the computerized switching, the deregulation of the telecommunications industry, and the rise of the Internet, in the 1980s and 1990s, the U.S. simply was at the center of global communications.

Now let us return to the matter of the National Security Agency's ability to survey the traffic passing through that global web. The U.S. government's capabilities grew in parallel with the continued expansion of U.S. communications connections around the world after World War II. What started as a continuation of World War II censorship into the postwar period transformed into an ongoing Cold War effort to monitor both wired and wireless communications for the defense of the country against foreign espionage. But instead of confining themselves to diplomatic and military traffic alone, as they had ostensibly done during the war, the predecessors of the NSA also sought all manner of traffic beneficial in the intelligence war against Communism. Such a move, made all the more complicated by the fact that this was wartime activity carried over into the quasi-peace of the Cold War, opened up the dangers that have now become manifest with the Snowden revelations. How did it start, that it could continue and expand to become what we see it today?

The issue has always first been one of access to traffic. Obtaining access to *international wireless* communications (government or foreign companies) outside of the United States was for the U.S. a function of resources (men, equipment, and financing), location (the optimal reception site to receive the targeted radio signals) and access (the diplomatic issue of a host country permitting a U.S. military facility). Thus the U.S. established listening posts all around the world to gather what radio traffic it could. Once gathered, that which was encrypted could be decrypted, and all of it analyzed. As data began to pass through the radio-relay of satellite communications, interception of that traffic, both government and foreign commercial, became possible as well.

Obtaining *international wire traffic* was harder, because the information had to be intercepted somewhere along the path of the wire. Since the Soviet bloc communicated extensively by landline, the U.S. had little hope of gaining regular access to internal, unencrypted traffic. This is what made the 1970s tapping of the Soviet cable between Vladivostok and the naval base on the Kamchatka Peninsula, and the 1950s Berlin Tunnel operation to tap Soviet bloc communications passing through Berlin, so remarkable.[13] Gaining access to the international networks—those run by the private companies—that handled Soviet-bloc or neutral traffic offered a way to compensate for the access problem.

How, then, did the NSA obtain traffic from these companies, as they expanded their reach around the globe and connect more and more of the world from the central pivot of the United States? From 1940 onwards, the U.S. military regularly obtained copies of traffic

[13] On IVY BELLS, see Sherry Sontage and Christopher Drew, *Blind Man's Bluff: The Untold Story of American Submarine Espionage* (New York: Harper Collins, 2000); on the Berlin Tunnel operation (OPERATION GOLD), see David Stafford, *Spies Beneath Berlin: The Extraordinary Story of Operation Stopwatch/Gold, the CIA's Spy Tunnel Under the Russian Sector of Cold War Berlin* (Overlook Press, 2002).

entering and exiting the United States through several key gateway cities (Washington, D.C., San Francisco, and New York City) where the companies that handled international data traffic processed that traffic. These included RCA, ITT, and Western Union, and those targeted included not only foreign agents and diplomats but also U.S. citizens, with great regularity. The program continued on after the war. It continued after a flurry of internal debate within the Truman administration, the army and the navy in the months after the end of World War II. The position of the two military services was this was perfectly permissible, because it covered foreign diplomatic and military traffic relating to national security. As evidence, officers pointed to a bevy of legal pronouncements and public statements, including by then-Senator Harry Truman during the war. But for domestic political reasons, out of a desire to protect now-President Truman (as well as preserve access for FBI Director J. Edgar Hoover) Attorney General Thomas Clark opted not to issue a written legal opinion that the services could offer to the communications companies. Instead, the officials went, hat-in-hand, to the companies and appealed to their patriotic instincts for a discrete, deniable program.[14]

This solution worked, and worked so well that once the process began it functioned almost autonomously, with very few individuals in the companies or, after 1952, in the National Security Agency, knowing about what became Operation SHAMROCK. But the absence of a formal legal opinion, a firm decision once and for all that this could occur, would come back to haunt Truman's successors. The aggregation of traffic from the

[14] General overviews of the origins of this can be found in James Bamford, *Body of Secrets: Anatomy of the Ultra-Secret National Security Agency* (New York: Doubleday, 2000) and Bamford, *The Puzzle Palace* (Boston: Houghton Mifflin, 1982). Bamford recently revealed that he himself had provided information as a whistleblower to the Church Committee in secret. See also Matthew M. Aid, *The Secret Sentry: The Untold History of the National Security Agency* (New York: Bloomsbury Press, 2009).

commercial firms continued until the public revelations about it in 1975, when the Church Committee first learned of the details, including the fact that U.S. citizens had been among those whose traffic had been targeted for analysis. The current system, of a FISA Court approving requests based on national security grounds, has continued since the 1970s. Meanwhile, the NSA supplemented the traffic it obtained passing through U.S. commercial firms' hands with that passing through the hands of the fellow Anglophone countries (Britain, Canada, Australia, and New Zealand) under the cover of the British telecommunications conglomerate Cable & Wireless, through the UKUSA agreement established in 1946.[15] The result is the observation network that remains in place through today.

Edward Snowden's revelations are, to be clear, stunning given the sheer volume of traffic that the National Security Agency can apparently access. But the acquisition program is not new, and the accessibility of traffic is not especially new either. Since World War II the U.S. has steadily constructed, through a combination of inadvertent efforts and overt design, a global communications network centered on North America. Success has beget success, and while the U.S. no longer relies upon telegrams or analog international telephony, the newer technological services—digital telephony, computerized data transmissions, streaming video and massive file transfers—nonetheless pass largely through the hands of U.S.-based companies or route through the Anglophone countries, where they are susceptible to interception, decryption, and analysis. The story of how this

[15] See, *inter alia*, "British-U.S. Communications Intelligence Agreement," March 1946, HW80/4, The National Archives, Kew, London, United Kingdom, and related documents on the UKUSA Agreement Release, 1940-1956, National Security Agency website, http://www.nsa.gov/public_info/declass/ukusa.html (last accessed 1 March 2014). See also Jeffrey Richelson and Desmond Ball, *The Ties that Bind: Intelligence Cooperation between the UKUSA countries* 2nd Edition (Boston: Unwin Hyman, 1990).

came to be is as much one of the history of the signals intelligence community—the NSA and its counterparts—as it is about understanding the government efforts undertaken to facilitate the spread of these companies, the expansion of their reach and the establishment of the continual, reliable communications means with the rest of the world that have motivated U.S. government officials since the aftermath of the Spanish-American War.

In conclusion, then, let me say simply that if anything, this is incredibly complicated history. It falls somewhere among military, diplomatic, technological, economic, and intelligence history. Perhaps it is simply national security history, for which I am not sure then what to call myself. Perhaps a national security historian. But I do know that you have chosen to call me president, for which I am grateful. I will do my best to lead the Academy forwards. I urge you to join with me in strengthening the Ohio Academy, to carry it forward proudly towards its 100th anniversary in the not too distant future. Thank you.