The Invention and Standardization of Television: A Historical Precedent to Current Convergence Debates in Content and Telecom Industries

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Introduction

When asked about the global media conglomerates, AOL Time Warner, News Corp., Sony, Viacom, Vivendi Universal and Disney, formed in anticipation of digital convergence and the possible dangers they pose to competition, Michael Powell, the current chairman of the Federal Communication Commission (FCC), responded: "No matter what the failings of particular businesses or the government, technology is relentlessly improving. That is the wild card that cannot be altered."[1] For Powell, convergence of voice, data, and video over digital networks is inherently driven by the progress of scientific innovation that is as steady as it is sure. The inevitability Powell attributes to technological improvement and convergence is not simply an opinion of a government official but the articulation of an oft-cited technologic postulate: Moore's Law. Moore's Law comes from an observation made in 1965 by Gordon Moore, co-founder of Intel, that the number of transistors per square inch on integrated circuits had doubled every year since the integrated circuit was invented. Colloquially, "Moore's Law" is an aphorism for the belief that the size and cost of technology halves approximately every 18 months.

Powell's comment and Moore's Law are easily grasped observations in the current age of digital technology, when all the promises of 1950s futurism seem to be materializing in on way or another. But what is at stake in accepting uncritically the naturalization of technological development and the inevitability of convergence? This

paper suggests that by making convergence a natural evolutionary force, a key part of its history and reality drops out of debate: the politics of appropriation and exclusion that constitute the very possibility of convergence itself. By eradicating the politics of convergence with the very language they favor, both Powell and Moore remove from the debate the historical contingencies of, and the institutional forces behind, convergence while elevating the chronological evolution of convergence to an ideology.

With a little investigation, these historical contingencies and institutional forces are not so easily subordinated to "the evolution of technology." This paper aims to denaturalize the evolutionary rationale given for convergence in American media infrastructure in two ways. First, this paper uses the history of broadcasting convergence to illustrate the kinds of cultural definitions upon which convergence can be contingent and argues that what changes these understandings depends less on the progressive scientific innovation and more upon the cultural ideologies about science ushered in during events of crisis. Second, this paper denaturalizes the evolutionary rationale of convergence by showing how deeply intertwined convergence is with state-interested corporate consolidation. The story of broadcasting convergence again provides examples of the politics of appropriation and exclusion historically linking state-interested corporate consolidation to convergence—a politics relevant to contemporary debates surrounding digital convergence. Once examined, the history of broadcasting convergence reveals the very real political stakes and institutional tensions between military, regulatory, and commerce agencies—and between the discourses each mobilizes to organize and control convergence to their advantage—for which an evolutionary explanation cannot account.

Convergence and Cultural Definition

Popularly defined, convergence is "the coming together of two or more disparate disciplines or technologies."[2] If examined carefully, the wording of this definition reflects the evolutionary metaphor so often used to describe convergence and the conditions thought necessary to achieve it. "Coming together" indicates that all technology develops in a homologous fashion and, at a particular moment determined by the logic of scientific progress, one technology will lock-step with one or more technologies, merging within a singular evolutionary tract rather than multiple and disparate ones. Semantically, the phraseology endows convergence with the characteristics of stable, organized, uninterrupted chronology. The questions asked of convergence *cum* chronology do not concern the interruptions and conflicts that demarcate convergence as a process but rather focus on "how continuities are established, how a single pattern is formed and preserved, how for so many different successive minds there is a single horizon."[3]

Another assumption is made apparent with the word "disparate." Here, convergence is thought to involve differential and separate technologies that, again, at a particular moment determined by the logic of scientific progress, unite, and become one. The underlying rationale is that technology is defined by its physical form and cumulative refinement of scientific invention in relation to that form rather than by the historical definition, and just as frequently the politics, constituting it. The questions asked of convergence *cum* innovation do not concern the historical events that transform a technology into culturally relevant, economically valuable, and socially implemented methods but rather focus on dispelling the oblivion of the past to reveal the clean continuities of linear development.[4]

In de-linking cultural definition from scientific development and coupling convergence with chronological innovation, the evolutionary rationale creates a selective, naturalized historical narrative of convergence. The history of broadcasting convergence, however, illustrates how crucial cultural definitions are to scientific developments. Key to broadcasting convergence is a method of presentational electricity that emerged at roughly the same time as telegraph technology (mid-1800s). Despite its innovative characteristics (described below), presentational electricity remained irrelevant to communication science until the early 1900s. Once recognized as legitimate the method of presentational electricity converged with wireless radio, producing radio broadcasting and subsequently television. Upon examination, this story involves transformations to highly contingent cultural definitions regarding the capabilities of electronic communications that do not fit within an evolutionary framework.

Presentational electricity is a method of communication based on the principle that space itself can be scanned with light or electricity, subdivided into informational bits, relayed to a receiver relatively instantaneously, and presented (rather than represented) to a viewer. Scottish inventor Alexander Bain (1810-1877) first introduced this method and the created a device based on this principle in 1843. That year Bain obtained a British patent for a method of telegraphic transmission that incorporated the electrochemical effects of light. This method involves scanning text written in non-conductive ink with an electrical current. It is accomplished by placing paper inscribed with non-conductive ink on a copper spool that both spins and moves laterally. In motion, the spooled paper passes under a copper stylus containing an electrical current. As the text passes under the stylus, the non-conductive ink momentarily interrupts the current so

that a distinctive electrical pattern is transmitted to a synchronized receiver. The receiver's stylus receives this pattern and passes it over a spool wrapped in chemically treated paper that reacts to the electrical current by making a blue mark. When the current is broken from the other end, the paper remains white. The received message is formed in white letters on a background of fine blue lines.[5]

It is this method and principle that converged with wireless radio in the early 1900s to manifest radio broadcasting and later, "radio with pictures." By opening up the possibility of transmitting more that just abstracted representations of alphabetic characters in the form of electrical pulses, Bain's method of presentational electricity is the legacy that radio and television research and development would inherit in the first half of the 20th century. Although eventually light waves replaced electrical current as the scanning means and the radio spectrum replaced copper wires as the transmission medium, the demonstrable reality of scanning space and in relay-instantaneous time is central to the emergence of television technology.

But in contrast to convergence as a natural phenomenon contingent only on the progress of science, the question is raised: why didn't Bain's method of presentational electricity converge with telegraph technology rather than wireless radio? After all, the telegraph came before wireless radio and Bain did indeed invent an innovative method regarding communication over wires. The answer to this question is two-fold. First, cultural definitions of electricity, rather than the physical disparities between the two forms made convergence in the second half of the 19th century an impossibility. Second, the ideological need for presentational electricity did not gain cultural currency until

April 14th, 1912, when the *Titanic* rammed into an iceberg that had loomed unnoticed in its path for roughly three hours.

Bain v. Morse

Bain's method existed in opposition to the telegraphic method typically attributed to Samuel Morse. Morse's telegraph operated by transmitting patterns of long and short electrical pulses using a telegraph key. The receiver would print these pulses as a series of dots and dashes.[6] An operator on the receiving end then translated symbols into alphabetic characters. Central to Morse's method is the use of electricity as a *representational* form. The method of telegraphic communication Bain patented in 1843 operated by scanning and subdividing images (in this case, text) into discreet units of electricity. These electrical "bits" are transmitted to a receiving device that *reconstructs the original sequence* and placement of those electrical "bits," thus *presenting* an image instead of *representing* alphabetic characters.

This disparity between the method of presentational electricity and that of representational electricity is not just a matter of "you say tomato and I say tomahto." Rather, the hegemonic discourse and economic power surrounding the telegraph during the mid-1800s that established electricity as a representational medium reinforced this disparity. With the example of Bain and Morse, convergence is not contingent on innovation per se but also on the cultural definitions of electricity popular at the time. The power of this discourse is evident in the fact that Bain himself abandoned presentational electricity to pursue the representational use of electricity associated with Morse and dominant during the mid-1800s. Testimony to the extent of Bain's defection—and to the hegemony of representational electricity—is found in the documents of a 1848 decision

made by the U.S. Patent Commissioner, Edmund Burke, declaring interference between Bain's U.S. patent application and an application made by Morse. By explicating the details of this litigation, it becomes clear that convergence is neither a simple "coming together" of tremendously disparate technologies nor is it simply a result of the material improvement of existing technology. Rather, convergence is contingent on political and economic conditions.

In October 1848, the U.S. Patent Commissioner ruled against Bain's April 1848 application "when the secret archives were consulted and it was found that an application, filed by Sam. F.B. Morse, January 1848 had been there deposited in accordance with the provisions of the law, which presented claims conflicting with those before mentioned set up by said Bain."[7] Bain tried to prove the priority of his invention by invoking his British patent, generally claimed and sealed in December 1846 but enrolled with specifications in June 1847. Another consultation with the "secret archives," however, revealed a caveat (a general claim without specification) placed by Morse in January 1847. Since "it is the practice of this office to require the date of enrollment of the specification as proof that the foreign patent had been completed," Morse's caveat, despite its lack of specificity, proved his right to priority of invention and established Bain's application as an interference.[8] Bain's counsel then asked the matter to be referred to the Attorney General, but since the office was vacant, no opinion was forthcoming.

In the mean time, Charles Morse gave "clear and unequivocal testimony" as to seeing his father operate a machine, identical to the one described in his January 1847 caveat, in September 1846.[9] Bain countered by claiming the machine described in his

1846 British patent was identical to that which he described in his November 1843 British patent entitled "For Certain Improvements in Electric Clocks, in Electric Printing, and Signal Telegraphs." However, the Commissioner deemed Bain's invention, patented in November 1843, significantly different from the one patented in 1846 and again declared it interfering with Morse's invention. The machine, in fact, was different, but only in terms of the principle of electricity used, not in terms of patentable methods or physical moving parts. The machine Bain patented in 1843 scanned text written in non-conductive *ink.* Therefore the machine scanned the entire surface uniformly and transmitted that configuration to the receiver for *presentation*. But the machine Bain attempted to patent in the U.S. in 1848 was different in that it scanned non-conductive *paper* that had perforations in the shapes of dots and dashes. Therefore, his later machine used the inverse the principle of electricity, only transmitting current corresponding with dots and dashes to the receiver for *representation*.

Patent Commissioner again referred the case to the Attorney General, this time in the form of the following question: "Whether, in a question of interference between a foreign and an American inventor, the foreign inventor can go behind the date of his foreign patent to prove priority?" The Patent Commissioner then reported that, "After mature deliberation on the part of the Attorney General, that question has been decided in the negative."[10] Therefore, according to the Patent Commissioner, Bain as a foreigner could not claim priority before the date of his patent *enrollment* in June 1847 and priority of invention must be decided in favor of Morse by merit of his January 1847 caveat. After an appeal hearing with as much back and forth as the original Patent Commission hearing, Judge Cranch ruled in March 1849 that there was no interference, since

principles and results cannot be patented, but improvements in the methods to produce such results using said principles were patentable. Therefore, Bain and Morse received separate U.S. patents for their respective (if similar) inventions.

Clearly, the Bain-Morse litigation illustrates the tumultuous and highly contingent conditions that need to be in place for convergence to occur or for a method to be recognized as "scientific progress." The hegemonic discourse and economic power of telegraphic communication via representational electricity marginalized presentational electricity, despite its convergence potential. The fact that Bain himself disavowed his method in an attempt to claim priority for an invention using inverse principles of electricity reveal the role cultural definitions and economic determinants have on scientific progress. Although once discarded as ideologically incompatible with the norms of communication science, presentational electricity's status began to change with one of the more notorious accidents of the 20th century: the sinking of the *Titanic* in 1912. During the accident and its aftermath, wireless radio and the hegemonic standard of representational electricity it embodied went from being as the pinnacle of communication technology to an insufficient and antiquated system that failed to keep *Titanic* afloat. More than material innovation, the ideological transformation of representational electricity and the subsequent redefinition of presentational electricity is what made convergence possibility.

Losing the Titanic, Denaturalizing Convergence

Built between 1909 and 1911, *Titanic* was one of the few ships equipped with wireless radio at the time. Despite the efforts of its two radio officers (R/Os), who maintained their posts even after being dismissed by Captain E.J. Smith, response to the

emergency came painfully slow. The *Carpathia,* the first ship to get to *Titanic's* coordinates, arrived *four hours* after the first distress call. Information about the catastrophe and its survivors traveled even slower than the aid to the sinking ship. Since the *Carpathia's* wireless had a limited transmission range, wires naming survivors were relayed first to a nearby ship, the *Olympic,* and then to the Marconi station in Cape Race, Newfoundland. Attempts to get a complete report of the facts were frustrated by a "maze of wireless flashes [that] darted from every station [and] formed a hissing mixture from which scarcely a complete sentence could be picked up by any receiving station."[11] The press was also "practically left without news because the wireless station on the *Carpathia* is so small and worked by one man."[12]

Titanic linked aspects of wireless radio and representational electricity—previously considered state of the art—to imperfection, not the least of which was its surveillance capabilities used for navigation. Though wireless allowed a semi-standardized and linear exchange of information in the form of Morse or Continental Code, operations were restricted because of limited channels and scant personal (ships usually had only one, sometimes two, R/Os). Since communication was confined to finite number of channels, nautical information about weather conditions, the location of icebergs, and the positions of other ships competed with "passenger traffic" (telegrams to and from passengers) for R/O processing. Many accounts suggest that backlogged passenger traffic preoccupied *Titanic's* R/Os, causing them to dismiss a crucial telegram reporting ice conditions in the area.[13]

Besides channel scarcity and its effect on accurate surveillance, *Titanic* proved wireless radio's monitoring capabilities superficial and risky. Since wireless radio only

allowed coded information *about* physical space to travel *over* physical space, ships could not monitor maritime space directly or independently. To use a crude analogy, navigating with wireless is akin to substituting maritime radar equipment with high power walkie talkies. After the *Titanic* disaster, wireless' contingent and abstract form of surveillance seemed exceptionally unsound—particularly when the venture involved transporting leisure class elites and an estimated $12,500,00 worth of cargo.[14] Guglielmo Marconi himself admitted wireless radio was responsible for both saving and losing lives.[15]

Another indictment of wireless was the effect its failure had on print media's authority to disseminate news during the crisis. Both the lack of information provided by, and misinformation obtained through, wireless sources compromised newspapers' ability to provide reports to the public. Piecemeal and incomplete lists of survivors posted around the city were the only reports newspapers could provide during the three days between the *Carpathia's* rescue of survivors and the ship's arrival in New York City. An estimated 50,000 people jockeyed to see the lists posted on broadsheets and illuminated on the electric bulletin board at Times Square. Crowds were so large police were called in to "handle" them.[16] Misinformation further compounded this news vacuum when late editions of some newspapers reported the *Titanic* in tow to Halifax with most lives saved—information based on false wires.[17]

Inundated by requests for unavailable facts, confounded by the lack of information, and compromised by false wires, newspapers like the *New York Times* could not allay public anxiety via the rational abstractions of the printed word. When the *Carpathia* sailed past Battery Park, an estimated 10,000 people crowded to witness the

sight. When the ship finally arrived at the West Side Piers on the night of the 18th, 30,000 people jammed Thirteenth, Fourteenth, and Fifteenth streets from Ninth Avenue to the riverfront.[18] The gathering of so many people (whether out of personal concern for loved ones or curiosity about the event) set in motion a cathartic, if chaotic, reversion to the spoken word. Ultimately, the problems surrounding wireless radio left the press without a comprehensive list of survivors until after the *Carpathia* docked.

With wireless reinterpreted through the events of April 1912, the ideological landscape began to shift and with it the cultural definitions of both representational and presentational electricity. No longer an interesting but marginal method of communication, presentational electricity became linked to safe transport, public confidence in times of uncertain outcome, and, most importantly, the scientific importance that formerly defined representational electricity. As a result of this event-centered shift in cultural definitions, the convergence between presentational electricity and wireless became a possibility. The clearest evidence of this convergence is the state-interested, military-supported formation of the Radio Corporation of America (RCA) from a buyout of American Marconi in 1919.

Appropriation and Exclusion

Cobbled together from General Electric, the light bulb and electrical systems manufacturer, Westinghouse, the electricity generation systems manufacturer, American Telegraph and Telephone, the long distance telephony company, and United Fruit, owner of the Tropical Radio Telegraph Company, RCA would be a central nexus of industry consolidation as well as a key player in the institutional tensions between military and commerce government concerns. The tensions between the Navy Department, the

Commerce Department, and RCA along with the discourses each mobilized to gain authority over the future of broadcasting convergence reflect a politics of appropriation and exclusion that is still evident in the debates over digital convergence.

Before World War I, radio patents were scattered among a variety of competitive manufacturing concerns,[19] making it impossible for any one concern to manufacture a working radio system without violating patent laws or anti-trust laws. Consequently, the primary use of radio at this time was wireless communication between ships at sea or for ship to shore contact, a situation on which the Marconi Company of America had a veritable monopoly because of its rights to British Marconi patents. The war changed this situation when as President Wilson, under the power of the Radio Act of 1912, required all concerns to work as a cooperative cartel and manufacture vacuum tubes exclusively for the war effort. Taking over all high power radio stations on the East Coast, the Navy Department held authority over broadcasting convergence under the auspices of national security.

During the war, the Navy Department had come to realize the potential in GE's Alexanderson Generator. As such, when negotiations between British Marconi and GE over the rights to the Alexanderson alternator, which began before the war, resumed in March 1919, the Secretary of the Navy, Josepus Daniels, lobbied for radio to become a government monopoly administered by the Navy Department. Although this takeover never happened, the discourse that linked broadcasting technology and consolidated industry organization to national security did gain currency. The Navy Department held conferences with the officers of GE, arguing that "if the General Electric Co. should sell these devices to the Marconi interests the result would be to make it possible for foreign

interests to maintain a monopoly of world-wide communication for an indefinite future period."[20] From these meetings, GE, Westinghouse, AT&T, and United Fruit Company agreed to assign their patents to a new subsidiary which those concerns would jointly own—RCA. Hence the convergence of presentational electricity and wireless radio into a privately run, state-interested, and military-supported science and consolidated industry for the purposes of national security. In fact, national security discourse is built into RCA's very laws of incorporation, requiring all directors and officers be American citizens and ceding to the Navy Department a non-voting supervisory position on the Board.

Rather than a minor detail regarding only the very distant past, the story of RCA's formation illuminates the present situation regarding 3rd generation[21] wireless and illustrates the durability of the politics of appropriation and exclusion linking convergence with corporate consolidation. The global conglomerates in existence today, i.e. AOL Time Warner, News Corp., Sony, Viacom, Vivendi Universal and Disney, are not that far off from RCA in 1919. Formed in *anticipation* of wireless convergence, these global conglomerates, like RCA, came into existence prior to the establishment of standardized technologies and methods necessary for convergence. Allowed by the federal government to balloon to their present size, these conglomerates, like RCA, are clear examples of state-interested consolidation. Think of it: RCA pulled together the manufacturers of light bulb and generator manufacturers with distribution systems established for telephone and telegraph under one corporate canopy; AOL Time Warner groups together one of the world's largest producers of entertainment with the leading internet services portal while the Microsoft/AT&T alliance (though premature) attempted

to combine the world's largest software producer with company with the greatest "last mile" broadband infrastructure potential.

RCA's offers another insight into the current wireless situation. Its formation was highly contingent on the Navy Department's repeated campaigns during World War I for a consolidated, domestically owned industry organization via the discourse of national security. And until the radio conferences between 1923-1932, military agencies were the de facto authority over broadcasting convergence. Interestingly enough, the Department of Defense (DoD) is again deploying a national security discourse to bear on the present wireless situation to a similar effect. Currently, U.S. wireless lags behind in other international markets, not for want of technology, but for want of spectrum space. Without more spectrum space, carriers are forced to erect more cell towers, which is expensive and a source of interference. Although the Clinton administration gave the FCC a deadline of July 2001 to mediate different spectrum interests—which include the Department of Defense, the Department of Commerce, the broadcasting industry, and Cellular Telecommunications Industry Association—and grant more spectrum to wireless carriers, no new allotments have materialized. The reason: the 1755 – 1850 MHZ band targeted for new allocation is currently occupied by the Department of Defense (DoD). In April 2001, the DoD issued a 328 page report stating the impossibility of DoD reallocation or bandwidth sharing without putting U.S. defenses at "substantial strategic and tactical disadvantage" and jeopardizing peace keeping operations.[22] In the post-September 11 climate of George W. Bush's America, national security is given priority over commercial concerns and military departments remain the authority over wireless.

But this may not be the case for long, if the history of broadcasting convergence tells us anything.

Although by 1919 and the formation of RCA, convergence between wireless radio and presentational electricity was couched in discourse that linked broadcasting convergence to the political problem of national security, this coupling was neither immutable nor unassailable. Much to the Navy Department's chagrin, their authority over broadcasting began to wane during the four radio conferences held between 1921 and 1932. During these conferences the deployment of public utility discourse by RCA's representatives and Secretary of Commerce Herbert Hoover eroded the currency of national security discourse and with it, the Navy Department's authority over broadcasting convergence. This alliance was political at its root. Since Secretary Hoover was interested in gaining industry support for the Commerce Department's authority over broadcasting, he tended to lend a more than sympathetic ear to RCA's desires for the future of radio. And because RCA had manage to antagonize the Navy Department with its monopolistic practices, RCA's officers were more than willing to support legislation that put the Commerce Department in control of radio.[23] Prioritizing technological questions vexing broadcasting convergence (i.e. interference and spectrum allocations) rather than the social and economic inequalities inherent to the radio industry's corporate and consolidated organization was central to this alliance's deployment of public utility discourse.

On the one hand, Hoover continually linked "the maximum public good to be secured" by the conference to the elimination of interference and spectrum allocation, rather than to investigating the anti-competitive practices organizing the industry. When

pressed, both Hoover and the key congressional adviser Congressman Wallace White, a Republican from Maine, decided that it would be "unwise" to undertake an in-depth examination of licensing and monopoly issues."[24] David Sarnoff, president of RCA, picked up on the public utility discourse, arguing that if the public's interest is to be served, the technical soundness of broadcasting and quick allocation of spectrum space must be prioritized. He went as far as demanding that the 1924 conference attendees take a stand on "whether it is sitting to discuss the question of monopoly, or whether it is sitting as a scientific body to discuss the technical questions."[25]

By supplanting national security discourse with that of public utility, the Commerce Department and RCA effectively appropriated the Navy Department's authority over broadcasting and established the interstitial domain between civilian agencies and radio industry interests as the realm of broadcasting authority. In addition by using a public utility discourse to achieve this aim commerce concerns excluded questions of state-interested monopolies organizing the industry. The current situation with wireless may turn out this way also.

The politics of appropriation and exclusion related to convergence did not end there however. During the 1940-1941 debates over television broadcasting's transmission standard, the politics concerning who has authority over broadcasting convergence involved a new player: the Federal Communication Committee. During the debates, the FCC attempted to deploy the public utility discourse in order to justify its position on the implementation of standards. In reaction, RCA deployed a discourse of free enterprise and, for national and international reasons, further consolidated its authority over broadcasting convergence. Associating regulatory agencies with bureaucracy and tyranny

and juxtaposing their authority with the "Americanism" of industry enterprise was as key to the deployment of this discourse—a discourse that is still in effect today.

While in February 1940 the FCC deferred the issue of transmission standards to "some future time"[26] and would allow limited broadcasts after September 1, one month later it suspended its order to revisit the potential need for a television transmission standard. According to the FCC, its change of stance was simply a matter of public interest. RCA, the FCC claimed, conducted a flagrant and irresponsible marketing campaign that violated a caveat, given with the initial FCC decision, against any industry activity that would "encourage a large public investment in receivers which, by reason of technical advances, when ultimately introduced, may become obsolete in a relatively short time."[27]

The marketing campaign in question consisted of full-page newspaper advertisements for RCA television sets that ran on the 441-line standard. The ads pitched sets at "convenient terms—10 percent down and 18 easy monthly payments."[28] The FCC claimed that the ads encouraged the large-scale public purchase of soon-to-be obsolete technology—while implicitly assuring the usefulness of those devices for up to 18 months. The FCC also believed that since there was no industry consensus on standards, the mass marketing of sets by any one company was premature at best. At worst, the Commission argued, RCA's actions were an abuse of a public utility and an explicit attempt to freeze standards at current levels to its own advantage as well as deter research.[29]

During the congressional hearings held by the Senate Committee on Interstate Commerce (ICC) to mediate the dispute, the FCC came under intense scrutiny when both

senators and the print media charged the agency with overstepping its jurisdiction and exhibiting "bureaucracy in action."[30] Although the FCC's monitoring of industry was not anathema to Roosevelt's progressive administration or the Supreme Court, both national and international situations cast an unfavorable light on their decision to suspend authorization of commercial broadcasts. In 1940, the nation was still recovering from the severe recession of 1937 and many politicians interpreted the FCC's decision as an unfair restraint on a new industry that could help pull the country out of its economic crisis.[31] Besides resonating with the nation's economic crisis, criticism of New Deal state expansion *qua* the FCC decision also played upon public fears concerning the international political situation. With the growth of German nationalism, Italian fascism, and Soviet totalitarianism in the late 1930s and the German occupation of Austria, parts of Czechoslovakia, and Poland that lead to the outbreak of World War II in 1939, any government policy construed as overstepping its jurisdiction became associated with tyranny. By proxy, the public utility discourse with which the FCC justified its position came to signify everything that was thought by critics to be wrong with New Deal economic policies and regulatory agencies. In its stead, the discourse of free enterprise began to resonant not only with the political actors involved but with the press as well, effectively excluding regulatory agencies and appropriating their authority for commercial concerns

Interestingly, the free enterprise discourse deployed by RCA during the ICC hearings was, in some ways inverse to its deployment of public utility discourse during the radio conferences. During the radio conferences, the Commerce Department and RCA saw broadcasting convergence as best accomplished by sticking to technical

questions and leaving questions about industry organization until later. During the ICC hearings, RCA associated the success of broadcasting convergence with the "free enterprise" of the broadcasting industry unimpeded by bureaucratic quibbling over technical questions. And RCA was far from the only constituency lobbying for authority via the free enterprise discourse. For example, throughout the ICC hearings, Senator Ernest Lundeen, a Farmer/Laborite from Minnesota, During the hearings, Lundeen described the FCC as a rogue bureau attempting to regulate advertising and business policy, running roughshod over individual business initiative and, in essence, paralyzing U.S. industry. Such sentiment surfaced in print also, as with a *Washington Post* editorial declaring industry freedom with standards, "the American way of doing things, and the way which encourages private enterprise to go forward with costly preliminary developmental work."[32]

At the end of the hearings, the ICC recommended that the need for standards should arise from industry consensus and not simply the FCC itself. But, the ICC concluded, hearings also revealed enough industry disagreement that justified the FCC's decision to defer commercialization until transmission standards were established. Despite this pragmatic ruling, the hearings further sanctioned a consolidated industry organization for broadcasting convergence by avoiding the question entirely. In addition, the ICC hearings introduced an anti-New Deal discourse used by commerce concerns that is still with us today and quite active in the politics of appropriation and expropriation surrounding digital convergence. Ironically, however, today it comes not just from industry leaders like Bill Gates, but from the FCC chairman himself, Michael Powell.

Powell is a testimony to the durability of anti-New Deal rhetoric surfacing in the television standards debate that associates regulation with the impediment of market forces and free enterprise with the development of convergence technology. When taking appointed as Chairman in 2000[?], Powell immediately set about reorganizing the Commission's bureau structure in order to bring deliver it from its New Deal legacy with its separate bureaus and different rules for each technology. In addition, Powell is openly resistant to impeding industry consolidation or enterprise since he believes "regulation work best when markets are mature."[33] Two examples make this resistance clear. When asked about the risks to competition inherent in corporate consolidation, Powell replied, "If Viacom wants to buy so-ands-so, is that the straw that broke the camels' back?"[34] When pressed about the DC Circuit Court's repeal of the cap on cable ownership on First Amendment grounds, Powell simply states:

> The minute you stray from economic efficiency and anticompetitive issues, you are talking about message. That is something I endorse the country debating 100 percent. But I'm the United States government. I am the one the Constitution warns against. And that's what's at issue in the DC Circuit - the courts will not issue a blank check to the government to stray into diversity and media without a more informed and substantial basis for doing it."[35]

At times, Powell can come off as dismissive to even *posing* the question of problematic industry consolidation in regard to digital convergence, stating that he has the same concerns, but "I demand better reasons to take action than just, you can articulate a set of speculative horribles that might happen."[36]

Conclusion

Ultimately, the politics of convergence, industry organization, and government regulation regarding digital convergence do not just hinge on Michael Powell's words. Yet, the politics of appropriation and exclusion discussed here—the long standing clash

between military, regulatory, and commercial agencies, the rationale that the public's interest is best served by dealing with technical questions of convergence first, that the laws of free enterprise are preferable to the whims of government regulation—remain a constant feature of the cultural landscape conditioning convergence. The fact that these discourses have been mobilized for almost a century in relation to convergence issues tell us something about the political influences on—or put more strongly, political determinants of—digital convergence. Far from a natural evolution of technology, it seems more apt to describe convergence as a long-standing political arena in which U.S. governmental agencies, and the state-interested monopolies they help spawn, grapple for the authority to decide the future of a technology as it relates to the economy. In doing so, these agencies and corporations, rather than the technology itself, becomes, in the words of Michael Powell, "the wild card that cannot be altered."

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[1] Rose, Frank. "Big Media or Bust" in Wired Magazine. March 2002, p. 97.

[2] . See The Webopedia updated March 22, 1998. 15 March 2002 http://www.webopedia.com/TERM/M/Convergence.html.

[3] Michel Foucault, Archeology of Knowledge. (NY: Pantheon, 1972), 11.

[4] Ibid. 18.

[5] Later, Bain reversed the motion of the machine by mooring the spool and mounting the copper stylus on a swinging pendulum. However, the machine's electrical configuration and method of transmission remained the same.

[6] Morse used a roller/stylus system to expose chemically treated paper to the electrical pulses and blue marks in the shapes of . and __ would result.

[7] "Decision of the Commissioner of Patents, in the matter of interference between S.F.B. Morse and Alexander Bain, applicants for patents for certain improvements in electric telegraphs." (Patent Office, 24 Oct. 1848). Cited in Stansbury, Appendix, 171.

[8] Ibid., 175.

[9] Ibid., 172.

[10] Ibid., 175.

[11] "*Carpathia* Here Tonight with *Titanic*'s Survivors." New York Times 18 Apr. 1912, p. 1:1.

[12] "Marconi Urges Need for Strong Wireless." New York Times 19 Apr. 1912, p. 10:2.

[13] U.S. Inquiry into the Loss of the *Titanic*. "Day 8, Testimony of Cyril Evans." *Titanic* Inquiry Project. George Behe, ed. Updated 25 Oct. 2000. <http://www.titanicinquiry.org/USInq/Am08EvansC1.htm>. (14 December 2000)

[14] "False *Titanic* News to be Investigated." New York Times 18 Apr. 1912, p. 1:5.

[15] "Marconi Urges Need for Strong Wireless." New York Times 19 Apr. 1912, p. 10:2.

[16] "Women Sob as News Bulletins Appear." New York Times 16 Apr. 1912, p. 5:6.

[17] "London Went to Bed Thinking All Saved." New York Times 16 Apr. 1912, p. 3:1.

[18] "Rescue Ship Arrives, Thousands Gather at Pier." New York Times 19 Apr. 1912, p. 5:6.

[19]According to the Federal Trade Commission's report, these manufacturing concerns consisted of Westinghouse Electric and Manufacturing Co., General Electric Co., Western Electric Co., the Marconi Co. of America, DeForest Radio Telephone and Telegraph Co., Moorhead Laboratories, Audio Tron Manufacturing Co. and Elman B. Myers (14). Report of the Federal Trade Commission on the Radio Industry.

[20] FTC Report on Radio, 15.

[21] 1st generation wireless is generally though of as referring to analog cellular, 2nd generation to digital cellular and 3rd generation to digital wireless networks.

[22] Department of Defense. Investigation of the Feasibility of Accommodating the International Mobile Telecommunications (IMT) 2000 Within the 1755-1850 Bandwidth. , i.

[23] This alliance was political at its root. Since Secretary Hoover was interested in gaining industry support for the Commerce Department's authority over broadcasting, he tended to lend a more than sympathetic ear to RCA's desires for the future of radio. And because RCA had manage to antagonize the Navy Department with its monopolistic practices, RCA's officers were more than willing to support legislation that put the Commerce Department in control of radio. Philip Rosen, The Modern Stentors, 1980, 25-27.

[24] Hugh Slotten, Radio and Television Regulation. (Baltimore: Johns Hopkins UP, 2000), 293 18.

[25] Qtd. in Slotten, 27.

[26] "A Go-Ahead Signal." New York Times. 10 March 1940, sec. XI, p. 12:1.

[27] Ibid.

[28] Ads quoted in Development of Television. Hearings before the Committee on Interstate Commerce, U.S. Senate on Res. 251, a resolution requesting the Committee on Interstate Commerce to investigate the actions of the Federal Communications Commission in connection with the development of television. (Washington D.C.: GPO, 1940), 19-20.

[29] "FCC Stays Start in Television, Rebukes RCA for Sales Drive." New York Times. 24 March 1940, p. 1:6.

[30] April 5th editorial in *Broadcasting Magazine*

[31] Hugh Slotten, Radio and Television Regulation. (Baltimore: Johns Hopkins UP, 2000), 97.

[32] "Television Controversy." Washington Post. Editorial. 8 April 1940.

[33] Frank Rose, 95.

[34] Ibid., 92.

[35] Ibid., 95.

[36] Ibid., 97.

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