

It was the *Twentieth* Century. There was electricity in the air, the excitement of a new era. Science was ascendant. New inventions were arriving daily. Cars, electric lights, washing machines, and telephones were coming to the American home. And electricity was literally in the air, as Gug(?) Marconi sent the first wireless communications through the ether. It was to be the century of electronic communications – communications so different in kind and scope that they would deeply change our perceptions of time and space, personal and group identity, and political and religious authority. Now at the outset of the Twenty-first Century, we see and interact with the world differently than all generations before. The Twentieth Century changed human communications fundamentally and forever.

Movies, phonograph, ...

This book is about the telephone, television, and internet communications we use every day – those that we take for granted and the new developments that alternately amaze and perplex us – how they were created through invention, industry, regulation, and our individual and public accommodation to them. It is a century-long story of the creation of new industries rife with competition, the consolidation of those industries into incredibly powerful and stable monopoly structures, and then the transformation of those industries through the rebirth of competition and the proliferation of myriad new kinds of communication.

Of course, the telegraph and telephone predated 1900, as did early wireless experiments, but the turn of the century marked the true birth of the electronic communications industry, comprising the telephone, broadcasting, and the internet, that was to become one of the signal legacies of the Twentieth Century. The industry was born and grew from fundamental developments in technical invention, financial formation, and business management.

Invention: The telegraph and telephone were *electric* technologies, employing batteries, generators, and mechanical switches, and early wireless transmissions were generated by huge electric sparks. But the invention of the vacuum tube in the early Twentieth Century (followed in mid-century by its successor, the transistor), sparked inventions using much more capable and versatile *electronic* technology that made possible new telephone and wireless communications that were impossible with brute-force electricity. The invention of vacuum tube amplifiers made long distance telephone calls practicable, and the invention of sophisticated electronic circuitry allowed wireless communications to operate over more frequencies, longer distances, and to carry voice and music instead of just morse code. This electronic communications technology was not evolutionary phenomenon; it was an explosion in sophistication and capability.

Finance: The frequent announcements of new communications technologies fed public fascination and demand for communications services. And the construction of the facilities to satisfy that demand required massive amounts of capital. The ability to attract large amounts of capital on a continuing basis to feed the growth of the communications industry required changes in the financial world to provide the capital

and practical business structures for the efficient deployment of that capital. Many inventors' dreams went unrealized while their inventions were incorporated into the businesses of the men who learned how to combine invention, capital, and growth. The communications business was from the outset and remains today a highly capital intensive business. While one could argue that Wall Street took over the industry or that the industry learned to tap the power of the New York capital markets, the attraction was mutual, and throughout the century, the industry has been shaped as much by finance as technology.

Management: As the many business failures of the early years attest, invention and capital alone did not assure success. The third vital component that breathed life into the technology and capital was the development of new business models and the art of shaping technology and capital together to create and then continue to meet new market demand. There were models to draw on for managing large, capital intensive network industries – railroads, telegraph, express postal service, and electric utilities - but none matched the complexity, scale, speed, and dynamism of this new industry.¹ The older industries grew from man's natural desire to transport goods and letters faster and to devise better forms of energy, but there was no natural market demand for the electronic communications industries. For the most part people wondered at the mystery of the new inventions, but even as we take them for granted today, our counterparts in the early 1900s had no well-formed conceptions of how they were to use them. The evolution of the electronic communications industry can be traced in technology and finance, but the real story is the people who had the business vision and management acumen to orchestrate technology, finance, and markets and thereby shape the telephone, radio, television, and internet services we have today.^{2 3}

Two signal events set the stage for the formation of modern electronic communications, each in the latter half of 1899. each in New York. One presaged the transformation of the highly competitive telephone industry into a massive national monopoly, the other signaled the creation of a totally new wireless industry.

[Bell Company becomes a New York corporation, shifts to New York financial markets for future capital to counter competition, throws in lot with Morgan banking syndicate, consolidates Erie, brings back Vail.]

[Marconi provides wireless coverage of yacht races to NY newspaper(s?), builds public awareness and fascination with wireless communications, sets stage to create American Marconi to tap US markets and capital.]

¹ Is this true? Can we document or justify it?

² This is pretty hyperbolic. Can we make sense of this paragraph?

³ Can we format these three paragraphs to show they are a subset of the major text? How do we format to show the shift of thread in the following paragraph?

[Concluding paragraph.]

Chapter 1 tells the story of the *creation* of the electronic communications industries from 1900 to the early 1930s - the formation of the AT&T monopoly to eliminate telephone competition and the birth of radio broadcasting in a competitive flurry that quickly settled into a monopoly of three national broadcast networks.

Chapter 2 traces the *consolidation* of the powerful telephone and broadcast network monopolies from the 1930s through the 1970s – AT&T's growth from a telephone company into a modern all-purpose national and international telecommunications company, the three radio networks' extension of their monopoly into a monopoly of three national TV networks, and the passage of the 1934 Communications Act that created the FCC to oversee these powerful new monopolies.⁴

Chapter 3 tells the story of the reintroduction of *competition* into the telecommunications and television industries from the 1970s through the end of the Century – the proliferation of new communications technologies after WW II that made the telecommunications and television monopolies vulnerable to competition, and the shift from a scarcity-based regime of legalistic regulation of long-established monopolies to a fundamentally new regime based on the growth of new services and competitive market forces.

** Need to address how & why the book is focused on the US.

⁴ Footnote here to explain the use of the word “monopoly”. Qualification of economic meaning for telephone and simpler construction than “oligopoly” in broadcasting.